MONTANA STATE UNIVERSITY

Mountains & Minds

Montana State University: Mid-Cycle Review
Responses to Items from Past Reviews

Remaining items from prior evaluations

Eligibility Requirement 3. In August 2012, the Commission additionally asked that we provide verification of the governing Board's approval of the University's Core Themes. This came about because our November 2011 submission of the Core Themes to the Montana Board of Regents was handled as an information item, so no action was taken to approve the Core Themes. This was remedied in November 2012 when the Core Themes were resubmitted as an action item for Board approval. That approval was granted on November 15, 2012.

Attachments

- ITEM 157-2001+R1112: MSU-Bozeman Core Themes
- Minutes of the Montana Board of Regents Meeting, November 15-16, 2012 (see p. 3 for record of approval of Item 157-2001+R1112: MSU-Bozeman Core Themes)

Note: With the Mid-Cycle Report we have decided to update our Core Themes yet again to align with MSU's Strategic Plan which was approved in November 2012. Board approval is currently being sought for the updated Core Themes. We anticipate approval in September 2014.

Recommendations from prior evaluations

In February 2012 the Commission requested that Montana State University address Recommendations 5 and 6 of the Fall 2011 Year One Peer-Evaluation Report in our Year Three Self-Evaluation Report (now the Mid-Cycle Report). These recommendations are:

5. The evaluation panel recommends that either additional resources be generated to support such areas as research, graduate education, undergraduate research, faculty and staff development, and facilities management or that strategic reallocations be made to ensure such support and that the progress by which this is achieved by consultative, participatory, and transparent consistent with the University's own commitment to those values (Recommendation 1 from the 2009 Comprehensive Evaluation, Standard 7.B.1) (new Standards 2.F.1; 3.A.2, 3.A.4; 4.A.5 and 5.B.1).

6. The evaluation panel recommends that the University work with the Board of Regents and the Commissioner of Higher Education, Montana University System, to develop comprehensive policies and practices that will ensure competitive salaries and benefits for the recruitment and retention of faculty, staff, and administrators (Recommendation 3 from the 2009 Comprehensive Evaluation, Standards 4 and 7) (new Standards 2.B.1 and 2.B.4).

Our responses to these recommendations follow.

Recommendation 5. Additional Resources

We have experienced rapid enrollment growth in recent years which has generated a significant increase in tuition revenue, over $6M has been added to the Provost's budget since FY 2012, with over half of that amount coming from additional tuition revenue. [Revenue vs Expense Trend worksheet appended] These funds from the Provost represent a portion of the funds that have been reinvested in the institution to:

- Add additional sections to meet student demand
- Hire additional faculty (tenure-track and non-tenure-track)
- Incentivize research
- Fund two rounds of strategic investment proposals guided by the Core Themes (first year) and Strategic Plan (second year)
- Build graduate education
- Increase support for undergraduate research
- Improve advising support by implementing DegreeWorks
- Fund a new Center for Faculty Excellence to support faculty development
- Continue to manage and make progress on the maintenance of our facilities

These expenditures are guided by the recommendations of a Budget Council, advisory to the President, created in 2010. The council's charge is: "To create, communicate and implement logical and easily

understood fiscal processes that lead to fair budgetary guidance or resource allocations that directly support University strategic goals and priorities."

Additional Sections

In the early years of the increasing enrollments, the philosophy behind adding sections was simple: ensure that there were enough seats available for all entering students to be able to create a schedule that would allow them to make progress towards a degree. A total of $1.4M (one-time-only, or OTO funds) was used to add additional sections in 2011-12 and 2012-13. [Strategic Plan Progress Report 2013 appended] Also in 2011, $1.1M in base funding was moved from the Provost's budget to rebase college budgets, replacing OTO funds that had been used to add sections in prior years. Moving the base funding to the Dean's budgets allowed the Deans to make decisions on how best to staff these courses for the future.

However the students who entered in large numbers in the past are now reaching the upper division. Eighteen new sections of upper division courses in engineering, the fastest growing college, will be added in Fall 2014 to accommodate these increased upper division enrollments.

Additional Faculty

The Institution invested $3.1M in new tenure-track faculty lines in 2011-12 and 2012-13. The new faculty lines both support the increased enrollments and represent a significant investment in the research mission. Start-up packages for new faculty between 2011 and 2013 totaled $6.3M. [Provost's Update 1/15/2013 appended]

Incentivize Research

Like many institutions, Montana State University allowed active research faculty to augment their salaries from research grant funds. Changes in Federal guidelines required a change in the practice. A new incentive plan allowing active research faculty to receive financial incentives from pooled institutional funds rather than directly from grants was approved in August 2013. Details of the research incentive program are available in the appended policy document.

Strategic Investment Proposals

The faculty members were invited to submit strategic investment proposals in 2011-12 and again in 2012-13. In 2011-12, the Institution's Strategic Plan was still being developed, so the Core Themes listed in the Year One report were used to make funding decisions. Once the Strategic Plan was adopted, the strategic goals in that plan were used to make funding decisions. However the strategic goals were developed from and align with the Core Themes.

The proposal process included an open call for proposals, initial ranking by the unit directors (primarily deans) with all proposals submitted to the Budget Council for consideration. Proposers of proposals scored high by Budget Council were asked to present their proposal and respond to questions at an open meeting. Then the Budget Council recommended proposals to the President for funding. Final funding decisions were made by the President.

- In 2011-12 there were 74 proposals submitted, and 16 were funded for a total of $1.8M ($1.2M base, $0.6M OTO). [list of FY12 funded proposals is appended]
- In 2012-13 a total of $2.8M ($1.2M base, $1.6M OTO) was recommended to the President for funding. [list of FY13 funded proposals is appended]

Building Graduate Education

One of the 2012-13 Strategic Investment Proposals (SIP) was related to building infrastructure for graduate education: $51K for strategic recruitment of graduate students. A significant portion of the proposal was used to update admissions software.

Additionally, base funding of $216K in FY13 and FY14 was set aside to provide graduate (PhD) recruitment stipends of $18K per student, plus a tuition waiver. In FY13 the Provost augmented the program by adding $108K for an additional six student stipends. [Graduate School Recruiting Programs appended]

The College of Engineering also received FY14 SIP funding $115K to build PhD capacity in their programs. This funding will be used to add two $18K stipends for new PhD students in each of the five engineering departments, plus fund three additional stipends in any department as needed.

Increase Support for Undergraduate Research

Funding for undergraduate research at MSU comes primarily from three sources: Provisional base funding through Academic Affairs, externally-funded programs that include an undergraduate research component, and externally-funded grants to individual PIs. We are planning to develop a coordinated system for tracking undergraduate research expenditures and participation across the entire university, but this system is not yet implemented. We present preliminary results showing expenditures on undergraduate research for Fiscal year 2014 and trends in central funding of undergraduate research.

Base funding through Academic Affairs

The Undergraduate Scholars Program (USP) is the largest and most diverse undergraduate research program at MSU awarding approximately $280,000 to support 220 student projects in a wide range of academic disciplines. In 2012 the Undergraduate Scholars Program submitted a proposal to the Provost requesting stable base funding for student awards and was granted a three-year provisional award (FY 2013-15) with the understanding that it would become a permanent budget line-item starting in FY 2016 if assessment goals defined in the proposal were met. Prior to this time the USP director raised ad-hoc funding form a variety of sources including the VPR, Montana EPSCoR, the Colleges, etc. The proposal included addition of 0.5 FTE for USP staff bringing the total FTE to 1.5 (Director, 0.5 FTE; Program Coordinator II, 1.0 FTE). The transition to base funding has transformed USP operations by facilitating long-range budgeting and strategic expenditures to improve and expand undergraduate research opportunities.

During the past eight years funding for USP has nearly doubled allowing a substantial increase in the number of awards from fewer than 150 in AY 2006-07 to 220 in AY 2013-14. The standard stipend was increased from $1500 to $1800 in AY 2012-13 (Figure 1).

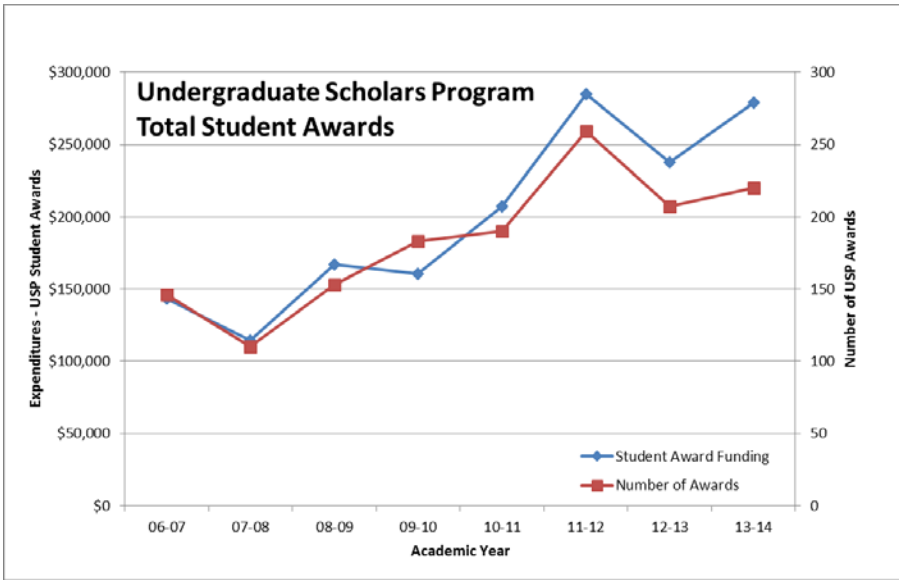


Figure 1. *Eight-year trend in number of awards and total expenditures for student awards in the Undergraduate Scholars Program. The request for base funding was based on expenditures during the peak year (AY 2011-12). And have been effectively flat since then. The apparent decrease in expenditures in AY 2012-13 is partly due to the way summer awards were distributed across fiscal years (beginning 1 July).*

Programs funded by external grants

MSU's Office of Sponsored Programs provides a report on expenditures for undergraduate researchers. This report lists 437 unique undergraduate students paid from 290 different OSP-monitored funding sources in FY14. [OSP Student Research appended] The average award was approximately $1300.

Examples of grant-funded programs that support undergraduate researchers include:

- Montana IDeA Networks of Biomedical Research Excellence (INBRE, NIH)
- Montana Space Grant Consortium (NASA)
- American Indian Research Opportunities (AIRO)
- Hughes Undergraduate Biology Program (HHMI)

Individual research projects and assistantships funded through grants to faculty PIs

Expenditures on student labor (Banner Acct. 61225) on all research grant accounts total more than $1.395 million for FY 2014. This figure is an estimate of compensation to students who participated in the MSU research enterprise at any level and includes students performing routine laboratory tasks, and students carrying out clerical and support tasks as well as students genuinely engaged in active research.

Improving Advising by Implementing DegreeWorks

In 2012-13 the implementation of a new advising program, called DegreeWorks, was completed to assist students and advisers in course planning. The new program allows both students and advisers to more easily understand how one semester's course selection impacts progress towards a degree. The DegreeWorks software was on all four campuses and is currently begin expanded to include graduate programs as well.

Center for Faculty Excellence

In 2011 the Provost established Montana State University's Center for Faculty Excellence to support the professional enhancement of our faculty. The Center was recently recognized as a 2014 Exemplary Teaching and Learning Center at the 25th International Conference on Teaching and Learning held in Ponte Verde Beach, Florida. A news article announcing that award states[1]

> *In 2013, the center offered 72 workshops with more than 1,800 attendees. Workshop topics included: teaching strategies to promote student learning, motivation, and retention; design and implementation of best practices; and ways to enhance research.*
>
> *Lockhart said the center awarded more than $200,000 in grants in 2013 to support faculty in their teaching and research. The center offered training for faculty interested in using MSU's two new technology-enhanced active learning, or TEAL, classrooms. It also organized a pair of book discussion groups, four writing groups that met weekly to review each other's research writing, and supports an early career faculty-mentoring program.*

Dr. Marilyn Lockhart has served as the interim Director of the Center since it was created, and was recently named Director following a national search.

Facilities Management

Montana State University has been working aggressively to reduce the level of deferred maintenance on our facilities. As far back as 1992 MSU employees began developing a tool, now called the Facilities Condition Inventory [FCI information appended], to assess and quantify a building's physical condition, and the average condition of the institution's facilities. This has allowed priority needs to be identified and addressed, and the overall condition of our facilities to be tracked.

The Facilities Condition Inventory tool received the APPA-Leadership in Educational Facilities organization's national "Effective and Innovative Practice Award" in 2008. In addition, the tool is now used to assess the condition of all K-12 schools in Montana.

The value that is used to quantify the condition of an institution's facilities is termed the Facilities Condition Inventory, or FCI. FCI values range from 0 to 100%.

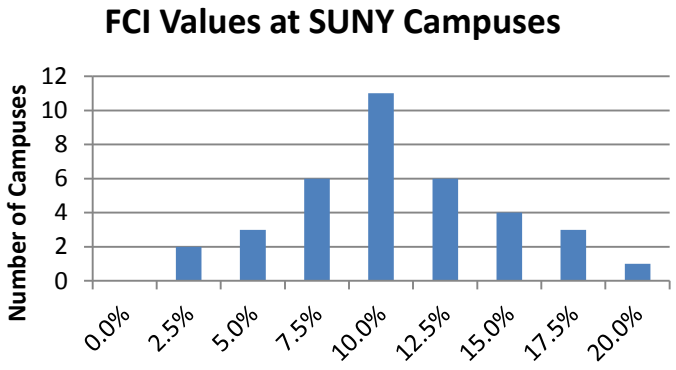
Facilities Condition Inventory

- Good 0 to 5%
- Fair 5 to 10%
- Poor Greater than 10%

MSU's current average FCI value for damage and wear on buildings is 6.8%. [MSU Deficiency report appended]

[1] MSU Center for Faculty Excellence receives international recognition, April 8, 2014 -- MSU News Service

For purposes of comparison, a 2007 report by the Rockefeller Institute of Government entitled Analyzing SUNY Facility Renewal and Backlog Needs [appended] included FCI values for SUNY campuses. The following histogram shows how FCI values were distributed for the various SUNY campuses.



A 2012 report with the same title produced by Sightlines LLC [appended] provides a table of FCI values for eight state university systems. 2012-13 FCI values from that report are listed here.

System	FCI
California State University	12%
University of California	25%
City University of New York	14%
Minnesota State Colleges and Universities	12%
Oregon University System	21%
State University of New York	10%
University of Hawaii	8%
University of Texas	6%

While the SUNY data sets were chosen for comparison simply because they appeared in a Google search on "typical FCI values for universities", MSU's FCI value of 6.8% appears to be well within the range of FCI values expected on university campuses.

In addition, the FCI values for individual buildings and systems allows MSU to develop strategies for making the best use of renovation funds. Recently completed projects include:

- Renne Library Campus Testing Services – response to a need for additional testing stations for increasing numbers of proctored examinations, including the new on-line Fundamentals of Engineering Examination
- Linfield Hall Remodeling – ADA compliance renovation (elevator installation and bathroom renovations) in a historic building, plus a complete renovation of a large lecture hall
- Blackstone Launchpad – update of space in the Strand Union Building to support the Blackstone Launchpad campus entrepreneurship program funded by the Blackstone Charitable Foundation.

- Technology-Enhanced Active Learning Classrooms (TEAL) – Two TEAL classrooms have been built to support a new pedagogy that encourages active learning and student collaboration. A third TEAL classroom has recently been approved for funding.
- Gallatin Hall Residence Suites – a new residence hall for upper-division students designed to house 70 students using suite-style accommodations. Additionally, construction has started on a new 400-bed residence hall.
- Plant Growth Greenhouse LED Project – LED lights were installed, replacing 1000 Watt high–intensity discharge (HID) lights. The new LED lights yield a 70% energy savings.
- Fieldhouse Repairs and Upgrades – repairs addressed roof damage from a severe hail storm in 2010. Upgrades include the installation of new arena floor to support track and field activities, replacement of existing bleachers, and improvement of the sound system. The goal was to make the facility more inviting for a wider range of institutional and public uses. ($3.2M).
- North Hedges Window Upgrade – All single pane windows were replaced with Low E double pane windows to improve energy utilization.

Projects underway include:

- Jake Jabs College of Business and Entrepreneurship – new building made possible by a $25M donation from alumnus Jake Jabs.
- Creative Arts Seismic Retrofit – funded by a grant from FEMA, a number of structural upgrades are being made to the buildings comprising the Creative Arts Complex. The upgrades are designed to improve structural performance in the event of an earthquake.
- Cheever 215 Lecture Hall Renovation – a total renovation of this large lecture hall including fixtures and finishes, teaching technology and ADA upgrades.
- Miller Dining Hall Renovation – a complete renovation that changes the way meals are prepared and served, following modern trends. Once this renovation is complete, Harrison and Hannon dining halls will also be renovated.
- Fieldhouse Arena Upgrades – upgrades include the installation of new arena floor, replacement of existing bleachers, and improvement of the sound system. The goal is to make the facility more inviting for a wider range of uses.
- ADA Transition Plan – the University is updating the ADA Transition Plan which serves both as an inventory of ADA needs and a plan for addressing shortcomings.

Significant renovation projects in recent years have also included

- Cooley Lab Renovation – total renovation of a very significant research building ($17M)
- Hapner and Langford Residence Hall Improvements – room remodels (2011) and improvements to public spaces and restrooms (2012) in these residence halls.
- Stadium End Zone Project – replacement of existing East end zone bleachers with new stadium seating, adding restrooms, concessions, and a visitor locker room ($10M)

- Renne Library Commons Renovation – conversion of the main floor of the Renne Library to a technology-based student collaboration and study space ($600K). Usage of the space has, based upon entry counts, has increased dramatically since the conversion.
- Gaines Hall Renovation – the building was taken down to columns and slabs, including the removal of the large lecture hall. The renovation included updated classrooms, offices, instructional labs, and a new lecture theatre.

These renovation projects are having an impact on the amount of deferred maintenance on campus.

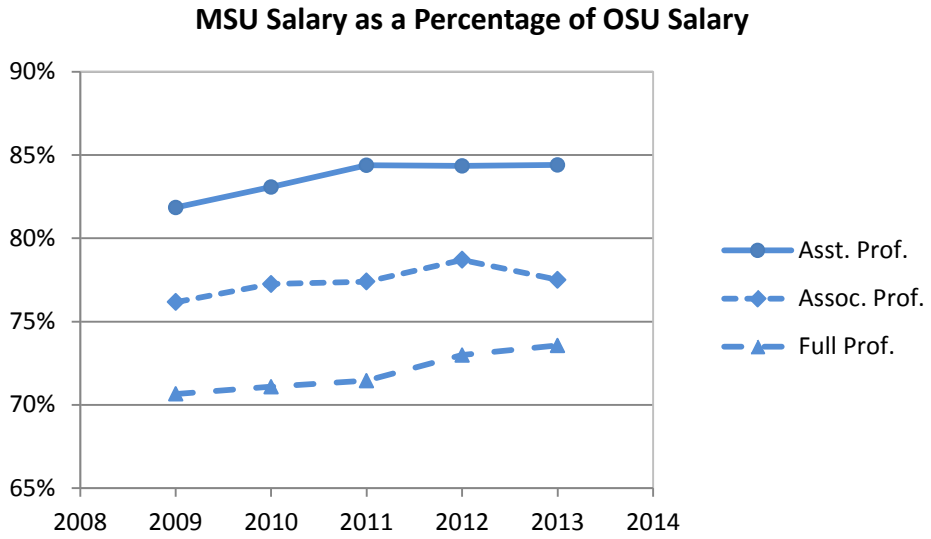
Projected major projects include

- Renovation of Romney Hall – this is currently an underutilized building near the center of campus. No longer adequate for its original function as an athletics facility, it is the University's top priority for State funding in this year's legislative session. The goal is to give this classic building a new life as a center for student learning ($25M)
- Norm Asbjornson Innovation Center – starting with a gift of $50M from alumnus Norm Asbjornson (March 2014), the changes envisioned for the south end of campus include not just the Norm Asbjornson Innovation Center, but additional facilities to support the Core Themes of learning, discovery, and integration. Planning is just getting underway but the current estimate for the south-side projects is about $80M.

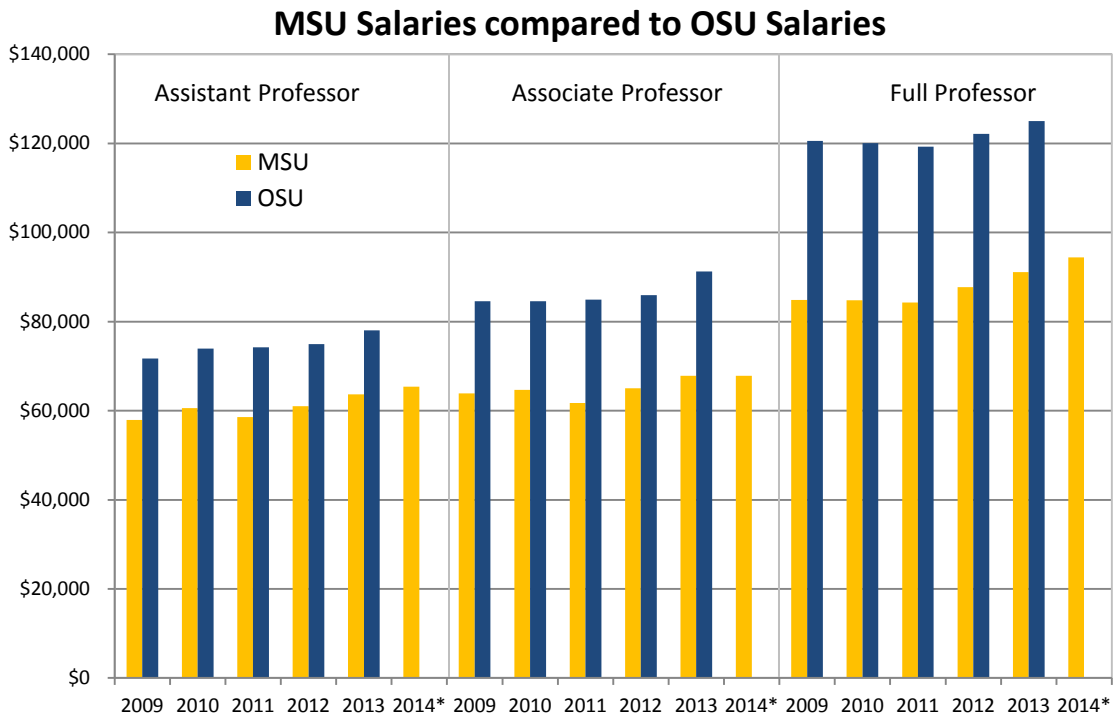
Recommendation 6. Salaries

The Year One report was prepared during the period after the faculties (tenure-track (TT) and non-tenure track (NTT)) had each voted to form a union and before negotiation of the collective bargaining agreements (CBAs) had been completed. During this transition time we had very limited options for addressing the significant challenge of adequate faculty compensation. Fortunately, those limitations have been removed and we are beginning to make some progress in this difficult area.

With the ratification of the CBAs, we were once again able to award merit and market increases for both TT and NTT faculty. The raise amounts under the CBAs were modest, but at least helped prevent further erosion in MSU faculty salaries when compared to Oklahoma State University (OSU) Salary Survey averages. (Values for very high research institutions are used in the comparison.)



The salary data show that, in general, we are making slow progress towards improving MSU average salaries by rank against OSU comparators. Over the past five years MSU Assistant Professor average salary has moved from 82 to nearly 85% of the OSU average for that rank. The values for full professor show a similar improvement trend, but at lower levels from approximately 71% to nearly 74% of the OSU average. Unfortunately we saw a dip in the trend for associate professor average salary compared to the OSU average. Looking at the actual salary values (in the following chart) it is clear that the dip is the result of a marked increase in the OSU average salary for associate professors. The MSU average salary for associate professors also increased between 2012 and 2013, just not as greatly as the OSU value.



* 2014 MSU data represents Budget Office and OPA projections for FY2015 post-raise salaries excluding unknown new faculty hires and separations

MSU salaries are not where we would like them to be, but specific steps have been taken in coordination with OCHE to address the issue, and we are beginning to see demonstrable improvements in this area.

Several administrative changes have been implemented since 2011 that have also helped with faculty salary and retention issues.

- A market pool has been established. Market raises have been introduced to move groups of faculty towards their OSU peer group average.
- A merit pool has been established and the amount of the merit raise has been increased. These higher merit raises are seen as more tangible rewards for excellent faculty performance.
- An equity pool has been established to address individual and group inequity issues, such as the salary inversions, gender inequities, and disparities between ranks.
- Greater scrutiny is now given to starting salary offers for new faculty members. While we do not need to offer 100% of OSU in order to attract quality faculty members, we no longer allow offers at 60% of OSU. Making higher initial offers has helped reduce the discrepancy between MSU and OSU salary averages, especially at the assistant professor level.
- The raises awarded at promotion have been changed from flat dollar amounts to percentages of the faculty member's salary. The percentage increases will benefit faculty at higher salary levels, while the dollar amounts protect faculty at lower salary levels.

Promotion Raises

	Past Practice	New Policy (FY13)
Promotion to Assoc. Prof.	$3000	Greater of $3000 or 6.5%
Promotion to Professor	$6000	Greater of $6000 or 10%

- A retention pool has been established. This has reduced the burden on deans' personnel budgets. New procedures allow retention offers to be made before a faculty member receives a competing offer, which improves the likelihood of retaining top faculty. Under these new processes we have been able to retain approximately 75% of the faculty who receive a retention offer.

Classified Staff Compensation

Employees in classified staff positions have received essentially the same raises as faculty, as shown in the following table.

Raises for MSU Staff and Faculty

	FY10	FY11	FY12	FY13	FY14	FY15
Staff*	0**	0	1% + $500	2% + $500	2.25% + $250	2.25% + $250
Faculty	0	0	1% + $500	2% + $500	2.25% + $250	2.25% + $250

* Staff raises vary slightly by union contract. For example, in FY15 the MPEA Classified Staff collective bargaining agreement called for raises of 2.25% + $0.12/hr rather than $250/FY. For a full-time employee $0.12/hr and $250/FY are virtually equivalent.

** Some classified employees were awarded one-time payments of $225 to $450 in FY10.

It is significant to note that, with support from students, Regents, and the Office of the Commissioner of Higher Education (OCHE), MSU was able to award salary increases of in fiscal years 12 and 13, even though the 2011 State Legislature did not authorize any funds for this purpose during that biennium. In May 2011, after the conclusion of the legislative session, the students recommended to the Board of Regents that tuition should be increased to support faculty raises, and tuition was raised by 5% in Fall 2012.

A chart listing annual salary increases since FY88 for various types of positions is available at http://www.montana.edu/opa/facts/SalaryIncreases.html.

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Montana State University Mid-Cycle Report – Part I

The following prompts were provided by NWCCU as Guiding Questions for completing Part I of the Mid-Cycle report. Please note that I have changed the order of the first two bullet points since our response on the validity of our core themes and objectives will impact how we define mission fulfillment. Abbreviated versions of these bullet points will be used to provide structure for this portion of our Mid-Cycle report.

- Are your core themes and objectives still valid?
- Mission fulfillment is a "meta assessment" of institutional effectiveness. Describe/explain your process of assessing mission fulfillment. Who is involved in the assessment? Is the Board of Trustees involved? Can you articulate the key assessment variables that determine and assess the alignment of mission with mission fulfillment?
- Is the institution satisfied that the core themes and indicators selected are providing sufficient evidence to assess mission fulfillment and sustainability? If not, what changes are you contemplating?
- Are your indicators proving to be meaningful? Do you have too many indicators or too few?
- What has the institution learned so far and what changes are contemplated? What has been your progress to date using the data? Do the data tell you what you are looking for?
- How are data being collected, analyzed, and utilized and the findings communicated to constituents?
- Moving forward to the Year Seven what will you need to do?

Are your core themes and objectives still valid?

The Core Themes and objectives in our Year One report were used as the groundwork for a more detailed Strategic Planning effort that was launched nearly simultaneously with the submission of our Year One report. The Strategic Planning effort involved a taskforce of over fifty individuals from a variety of roles on campus, and leaders from off campus as well. The new Strategic Plan was approved 12 months after the Year One report was submitted.

When the new Strategic Plan was completed, there was still a high degree of correlation to the Year One report's Core Themes and objectives.

Year One Report: Core Themes	**Strategic Plan: Goals**
1. Educate students	Learning
2. Create Knowledge and Art	Discovery
3. Serve Communities	Engagement
4. Integrate Learning, Discovery and Engagement	Integration
5. Stewardship[1]	Stewardship
	Access

A document illustrating how the objectives and indicators in the Year One report compare to the objectives and metrics in the Strategic Plan is provided in the reference materials [Comparison of MSU Year One Report and Strategic Plan Aug 2014]. A portion of the comparison for Core Theme 1: Educate Students is shown here as an example.

[1] In response to an evaluators' suggestion that the Core Themes should more closely reflect the institutional mission, the Stewardship core theme was removed from the updated Year One report submitted in March 2012. However the members of the Strategic Planning Committee felt strongly that stewardship should remain one of the goals of the institution. It is being restored as part of the updated Core Themes.

Updated Year One Report	Strategic Plan
Core Theme 1: Educate Students	**Strategic Goal: Learning**
Objective 1: Increase graduation rates at Montana State University.	***Objective L.2: Increase graduation rates at MSU***
6-year bachelor's graduation rate will increase from 51% to 62%.	Metric L.2.1: By 2019, the bachelor's graduation rate will increase from 51 percent to 65 percent as measured by the six-year graduation rate.
Graduate degrees awarded will increase from 548 to 650.	Metric L.2.2: By 2019, the number of graduate degrees awarded will increase from 548 to 625 per year. The number of doctoral degrees awarded will increase from 56 to 80 per year.
Associate degrees conferred will increase from 38 to 70.	Metric L.2.3: B By 2019, the number of associate degrees conferred will increase from 38 to 70 per year. Workforce certificates conferred will increase from 35 to 65 per year.
First time, full time freshmen fall-to-fall retention will increase from 74% to 82%.	Metric L.2.4: By 2019, the first time, full time freshmen fall-to-fall retention rate will increase from 74 percent to 82 percent.

Updated Year One Report	Strategic Plan
Objective 2: Increase Job Placement and Further Education Rates.	***Objective L.3: Increase job placement and further education rates.***
Percent of graduates entering Montana workforce will increase from 38 to 45.	Metric L.3.1: By 2019, the percent of graduates employed full time in their field or in positions of their choosing will increase from an average of 62 percent to 70 percent.
Percent of graduates pursuing an advanced degree will increase from 22% to 25%.	Metric L.3.2: By 2019, the percent of graduates pursuing an advanced degree will increase from an average of 21 percent to 25 percent.

While there is a strong congruence between the two documents, they are not equivalent. The Strategic Planning Committee started with the Core Themes from the Year One Report and expanded and developed those themes to create the new Strategic Plan. The fact that the Core Themes could survive a year-long vetting process largely intact is strong evidence that the Core Themes are still valid and continue to reflect the ideals and goals of the faculty. With this Mid-Cycle Report we are updating the Core Themes to align exactly with the Goals of the Strategic Plan.

New Core Themes

- Learning
- Discovery
- Engagement
- Integration
- Stewardship
- Access

We have submitted a request to the Montana Board of Regents to approve this update of the Core Themes. We anticipate that the Regents will review our request at the September 17-18, 2014 meeting, prior to the evaluators' site visit in October 2014. [Submitted Board item is appended]

Additionally, we will use the objectives and metrics of the Strategic Plan as the objectives and indicators corresponding to the Core Themes. In this manner the Strategic Plan will become the single planning document used on campus for both strategic and accreditation purposes.

Assessing Mission Fulfillment

We define mission fulfillment as making sufficient progress towards the goals defined in the Strategic Plan. This approach is required for several reasons:

1. MSU's Strategic Planning time period is not aligned with the seven-year accreditation cycle. While the targets initially established in the Year One report were timed to coincide with the Year Seven report, the taskforce charged with developing the Strategic Plan determined that additional time was needed to reasonably accomplish the goals of the Strategic Plan. They moved the target dates for most metrics out to 2019, two years after our Year Seven report will be submitted (and three years after the data will be collected for the Year Seven report).
2. We have no expectation that all of the goals in the Strategic Plan will be fully met. The Strategic Plan, like the Mission and Core Themes which preceded it, includes aspirational goals. For example, the goal "By 2019, all graduating students will have had a substantial curricular experience that integrates learning, discovery and engagement" will be extraordinarily difficult to accomplish in the near term. But we believe that we can make better progress by aiming high, even if we fail, than by setting easy targets.
3. We are still defining some of the targets. In areas where data has not historically been collected we first need to establish a baseline, and then establish targets. The Planning Council and the Office of Planning and Analysis have been working to collect the baseline data for the past year. Non-numeric targets, such as "increase" are appropriate for metrics in newer areas such as Engagement and Integration for which the institution is only now beginning to collect data. In AY15 Planning Council will establish additional numeric targets, where appropriate, for strategic goals for which baseline data is available.

With those qualifications, we still want to have a quantifiable way of determining the extent of mission fulfillment. First, we have established interim values for numeric targets for 2017 that are scaled back to 70% of the 2019 target. [Attachment: Interim Targets] For established Core Themes such as Learning, we anticipate achieving 75% of the targets. In newer areas such as Integration, achieving 50% of target values will be viewed as success. Overall, we define mission fulfillment as meeting at least 60% of the interim targets by the time of the Year Seven report.

Sufficient evidence to assess mission fulfillment?

With multiple indicators (or metrics) for each objective in the Strategic Plan, we believe that we will have sufficient evidence to assess the extent of mission fulfillment.

Indicators: Meaningful and Sufficient?

We believe that the number of indicators is certainly sufficient, perhaps excessive in some areas, and the Office of Planning and Analysis and the Planning Council continue to work to refine the metrics. We still have several Core Themes that are lacking baseline data and targets.

Core Theme	Targets Established
1: Learning	Well established
2: Discovery	Some development required
3: Engagement	Development required
4: Integration	Development required
5: Access	Well established
6: Stewardship	Some development required

Progress to date

The Office of Planning and Analysis annually publishes a Strategic Plan Progress Report on the University's website. The entire report is available online, and only selected portions of the Learning and Discovery sections are included here as examples of the way progress on strategic goals is being reported to the faculty and the public. Examples here are from the first year progress report (2013); the progress report for the second year will be posted by mid-September, 2014.

Learning

MSU has always prepared graduates to meet the challenges of tomorrow. Successful, sought-after graduates are part of our legacy, and preparing students is central to our mission. MSU students learn in the classroom, lab, studio and field, through a hands-on, student-centered curriculum that integrates learning, discovery, and engagement in and out of the classroom.

Goal: MSU prepares students to graduate equipped for careers and further education.

- Objective L.1: Assess, and improve where needed, student learning of critical knowledge and skills.
- Objective L.2: Increase graduation rates at MSU.
- Objective L.3: Increase job placement and further education rates.

Strategies

- Clarify, systematize and automate the process for assessment of learning outcomes
- Target success in key introductory level courses with supplemental instruction, flipped classrooms, co-curricular study options, resource centers and peer mentoring
- Dramatically expand tutoring services
- Bring support centers to the students through expanded hours, added locations and renovated facilities
- Improve and add to advising and student success programs

Budget alignment (2012–13 investments unless otherwise noted)

- $3.1 million in new tenure-track faculty lines in 2011–12 and 2012–13
- $1.4 million for additional class sections to serve growing enrollment in 2011–12 and 2012–13
- $25 million gift to fund construction of new Jake Jabs College of Business and Entrepreneurship and develop new college programs
- $150,000 to support strategic investment proposals for math, statistics, and chemistry instructional redesign and enhancement
- $455,000 for Office of Student Success programs like Smarty Cats tutoring, financial literacy and career coaching
- $1 million in renovated classroom and collaboration spaces
- $7 million investment in new suite-style residence hall to enhance retention
- $11 million investment in residence and dining hall upgrades since 2011

Successes

1. TEAL classroom successes—In support of its learning objectives, MSU conducted a pilot test of a technology-enhanced active learning, or TEAL, classroom in 2012-2013. The TEAL classroom in Gaines Hall enabled 240 undergraduate and graduate students from all eight of MSU's colleges to collaborate on assignments during class hours in a high-tech space equipped with flat screens and data ports for laptop computers. A key feature of TEAL classrooms is the "flipped" structure of the course so students read or view lecture materials outside of class and actively solve problems in class. This innovative new teaching method and incorporation of technology has demonstrated significant improvement. In the case of Statistics 216, for example, the TEAL classroom resulted in a 68 percent decrease in students having to retake the course.
2. Banner Year—Twenty-five MSU students won or earned honorable mentions for major scholarships and awards during the 2012-13 academic year.
    - 1 Marshall Scholar
    - 1 Rhodes Scholar
    - 1 Newman Scholar
    - 1 Fulbright Scholar
    - 1 Udall Scholar
    - 4 Goldwater Scholars
    - 1 National Defense Science and Engineering Fellowship
    - 7 National Science Foundation Graduate Research Fellowships
3. Success in Student Competitions—Student competitions are a way to validate MSU's academic excellence compared to other institutions across the country. In the past year MSU students excelled in a broad spectrum of competitions across many disciplines.
    - Animal science students won the Western Region Academic Quadrathlon and placed third in the national competition.
    - Business students took third in the John Ruffatto Business Plan competition.
    - Finance students won first at the region's Chartered Financial Analysts Institute Research Challenge and advanced to the North American competition.

- Civil engineering students earned a first-place trophy at the estimating competition of Associated Schools of Construction.
- MSU engineering students recently won the Judges Innovation Award at NASA's fourth annual Lunabotics Mining Competition at the Kennedy Space Center.

4. Investing in Students—MSU has invested in a variety of support programs that help students succeed. Students have access to free peer-tutoring through the Smarty Cats program, and during the 2012-2013 academic year 15,000 hours of tutoring were provided. Writing assistance is available in a renovated and expanded Writing Center and at a satellite center located in the library. DegreeWorks, a recently launched online tool, enables students to map out their college path and stay on track to graduate, giving advisors time to focus on individual counseling.

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Discovery

Innovative and significant research and creative activities are a recognized hallmark of MSU, where faculty, students and staff all participate in the creation of knowledge and art.

Goal: MSU will raise its national and international prominence in research, creativity, innovation and scholarly achievement, and thereby fortify the university's standing as one of the nation's leading public research universities.

- Objective D.1: Elevate the research excellence and recognition of MSU faculty.
- Objective D.2: Enhance infrastructure in support of research, discovery and creative activities.
- Objective D.3: Expand the scale, breadth and quality of doctoral education.

Strategies

- Improve support for faculty active in research and creative activity through enhanced professional development, additional financial support and facilities improvements
- Increase the number of grant-active faculty through strengthened grant-writing support, expanded participation across disciplines, and opportunity hires
- Expand interdisciplinary efforts in research, creative activity and graduate education
- Increase capacity and strengthen recruiting for high quality graduate programs by improving the number and amount of graduate stipends, encouraging more faculty to advise doctoral students, and establishing timely pathways to degree completion

Budget alignment (2012–13 investments unless otherwise noted)

- $3.1 million in new tenure-track faculty lines since 2011 (also supports the Learning goal)
- $1.5 million in additional salary and research support to retain MSU's talented faculty
- $6.3 million in new faculty startup packages
- $325,000 allocated for 2013-14 for 18 new competitively awarded graduate assistantships, plus $170,000 awarded in strategic investment proposal process for

enhanced graduate recruiting and 11 additional graduate assistantships in specific programs

- $80,000 for Native American graduate students in science and engineering

Successes

1. Cooley Lab Renovation—MSU's Cooley Laboratory, a hub for biomedical research, recently enjoyed a $14.9 million renovation that transformed the building into a state-of-the-art facility for research teams from the departments of microbiology, immunology and infectious diseases, and cell biology and neuroscience. Cooley is the first facility at MSU to earn a prestigious LEED Gold certification from the U.S. Green Building Council for energy-efficient design and construction.
2. Faculty Excellence—In the past year, MSU faculty members have earned many prestigious awards and fellowships in their respective fields. Four faculty fellows were named in their disciplines:
    - Earth Sciences professor and director of the Montana Institute on Ecosystems Cathy Whitlock was named a Fellow of the American Association for the Advancement of Science (AAAS).
    - Land Resources and Environmental Sciences research professor and director of the Montana Water Center Duncan Patten was named a Fellow of the Ecological Society of America (ESA).
    - Marcy Barge, a professor in the Department of Mathematical Sciences, was named a Fellow of the American Mathematical Society (AMS).
    - Mark Young, a professor in the Department of Plant Sciences and Plant Pathology, has been named a Fellow in the American Academy of Microbiology.
3. Breakthrough Discoveries—MSU research has led to many significant discoveries. As a result, MSU holds more than 200 active technology licenses, nearly 90 issued patents and 14 plant variety certificates.
4. Growing Graduate Education—In the past year MSU has made great strides in expanding its graduate and doctoral education.
    - The Board of Regents approved a Doctorate of Nursing Practice and the Professional Masters in Science and Engineering Management programs with the first cohort of students enrolling in fall 2013.
    - The Montana Legislature increased the capacity of the WWAMI Medical Education Program by 50 percent and supported the creation of a Veterinary Medicine Program that will enable 10 Montana students to complete their first year of veterinary school at MSU.
    - MSU renewed its focus on growing PhD programs in 2013 through strategic investments in graduate assistantships, improvements in tracking and advising graduate students through key checkpoints, and a Graduate Education Summit.
5. Prestigious Award for Physicist: NicoYunes, an MSU physicist, won a five-year $500,000 Young Investigator CAREER Award from the National Science Foundation. The CAREER Award is the NSF's most prestigious award that supports the early career development of teacher-scholars and honors outstanding scientists who haven't yet received tenure.

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How are data being collected, analyzed, and utilized?

Data to monitor performance against strategic goals is being collected and analyzed by the Office of Planning and Analysis (OPA) in coordination with other offices across campus. Staff members in OPA have been working since before the Strategic Plan was approved in 2012 to identify data sources, and create mechanisms to collect data required for the Strategic Plan. We took a major step forward in several areas when we began collecting faculty performance data using Activity Insight in Spring 2014. We will begin mining this dataset to better understand faculty and student performance metrics in AY15.

When the Strategic Plan was initially developed in 2011-12, there was a conscious decision not to include institution-level strategies with the plan. Instead, each unit was expected to develop a response to the Strategic Plan that included strategies for making progress towards the strategic goals. Examples of unit-level plans include:

- Office of Student Success
- Academic Affairs
- Administration and Finance
- Colleges and Departments
- MSU Library
- Information Technology Center

Data collected by the Office of Planning and Analysis is used by members of the Planning Council, Faculty Senate, and administration to monitor progress toward strategic goals. Reports on each goal are presented to University Council annually. Deans Council, Assistant/Associate Deans Council, and other interested campus groups also receive reports. MSU's Executive Team reviews one strategic goal (*aka* Core Theme) in depth each quarter.

Moving forward to the Year Seven report

Montana State University has fully adopted the Strategic Plan and units have responded with their own strategic plans aligned with the institution's goals and including strategies for making progress on the strategic goals. Many millions of dollars in new and reallocated funding have been invested in projects and the strategic goals have been used as priorities and criteria for investment.

We are investing heavily in the Strategic Plan's goals, and there is no doubt that we will be able to show significant progress in our Year Seven report. We have substantial work to do as we plan to demonstrate mission fulfillment by Year Seven.

- We must continue to invest in salaries to attract and retain outstanding staff and faculty, making progress against peer averages.
- We must continue to invest in student support including direct financial aid initiatives, and projects to improve retention and graduation.
- We must get 100% of programs to establish and use assessment plans to validate student learning.
- We must find additional ways to get faculty, staff, and students involved in engagement activities.
- We need to finalize baseline and target values for all metrics so that we can quantify the extent of mission fulfillment for each Core Theme.

These are significant challenges, and Montana State University is committed to achieving the goals of the Strategic Plan.

Montana State University Mid-Cycle Report, Part II

Objectives to Indicators to Outcomes

Montana State University has embraced the Strategic Plan as the institution's guide for planning and investment. Our progress report [Strategic Plan Progress Report 2013][2] lists the strategic goals, examples of strategies that have been used to move toward the goals, examples of how the budget has been aligned with the strategic priorities, and successes, or outcomes, observed to date. In this portion of the Mid-Cycle Report we will present several examples of "progressing from objectives to indicators to outcomes."

- Example 1: Learning – TEAL classrooms to improve graduation rates
- Example 2: Learning – Assessment in General Education
    - 2.1 Quantitative Reasoning
    - 2.2 University Seminar
- Example 3: Learning – Program Assessment
    - 3.1 Sociology
    - 3.2 School of Film and Photography
- Example 4: Discovery – Building the Doctoral Program
- Example 5: Engagement – Revamping the Carter County Museum, and more

[2] A new Progress Report is scheduled to be distributed in mid-September, 2014.

Example 1: TEAL classrooms to improve graduation rates

Improving graduation rates and graduation numbers is both an institutional priority and a state system priority. Graduation numbers is one of the key performance indicators currently being used at the system level for the portion of the State allocation that is tied to performance-based funding.

Graduation rates appear in the Strategic plan in Objective L.2 and Metric L.2.1.

> Objective L.2: Increase graduation rates at MSU.
>
> Metric L.2.1: By 2019, the bachelor's graduation rate will increase from 51 percent to 65 percent as measured by the six-year graduation rate.

MSU has a number of efforts underway (e.g., increase staffing, improve advising, reduce curriculum bottlenecks) to try to improve graduation rates. This example looks at one specific project that has been implemented with hopes of ultimately improving graduation rates.

There is evidence in the research that active learning can promote student success. In 2013 two classrooms were renovated as Technology-Enhanced Active Learning (TEAL) classrooms. The rooms have enhanced technology support, and are designed for collaborative learning.

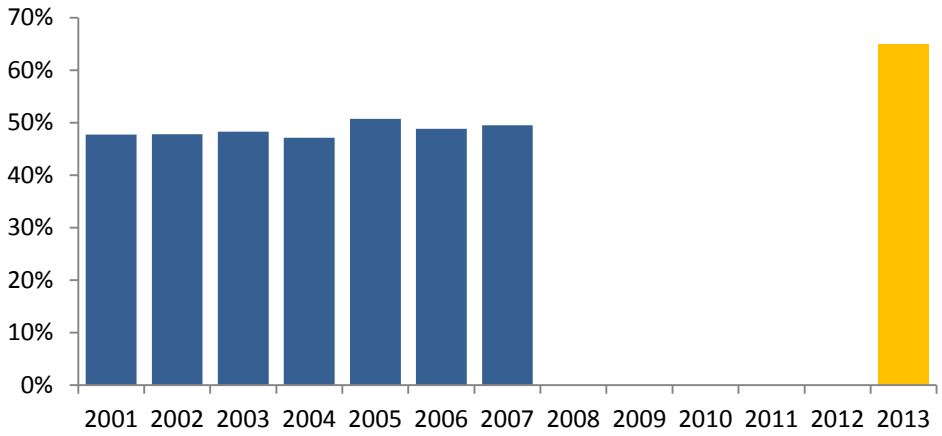
While the TEAL classrooms were being designed and built, the instructors who would utilize the classroom formed a community of interest within the Center for Faculty Excellence and worked together to develop ideas and plans for teaching in an active learning environment.

The results have been dramatic. In STAT 216 the percentage of students earning satisfactory grades (A, B, or C) increased from 66% (over the six semesters prior to using TEAL classrooms) to 86% in the active learning environment.

We observed similarly dramatic results for students taking M 121 College Algebra in the TEAL classrooms. Eighty percent of students taking M 121 in the active learning environment earned satisfactory grades (A, B, or C) compared to 56% of students in the six semesters prior to the opening of the TEAL classrooms.

These results are extremely significant because M 121 and STAT 216 are required mathematics courses taken by the majority of students outside of engineering, and these courses are often roadblocks for students attempting to make progress towards their degree. By removing these roadblocks for many students, they should be able to make better progress towards their degrees.

Because M 121 and STAT 216 are lower-division courses, it will be a few years before we start seeing improvements in success rates in these courses impact graduation rates, but we are collecting graduation rate data as shown in the following chart.



Metric L.2.1: Percent of Incoming Students who Graduate Within Six Years

Source: Office of Planning and Analysis

Note: The strategic goal is a graduation rate increasing to 65% by 2019. To determine the six-year graduation rate in 2019, the cohort of students that enrolled in 2013 is tracked to determine the percentage that graduate by 2019 (i.e., within six years). The x-axis on the chart above shows the year of enrollment of each cohort, and is therefore offset by six years from most of the other charts used to report progress on metrics.

Example 2: Assessment in General Education

The assessment of general education appears in the strategic plan in Objective L.1 and Metric L.1.2.

> Objective L.1: Assess, and improve where needed, student learning of critical knowledge and skills.
>
> Metric L.1.2: University measures of undergraduate student mastery of critical thinking, oral communication, written communication, quantitative reasoning, understanding of diversity and understanding of contemporary issues in science will be developed by 2014. Targets set in learning assessment plans will be met by 2019.

The general education program at Montana State University was overhauled in 2004 and is now called CORE 2.0. CORE 2.0 was originally designed using only input assessment processes to determine which courses to include in the general education program, and when reviewing existing courses. Since 2010 the Core 2.0 Committee has focused on redesigning the general education assessment process using direct outcomes assessment.

One of our first discoveries as we attempted to develop direct outcomes assessment processes was that the stated learning outcomes for each CORE area were poorly written for outcomes assessment.

Ultimately we decided we needed to update and rewrite all learning outcomes for the general education program to tighten the expectations and make the outcomes assessable. As examples, the before and after learning outcomes for two CORE areas are shown below:

Quantitative Reasoning

Before

A Q course will improve a student's ability to:

1. Reason analytically and quantitatively.
2. Think critically and independently.
3. Apply the acquired skills to other courses.
4. Improve their ability to make informed decisions that involve interpreting quantitative information.

After

Students completing a Core 2.0 Quantitative Reasoning (Q) course should demonstrate the ability to:

1. interpret and draw inferences from mathematical or statistical models represented as formulas, graphs, or tables,
2. represent mathematical or statistical information numerically and visually, and
3. employ quantitative methods such as arithmetic, algebra, geometry, or statistical inference to solve problems.

University Seminar

Before

Through the University Seminar, students will:

1. Improve their ability to
   a) speak effectively about their ideas.
   b) guide their education by asking and exploring their own questions.
   c) prepare and deliver a thoughtful oral presentation.
   d) listen effectively.
   e) incorporate diverse points of view in developing arguments and reaching conclusions.
   f) read critically and interpret complex texts.
   g) write a thoughtful college paper.
2. Strengthen habits of critical thinking.
3. Expand interests in the humanities, social sciences and natural sciences.
4. Come to know a faculty member, student fellow, and other first-year students.
5. Enjoy the discussion and development of ideas and participation in a community of learners.

After

Through completion of the US Core students will:

- Demonstrate critical thinking abilities
- Prepare and deliver an effective oral presentation
- Demonstrate analytical, critical, and creative thinking in written communication

Note: Some of the desirable but less assessable language of the old learning outcomes was moved to an introductory paragraph presented just ahead of the new list of learning outcomes.

Additional information on CORE learning outcomes is available at www.montana.edu/core2.

Assessment plans based on direct assessment of student work have been or are being prepared for each area of the general education program.[3] The assessment plans for the Q (Quantitative Reasoning) and US (University Seminar) areas are presented here.

[3] Assessment plans have been developed in CORE areas Q, US, I, D, CS. Assessment plans are being developed for the R and W CORE areas.

Example 2.1: CORE Q: Quantitative Reasoning

The Mathematical Sciences Department is the owner of nearly all Q courses in the general education program. This allowed the assessment plan for the Q area to be developed rapidly. Also, the quantitative nature of this general education category makes reviewing student work fairly straightforward.

The learning outcomes for the Q CORE area were updated (presented above), data sources were identified, and a schedule of assessment was created:

2012 – 2013

M 149Q, *Secrets of the Infinite*
M 151Q, *Precalculus*
STAT 217Q, *Intermediate Statistical Concepts*
PHL 236Q, *Logic*

2013 – 2014

M 161Q, *Survey of Calculus*
M 165Q, *Calculus for Technology I*
M 171Q, *Calculus I*
M 181Q, *Honors Calculus I*

2014 – 2015

M 121Q, *College Algebra*
STAT 216Q, *Introduction to Statistics*
STAT 226Q, *Honors Introduction to Statistics*

2015– 2016

M 166Q, *Calculus for Technology II*
M 172Q, *Calculus II*
M 182Q, *Honors Calculus II*

2016 – 2017

M 145Q, *Math for the Liberal Arts*
M 273Q, *Multivariable Calculus*
M 283Q, *Honors Multivariable Calculus*
STAT 201Q, *Statistics in the World*

2017 – 2018

M 133Q, *Geometry and Measurement for K-8 Teachers*
M 147Q, *Language of Mathematics*

Rubrics were built defining acceptable levels of student performance for each outcome:

Learning Outcome 1: *Interpret and draw inferences from mathematical or statistical models represented as formulas, graphs, or tables.*

Acceptable:

- The student demonstrates the ability to interpret the variables, parameters, and/or other specific information given in the model or statistical output. The interpretation may contain minor flaws.
- The student uses the model to draw inferences about the situation being modeled in a manner that may contain some minor flaw(s).

- The interpretation(s) and/or inference(s) may be incomplete or inaccurate due to a minor flaw, such as a computational or copying error or mislabeling.

Not acceptable:

- The student makes no appropriate attempt to interpret the variables, parameters, estimates, and/or other specific information given in the model due to major conceptual misunderstandings.
- The student either attempts to use the model to make the required inference(s) and/or interpretation(s) but lacks a clear understanding of how to do so, or the student cannot use the model to make the required interpretation(s) or inference(s).

Learning Outcome 2*: represent mathematical or statistical information numerically and visually.*

Acceptable:

- The student understands most of the important aspects of the mathematical or statistical information and employs the appropriate representation(s) to display the information with possible minor flaws.
- The student correctly and accurately employs most of the appropriate and required aspects of the representation to display the information. The representation may be lacking in a minor way.
- There may be misrepresentations of the information due to a minor computational/copying error. The student uses mostly correct format, mathematical or statistical terminology, and/or language.

Not Acceptable:

- The student does not fully understand the important aspects of the mathematical or statistical information and employs the appropriate representation(s) to display the mathematical information with major conceptual flaws.
- The student may show some knowledge of how to employ most of the appropriate and required aspects of the representation to display the information, but the representation or interpretation is lacking in a major way.
- The representations may show some reasonable relation to the information but contain major flaws. The student may use some correct format, mathematical terminology, and/or language, but the representation is incomplete in some major conceptual way.

Learning Outcome 3*: Employ quantitative methods such as arithmetic, algebra, geometry, or statistical inference to solve problems*.

Acceptable:

- The student demonstrates some understanding of the problem and/or can identify specific arithmetic, algebraic, geometric or statistical method(s) needed to solve the problem.
- The student uses the method(s) to solve the problem. The plan for the solution is clear, logical, and evident but may be lacking in a minor way such misreading the problem, or a copying error.
- The solution or interpretation is generally correct or well justified, but may contain minor flaws.

Not Acceptable:

- The student demonstrates at best a slight understanding of the problem. The student has difficulty identifying the specific arithmetic, algebraic, geometric or statistical method(s) needed to solve the problem.
- The student may attempt to use a method(s) that will solve the problem, but the method itself or the implementation of it is generally incorrect. The plan is not evident nor logical.
- The solution or interpretation may contain some correct aspects though there exist major conceptual or logical flaws.

Data have been collected and scored against the rubrics. After the first round of assessment, minimal assessment results were provided:

- M 149Q: Learning Outcome 1 (88%), Learning Outcome 2 (82%), Learning Outcome 3 (91%)
- M 151Q: Learning Outcome 1 (74%), Learning Outcome 2 (57%), Learning Outcome 3 (75%)
  The threshold at the time of this assessment was 50%. See the assessment report posted on the web page for a discussion of why the evaluators believe the second learning outcome results are lower than expected. Based on this assessment, we are improving the assessment process to better align the questions used in the assessment with the stated learning outcomes. For this assessment questions were taken from the final exam that most closely aligned with the outcomes, but the questions were not written to explicitly assess the outcomes. This led to discussions with supervisors and instructors of courses to be assessed next, with the goal of making sure assessments in the future are performed with targeted questions. We believe this will lead to a more direct and appropriate assessment of the Q learning outcomes.
- STAT 217Q: Learning Outcome 1 (92%), Learning Outcome 2 (100%), Learning Outcome 3 (77%)
- PHL 236Q: Learning Outcome 1 (83%), Learning Outcome 2 (83%), Learning Outcome 3 (83%)
- M 181Q: Learning Outcome 1 (91%), Learning Outcome 2 (91 %), Learning Outcome 3 (82%)

As a result, the Q CORE Committee created a template for a more robust report which is now used. An example of the results using the new form is shown here:

Q-core Assessment Report

Course: M 165 Q Semester: Spring 2014
Instructor(s) and/or supervisor: Lukas Geyer
Assessment done by (2 faculty members): Lukas Geyer and John Lund
Number of students in course: 60
Number of students assessed (at least 6): 44

Description of assignment, problems, and/or questions used for assessment:

All 44 final exams were assessed, out of two sections. The problems used to assess Learning Outcomes were problem 2 for outcome 1, problem 8 for outcome 2, and problem 5 for outcome 3. Problem 2 asked students to answer several questions about the derivative of a function whose graph was given. Problem 8 asked students to sketch two curves and find the area between them. Only the sketch was used to assess Learning Outcome 2. Problem 5 was a related rates "word problem".

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Learning Outcome 1: Interpret and draw inferences from mathematical or statistical models represented as formulas, graphs, or tables.

- Total number of assignments assessed: 44
- Number of student assignments demonstrating the learning outcome at an acceptable level, as defined in the Q-core Rationale and Assessment Plan : 38
- Proportion of assignments rated as "acceptable": 86%
- Is this over the specified threshold of 2/3? Yes
- Comments and ideas for better aligning the course or the assignments with the Q-core rationale: None
- Comments and ideas for improving the process of assessment: None

Learning Outcome 2: Represent mathematical or statistical information numerically and visually.

- Total number of assignments assessed: 44
- Number of assignments demonstrating the learning outcome at an acceptable level, as defined in the Q-core Rationale and Assessment Plan : 41
- Proportion of assignments rated as "acceptable": 93%
- Is this over the specified threshold of 2/3?
- Comments and ideas for better aligning the course or the assignments with the Q-core rationale: None
- Comments and ideas for improving the process of assessment: None

Learning Outcome 3: Employ quantitative methods such as arithmetic, algebra, geometry, or statistical inference to solve problems.

- Total number of assignments assessed: 44
- Number of assignments demonstrating the learning outcome at an acceptable level, as defined in the Q-core Rationale and Assessment Plan : 36
- Proportion of assignments rated as "acceptable": 82%
- Is this over the specified threshold of 2/3? Yes
- Comments and ideas for better aligning the course or the assignments with the Q-core rationale: None
- Comments and ideas for improving the process of assessment: None

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Committee Review: Closing the Loop

While the Q CORE Committee still considers their assessment plan under development and characterizes their 2014 annual assessment report as a "progress report", they are clearly seeing results from their assessment process. Portions of the report are reproduced here. The full report is appended.

Report on Assessment of Core 2.0 Quantitative Reasoning Area
Prepared by Megan Higgs on April 9, 2014

I. Progress with Q assessment as of April, 2014

We have implemented our complete assessment plan on 5 Q-designated courses (M 149Q Secrets of the Infinite, M 151Q Precalculus, STAT 217Q Intermediate Statistical Concepts, PHL 236Q Logic, and M 181Q Honors Calculus). The proportion of sampled students meeting the learning outcomes was over the stated threshold for all courses.

Despite meeting the goals for all outcomes and all courses, we made several changes to the assessment process based on results and feedback from faculty.

- We increased the threshold from 50% to 67% because we believed 50% was too low for the learning outcomes in the class. The 2/3 was chosen because this seems to be a realistic cutoff to capture the fact that up to 1/3 of assessed assignments may not meet learning outcomes simply because of student ability and motivation, rather than as an indication the course in not adequately meeting Q-core requirements.

- In response to the assessment of M 151, which had lower results than expected, the instructor of the course wrote a detailed description of the problems he saw with the assessment process, mainly that he relied on trying to align questions from the final exam to the outcomes rather than writing questions explicitly created to assess the outcomes. After this, we held a meeting of all instructors involved in teaching the Calculus series to discuss whether this would be a problem for their courses because they are up for assessment during Spring 2014. They feel confident they can appropriately assess the outcomes if they plan ahead and include questions that are easily tied to each learning outcome. The general opinion was that this planning ahead with assessment materials will make the assessment more meaningful and easier for the faculty members involved. I have sent multiple reminders this semester to the faculty in charge of the courses to be assessed and am hoping they will give an assignment or include a page on an exam or the final exam that will be specifically used for the assessment. This will also make it easier to save the student work used in the assessments if we should ever want to go back and review it at a later time. For example, it would be nice to have the work if substantial changes are made the course and we want to compare responses from students before and after the work. I am encouraging instructors to save as many assignments as possible even if they are not randomly selected to be included in the formal Core 2.0 assessment. If it is available on one page it should be easy to scan the papers and save them electronically.

- We also created a template to make it easier for faculty members involved in the assessment process to easily enter the information. The template includes specific places to provide ideas about how the course and/or assignments can be better aligned with the Q Core 2.0 rationale, and/or how the assessment plan can be improved. We hope this will encourage those involved in assessment to think about "closing the loop."

- Faculty members instructing the courses have been integrally involved in the assessment process so we are sure the information about the assessment is being communicating to the instructors.
- We also created a space on the Department of Mathematical Sciences website to store the results of all of our assessments, both Core 2.0 and undergraduate programs. The results for 2012-2013 are on the webpage and we will add the results from 2013-2014 after assessment is completed for the Spring 2014 semester.

  http://www.math.montana.edu/reports.html

- The Department of Mathematical Sciences also recently created a new service role of Assessment Coordinator. The role of this person will be to send emails to instructors with the relevant assessment information each semester so that assessment does not fall through the cracks because of busy schedules.

- We also found a mistake in the list of classes included in the assessment schedule and recently updated that.

A significant result of the assessment process is listed in the first bullet point. There was some concern among the administrators responsible for assessment when the Q CORE Committee decided to set the threshold response at "50% acceptable or higher." But, believing that the continuous improvement nature of the assessment process should demonstrate to the committee members that their threshold was too low, we allowed the process to work. We were pleased to see that the threshold has now been raised to "2/3 acceptable or higher."

Example 2.2: CORE US: University Seminar

The University Seminar area of CORE 2.0 includes numerous courses taught by various departments. As such, developing a single assessment plan was a significant undertaking. In 2011-12 the CORE US Committee was expanded to include the directors or instructors for each US course. By May 2013 they had agreed upon a set of program learning outcomes that would be used with all US courses. These updated learning outcomes for US CORE courses were presented above.

The CORE US Committee then developed an assessment plan for University Seminar courses, including the following elements (summarized here, full assessment plan appended):

- Student Learning Outcomes
- Assessment Schedule – after a startup period (one year), all US courses will be sampled every fall semester. One learning outcome will be assessed each year on a three-year cycle.
- Sample Size and Selection of Student Work

  We will evaluate student work from 5-10% of the students enrolled in each US core offering. Directors will review the course syllabus and select appropriate assignments to sample for each SLO. Directors will randomly select students from multiple sections (when possible) and will collect the student work from instructors. Directors will alternate instructors whose students are selected, and directors will not rely upon or favor any instructors over others.
- Assessment Process

  Each seminar will select their assessment team comprised of at least two individuals from their leadership team and current seminar faculty. In instances where the seminar director is the only faculty member teaching the course, outside evaluators will participate in that course's assessment. Otherwise, the use of outside evaluators will be at the discretion of the seminar directors.

  Evaluators will score student work using the common rubrics created by the seminar directors. Whenever possible, evaluators will not score work from their own section. After the assessment is complete, the director of each seminar will create a summary document that details the assessment results for their courses. These results will be shared with the seminar directors group.
- Post Assessment

  Seminar directors will meet to review and discuss the assessment results at the end of each assessment cycle (once a year). The seminar directors will invite the Associate Provost to join this discussion and a full summary of the assessment results will be shared.
- Threshold

  Each course must meet a minimum threshold. 60% of student work from each course should be at the level of "meets expectations."

  If a course fails to meet the 60% threshold, the following steps will be taken:

  1. *Courses with a score below 60% will review both their course and the assessment process and will bring their questions and potential solutions to discuss with the seminar committee.*
  2. *The course will be re-assessed in the following semester (or during the next offering).*
  3. *If the course does not meet the threshold after a second assessment, the seminar directors will discuss the assessment results and determine next steps to improve the course in consultation with the Associate Provost.*

- Assessment Report

  After the individual course assessments have been completed, a representative (rotated throughout the seminar directors group annually) will compile the individual assessment reports and create a summary report to share with the Associate Vice Provost. The report will include a narrative that details the assessment results, provides a summary of each course's scores, sample rubrics, and guidelines about necessary next steps if courses do not meet the threshold.

Data Collection and Assessment

Ten of the 12 US CORE courses have been included in the scheduled assessment of learning outcome 1: Students will demonstrate critical thinking skills. The assessment for the other two US courses is scheduled to be completed in Fall 2014.

- AGED 140US Leadership Development for Agriculture
- BGEN 194US Seminar
- CLS 101US Knowledge and Community
- CLS 201US Knowledge and Community
- COLS 101US First-Year Seminar
- COM 110US Public Communication
- EDU 101US Teaching and Learning
- LS 101US Ways of Knowing
- US 101US First-Year Seminar
- US 121US Education, Social Issues and the Digital Age
- HONR 201 Texts and Critics (to be completed in Fall 2014)
- HONR 301 Texts and Critics (to be completed in Fall 2014)

Selected assignments from each course were scored using a common rubric. A report on the assessment results from each course was returned to the US CORE Committee (*aka* US Course Directors). These individual assessment reports often included recommendations for changes to the individual course. As an example, the report for the Fall 2013 offering of US 121US (Note: this somewhat confusing course designation can be interpreted as follows: US rubric = University Studies, Course number = 121, CORE designation US = University Seminar). The complete report is appended.

Fall 2013 US 101US Critical Thinking Student Learning Outcome Assessment

Process: The Seminar Director and Assistant Director selected an essay assignment that was completed in mid-November for the critical thinking learning outcome assessment. A copy of the assignment is attached to this summary. To hit the assessment target of 10% of course enrollment, directors randomly selected 72 students from 12 different sections.

The US 101US enrollment for Fall 2013 was approximately 670 students.

Each essay was read by two evaluators and was scored using the common US Core CT rubric. Essays were read and scored individually. Evaluators then gathered to discuss differences in their evaluation and scoring. During the discussion, evaluators also confirmed their definitions of the criteria and clarified how they

scored items when student work fell within two levels of achievement. (e.g., student used multiple relevant sources, but did not cite the sources properly).

Evaluators: The evaluation team consisted of the seminar leaders: Emily Edwards, Ryan Storment, and Margaret Konkel, and seven current seminar instructors: Jim Thull, Shari Curtis, Deborah Blanchard, Sara Browne, Amanda Bitz, Megan Swanson, and Steve Guettermann. All student work was pulled from instructors not on the evaluation team.

Scoring the Assessment: To facilitate the scoring of assignments, each level of achievement was given a numerical value: 1 = below expectations, 2 = meets expectations, and 3 = above expectations. Because two evaluators scored each assignment, we averaged the evaluator scores to assign one point value to each criterion.

When evaluator scores varied, the evaluators discussed the discrepancies. When evaluators reached consensus, the score was updated to reflect the outcome of the evaluators' discussion. If a student earned both a 2 and 3 for one area, the average score of 2.5 was recorded.

1 or 1.5 = Below Expectations
2 or 2.5 = Meets Expectations
3 = Exceeds Expectations

Summary of Scores: The following table represents the percentage of individual essays that fell within each level of achievement.

Criteria	Above Expectations	Meets Expectations	Below Expectations
Claim	11%	63.60%	25%
Support	34.70%	47.20%	18%
Alternative Perspective	20.80%	62.50%	16.50%
Language	27.70%	70.80%	1.3%

Recommendations and Considerations:

1. Meet with evaluators prior to conducting the assessment to discuss the assignment and the common rubric and to share examples of student work that reflects each level of achievement for each criterion.
2. Share all Core student learning outcome rubrics with instructors at the beginning of the semester. Discuss guiding definitions and achievement markers for all criteria by reviewing examples of student work.
3. In conjunction with the previous discussion, discuss approaches to help students achieve at a higher level by more fully incorporating required elements. For example, students might include support and alternative perspectives, but not many students fully incorporated these items into their assignment. While students would use outside support and acknowledge alternative perspectives, they often didn't discuss the relevance of these items. At times these elements would feel as though they were inserted into the argument, without being fully connected to the narrative.
4. The initial assignment selected for the assessment was an essay that asked students to define and connect their personal philosophy to the philosophies of other authors. Such personal reflection allowed students to make some subjective arguments. For future assessments, it is recommended that assignments that allow for less personal reflection be selected. The US seminar directors will consider

evaluating an additional assignment in Spring 2014 alongside the Critical Thinking rubric to ensure that students are achieving this outcome as indicated in our initial assessment.

5. While the US 101US course offers common rubrics to both students and instructors for oral presentations, leading discussion, and writing essays, we had not previously shared a common rubric for critical thinking. Reviewing our course rubrics and aligning them with the common US Core rubrics should be considered.

Overall Assessment: Closing the Loop

The US CORE Committee reviewed all of the course assessment reports and provided an overall assessment.

> All courses that completed the assessment, with two exceptions, met the established threshold requirement of 60% 'Meets Expectations'. The courses that fell short, COLS 101US and US 121US, have listed next steps for addressing their concerns. Even those courses that met the threshold have identified opportunities where they can help their students strengthen particular elements of critical thinking. In addition to reviewing how we engage our students in critical thinking, many departments made recommendations for their own assessment process and others made recommendations for the Seminar Director's Committee to consider adopting across all sections. While these are listed on the individual reports a sample includes: sharing the common rubric with all course instructors; sharing and discussing samples of student work representative of each level of achievement; assigning common number values to each level of achievement; identifying and utilizing an assessment report template to streamline and simplify the final report.
>
> Several courses (AGED 140; CLS 101 and 201; COM 110; and LS 101) piloted our initial assessment in Spring 2013. Through the work of these assessment teams, we recognized the challenges of applying a single rubric to our very different courses. The work of the initial assessment teams proved helpful in identifying necessary changes to the rubric. Such conversations have also been fruitful in helping committee members collaborate with and learn from colleagues in other departments.
>
> While two courses HONR 201US and HONR 301US did not complete the fall assessment, this department will complete both the critical thinking assessment and the oral communication assessment during Fall 2014 under the leadership of Ann Ellsworth.

The assessment of US CORE Courses is on-track with assessment of the second learning outcome, "Students will prepare and deliver an effective oral presentation," scheduled for Fall 2014.

Example 3: Program Assessment

Program assessment appears in the strategic plan in Objective L.1 and Metric L.1.1.

> Objective L.1: Assess, and improve where needed, student learning of critical knowledge and skills.
>
> Metric L.1.1: By 2019, MSU will achieve targets for mastery of disciplinary knowledge as developed in departmental learning assessment plans.

Current Situation

The implementation of program assessment plans at Montana State University varies widely by discipline. Professional programs with external accreditation such as Engineering, Business, Education, Nursing, and Nutrition have well-established assessment programs and a long history of outcomes assessment. Areas without external programmatic accreditation are well behind and have been slow to develop assessment plans. In some cases, earlier efforts to comply with accreditation requirements in this area have actually impeded our progress.

Departmental Assessment Plans have been on file since 2004, but many of these plans were developed with little understanding of how to do outcomes assessment, and the institution's emphasis was on departmental assessment plans rather than program assessment plans. Substantial rework has been required to develop workable assessment plans for all of our programs. Significant progress has been made towards our goal of redeveloping program assessment plans for all undergraduate majors, but many minors and certificate programs still need assessment plans.

Undergraduate Majors

A few years ago the College of Letters and Science was identified as an area where significant development work was required in the area of program outcomes assessment. In 2011-12 the Associate Dean of that college attempted to have each of her departments develop assessment plans for all undergraduate programs. In that year the college moved from effectively zero undergraduate programs having required assessment elements (stated outcomes, identified data sources, timetable) to 16 programs (89%) with those elements in place. The majority of the programs have followed their assessment plans by (1) collecting outcomes data, (2) assessing it, and (3) reporting back on how they have used assessment results to "close the loop" by improving their programs. The efforts of the faculty in the Sociology program will be used as one of the examples of assessment success in this report.

There is a similar push currently underway in the College of Agriculture to add required elements to assessment plans. Specifically, many of the assessment plans in the College of Agriculture include program learning outcomes and identified data sources, but fail to include a schedule for when each outcome will be assessed. We anticipate having these assessment plans updated by Fall 2014.

After the concerted push in the College of Letters and Sciences, 42 of 56 undergraduate majors at Montana State University now have assessment plans that include stated program outcomes, identified data sources, and a schedule for assessment of each outcome. When the assessment plans in the College of Agriculture are completed, the university will have 53 of 56 undergraduate majors in compliance. The three remaining programs outside of the College of Agriculture will also be asked to complete assessment plans by Fall 2014.

Graduate Majors

As of the beginning of Summer 2014, program assessment plans for graduate majors were largely non-existent: only 11 of 80 graduate programs had complete assessment plans on file. However, the majority of graduate programs are thesis-based and require students to complete a comprehensive examination and/or a thesis defense with a report submitted to the Graduate School. Many other

programs require students to prepare a professional paper that can be used to demonstrate mastery of content as well as communication skills.

In practice, there is a long history of assessment in place in these graduate programs, and we simply needed to align existing assessment activities with program assessment. In Summer 2014 the Graduate School created a master assessment plan for all graduate programs using the following program learning outcomes (from Oregon State University):

For masters' students:

a. Conduct research or produce some other form of creative work, and
b. Demonstrate mastery of subject material, and
c. Be able to conduct scholarly or professional activities in an ethical manner.

For doctoral students:

a. produce and defend an original significant contribution to knowledge;
b. demonstrate mastery of subject material; and
c. be able to conduct scholarly activities in an ethical manner.

All graduate programs will now be required to provide an annual assessment report based on these learning outcomes unless a separate program assessment plan has been filed. (The MFA program in the School of Film and Photography, for example, has been using an assessment plan developed prior to the implementation of the global graduate assessment plan. They will be allowed to continue using that assessment plan.)

Example 3.1: Program Assessment in Sociology

The Sociology program was selected as an example of a program that significantly revised their assessment program in 2011, but which is now closing the loop on program assessment for their program.

The information presented here is from the Sociology program's 2013 annual assessment report. The 2014 annual assessment report is not due until Fall 2014.

- The 2013 assessment report was submitted on June 6, 2013 [appended]
- The Sociology faculty reviewed the assessment reports during the 2012-13 academic year.
- The assessment reports are based on data collected during the 2011-12 academic year.

Program Learning Outcomes

The Sociology faculty identified the following program learning outcomes for their program:

1. **Sociology as a Discipline.** Our students will demonstrate an understanding of the discipline of sociology and its role in contributing to our understanding of society and changes in society.

2. **Sociological Concepts.** Our students will demonstrate a knowledge, comprehension, and relevance of core sociological concepts.
3. **Sociological Theories.** Our students will demonstrate an understanding of the role of theory in sociology.
4. **Sociological Application.** Our students will formulate research questions based on critical readings and understandings of sociological research.
5. **Oral Communication.** Our students will demonstrate the ability to present materially orally in an organized and effective manner.
6. **Written Communication.** Our students will demonstrate appropriate writing practices and formats and effective written communication and editing skills.
7. **Empiricism.** Our students will demonstrate an understanding of the roles and of evidence in qualitative and quantitative methods.

Identified Data Sources and Schedule for Assessment

The faculty prepared a chart indicating the sources of data that would be collected for assessment, and the semester when each data set would be collected and assessed.

ASSESSMENT PLANNING CHART. PROGRAM: Sociology					
	Assessment Year and Targeted Courses				
LEARNING OUTCOME	2011-12	2012-13	2013-14	2014-15	***Assessment Targets***
1: Sociology as a Discipline		SOCI 414			Essay Question
2: Sociological Concepts			SOCI 499		Final Project & Poster
3: Sociological Theories		SOCI 455			Essay Questions
4: Sociological Application			SOCI 318		Final Project
5: Oral Communication	SOCI 470				Discussion Leader
6: Written Communication	SOCI 499			SOCI 499	Final Project
7: Empiricism				SOCI 318	Essay Question

Based on the assessment schedule, assignments in two courses were targeted for review in 2011-12:

- Discussion Leader Assignment in SOCI 470
- Final Project and Poster in SOCI 499 (a capstone course)

Data Collection and Scoring

The identified assignments were collected and a randomly selected subset was scored by either two members of the faculty or, in one case, by the instructor using a prepared scoring rubric. A summary report for the faculty was prepared. Those summaries are reported here:

SOCI499: Senior Capstone
Professor: Leah Schmalzbauer

Assessment by: Dr. Tami Eitle and Danielle Hidalgo
Learning Outcome: Written Communication

Six (6) papers were randomly selected for assessment of student learning outcomes: two A papers, two B papers, and 2 C or D papers from each capstone section (12 papers total).

Overall our assessments of the papers were very similar. We had a discussion based on our assessments and agreed upon the following:

Students who perform well (at the A level) in the capstone are doing really superior work. They show an understanding of the kinds of questions that sociology can address, are able to critically read and assess prior research, are knowledgeable enough to choose appropriate research methods given their research topics and questions, and provide informed sociological interpretation of their results. In addition they write very well. In fact some of these papers we felt were of such high quality that they could be prepared for presentation at professional meetings along side the work of graduate students.

Students who produced B level papers were more of a mixed group. Two of the papers were similar in many respects to the A papers, but were not as well written and showed less of a mastery of the literature. The rest of the papers were just sloppy in many respects: For example, more summary than critical discussion of prior research, not enough consideration given to the appropriateness of the method, less independent interpretation in their discussion of findings. These papers also depended more on direct quotes rather than describing prior research in their own words.

The C (or in one case D) papers were altogether a lot more confused than the other papers. The literature reviews were often disorganized and not focused, the research questions in at least half the cases were not really sociological, the research methods were not necessarily appropriate for the research questions, and the papers trialed off into narrative way too often for a formal research paper. These students often still do not understand what data are (confusing data with research articles that they find in the library system), their proposed studies or analysis was not at the same level of analysis as their research question suggested, and they had a tendency to want to ask their research questions to their subjects. Example: Research Questions: Why do police officers have higher divorce rates compared with many other professionals? Proposed Methods: Interviewing police officers and asking them why police officers have higher divorce rates. Finally there is a marked and significant drop in the quality of the writing in the C papers compared to any of the other papers.

SOCI470: Environmental Sociology
Professor: Scott Myers

Assessment by: Dr. Scott Myers
Learning Outcome: Oral Communication

This learning outcome was assessed by the attached rubric [shown below], and all students enrolled in the class (n = 31) were scored according to the rubric. The readings for the course were comprised solely of peer-reviewed journal articles and published books by well-regarded publishing houses. The course was divided into five different topical sections, and each student was required to be a discussion leader for one of the sections. On average, each section had six students as discussion leaders, and each section lasted

about three weeks. The students were provided with extensive guidelines on how to lead discussions, and these guidelines were nearly identical in scope to the criterion in the attached rubric.

Of the 31 students, 30 of them received a rubric score at the minimally acceptable level. This indicates that these students met the expectations for this learning outcome. The one student who did not score as minimally acceptable did so because of a lack of preparation and attendance. Of the 30 who met the minimal threshold, the distribution of scores was:

- 5 scored as Exceptional
- 12 scored as Exceeds Expectations
- 8 scored as Acceptable
- 5 scored as Minimally Acceptable.

Across the six criterion categories in the rubric, students excelled most in the Responding to Students and Atmosphere categories. On the other hand, the discussion leaders tended to struggle most with Question Types and Closure. In fact, only a few students were able to successfully close out a class discussion properly due, in part, because of the types of questions they used to frame the discussions. Interestingly, there appeared to be a peer-learning effect occurring throughout the semester. That is, the quality of the discussions and discussion leaders improved with each subsequent section, perhaps indicating that the non-discussion leaders learned about oral communication by observing the discussion leaders. These students then applied these lessons during their tenure as discussion leader.

Most of the students came well prepared and excited to lead the discussions, and most of the students who were not discussion leaders were equally excited for the challenge. The main hurdle for both groups of students was perhaps the level of reading required. It appeared that the students struggled with some of the academic readings, especially when these readings were highly theoretical or contained inferential statistics.

While not part of this learning outcome, the incorporation of this activity into the course appeared to have an unanticipated outcome. Namely, the quality of the in-class written exams was of very high quality.

Discussion Leader / Oral Communication
Scoring Rubric
SOCI470 – Environmental
Sociology Spring 2011

Discussion Leader: _____ Evaluator: _____

Criterion	Exceptional to Good (4 – 5 points)	Fair to Acceptable (2 – 3 points)	Poor to Unacceptable (0 – 1 points)	SCORE
Initiation of Discussion	Leader begins with a short, concise statement of the problem being discussed; avoids an introductory lecture.	Leader begins with rambling problem statement; has a tendency to lecture at the outset.	Leader begins discussion with a long lecture, and to some extents tends to achieve the goal by self.	
Responding to Students	Leader responds well to students who provide input; acknowledges contributions regularly and thanks with sincerity; asks appropriate follow-up questions.	Leader non-uniformly acknowledges contributions provided by students, or uses only such statements as okay, yes, etc. Rarely asks follow-up questions.	Leader fails to acknowledge contributions made by students. Does not ask follow-up questions to obtain required clarification if necessary.	

Question Types	Leader uses a wide variety of question types; uses questions that directly bear on the expressed goal; avoids rhetorical questions; manages to have students think and talk critically about topic.	Leader uses a limited variety of question types; limited applicability of questions to goal attainment; some use of rhetorical questions.	Leader uses a very limited variety of question types; some showing a degree of inapplicability to goal attainment; does not achieve any reasonable depth of discussion.	
Question Shifting	Leader generally begins discussion with divergent questions and moves toward convergent questions near the end of the discussion; makes appropriate digressions if necessary.	Leader's choice of questions somewhat erratic, but tend to move from divergent to convergent as discussion continues.	Leader does not exhibit any concern for type of questions asked either at beginning or conclusion. Questions bear directly on subject matter in a lock-step fashion.	
Atmosphere	Leader maintains a friendly, collaborative atmosphere; all students appear free to participate without recrimination.	Leader tends to maintain a reasonable atmosphere for discussion, but sometimes fails to control criticisms or witticisms of others.	Leader fails to maintain atmosphere conducive to successful discussion; statements or witticisms of others offend some students.	
Closure	Leader helps students to arrive at a meaningful conclusion to the discussion, restating the original goal, and having students explain its solution or achievement; uses appropriate questioning to ensure attainment of goal.	Leader tends to do his or her own summary; concludes discussion early and quickly due to a lack of time; does a minimal job to determine whether or not educational goal has been attained.	Leader does not achieve any form of closure, or does so very inadequately; runs out of time; does not assess to determine whether or not students have achieved educational goal.	
Adapted from: Physics Teacher Education Program Illinois State University			**TOTAL:**	**/30**

INDICATORS OF ACHIEVEMENT	**RANGE***
EXCEPTIONAL	27 – 30
EXCEEDS EXPECTATIONS	23 – 26
ACCEPTABLE	12 – 22
MINIMALLY ACCEPTABLE	6 – 11
UNACCAPTABLE	5 OR LESS

*Work must be judged as "Minimally Acceptable" to meet the expectations for this learning outcome.

Faculty Assessment: Closing the Loop

The individual assessment summaries were reviewed and discussed by the faculty. A summary of the faculty discussion was submitted as part of the program's annual assessment report.

Learning Outcomes Summary for Spring 2012

SOCIOLOGY FACULTY RESPONSE

The two courses assessed for the 2011-2012 cycle were SOCI499: Senior Capstone and SOCI470: Environmental Sociology. SOCI499 assessed the learning outcome of written communication and SOCI470 assessed the learning outcome of oral communication. The quality of the work of the students in both classes were mixed, but, on average, met the expectations for each learning outcome.

For SOCI499, the evaluation of the C and D paper group revealed that these students struggled for two different reasons: (1) many of them are just disinterested, unmotivated, and want to do only enough to get by, but (2) among this group are also students who really are just getting by and they are working at it but are just generally borderline C students. The recommendation of the Sociology faculty is that it may worthwhile to express to faculty and particularly faculty teaching research methods about the confusion in students minds about data and research articles being the same thing. Further, it would benefit our students to have to think about unit of analysis as they read through the research that we all assign in our classes. For writing skills, we believe it would greatly benefit our students and their learning if they took at least one English comp class in addition to the W Core requirement. Even among the A paper group, these stronger students might improve their writing with more practice.

For SOCI470, the Sociology faculty saw similar themes as that in SOCI499. Namely, most students struggle with original journal articles, especially those that are empirically and statistically driven. Yet, the faculty still regarded the Discussion Leader component as an integral aspect of student learning—one that goes far in achieving active and student-centered learning principles. Much like the above recommendation for an additional writing course, the faculty believe that our majors would benefit from a public speaking course, perhaps advising them to take COM110US to fulfill the CORE 2.0 requirement.

Curricular changes: None recommended at this point, but the faculty will continue to discuss the possibility of requiring our majors to take COM110US

The 2013 annual assessment report summarizes the results of this program's first year of collecting data and assessing student performance. No curriculum changes were made as a result of the first-year assessments, but the assessment process has made the faculty aware of potential deficiencies which are now being monitored.

Example 3.2: Program Assessment in Film and Photography

The College of Arts and Architecture is an area that has made good progress on assessment, with 5 of 6 undergraduate degree programs having assessment plans with stated outcomes, identified data sources, and a specified timetable for completing assessments. This is perhaps not surprising since the College actually has a long history of using assessment (typically portfolios) to monitor student performance and progress towards degrees. Adapting the ongoing assessment processes for program review purposes was fairly straightforward.

The School of Film and Photography (SFP) has been selected as an example because they have had to address some unique challenges in developing an assessment plan. While information on the BA program is presented here, the faculty is actively involved in assessing both their BA and MFA programs. Complete assessment plans and reports for both the BA and MFA programs are appended.

One Degree, Multiple Curricula

The SFP offers a single BA degree in Film and Photography, using options to allow students to focus in either area. But they chose to adopt uniform program outcomes and assess the degree rather than each option. This has assisted the School in increasing the emphasis on integration, focusing on the commonalities of the two options rather than the differences. Because of the differences in curricula, the options are sampled separately, but the data are scored using the same rubrics. According to the SFP assessment plan:

> Assessment will employ the same rubrics, based on shared Program Outcomes, in both options, however, so that the data can be compared and collated to assess the overall effectiveness of the school and the uniformity of the student learning experience.

Dealing with Electives

The program uses electives more than specific course requirements in the upper division courses. This approach can complicate the assessment process since the students do not all have the same academic experience. The faculty in SFP addressed this by establishing uniform standards/expectations for the upper division courses.

> The new curricula in Film and Photography (adopted 2011) rely more on a menu of electives than on specific requirements in upper division courses. In order to insure consistency in outcomes and to facilitate assessment, the School of Film and Photography will adopt the following strategies for upper division elective courses:
>
> - We will adopt uniform standards/expectations for 300- and 400-level "studies" courses (history, theory, criticism), respectively, in terms of reading, writing, and research expectations, with mastery of critical thinking, original research, and written expression expected in the 400-level courses. We will apply the same expectations and standards to any changes in studies course menu.
> - We may consider making one 300-level studies course a pre-requisite for any 400-level studies course, in order to provide the development necessary to attain 400-level mastery.
> - We may require that students take at least one 400-level studies elective in order to insure that all students reach a level where mastery of relevant outcomes may be consistently assessed. Currently, faculty vacancy limits our ability to do so.
> - We will also adopt uniform standards/expectations for all recurring, 300-level "production" electives to address the aesthetic context of the specific skill area, including some written analysis, (some research), as well as high-evel developmental expectations for technical accomplishment in the specific skill area.
> - We will review learning outcomes of all 300- and 400-level elective courses for alignment with the uniform Program Outcomes.

- With uniform expectations, we will develop two standard rubrics for 300- and 400-level studies courses respectively, and one standard rubric for all 300-level production electives. Elective vs. required courses assumes that the specific knowledge content is less relevant than the framework of knowledge acquisition and demonstration (multiple paths towards the same end), and assessment rubrics should be based on this. One goal of this assessment strategy will be to insure that all elective classes conform to the uniform expectations.
- Because electives will rarely enroll all majors, we will assume that any elective class represents a "sample" of student work for the purpose of assessment, and we will rotate assessment among electives to insure consistency in meeting Program Outcomes.

The items in red are shown as presented in the SFP assessment plan. That is, these are open issues that the faculty is monitoring and will be deciding upon as a result of the assessment process.

Curriculum Mapping

The assessment materials provided to departments encourages faculty to develop a curriculum map as part of the process of developing an assessment plan. Faculty are encouraged to mark courses are designed to introduce (I) student to concepts, allow student to develop (D) proficiency, or expect students to demonstrate mastery (M). The SFP curriculum map helped the faculty understand their curriculum and determine how to address the issue of electives in their curriculum. The curriculum map below is for the Film Option. A similar curriculum map was developed for the Photo Option.

			Outcomes				
RQ		Credits	1	2	3	4	5
*	FILM 100 Introduction to Film and Photography	3		I	I		I
a	FILM 104 Modes of Screen Drama	3		I			I
*	FILM 106 Film in America	3		I			I
*	FILM 112 Aesthetics of Film Production I	3	I		I	I	
*	FILM 212 Aesthetics of Film Production II	4	I		I	D	
*	FILM 251 Scriptwriting	3	I		I	D	I
c	FILM 253 Television Production	3	I				
*	FILM 254 Acting for Film	3	I			I	I
a	FILM 260 International Film and Television	3		I	I		I
b	THTR 304 Theatre Production	4	D		D	D	D
c	FILM 333 Production Management	3	D		D	D	D
c	FILM 351 Advanced Script Writing	3	D		D	D	D
c	FILM 352 Editing	3	D	I	D	D	
c	FILM 354 Lighting	3	D		D	D	
c	FILM 355 Cinematography	3	D			D	
c	FILM 356 Production Design	3	D	D	D	D	D
c	FILM 357 Directing	3	D			D	
c	FILM 359 Sound Design	3	D			D	
b	FILM 371 Non--Fiction Film Production	4	D		D	D	D
b	FILM 372 Fiction Film Production	4	D		D	D	D
a	FILM 381 Studies in the Film	3		D	D		D
a	FILM 449 Film and Documentary Theory	3		M	M		M
a	FILM 481 Advanced Studies in Film	3		M	M		M
c	FILM 493 Professional Perspectives ---- L.A. Field Trip	3			D		
c	FILM 494 Seminar/Workshop	v					
*	FILM 499 Senior Production	5	M	M	M	M	M

Notes:

a. Three upper-division film or photography studies courses required, including non-departmental courses
b. Two of these three production courses are required
c. Students must take four SFP electives

Assessment Report

The SFP turned in their annual assessment report for 2013-14 including both the BA and MFA assessment results. The complete assessment report is appended, but only the BA portion is included here.

Note: This example also illustrates the use of the new template for assessment reports.

Annual Assessment Report

Academic Year: 2013-2014
Department: School of Film and Photography
Program(s): BA in Film and Photography

1. What Was Done

According to our assessment plan, we evaluated learning outcomes 2 and 5 this year in selected courses in the Undergraduate curriculum.

2. What Data Were Collected

Fall 2013

2. The final assignment was collected from PHOT 374, PHOT 401, FILM 351, and FILM 372 in the undergraduate curriculum and scored using our "Production Assignment" rubric template.

5. The final assignment was collected from PHOT 374, PHOT 401, FILM 351, and FILM 372 and scored according to the "Production Assignment" rubric.

Spring 2014

2. The final assignment was collected in PHOT 373, and FILM 371, and scored according to our "Production Assignment" rubric.

5. The final assignment was collected from FILM 381 and scored according to our "Written assignment" rubric.

3. What Was Learned

2. A majority (more than 75%) of our students "understand and appreciate the history and criticism of photography and/or film," although the fall students fell slightly below this threshold.

5. Students demonstrated an ability to "employ critical thinking skills informed by integrating areas of knowledge outside their chosen discipline" with a total average of 66% of those enrolled, with the spring classes again outpacing the fall with scores that met or surpassed out threshold of 75%.

4. How We Responded

2. We are revising our rubrics for next year to allow us to pinpoint specific weaknesses more precisely and asking instructors to include the rubrics in selected assignments.

5. To create a more consistent outcome among the students, we are making "critical thinking" a production imperative beginning with freshman classes.

Note: Results of the assessment will be shared with faculty at the AY 2014-15 Startup Meeting on August 21, 2014.

Assessment Responses – Closing the Loop

In this example, the SFP faculty identified that the students, on average, were meeting the target of 75% or higher scoring acceptable or higher on each category of the scoring rubric. However, they found inconsistencies between semester offerings and are planning to improve their scoring rubrics to allow them to pinpoint problems so that they can better respond. The faculty is also considering making critical thinking a "production imperative" in the future. This will be discussed by the faculty at the beginning of the next school year.

Example 4: Discovery – Building the Doctoral Program

The final meeting of the Faculty Senate in May 2013 was devoted to allowing faculty to provide input on the Institution's needs and priorities. What emerged as the top priority from that meeting was the desire to see MSU retain its Carnegie ranking as a Very High Research institution. While we do not control the ranking process, we can take steps to improve our performance in areas that are expected to be part of the Carnegie Foundation's ranking process. One area that is considered essential is to increase the number of doctoral awards granted annually, especially PhD awards.

These goals appear in the strategic plan in Objectives D.1 and D.3, and Metrics D.1.3, D.3.2 and D.3.3.

Objective D.1: Elevate the research excellence and recognition of MSU faculty.

Metric D.1.3: By 2019, MSU will improve its rank among Carnegie Classified Research Universities—Very High Research Activity (RU/ VH) institutions on four measures: STEM R&D expenditures (current rank 94); non-STEM R&D expenditures (rank 92); number of science and engineering research staff (rank 96); and doctoral conferrals (rank 106).

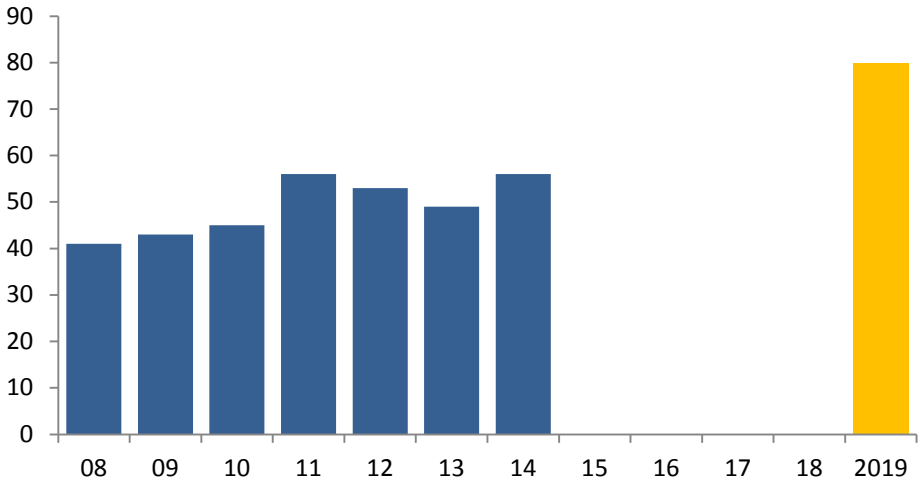
Objective D.3: Expand the scale, breadth and quality of doctoral education.

Metric D.3.2: The graduate student population will increase 20 percent to approximately 2,350 by 2019, with an emphasis on increasing doctoral student enrollment.

Metric D.3.3: By 2019, the number of graduate degrees awarded will increase from 548 to 625 per year. Science, technology, engineering and mathematics (STEM) master's and doctoral degrees will increase to 325. All doctoral degrees awarded will increase from 56 to 80 per year.

One strategy employed to address these objectives was the establishment of the PhD Enhancement Fund in FY13.[4] The Fund provides $216,000 in base funding to provide stipend support of $18,000 for 12 entering PhD students each year. These students also receive full tuition waivers. Awards are determined by the Graduate School which seeks to use the funds to strengthen doctoral programs. These enhancement funds are intended as incentive funds, with students moved to grant funding after the first year. The availability of these funds makes a huge difference to faculty members who have been awarded a three-year grant and are nervous about taking on a PhD student that will likely need four years to complete his or her program. The PhD Enhancement Fund in designed to encourage faculty researchers who might opt for a master's candidate to take on a PhD candidate.

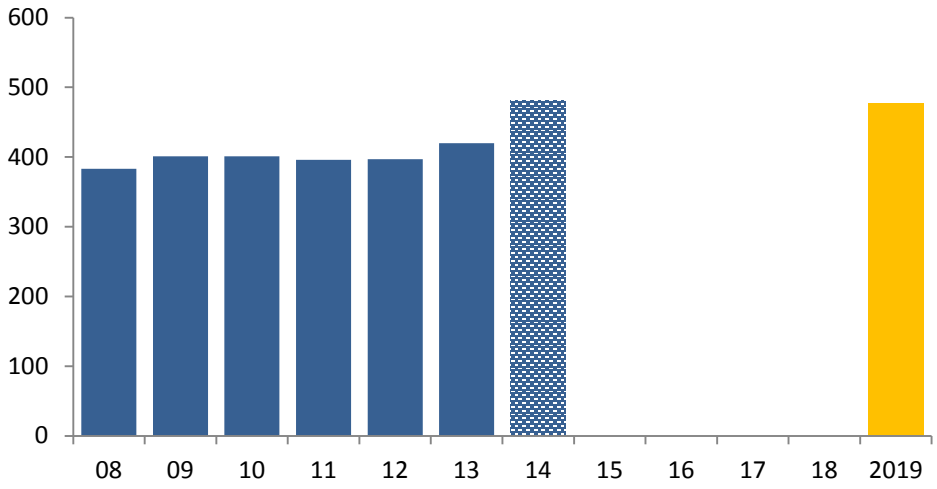
While it will be several years before we see PhD Enhancement Fund students graduating, we are already seeing significant progress towards our goal of increasing the number of doctoral degrees awarded. Increasing the number of PhD candidates in the pipeline will help us meet this strategic objective.



Metric D.3.3: Doctoral Degrees Awarded

Source: Office of Planning and Analysis

[4] In the first year of the program, a large number of highly qualified candidates were identified, so an additional six awards were made using one-time-only funding.



Metric D.3.2 (partial): Doctoral Headcount Enrollment

Source: Office of Planning and Analysis (2014 data is currently a projected value, actual value available mid-September)

Example 5: Engagement – Revamping the Carter County Museum, and more

Six students from Montana State University spent the summer of 2013 revamping the Carter County Museum in Ekalaka, Montana. That program not only brought MSU students to rural Montana to put their skills and abilities to work in a community, but it also launched a larger program called project SCOPE (Student Community Outreach ProjEct) which intends to match more students and communities on projects that combine outreach and student research.

The related objectives and metrics in the Strategic Plan include Objectives E.1 and E.3, and Metrics E.1.2, E.1.3 and E.3.1.

Objective E.1: Strategically increase service, outreach and engagement at MSU.

Metric E.1.2: By 2019, the percentage of students, faculty and staff involved in service, outreach and engagement activities, with particular attention to underserved areas and minority populations, will increase.

Metric E.1.3: By 2019 the number of MSU service, outreach, and engagement activities will increase.

Objective E.3: MSU students, faculty and staff will have increased opportunities for leadership development.

Metric E.3.1: By 2019, the number of opportunities for leadership development and practice will have increased. Awareness of the opportunities will have also increased.

The engagement of students was described in an MSU News article, dated November 22, 2013 [appended]. Portions of that article are reproduced here:

MSU students from any discipline have the background and abilities to benefit a community, Rogala said. The core group that worked in Ekalaka majored in earth sciences, history, graphic design, landscape design and film. Some of the participants had worked together on MSU's student newspaper, the Exponent. Some were active in MSU's student government.

The students, while in Ekalaka, prepared dinosaur fossils and redid an area of the Carter County Museum devoted to Native American artifacts. They organized a two-day Dino Shindig that drew more than 560 visitors to this southeast Montana town of 300. They built display cases and prepared for a new 12,000-square-foot addition that will feature fossils and casts of fossils found in southeast Montana. They planted trees, native plants and heirloom vegetables. They designed logos, a children's coloring book and the museum website.

"They came in. They took over. They did a wonderful thing and then they were gone. It was like a whirlwind," said Marilyn Schultz, assistant director of the Carter County Museum. "Some of the things they have done we could not have done -- ever."

Rogala said the collaboration was a huge success. She gave much of the credit to Nathan Carroll, one of the co-founders of SCOPE and an Ekalaka native who graduated from MSU with a degree in paleontology. He is now pursuing his master's degree at MSU while serving as curator of the Carter County Museum.

Sabre Moore from Wright, Wyo., one of the students who spent the summer in Ekalaka, said, "It was a wonderful opportunity. It was definitely one of the best things I have agreed to do."

The museum project allowed her to use her history major and three minors (museum studies, Native American studies and English literature studies) in a variety of ways, Moore said. She designed exhibits for the Native American collections, for example. She helped the museum reach Native American Graves Protection and Reparation Act (NAGPRA) accreditation, set up new displays and created a handbook for the museum collections.

Tammi Heneveld, a graphic design major from North Pole, Alaska, designed promotional materials and a new website for the museum.

"It was a really fulfilling and almost profound experience for me," Heneveld said. "It's really inspiring to know that I can use my degree to help an organization or cause that I really care about, and I have the opportunity to be something bigger than myself. It was also a lot of fun to work alongside a bunch of my friends."

While working to updated the displays in the Custer County Museum was a great summer engagement project, that was only the beginning for some members of the team. They saw a need to assist more students and communities find matches between projects and skill sets, and created Project SCOPE (Student Community Outreach ProjEct) to exand opportunities in the future.

Again, quoting from the MSU News article dated November 22, 2013:

> "This concept isn't new at all," said Shelby Rogala, a 2012 MSU graduate and SCOPE's interim director. "We are a land-grant university. This is our mission. But we hope to make it more accessible and more supported."
>
> . . .
>
> Students who participate next summer will be able to be able to work at the Carter County Museum or other projects elsewhere, Rogala said. In addition to the projects listed on the SCOPE website, she is looking for other projects.
>
> One available project already involves Katie Liebenstein of Portland, Ore., a pre-nursing student who graduated from Lewis and Clark College four years ago in history. She is working with MSU Extension Community Resources Specialist David Young to create a curriculum for inmates at the Gallatin Valley Detention Center on health literacy and the Affordable Care Act. Starting Jan. 1, she will go to the Detention Center to teach the curriculum and work alongside the inmates as they work through the financial and health questions involved in enrolling in the healthcare program.
>
> "It is challenging work, but I look forward to working with the inmate population soon," Liebenstein said.
>
> She added that she wanted to become involved with SCOPE because she was interested in working on a local issue involving public health. If a project wasn't already in the works, she figured there was always a need for more outreach and education regarding community health.
>
> "SCOPE is a great organization because they have the means to connect students with authentic research and outreach projects in local communities and around Montana," Liebenstein said. "I think getting to work on a project that is directly impacting the Bozeman community is really powerful and makes me feel more connected to this place and to my studies."
>
> Another new project would have students help a regional economic development group create a marketing plan, identification and materials. The group is the Beartooth RC & D Area, Inc., which works primarily in rural communities across Sweet Grass, Stillwater, Carbon, Yellowstone and Big Horn counties.
>
> SCOPE began last year as a pilot program. Rogala said part of her job now is looking for resources both off and on campus to support the SCOPE students. Those who worked at the Carter County Museum volunteered their time, receiving free lodging at a nearby camp for hunters with

physical challenges. They were plied with cookies and homemade casseroles. Some earned classroom credit for their work. Others carried the experience with them as they started their first job after graduation.

Rogala is working particularly closely with MSU's Undergraduate Scholars Program to write grants that will support SCOPE students. She is also checking into internship and scholarship possibilities.

Colin Shaw, director of the Undergraduate Scholars Program, said he believes in SCOPE.

"Undergraduate research and engagement are two pillars of the MSU mission that we have been working to integrate for some time," Shaw said. "SCOPE will connect the research and creative energy of our undergraduate students with real community needs.

"As a student-conceived grassroots organization, SCOPE is well positioned to build relationships with the community and find new ways for our students to help in solving real-world problems through research and creative projects," Shaw said. "This is really a great way for our students to combine rigorous academic research with service to the broader community."

This project has not only allowed MSU students to engage with communities, but has allowed the SCOPE founders to develop leadership skills as well. While participation in meaningful engagement activities may be a tough objective to quantify, it is clear that the revamping of the Custer County Museum and the creation of Project SCOPE were highly successful engagement activities for those involved.

Montana State University: Mid-Cycle Review
Responses to Items from Past Reviews

Reference Materials – Responses to Past Items

1. ITEM 157-2001+R1112: MSU-Bozeman Core Themes (2012)
2. Minutes of the Montana Board of Regents Meeting, November 15-16, 2012
3. Montana State University Strategic Plan
4. Revenue vs Expense Trend Spreadsheet
5. Strategic Plan Progress Report 2013
6. Provost's Update, describes faculty lines added in 2011-12, 2012-13
7. Research Incentive Policy
8. FY12 SIP Funded Proposal Summary
9. FY13 SIP Funded Proposal Summary
10. Graduate School Recruiting Programs (including PhD Enhancement Fund)
11. OSP Student Research FY14
12. Facilities Condition Inventory (FCI) Information
13. 2007 SUNY Backlog Report (Analyzing SUNY Facility Renewal and Backlog Needs)
14. 2012 SUNY Backlog Report (Analyzing SUNY Facility Renewal and Backlog Needs)
15. MSU Deficiency Trend Data (includes deferred maintenance, FCI values)

Reference Materials – Mid-Cycle Report

1. Comparison of MSU Year One Report and Strategic Plan Aug 2014
2. ITEM 164-2010-R0914: Updating MSU-Bozeman Core Themes (2014)
3. Interim Targets
4. Strategic Plan Progress Report 2013 (duplicate)
5. Q Core Assessment Plan
6. Q Core Assessment Report
7. Sociology Assessment Plan (BS)
8. Sociology Assessment Report (BS)
9. Film and Photography Assessment Plan (BA and MFA)
10. Film and Photography Assessment Report (BA and MFA)
11. MSU News article, Carter County Museum, November 22, 2013
12. US Core Assessment Plan
13. US Core Assessment Report

November 15–16, 2012

ITEM 157-2001+R1112
MSU-Bozeman Core Themes

THAT

The Board of Regents of Higher Education approve the new core themes, Montana State University Bozeman

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EXPLANATION

These five Core Themes have been developed on the MSU Bozeman campus as part of our accreditation process. The development has been a collaborative effort between the MSU Provost's Office and the University Planning Council. The process has included presentations to various constituency groups, several open public forums and on-line surveys and information gathering.

MSU Core Themes

Core Theme 1: Educate students

Core Theme 2: Create Knowledge and Art

Core Theme 3: Serve Communities

Core Theme 4: Integrate Learning, Discovery and Engagement

Core Theme 5: Stewardship

ATTACHMENTS

No Attachments

MINUTES
Montana Board of Regents
University of Montana - Missoula
November 15-16, 2012

Thursday, November 15, 2012

Roll call indicated a quorum present. Regents present: Chairman Angela McLean, Regents Todd Buchanan, Joseph Thiel, Paul Tuss, Pat Williams. Commissioner of Higher Education Clayton Christian, *ex officio,* was present. Ex officio members Governor Brian Schweitzer and Superintendent of Public Instruction Denise Juneau, were absent; Steve York served as OPI's representative. Regents Major Robinson, Vice Chair, and Jeff Krauss were excused.

The Board meeting convened at 8:15 AM.

Regent Paul Tuss moved approval of the minutes from the September 19-20, 2012 meeting. Motion approved 5-0, with Regents Major Robinson and Jeff Krauss being excused from the meeting.

System Issues, Reports, and Action

- Commissioners Report

Commissioner Christian made Board members aware that a resolution was received from the associated student organizations at University of Montana and Montana State University requesting possible policy changes at the board level to add gender identity to the protected, non-discrimination policy. Commissioner Christian stated that the document will be reviewed and discussed as students requests are not taken lightly, nor is changing Board policy. This topic will need to be well vetted and viewed from a system perspective, as per the process for all potential policy changes.

Commissioner Christian gave an update on a recent WICHE conference that covered topics including national legislative issues and the return on investment concept. WICHE will compile a report titled "Beyond Need and Merit" by David Longanecker to address how the majority of financial aid is awarded. WICHE will present the results to the WICHE commissioners for review and will offer assistance related to policy review.

- Fall Enrollment

Associate Commissioner Tyler Trevor discussed the overall history of system-wide student FTE, the explosive growth in 2011 and the recent slight enrollment decline. He compared student FTE per institution type, which depicted a downward trend due to the great deal of diversity on campuses. Mr. Trevor compared two-year colleges' enrollment which declined 8.5% collectively across the board with Dawson CC declining 22.2% and Miles CC declining 9.4%.

He further discussed the impact that dual enrollment will continue to make given the new tracking system that is in place and the cuts made to tuition and fees for dual

enrollment. Mr. Trevor noted that a natural decline in high school graduates is currently occurring which is not likely to change until 2017.

Commissioner Christian discussed the gap that exists between graduating high school students and college enrollment and expressed a desire to focus on this area and see how it may be addressed as it would help make up for the demographic loss.

- Strategic Plan - Dashboard Indicator | Retention

Associate Commissioner Tyler Trevor gave a presentation focused on increasing and tracking retention rates which is a useful tool for campuses to evaluate student success for first-time, full-time freshmen and what percentage come back for a second year. This comparison over time allows for easy tracking of students throughout the entire university system. He discussed the comparison of institutional and system-wide rates which provides a more complete picture of cohort retention. He noted that the focus is on those transferring from two-year to four-year institutions. He explained that the figures shouldn't be thought of as a total, but rather as a denominator showing all entering full-time freshmen students and the numerator being representative of those students that returned to the specific institution they originally entered. The system numerator represents those students that returned to the same institution or any other MUS institution. This provides institutional and system views of retention.

- Construction of the Missoula College Facility Campus

Given increased public interest and awareness regarding this item, Commissioner Christian reminded attendees that this is not an action item; action has already taken place at several past meetings. He touched on the overall process to date which included: master plan developed and approval in 2007. He clarified that President Royce Engstrom would provide an update on the current standing of the process and that there is no decision before the Board today, simply an update for public interest.

President Engstrom provided basic contextual information regarding the item; he explained that the South Campus area is the proposed site for constructing Missoula College, the highest new project on the LRBP list for this legislative session. He reminded attendees that this has been a work in progress for many years. A map was displayed depicting the land currently owned by UM-Missoula, including the UM Golf Course, located on the South Campus. President Engstrom discussed each area and gave a description of the current campus buildings located on the map. He gave a chronological overview of the three proposed master plans.

The Mountain Campus plan was approved in 2002 and identified several potential sites for construction, many of which have been built on since that time leaving little room left on the campus for further expansion. In 2004, President Dennison asked that a master plan be developed for the Fort Missoula area. These three pieces of land are currently owned by the institution; however, construction is not possible without further acquisitions of unencumbered land being acquired. Archeological and cultural associations further limit construction in this area.

The South Campus plan, proposed and approved in 2007, is a comprehensive master plan that also addresses future academic and student housing needs. This plan was specifically designed to address the needs of the college for the next 50 years of growth. The approval of this plan formed the basis for the appropriation of $500,000 by the Montana Legislature for the site. Missoula College would be the first academic building located on the South Campus which is the only piece of land that would allow for considerable growth and continued building over the next several decades.

President Engstrom noted the expansion discussion doesn't just pertain to the construction of Missoula College, but views expansion as a whole and addresses the long-term growth for UM. He reiterated that UM does own the South Campus land and has been actively developing it over the past few years including extensive residence halls and athletic centers. The connectivity between the Mountain Campus and South Campus is conducive to student and staff movement and infrastructure between buildings, making this a cost effective approach. Concerns consist of destroying green space but the campus plan includes plans to preserve as much green space as possible. Traffic concerns need to be addressed. Infrastructure related to cost effectiveness are addressed and satisfied by the South Campus master plan. President Engstrom explained that at the present time there are no other additional buildings being proposed for the current location.
Commissioner Christian reiterated to all attendees that there no further action required for this item as it has received Board approval in 2007 and will move forward accordingly. He encouraged attendees and members of the public to share their considerations during the public comment portion of the meeting.

- Legislative Session Prep: Long Range Program (LRBP) Video

Associate Commissioner Tyler Trevor shared a ten minute video providing an overview of LRBP that highlights the top three projects on the list and was designed to be used in a variety of settings including Legislative settings and for individual constituents.

- Campus Reports

Staff and Compensation Committee

CONSENT

a. Employee Equity Interest Under Policy 407; MT Tech *ITEM 157-1501-R1112*

Staff Items

a. MSU-Bozeman *ITEM 157-2000-R1112*
b. MSU-Northern *ITEM 157-2800-R1112*
c. Dean Emeritus of Library: Miller; MSU-Bozeman *ITEM 157-2002-R1112*

Regent Joseph Thiel moved to approve the consent agenda. Motion approved 5-0.

Regent Angela McLean noted the board has ranked faculty and staff compensation as a top priority for the legislative session. A focus group has been formed and will examine the issues of compression and inversion and consider ways in which the board can address these issues.

DISCUSSION

Recruitment & Retention Work Plan and Strategies
- *Regent Conversation with Faculty and Staff Representatives*

Associate Commissioner Kevin McRae and invited guests discussed the 2012-2013 Staff and Compensation Work Plan drafted by the committee to serve as a guide to improve the ability of Montana's college and universities in recruiting and retaining capable personnel to serve the state's students and citizenry. The work plan consists of four direct goals:

Goal One: Secure strong state funding of the Montana University System to ensure that students and the public are served by capable faculty, staff, and professionals in facilities that are conducive to teaching, learning, research, and service.

Goal Two: Maintain Montana University System dialogue between faculty, staff, professionals, administrators, and regents to explore value enhancements that contribute positively to the total employment package or work environment.

Goal Three: Maintain effective labor relations with unions representing nearly 4,000 faculty and staff on matters of collective bargaining, including wages, hours, salaries, and other terms and conditions of employment.

Goal Four: Regularly review and examine aspects of compensation that are particularly pressing or problematic in the view of the Montana University System faculty, staff, professionals, and administration.

At this time he introduced faculty guests: Professor Sandy Osborne, Chair of the Montana Coalition of Union Faculty (CUF) of MSU-Bozeman; Professor David Shively, UM-Missoula; Marco Ferro, MEA-MFT; and support staff representatives: Christine Vance, Chapter President for Montana Public Employees Association; and Jeff Howe, Field Rep Staffer for MPEA and asked that they share their perspectives, feedback, and ideas for the legislative priorities and agenda.

Panel members presented information including: appreciation for making this a top priority and willingness to work together to solve the issues; feedback regarding the work plan; the need to develop a strategy for retention and recruitment for quality faculty; findings from campus recruitment efforts; the inability to provide appropriate salaries and often the inability to get applicants to agree to an interview on campus; support for the Pay Plan; appreciation for the dependent tuition waiver; and the request for the board to devote funding to address unemployment compensation issues.

Chair McLean reminded the board that the faculty and staff initiative is a board initiative. She encouraged the members to develop a plan to effectively address the issues of inversion and compression as a system.

Regent Thiel explained that the reason this remains to be such a top priority for Regents is because they have a direct effect on the quality of education. He stressed the imperative need to be able to recruit and keep the best and brightest faculty in order to fulfill the educational mission.

Regent Thiel noted that the focus group needs to determine what benchmarks should be used.

President Waded Cruzado noted that it would be helpful to the campuses to be allowed more flexibility in the hiring process regarding compensation decisions.

Associate Commissioner Kevin McRae noted that a guideline exists for contract professionals and administrators which state that a retention adjustment can be implemented for market purposes if it is necessary to keep the person from accepting another position or if there is other evidence of the employee's market ability.

President Engstrom agreed with Mr. McRae and considered it to be a campus by campus approach for market adjustments. He noted that the current process allows for addressing those who are imminently recruitable. He said that the more serious issue in need of attention is the issue of inversion or compression. President Engstrom requested that these issues be addressed in a systemic fashion.

Discussion followed on the need for specific data to show the direct correlation between failed searches and the impact on graduation rates; support of continued efforts toward improving compensation for faculty and staff and the recruitment issues raised; retirement system concerns and; and appreciation for the joint efforts to address the issues discussed.

Public Comment

Laura Alvarez, UM-Missoula faculty member, spoke in support of faculty and staff compensation.

Shana Wold, Vice Chair for Staff Senate at MSU-Bozeman, spoke in support of faculty and staff compensation as well as continued discussions on the issue.

Darlene Samson, Staff Senate President for UM-Missoula, shared results of a recent survey indicating the financial challenges facing some employees due to compensation levels.

K-12 Partnerships

- Dr. Ken Miller, MSU-Billings

Regent Angela McLean described the OPI competitive grant and its conjunction with the K-12 community. Dr. Georgia Cobbs, UM-Missoula, explained that within the grant also exists a partnership between UM and MSU. She informed attendees that she received the math portion of the grant and Dr. Ken Miller; MSU-Billings received the science portion.

Dr. Ken Miller, MSU-Billings explained that the two recent grants stemmed from a previous grant within the state that was merged and reconstructed over time. He stated that one of their goals, in line with OPI and the University System, is to increase the number of STEM (Science, Technology, Engineering, and Mathematics) teachers within the state and create more STEM jobs. These two grants have partnered together in order to create the Montana Partnership with Regents for Excellence in STEM (MPRES). He described the premise of MPRES as an effort to help teachers within the state to look at the current activity and development of science within the state. Dr. Miller noted the goal is to develop a similar Common Core system approach with a focus on science which will include training for teachers and trainers, who will be working across the state in regional educational service areas (RESA), designated by OPI. He mentioned the existence of the Higher Education Consortium which gathers faculty from across the state to discuss issues and determine what significant action can be taken collectively. Dr. Miller added that within the new science standards lie cross-cutting concepts that deal with all the different disciplines and how they relate to science.

- Dr. Georgia Cobbs – UM-Missoula

Dr. Georgia Cobbs, UM-Missoula, discussed the Standard Space Teaching Reaching Educators Across Montana (STREAM) project, a partnership existing between MSU-Bozeman, UM-Missoula, and Billings' Public Schools. She informed the board of their inclusion of schools of varying sizes to ensure that a variety of institutions are being accurately represented. She reviewed the structure that has been established and mentioned the development of online modules that can be accessed and used by classroom teachers to help change current mathematical practices. Dr. Cobbs noted that discussions are taking place regarding where to physically house the modules so that the entire state can have access.

Mr. Steve York, OPI Representative, noted that the state consortium on educator effectiveness involves the deans of many institutions.

Two Year and Community College Education Committee

INFORMATION

Regent Joseph Thiel reminded the board that the latest committee work plan was presented and passed.

a. Comprehensive Mission Expansion Update & Next Steps – J. Cech, R. Groseth

Deputy Commissioner John Cech reminded attendees that with the help of the Lumina Foundation they were able to hire the College Brain Trust firm to focus on the next steps of the strategic plan development. This involves finalizing the plan's framework and configuring it into four chapters. The first chapter provides the introduction; the second chapter provides an overview of the data associated with college trends and will focus on the initiatives that each college has undertaken. To help show which initiatives the five former colleges of technology are undertaking help the institution become a more comprehensive two-year institution, the committee has asked that each initiative be clearly presented with guidelines indicating the responsible party, identify necessary resources, and provide completion dates.

Chancellor Rolf Groseth, MSU-Billings, noted the Regents' goal to increase participation in postsecondary education in addition to improving the conversion process associated with the high school completion rate and his confidence that the two-year campus programs offer the opportunity to do so. He told the board that all of the two-year campuses are signaling to the communities the expansion in campus missions via name change events. He stated that College Brain Trust has done an excellent job of setting the standard for creating the necessary documents the Board can use to compare campuses progress and goals. He stated that each school works with a rebranding task force that is charged with coming up with an identity that could be used to implement the Board's direction to the campuses to ensure that the new names reflect the location, mission, and affiliation. City College has 15 initiatives, one of which is to develop additional pathways towards credentials for either new certificates or developing a certificate where there is currently only an associate degree. City College is looking at a model based on industry integration in combination with work that is done in the classroom. He informed attendees that both City College and Great Falls College are working with industries within their communities, specifically in welding and fitting areas. He discussed the increase participation rate initiative and explained that the main objective is to get more people into postsecondary education to help move Montana towards the mainstream regarding the adult and student participation rates.

b. Improving Outreach to Adult Learners – B. Hietala; S. Jones

Sue Jones, Director of Two-Year Mission Integration, OCHE, and Dean Robert Hietala, Gallatin College-MSU, described efforts underway through the Adult Learners workgroup, which is part of College Now, to help the university system reach out and provide flexible postsecondary options for a large segment of the population.

Dean Robert Hietala, Gallatin College-MSU, reminded the board that the comprehensive two-year mission, approved by the Board, states that being adult-focused and providing accessible learning was identified as a key attribute. A committee researched how adult learners are served across a two-year system. The first evaluation was to look at what percentage of enrollment is made of non-traditional students, which findings indicate show that 45% of Montana's two-year enrollment is non-traditional students. He explained that Montana is behind peers is comparison of the number of adults served per 1,000 adults in the state and that half of the adults engaged in the Montana two-year education system eventually earn a two-year degree or certificate.

Sue Jones updated the board the committee's activities, including the perceptions of adult learners, how to help them succeed, and the opportunity for individual campuses to view the perceptions of their own adult attendees as well as the individual campuses' strengths and weaknesses. Next steps include: having campuses identify specific steps to improve their adult-friendly practices, leverage the strengths of individual campuses to share information and tips with one another, and in juxtaposition with College Now and Lumina apply for up to $10,000 in funding for improvements. She reported that Montana two-year campuses are all doing some form of prior learning assessment, which essentially offers some form of credit for prior learning component of adult-learning which is an evaluation of learning gained from life experience. The committee will seek proposals for improving prior learning assessments on campuses, scale up efforts to inform adults of opportunities, and ensure that each campus has implemented adult-friendly initiatives and strategies. In addition, they will compile the results from pilot programs into a profile for sharing practices.

Commissioner Clayton Christian noted that efforts focused on military veterans is an area that the university system could reach adults and encourage them while granting them credit for the experience they have attained. He stated that he would like to see them included and have some efforts be focused in their direction.

Sue Jones, Director of Two-Year Mission Integration shared an option regarding military training evaluation; including offering online courses to those veterans that have not yet returned home. This has proven to be a great way to get veterans engaged and actively pursuing their education. Regent Todd Buchanan asked if we were currently offering this option.

a. Statewide Two-Year Rebranding Status – J. Cech, T. Warner, A. Connole

Tim Warner, Senior Vice President of Strategies 360, noted the progress Montana has made due to listening to communities, extensive research and focus on the perspective student, and what efforts are being implemented on a statewide level. Schools have been consistent with the naming framework that was discussed and approved while maintaining dynamic individual missions and affiliations. Other two-year colleges that are in the rebranding process either have or are very near to having their final logos.

Annie Connole of Strategies 360 explained that a regular bi-weekly meeting is facilitated in order to receive updates on the status and progress of each school. She briefly recapped each institutions current position: Helena College-UM has initiated a marketing campaign and continue to raise their profile through fostering community relationships. Highlands College of Montana Tech presented its name to the community and is highlighting it through community outreach. Missoula College held is renaming event and had great participation by students, staff, and members of the community. Great Falls College is in the final stages of developing and getting approval for their logo; they have been working diligently with the community and students throughout this process. Their rollout event will be held on January 31st to celebrate and highlight higher education. Gallatin College-MSU is in the final stages of finishing their logo and will get

it approved within the next few weeks. Bitterroot College has engaged their local brand task force to develop brand positioning and messaging in addition to identifying key partnerships for outreach strategies within the Bitterroot Valley.

Tim Warner reiterated that the overall goal is to ensure these brands are lifted up to help create a statewide brand for the two-year, tribal colleges, and community colleges. There has been some conversation regarding building a statewide portal so show financing and information about each campus. Mr. Warner noted that K-12 has been integrated to some degree.

Regent Paul Tuss asked Dean Susan Wolffe, Great Falls College-MSU about the initial support regarding the name change and the recent concerns now associated with the new name and what actions could be taken to make the transition smoother.

Dean Susan Wolffe, Great Falls College-MSU, explained that part of the strategy for the rollout event includes the City of Great Falls proclaiming “Higher Education Month” in order to include all of the higher education partners and which would highlight that a variety of higher education is available in many different ways.

b. Developmental Education Reform Taskforce – J. Cech, N. Moisey

Associate Commissioner Cech gave a brief update stating that he and Deputy Commissioner Neil Moisey were appointed to serve as co-chair on the taskforce, which was approved in September and which begin meeting in mid-December.

c. Statewide Workforce Development Taskforce Report – W. Cruzado, J. Cech

Associate Commissioner Cech highlighted the recent convening of this taskforce in conjunction with President Waded Cruzado. They are working on a plan for the next steps in moving forward. Commissioner Christian recently visited Miles Community College, Dawson Community College in Glendive, and the Williston area with Regent Jeff Krauss, and himself. Commissioner Christian noted that it is important to maintain strong partnerships with these campuses as they are an important part of education in Montana in challenging areas. He referenced that there is a lot to learn from North Dakota such as the non-credit program at Williston State that is geared towards workforce development business partnerships.

Associate Commissioner Cech noted he recently held a meeting in Helena and discussed identifying a single institution in eastern Montana to serve as a focal point for intersection and help connect other trainings within the two-year system.

President Stefani Hicswa, Miles Community College (MCC) stated that Montana is well positioned to move forward with non-credit offerings that meet the work force demand and economic changes. She stated that there is a lot of opportunity for growth in this area specifically for two-year education to expand non-credit offerings throughout the state.

Associate Commissioner Cech noted a study from the American Association of Community Colleges on non-credit enrollment. Challenges that Montana is facing is rapid financial resource development; colleges need to be able to respond quickly in order to meet those needs and; this resource piece is an important component and will need to be addressed.

Associate Commissioner Dr. John Cech stated that the Governor's office conducted a series of interviews across the state about workforce training needs. The issue of community development surfaced as a result. They are experiencing population fluctuation which impacts to civic infrastructure including roads and water. It is imperative to ensure that folks have the appropriate training and expertise to move into those communities.

Regent Williams noted that the colleges have become skilled in preparing for job needs. They can change curriculum and courses based on demands and in response to the workforce need. Communities and the environment; however, cannot turn on a dime once infrastructure is overrun; it takes time to deal with urban needs. President Waded Cruzado appreciated these comments; but reminded everyone of extension, which exists in 55 counties to ensure that the needs of communities are being met.

Administrative, Budget, and Audit Oversight Committee

INFORMATION

a. Opportunities in Employer Health Care Delivery; OCHE *Director Connie Welsh*

Connie Welsh, Director of Employee Group Benefits Program at OCHE provided historical background and context information about the healthcare delivery. The MUS benefit plan was created in early 1980's; the system chose to create a single plan by pooling a large number of employees in order to increase purchasing and administrative efficiencies, and the standardization of benefits that are offered to employees and their families. Then the MUS absorbed the financial risk by taking additional steps towards self-insurance. Currently the MUS plan covers 18,000 Montanans including retirees and dependents. She briefly discussed various components of the plan including the cafeteria plan and tax advantages that permit employees to have premiums taken out before taxes; we generally know these programs as the flex accounts and dependent care accounts we use and paying for our premiums pre-tax.

She discussed the Patient Protection and Accountable Care Act which has been a big cultural and political issue to review as there is abundant information and misinformation circulating about the potential impacts. The PPACA law is bringing about a number of changes in Montana. She stated that the MUS in past years (1986-2002) was in the position of working with the only domestic health insurance company domiciled in Montana. In 2002 the creation of an additional insurer provided the opportunity for competition. Additional players have subsequently entered the market. Early on, the MUS worked with New West and Allegiance to serve as 'anchor tenants' and provide the opportunity for those options to become viable in Montana. This was done by

creating an employer driven health insurance exchange and an single benefit plan design or managed care option to be administered by all carriers. Both public and private employers in Montana used this exchange. Conditions were set up to offer competition to ensure that employees would have an identical benefit plan and could shop around for what suited them best. At this time, the market place in Montana is undergoing substantial changes. By the end of 2013, we anticipate that Montana will not have a health insurer that is solely domiciled in Montana. That will be the first time since 1946 that the state does not have a Montana-based health insurer.

Regarding the impact to individuals, she stated that PPACA includes further expansion of those covered, increases in coverage, and changes to how benefits are administered which are moving the insurance system toward standardization of the basic services offered. She explained that once PPACA is fully implemented, costs can then be evaluated on a more comparable basis. The MUS plan is well positioned to go though the changes from PPACA. It is in sound fiscal shape and the individuals who provide guidance and advice regarding the plan are very engaged and knowledgeable about what needs to be done.

Director Welsh noted the MUS has seen tremendous change in how it provides benefits in the last three decades. We will see much more change in the next few years, but the MUS has had a history of adapting to these very well and continuing to provide excellent quality, critical benefits to our employees, retirees, and their families.

b. 2015 Biennium Executive Budget Review

Commissioner Christian noted ongoing conversation with the executive branch which is releasing the budget at this time and that it appears that the present law adjustment as requested by the commissioner's office will be included in the executive budget. He stressed that the present law adjustment is necessary to maintain services at their current level. This funding in the proposed tuition cap conversation in conjunction with an adequate pay plan funded at Montana residents student percentages and WUE a accurate pay plan. He discussed a line item for the Vet Med Initiative and increased WWAMI slots at the requested funding level. It appears the Governor's budget will include funding for a Long Range Building Plan which includes MUS building priorities. He stressed that this is an ongoing process. He noted that the needs required to maintain high quality service are included and we need to do our part to maintain affordable higher education in Montana at a sustainable level.

c. Linfield Hall Fire Sprinkler; MSU-Bozeman

Deputy Commissioner Mick Robinson explained that the campuses sometimes requests general spending authority that the campuses can utilize for small projects that do not require state funding. The board does not need to approve spending authority because we are utilizing legislatively approved spending authority. Terry Leist, MSU Vice President of Administration and Finance informed attendees that a project is already going on related to access issues as it's primarily a code issues creating the genesis of this project.

d. Dawson CC Business Plan *President Jim Cargill*

President Jim Cargill, Dawson Community College referenced his recent retirement announcement, effective December 31, 2012. He described the challenges of being located on the edge of the Bakken area, which include: diminishing classes; the majority of high school graduates going directly to the oilfields; having the smallest graduating class in recent history; a significant drop in retention rates and; recent staff resignations. President Cargill reference attempted strategies for increasing enrollment including community assistance, partnerships, and support.

e. Audit Reports
   1. The University of Montana Foundation-June 30, 2012-Unqualified

Deputy Commissioner Mick Robinson explained that these reports are received by OCHE and any issues are then communicated to the board. These five reports were received from various foundations that are connected with the campuses, all of which contain unqualified audit opinions but no issues. He stated that the audits are available within OCHE if anyone is interested in obtaining a copy.

1. Montana State University-Billings Foundation-June 30, 2012-Unqualified
2. Montana Tech Foundation-June 30, 2012-Unqualified
3. Montana State University-Northern Foundation-June 30, 2012-Unqualified
4. University of Montana-Western Foundation-December 31, 2011-Unqualified

CONSENT

a. Paint Existing Auxiliaries Facilities; MSU-Bozeman *ITEM 157-2004-R1112*
b. Replace Dishwasher and Soiled Dish Return; MSU-Billings *ITEM 157-2704-R1112*
c. Approval of Computer Fee; Great Falls College *MSU ITEM 157-2902-R1112*
d. Equipment Fee; Great Falls College MSU *ITEM 157-2904-R1112*
e. Approval to Lease Spectrum Lab; MSU-Bozeman *ITEM 157-2006-R1112*
f. Long-Term Maintenance Plan; MSU-Billings *ITEM 157-2702-R1112*
g. Lease Agreement With MSU Alumni Foundation; Great Falls College MSU *ITEM 157-2903-R1112*
h. Remodel Donaldson Hall; Helena College UM *ITEM 157-1903-R1112*
i. Revision of Operating Budgets; MSU-Bozeman *ITEM 157-2003-R1112*
j. Revision of Operating Budgets; Dawson Community College *ITEM 157-201-R1112*

Regent Paul Tuss made a motion to approve items a-j on the consent agenda. Motion approved 5-0.

ACTION

a. Construct, Maintain, Repair and Replace New and Existing Parking, Street and Access Facilities; MSU-Bozeman *ITEM 157-2005-R1112*

Terry Leist, MSU Vice President of Administration and Finance, noted this item seeks authorization of parking and street maintenance in auxiliary areas, using non-state funds in the amount of $2.5 million. Vice President Leist explained that these changes will occur over the next few years and that all streets being addressed by this item are on campus. The intent is to combine the projects to create better efficiencies through the use of engineering firms.

Regent Tuss moved to approve ITEM 157-2005-R1112. Motion passed 5-0.

b. Energy Performance Contract; MSU-Bozeman *ITEM 157-2009-R1112*

Terry Leist, MSU Vice President of Administration and Finance, explained that this is now in Phase II of the process and the item requests $6.2 million as well as a request for the authority to initiate negotiations for financing for up to $4.5 million. He added that they anticipate up to $390,000 in energy savings in addition to the component of deferred maintenance. He stated that this project would be completed by the end of 2013. Mr. Leist clarified that both Phase I and Phase II requests if approved would be McKinstry contracts.

Regent Paul Tuss moved to approve ITEM 157-2009-R1112. Motion passed 5-0.

c. Repair and Replace Heating Plant – PE Building; MSU-Billings *ITEM 157-2701-R1112*

Chancellor Rolf Groseth, MSU-Billings, explained that this item requests authority to replace a current outdated boiler with a steam boiler by using some student building fees.

Regent Tuss moved to approve ITEM 157-2701-R01112. Motion passed 5-0.

d. Purchase Real Property; MSU-Billings *ITEM 157-2703-R1112*

Chancellor Rolf Groseth, MSU-Billings explained that this request would authorize MSU-Billings to purchase real property in the expanded acquisition zone for $219, 000. He noted that this area is west of the campus and that the purchase would include the purchase of three houses. He stated that these acquisitions were included in long-term planning of auxiliary and athletic facilities that was brought before the board in March of 2011 for approval.

Commissioner Christian reminded the board that a significant investment is made once a campus identifies and begins to make purchases within an acquisition zone. He stated that this was well vetted at the time these zones were created and it remains prudent for the board to acquire these areas for expansion.

Chancellor Groseth clarified that the intent is to acquire the property and to continue to manage the property until it is needed.

Regent Buchanan discussed general growth plans that are associated with campus master plans and how it often prompts continued growth. He asked if master plans are ever reviewed or reconsidered and that at some point a discussion should take place with a focus on rethinking the direction. Commissioner Christian agreed and stated that an inventory of campus acquisitions can be compiled to ensure that they are still pertinent.

Regent Buchanan moved to approve ITEM 157-2703-R1112. Motion passed 5-0.

f. Acquisition to Acquire Real Property Easement for Research Purposes; UM-Missoula *ITEM 157-1001-R1112*

UM-Missoula President Engstrom informed the board of the recent work with the Governor's Office regarding this item. The Milk River Ranch is located in Hill County and contains the rights to archeological and paleontological riches. The Department of Natural Resources and Fish Wildlife and Parks Department wish to acquire this property for the state of Montana. He explained that part of the purchase agreement includes assigning the archeological and paleontological resources to an organization; the University of Montana in conjunction with the State wishes to acquire those rights for research purposes. President Engstrom explained that in order for this to take place the University needs to purchase those rights from landowners. The purchase price is $2 million and would secure and preserve those rights for the University.

Regent Buchanan asked if the $2 million was included in the proposed budget. President Engstrom clarified that these are ongoing discussions but that funding would have to be included in the FY 2013 budget in order to proceed.

Regent Tuss stated that this would be a great asset that would serve students well. Regent Williams agreed and supported the opportunity to attain the land. President Engstrom explained that Norte Dame has been doing some research in the area and would be allowed to continue; however, both institutions would need to enter into some sort of agreement. Cathy Swift, Chief Legal Counsel of the Office of the Commissioner of Higher Education, stated that they have not yet seen the final agreement between the current owners, DNRC, and Fish Wildlife and Parks which sets forth the reservation to the University granting them rights; however, UM would have all rights of access to archeological and paleontological rights. Regent Pat Williams asked if we could then bar certain parties from having access to the land. Cathy Swift, Chief Legal Counsel of the Office of the Commissioner of Higher Education, stated that further research would need to be done but explained that the rights of access to the property would be held by The University.

Regent Buchanan stated that it was the Board's job the view this as a system acquirement of paleontological assets which historically have been held by MSU-Bozeman. President Engstrom agreed that MSU does have a famous paleontological

program and mentioned the similar program associated with the University of Montana. He clarified that each program focuses on different areas but both maintain a strong paleontological effort. Regent Buchanan stated that he views this as system property and hopes it can managed in collaboration with other institutions. President Engstrom agreed that they would make every attempt to ensure access is available to other institutions. President Waded Cruzado stated that she was unaware of this item and encouraged the Board to include some language that echo Regent Buchanan's comments about Montana State University also having access, without fees, and identify how copy rights will be managed to prevent problems in the future and to encourage researchers.

Commissioner Christian noted that given the sensitive rights associated with the property, given the Native American and archeological history, that it is hard to determine a price for this land. He stated that the appraisal came in at $12 million; but that we would work with campuses to assure the value is reasonable. Regent Pat Williams expressed the delicacy of the access issues and stated that communication with the Tribes, specifically Blackfeet and Salish, would be key as they are convinced that they have rights to access and research this land. Commissioner Christian noted that there is a lot of interest between various entities and that the Native American rights have protection and preservation under federal law. This purchase puts the land into public ownership and leaves assets intact.

Regent Tuss moved approval of ITEM 157-1001-R1112. Motion passed 5-0.

Public Comment:

Professor David Beck, Native American Studies-UM, expressed appreciation for considerations extended to the Tribes.

President Engstrom clarified that the item authorizes Commissioner Christian and President Engstrom to continue with the proposed agreement after all conditions are met.

Public Comment

Sally Peterson, Missoula resident, urged the board to reconsider the proposed location for the Missoula College. She discussed the 27-acre block located above a flood plain as the proposed location that has been researched. She noted that there are different approaches and definitions at play given this item. She stated that the golf course terrain, off South Avenue, has the potential to be developed and reap an enormous amount of money. She noted a petition signed by community members that support reconsideration of the location for the Missoula College. The following people also expressed their support against constructing the Missoula College on the golf course: Ian Lang, Jack Lyon, Anne Woodridge, Peggy Cain, David Werner, Mr. Holm, Paul Bolhan, and Rene' Mitchell, Louie Schneller, Joann Gray, Dennis Shae, Lee Clemenson, and Jan Holm, Harold Holm, James Gronkey. Fifty-four additional members of the public signed the attached form of support signifying their position on this item

and opted not to speak on its behalf.

Chair McLean asked that those who are in support of Sally Peterson's statements related to the UM Golf Course issue sign their name to be included in the official record in order to accommodate other members of the public and their views.

The following members of the public spoke on behalf of supporting the construction of the Missoula College onthe proposed South Campus: Zach Brown, Acea Holand, andLindsay Murdock. Fourteen members of the public signed the attached form of support signifying their position on this item and opted not to speak.

The meeting recessed at 5:15 PM.

Friday, November 16

The board reconvened at 9:00 AM.

Commissioner Christian acknowledged the absence of Ms. Lynette Brown due to the loss of her father and extended the sympathies, prayers, and well wishes from the Board. He thanked Ms. Amy DeMato and Ms. Winnie Strainer for assisting in the meeting during Lynette's absence.

Academic, Research, and Student Affairs Committee

CONSENT

Regent Thiel was excused from the November 16 board meeting.

a. Honorary Doctorate; MSU-Bozeman

Dr. Neil Moisey, Interim Deputy Commissioner, explained that individual nominated for this award is not aware of the nomination; therefore all discussion relating to this item have taken place in executive session. Regent Williams stated that the nominee has truly earned and deserves this commendation.

Regent Tuss moved approval of the consent item. Motion passed 4-0.

ACTION

a. MSU-Bozeman Core Themes; MSU-Bozeman *ITEM 157-2001+R1112*

Provost Martha Potvin, MSU-Bozeman, described the requirements associated with core themes and explained that these specific themes were submitted to creditors and MSU had received approval through that process. Next fall the creditors will conduct an audit to ensure that the resources exist in order to accomplish these goals. MSU-Bozeman's core themes relate directly to their mission of learning, educating students, creating knowledge that relates to discovery, and serving communities. She clarified that the request is for formal approval of these themes.

Regent Tuss moved approval of ITEM 157-2001-R1112. Motion passed 4-0.

b. Regents' Professor Nomination T. Douglas; MSU-Bozeman *ITEM 157-2011-R1112*

Regent Buchanan explained the context of these items is a way to recognize and thank outstanding professors.

President Cruzado shared the successes and accomplishments of Professor Douglas including his innovative and creative approach to his research in proteins. She mentioned the many patents, grants, and publication that Professor Douglas has secured and shared an email she received from a student expressing their excitement upon hearing about his nomination for this award. She stated that Professor Douglas has assisted and directly contributed to the overall good standing of MSU and science outreach. His innovative community involvement makes him an invaluable asset to MSU.

Regent Buchanan moved to approve ITEM 157-2011-R1112. Motion passed 4-0.

c. Regents' Professor Nomination M. Sexson; MSU-Bozeman *ITEM 157-2012-R1112*

President Cruzado expounded on Professor Sexson's life and service to the university; she described him as a highly valued member of the department. He is well known as a captivating and stimulating professor that motivates students to learn. Students state their experiences are not only thought provoking but life changing. She shared several of Professor Sexson's awards, published works, and outreach work over his years of service. Chancellor Groseth stated that in addition to multiple generations of faculty and students, administrators also view his work as inspirational.

Regent Buchanan moved approval of ITEM 157-2012-R1112. Motion passed 4-0.

INFORMATION

a. Level I Memorandum

Interim Deputy Commissioner Neil Moisey reminded attendees that the Level I Memorandum items are approved at the Commissioner's office. He briefly summarized the items including those programs moving into moratorium and termination.

b. MSU-Northern Video

Chancellor Limbaugh shared a video that compares the recent activities, renovations, and upgrades that have taken place at MSU-Northern. The video showcased the three projects: upgrades to resident halls, food court, and gymnasium upgrades. He stated that the resident hall upgrades were done as a volunteer effort through significant partnership with MSU and the community.

Degree Works

President Cruzado reminded the board of the continued efforts towards different ways to excel degree completion at MSU. She stated that Degree Works is an example of this work and the continued commitment.

Mr. Tony Campeau, Associate Registrar of Montana Tech, explained that Degree Works is the result of the CAO Advising Taskforce results. He explained that Degree Works is a tool in the ongoing dialogue between collegiate students and advisors. This tool focuses the communication that defines students' specific graduation requirements. This project clearly shows students how many credits are completed and their overall progress towards graduation. It shows, in detail, the core requirements and how students are meeting these in addition to their transfer work. Mr. Campeau noted that this is being used across the system but has not yet been rolled out to students, only advisors and counselors.

Mr. Steve York, OPI Representative briefly mentioned information about a grant from OPI to develop electronic transcripts for high school students in order to make this transfer easier.

c. MSU Strategic Plan

President Waded introduced the MSU strategic plan as it was a monumental effort that the institution has undergone for last 18 months.

Dr. Chris Fastnow, Interim Director of Planning and Analysis, explained that the core themes overlap very well with this plan. She described the highly collaborative and participatory process that involved many people. These efforts resulted in a high goal-setting document with strategies to meet the goals. It is being used as a budget and resource allocation tool which fits with one of the objectives that addresses alignment. The plan will aid in priority setting for areas of growth and potential change. The mission statement, which guides this plan, has already been approved. The vision statement is good depiction of MSU as an institution. The strategic planning committee also developed four core values to guide principles and further describe what we do: respect, integrity, student success, and excellence.

d. American Indian Minority Achievement

Associate Commissioner Tyler Trevor explained that the data reflects American Indian enrollment by campus and noted that the definition and method in which collecting race and ethnicity information changed and impacted the system data. Mr. Trevor presented the retention data specific to the American Indians on campuses within the Montana University System; this provides an idea about the flexibility of data that can be produced for specific student demographics and profiles. He remarked on the incremental progress that has been made to date, which directly related to an increase in the number of Native American students enrolled in the system. Associate

Commissioner Trevor noted that the data is available to show the overall trends occurring in Montana.

Regent McLean discussed growing dual enrollment opportunities including the American Indian Reservations; she asked that campuses make a considerable effort to ensure that these opportunities are extended to the student population on reservations.

e. Financial Literacy Efforts Update

Regent Buchanan reminded attendees that the financial literacy efforts are one of the Board's initiatives. He asked that time continue to be allotted for this item as it is a national concern and average debt loads continue to increase.

Ron Muffick, Director of Student Financial Services (SFS) recapped the Affordability Taskforce's three recommendations to the Board: to increase need-based aid, provide centralized default prevention services, and develop a coordinated and collaborative financial literacy program. The financial literacy component aims to strengthen the programs within the state in an effort to reduce student debt, while forming a coordinated, collaborative approach that targets at-risk students and addresses best practices. He noted that campuses will meet in one year to discuss best practices and to ultimately develop a coordinated, collaborative approach for the system with a consistent theme and message. Next steps include determining implementation details for each process and reviewing what has worked well and what can be done in future years.

Mr. Muffick discussed the need-based aid program and noted that this year a targeted, more precise method has been adopted. Efforts are underway to help alleviate student debt load while incentivizing students towards degree completion. He noted that some best practices include: a designated person at each campus for financial literacy; a campus-wide advisory board incorporating various offices across campuses to help; use of MUS material and information and; specific topics to be covered within the program such as budgeting, debt management, and loan forgiveness programs.

Discussion followed on: suggestion to consider absolving some debt load of student upon graduation; national efforts toward progressive accountability; graduation rate for PELL recipients is 29-30% resulting in a 70% of loss; and PELL grant legislation.

f. Veterans Workgroup Recommendations

Ron Muffick, Director of Student Financial Services, noted progress of the Veterans Workgroup toward ensuring that the MUS remains an active veteran-friendly system. The workgroup came up with three recommendations: to develop a coordinated system approach to all veteran policies and issues in conjunction with the Department of Labor and the Veterans Affairs office; a consistent campus level approach to best practices related to veteran services; develop a need-based aid program that supplements federal funding. Mr. Muffick referenced national best practices including providing a micro site specific for veterans to provide them with the necessary resources.

Commissioner Christian encouraged continued efforts, including support for a legislative initiative and commended the efforts that Senator Tester has provided related to veteran support.

g. Academic Program Reviews
- MSU-Bozeman
- MSU-Billings
- MSU-Northern
- Great Falls-MSU
- UM-Missoula
- UM-Western
- Helena College
- Montana Tech of The University of Montana

Regent Buchanan noted the board's intention to align programs to match strategic missions of the campuses. He reminded the Board that this process requires campuses to submit program reviews every seven years.

President Engstrom clarified that the program review process is different than the program alignment and prioritization. The seven year review is focused on the internal improvement and adjustment of these programs. He stated that UM-Missoula brings in outside experts to assist with the review and as a result have made significant changes. He stated that this process serves a valuable role in the ongoing quality assurance of what programs are doing and how they might improve. President Engstrom noted that this process serves as a valuable self-improvement tool to keep programs in touch with what is happening nationally and ensuring that the right curriculum is being offered.

President Cruzado noted that the campus intent of this process is to empower campuses to craft the expertise related to the programs. She recommended developing some common measures to furnish information to enable the Board to compare programs.

Regent McLean stated that a decision needs to be reached in conclusion to what the ultimate goal is, program review or prioritization. Until this decision is reached the campuses lack clear objectives and guidelines.

Regent Buchanan asked that Deputy Commissioner Moisey review the policy and its intent.

President Engstrom requested the Dr. Moisey work with the campuses and clearly communicate the expectations.

i. Update on Material Science PhD.

Provost Doug Abbott noted that the three campuses that are involved have been meeting to discuss and review the issue.

Board discussion followed on the following: what level of corporate commitment exists; what level of resources would be required from each of the collaborating campuses; and to what level of involvement of fundraising would be needed.

j. Update on Vet Med Taskforce

Regent Buchanan noted the possible inclusion of a claw-back or pay forward provision for students who receive these funds. The intent is to provide options for Legislative consideration.

Public Comment

Dr. Debra Yarbroe, President of the Montana Veterinarian Medical Association, Dr. Beth Blevins, veterinarian, Terry Todd, Montana Stockgrowers Association member, all spoke in support of the MSU vet med program.

k. Update on Accelerated Degrees/4-Year Degree Completion

Regent Buchanan noted that many students are already completing degrees in three years, due in part to dual credit opportunities.

Smart Buildings Initiative Action Plan *Zach Brown and Blake Bjornson*

Zach Brown, UM student, and Blake Bjornson, MSU student, noted the intent for this student led effort to capitalize on energy efficiency opportunities across the university system and ultimately find incentives and processes to use state dollars more efficiently. They shared several objectives associated with the plan including: controlling utility costs, addressing deferred maintenance issues, and reducing energy consumption. Steps associated with this initiative included: installation of smart metering equipment, develop metrics and set goals, implement conservation projects, and reinvesting savings. They noted the implementation process associated with these projects and that 5-10% cost savings can be achieved by changing behavior patterns. They plan to keep the Board informed as this project continues.

The board and Presidents Cruzado and Engstrom commended the students for their valuable efforts and recommendations.

Public Comment

Micah Neilson read an email from student Jay Moore expressing the Mr. Moore's support for the construction of Missoula College on the South Campus.

Rochelle Jeffrey, Jim Hamilton and Darrell Frideres spoke against construction the Missoula College at the proposed location.

Kiah Abbey, Jody Waites, Anita Green, Adrian Edwards, and Topher Williams spoke in support of adding sexual orientation and gender identity to the system nondiscrimination policy.

Liz Putnum voiced her support of the construction of the Missoula College at the proposed location site.

The meeting adjourned at 1:50 PM.

Approved by the Board of Regents on

_____	_____
Date	Date
_____	_____
Clayton T. Christian Commissioner of Higher Education and Secretary to the Board of Regents	Angela McLean Chair, Board of Regents

MONTANA STATE UNIVERSITY STRATEGIC PLAN 2012

MOUNTAINS & MINDS: LEARNERS AND LEADERS

MONTANA
STATE UNIVERSITY
Mountains & Minds

www.montana.edu/strategicplan

MOUNTAINS & MINDS: LEARNERS AND LEADERS

Introduction

Montana State University's Strategic plan sets overarching goals for the university and relies on every member of the MSU community—students, faculty, staff, alumni, and our community partners—to contribute to its success.

The plan is intended to guide and inform those making strategic decisions, without constraining the tactics that will help MSU achieve its goals. Each University unit is empowered to envision its future, develop its own paths to these goals, and contribute to the University's success in diverse and creative ways.

This plan caps 18 months of work by hundreds of constituents across the University and state. The Strategic Planning Committee and the Planning Council, as well as faculty, staff, student, and community members, carefully considered the Montana University System's strategic plan as well as the accreditation process to ensure that our goals and metrics move MSU forward.

Integrating learning, discovery and engagement

MONTANA
STATE UNIVERSITY
Mountains & Minds

Mission, Vision, Values

Mission Statement

Montana State University, the state's land-grant institution, educates students, creates knowledge and art, and serves communities by integrating learning, discovery and engagement.

Vision

Montana State University is as remarkable as its setting. Created as a land-grant institution, it is a welcoming, adventurous community of students, faculty and staff distinguished by its commitment to address the world's greatest challenges. The university energizes individuals to discover and pursue their aspirations. It inspires people to engage with the university to improve the human prospect through excellence in education, research, creativity and civic responsibility.

Values

Respect
Value respect for diversity in all its dimensions. Respect and civility foster collaboration and open communication, which in turn create productive local, regional, and global communities.

Integrity
Value honesty and professionalism in all work. Each individual is personally accountable for his/her work and behavior.

Student Success
Value all students and believe in creating an environment in which they can be successful and reach their full potential.

Excellence
Belief in challenging the MSU community in the pursuit of the highest quality that can be attained

Learning

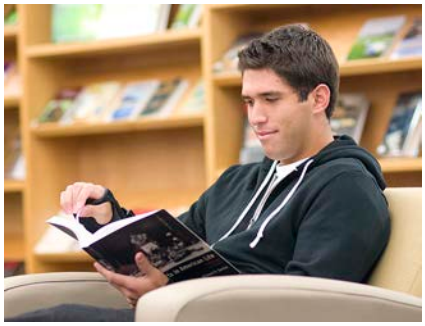
Since its inception, MSU has prepared graduates to meet the challenges of tomorrow. Successful, sought-after graduates are part of our legacy, and preparing students is central to our mission. MSU students learn in the classroom, lab, studio and field, through a hands-on, student-centered curriculum that integrates learning, discovery, and engagement in and out of the classroom.

Goal: MSU prepares students to graduate equipped for careers and further education.

Student learning sits at the heart of the university. MSU students make an impact on society, acquiring broad general education that allows them to make critical and ethical judgments, learning specialized knowledge to be successful in their careers or further study, and developing the skills to be active, informed citizens and leaders of Montana and the world. MSU prepares students not only to solve today's problems but also to rise to tomorrow's emerging challenges.

MSU excels in educating students with a variety of pedagogies and measured in a variety of ways. Every department has specific learning outcome assessments, and the general education curriculum, Core 2.0, uses course-level assessments to gauge student achievement. MSU graduates score well on national exams, place in competitive graduate programs, and find career success.

This goal pushes MSU to seek continuous improvement in student learning and to create innovative, compelling student learning opportunities that will increase retention and graduation rates. Combining rigorous assessment of student learning outcomes with nationally-normed measures of student success encourages MSU to build on its traditional excellence in teaching and learning.



Evidence of MSU's success in this arena is wide ranging:

- Undergraduate students regularly outperform their peers on a variety of professional exams, including the Fundamentals of Engineering, national nursing licensure exam (NCLEX-RN), Major Field Test in Business and Dietetics, and the Praxis II exams for education major, to name a few.
- MSU students' medical school acceptance rates are approximately 20 percent higher than the national average.
- MSU students frequently earn graduate scholarships and fellowships from federal granting agencies and a variety of other funding organizations that help student pursue graduate education at MSU and other prestigious institutions.
- At the graduate level, MSU students have received a variety of prestigious honors and awards, including Science to Achieve Results (STAR) Graduate Fellowships, Student Emmy Awards, Fulbright Fellowships and Jack Kent Cooke Graduate Arts Awards.

Learning *continued*

Objective L.1: Assess, and improve where needed, student learning of critical knowledge and skills.

Metric L.1.1: By 2019, MSU will achieve targets for mastery of disciplinary knowledge as developed in departmental learning assessment plans.

Technical note: *Every department at MSU defines learning outcomes for its major and minor programs at all degree levels and assesses the extent to which mastery of those objectives is met. These data currently reside at the departmental level and will need to be collected and reported centrally. Departments are currently required to file a report on how their assessment plans were reviewed and changed each year, and that report could become a vehicle for measuring this metric.*

Metric L.1.2: University measures of undergraduate student mastery of critical thinking, oral communication, written communication, quantitative reasoning, understanding of diversity and understanding of contemporary issues in science will be developed by 2014. Targets set in learning assessment plans will be met by 2019.

Technical note: *The Core Committee has been updating the Core learning outcomes for the past year in preparation for developing direct assessment plans for the Core. Assessing Core areas will start next year, with all Core areas assessed in the following two years.*

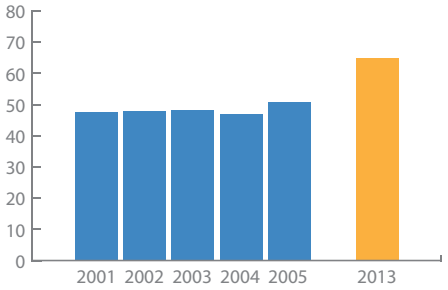
Objective L.2: Increase graduation rates at MSU.

Metric L.2.1: By 2019, the bachelor's graduation rate will increase from 51 percent to 65 percent as measured by the six-year graduation rate.

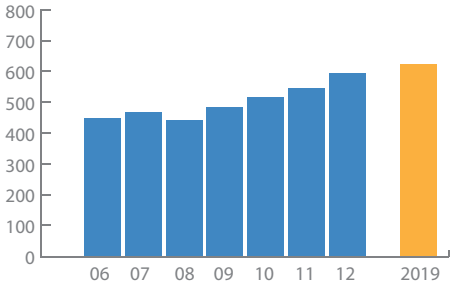
Technical note: *The most used measure of graduation rates at four-year universities is the proportion of the first-time, full-time freshmen cohort that completes a bachelor's degree within 150 percent of the traditional completion time. The graduation rate at Western land-grant institutions ranges between 32 percent and 67 percent. The average is 54 percent. For the incoming class of 2005, the graduation rate at MSU was 51 percent. Increasing this to 65 percent will place MSU among the top Western land-grants for graduation rates. The first-time, full-time freshmen graduation rate is available each fall at http://www.montana.edu/opa/facts/gradrate.html. Comparison figures are taken from each institution's Common Data Set (CDS), available on each school's website.*

Metric L.2.2: By 2019, the number of graduate degrees awarded will increase from 548 to 625 per year. The number of doctoral degrees awarded will increase from 56 to 80 per year.

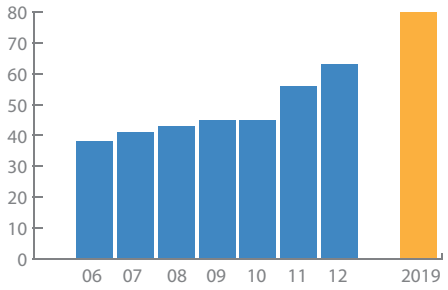
Technical note: *Growing to 625 represents a 15 percent increase. These figures are available online at http://www.montana.edu/opa/facts/quick.html#Degrees. The 2010-11 figure includes 491 masters, 1 specialist, and 56 doctoral degrees.*



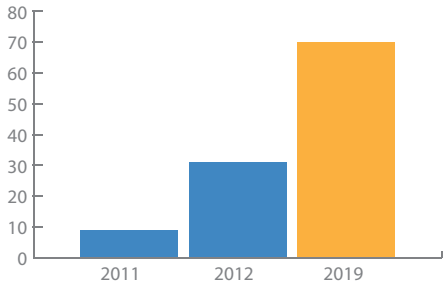
Metric L.2.1: *Percent of Incoming Students who Graduate Within Six Years*



Metric L.2.2: *Graduate Degrees Awarded*



Metric L.2.2: *Doctoral Degrees Awarded*



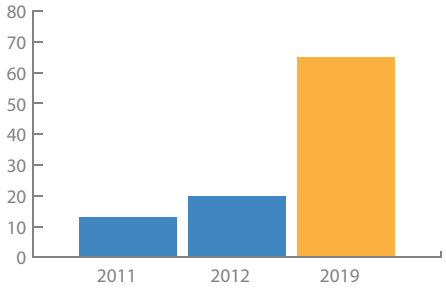
Metric L.2.3: *Associates Degrees Awarded*

Learning *continued*

Metric L.2.3: **By 2019, the number of associate degrees conferred will increase from 38 to 70 per year. Workforce certificates conferred will increase from 35 to 65 per year.**

Technical note: *MSU Gallatin College awarded 38 associate degrees and 35 workforce certificates (e.g. welding and bookkeeping) in 2012, only its second full year of operation as a college. As the current programs mature and new programs are added, the number of degrees awarded should nearly double. An increase to 70 associate degrees awarded represents approximately a 10 percent per year increase in each of the next six years.*

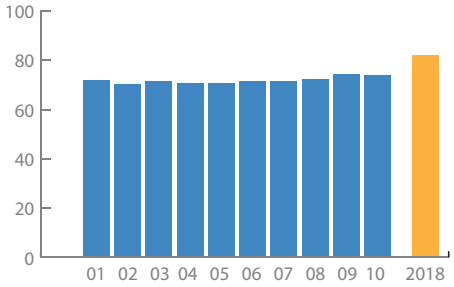
These figures are available online at http://www.montana.edu/opa/facts/quick.html#Degrees.



Metric L.2.3: *Certificates Awarded*

Metric L.2.4: **By 2019, the first time, full time freshmen fall-to-fall retention rate will increase from 74 percent to 82 percent.**

Technical note: *The most-used measure of retention at four-year universities is the proportion of the first-time, full-time freshmen cohort that enrolls in the second fall semester. The retention rate is a leading indicator of graduation rates, and therefore, provides a more immediate measure of student academic success. The average retention rate at Western land-grant institutions ranges between 71 percent and 84 percent. The average is 77 percent. For the fall 2010 freshman cohort, the fall-to-fall retention rate at MSU was 74 percent. Increasing this to 82 percent will move MSU into the top echelon of western land-grants for freshmen retention. The first-time, full-time freshmen retention rate is available each fall at http://www.montana.edu/opa/facts/gradrate.html. Comparison figures are taken from each institution's Common Data Set (CDS), available on each school's website. The MUS calculates a different retention rate that includes students who transfer between MUS institutions, but we will not have national benchmarks for that number.*



Metric L.2.4: *Percent of Incoming Students who Return for Second Year.*

Objective L.3: Increase job placement and further education rates.

Metric L.3.1: **By 2019, the percent of graduates employed full time in their field or in positions of their choosing will increase from an average of 62 percent to 70 percent.**

Technical note: *Graduates are surveyed one year after graduating from MSU. This figure represents the percent of all responding degree recipients who report full-time employment in the major field or field of their choosing. Nearly all (84 percent) MSU graduates are employed within a year of graduating, and 94 percent are employed, in graduate school, or otherwise not looking for work. These figures come from data in the Career Destinations Survey. The Career Destinations annual report shows all employed graduates, not just those employed in their field or in a position of their choosing.*

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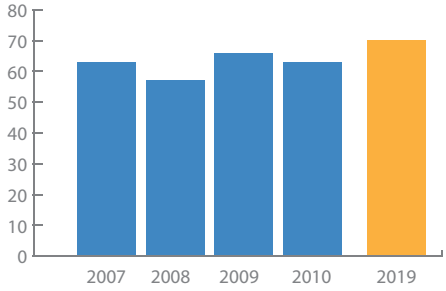
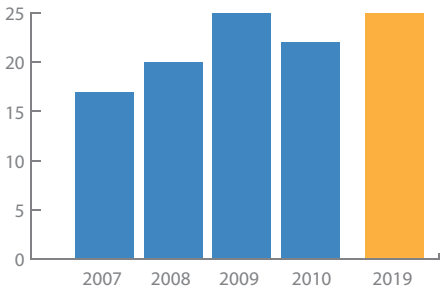


Metric L.3.1: *Percent of All Graduates Reporting Employment in Major or Field of Choosing*

Learning *continued*

Metric L.3.2: By 2019, the percent of graduates pursuing an advanced degree will increase from an average of 21 percent to 25 percent.

Technical note: *Graduates are surveyed one year after graduating from MSU. This figure represents the percent of all responding bachelor degree recipients reporting current enrollment in graduate school. For many students, graduate school follows immediately after earning an undergraduate degree. For other students, time in the work force or following other pursuits is both more appropriate for the student and more desirable for the graduate program, but it is difficult to track graduates once they have left the institution. Because there is variance in the desirable timing of graduate enrollment, MSU seeks only a modest growth in immediate enrollment. Over the last four graduating classes, this number has moved between 17 percent and 25 percent. These figures come from data in the Career Destinations Survey. Some in graduate school also report full-time employment and are counted in Metric 2.1.*



Metric L.3.2: *Percent of All BA/BS Recipients Reporting Enrollment in Graduate School*

Discovery

Innovative and significant research and creative activities distinguish the 21st century university and are a recognized hallmark of MSU, where faculty, students and staff all participate in the creation of knowledge and art.

Goal: MSU will raise its national and international prominence in research, creativity, innovation and scholarly achievement, and thereby fortify the university's standing as one of the nation's leading public research universities.

MSU's standing in the top tier of research institutions is hard won every day by the talented faculty, students, and staff who create knowledge and art, apply new insights to critical issues, and communicate the impacts of their discoveries throughout the world. These discoveries advance the state of the art, provide concrete improvements to daily life, enhance undergraduate and graduate education, drive economic development, and contribute to a thriving community.

MSU has been recognized for its research and creative contributions with a Carnegie Classification in the Research Universities/Very High Activity (RU/VH) class, yet it has one of the smallest faculties and student bodies in the 108-university group. MSU's reputation as a research and creative force must be solidified so that the best scholars continue to choose MSU to study, work, and address the tough problems of tomorrow.

Sustaining this prominence requires recruiting, retaining, and recognizing talented faculty, students, and staff, developing and maintaining the appropriate infrastructure, and training the next generation of scholars and artists. In achieving this goal, MSU continues to advance knowledge and improve society, while solidifying its reputation for excellence in research and creativity, enhancing its faculty's prominence and strengthening its graduate programs, particularly at the doctoral level.

MSU is recognized for excellence in research and creative activity:

- MSU's research expenditures regularly surpass $100 million annually ($112.3M for FY12).
- Faculty members at MSU achieve national and international reputations as influential leaders in their disciplines
- MSU faculty are tapped to serve on national boards and committee service- such as Farmer Mac, the Environmental Protection Agency, and the Industry Trade Advisory Committee on Small and Minority Business.

continued

Discovery *continued*

- MSU faculty, staff, and students are noticed in the nation's media, with appearances in Scientific American, Time, Popular Science, The New York Times, the Washington Post, and USA Today, and on MSNBC, NPR's Morning Edition, and the Discovery Channel, among other high-profile references.

Objective D.1: **Elevate the research excellence and recognition of MSU faculty.**

Metric D.1.1: **By 2019, MSU will attract and retain faculty of national and international recognition, including society fellows, artists with museum-level exhibitions, acclaimed writers and critics, and performers, filmmakers, and composers whose work engages audiences at leading venues.**

Technical note: *Data on retention and hires are available through central databases. However, information on prominence will need to be collected annually either by a departmental survey or in a faculty activity reporting system.*

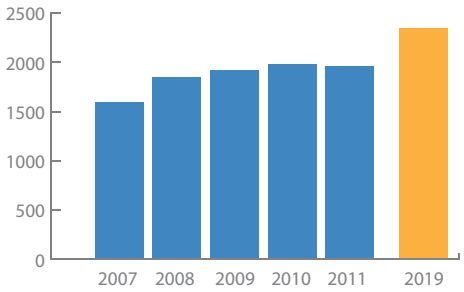
Metric D.1.2: **By 2019, national and international recognition of MSU faculty will improve as measured through accomplishments such as national awards, peer-reviewed publications, invited presentations, journal citations, fellowships, editorial positions, technology transfer activities, visiting appointments, scholars visiting MSU, occurrence of scholarly conferences on the MSU campus, membership on governmental policy committees, review panels, museum-level exhibitions, creative work that engages audiences at leading venues and placement of doctoral students.**

Technical note: *These data will need to be collected annually either by a departmental survey or in a faculty activity reporting system.*

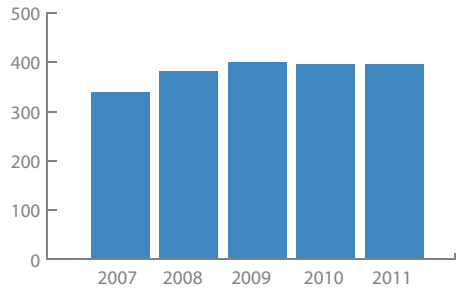
Metric D.1.3: **By 2019, MSU will improve its rank among Carnegie Classified Research Universities—Very High Research Activity (RU/VH) institutions on four measures: STEM R&D expenditures (current rank 94); Non-STEM R&D expenditures (rank 92); Number of science and engineering research staff (rank 96); and doctoral conferrals (rank 106).**

Technical note: *The Carnegie classification is determined by four aggregate measures and three per-capita measures of research activity. MSU ranks in the top 50 in each of the three per-capita measures, but in the lowest 20 on the four aggregate measures (because of our relatively small size). STEM is an acronym for Science, Technology, Engineering and Mathematics. These figures are compiled annually by the Carnegie Foundation and available at http://classifications.carnegiefoundation.org/resources/*

Objective D.2: **Enhance infrastructure in support of research, discovery and creative activities.**



Metric D.3.2: *Graduate Student Fall Headcount Enrollment*



Metric D.3.2: *Doctoral Student Fall Headcount Enrollment*

Discovery *continued*

Metric D.2.1: **By 2019, funding for capital projects from public and private sources will increase in order to provide state-of-the-art laboratory, studio and other space-related resources for MSU's growing community of scholars and artists.**

Technical note: *Annual capital expenditures by source are available in the accounting system. We have not routinely tracked those in a specific report, but that is possible.*

Metric D.2.2: **By 2019, MSU will increase grant-sponsored investment in centers, core facilities and resources to expand state-of-the-art tools, expertise and opportunities for research and creative activities.**

Technical note: *Annual capital expenditures by source are available in the accounting system. We have not routinely tracked those in a specific report, but that is possible.*

Objective D.3: Expand the scale, breadth and quality of doctoral education.

Metric D.3.1: **The percentage of faculty who advise doctoral students will increase by 2019.**

Technical note: *These data may be culled from dissertation committee rosters collected by the Graduate School or gathered in a faculty activity reporting system.*

Metric D.3.2: **The graduate student population will increase 20 percent to approximately 2,350 by 2019, with an emphasis on increasing doctoral student enrollment.**

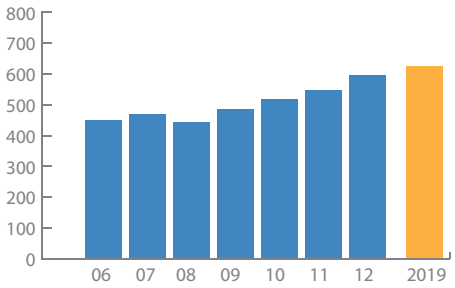
Technical note: *Fall 2011 headcount graduate student enrollment was 1965. This same metric appears in the Access section of this plan. This metric represents headcount enrollment and is consistent with Objective 2.3.1 in the MUS Strategic plan, which uses FTE enrollment. See http://mus.edu/data/StratPlan/13_Goal_2_Graduate_Education_2012.pdf.*

Metric D.3.3: **By 2019, the number of graduate degrees awarded will increase from 548 to 625 per year. Science, technology, engineering and mathematics (STEM) master's and doctoral degrees will increase to 325. All doctoral degrees awarded will increase from 56 to 80 per year.**

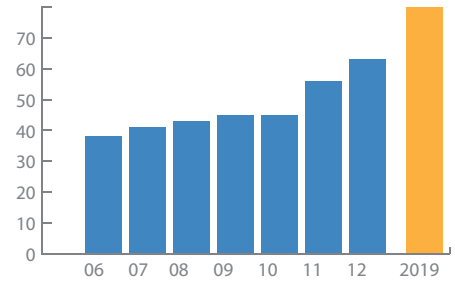
Technical note: *This metric is consistent with the overall and broad STEM definition in Metric 2.3.2 in the MUS Strategic Plan. See http://mus.edu/data/StratPlan/13_Goal_2_Graduate_Education_2012.pdf.*

Metric D.3.4: **The number and proportion of graduate students presenting at national and international meetings, publishing in eminent academic outlets, earning high-profile fellowships, securing prizes from national and international competitions and garnering prestigious first job placements will increase by 2019.**

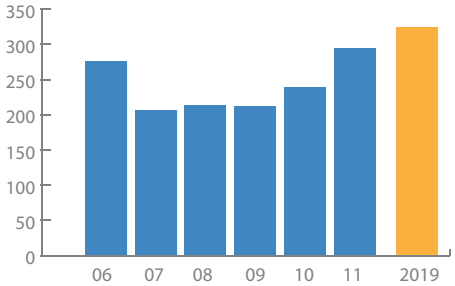
Technical note: *These data are currently available only at the departmental level, so this metric will require a new collection effort.*



Metric D.3.3: *Graduate Degrees Awarded*



Metric D.3.3: *Doctoral Degrees Awarded*



Metric D.3.3: *Graduate Degrees in STEM Fields Awarded*

Engagement

Engagement is the collaboration between MSU and its local, state, national, and global communities for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity (Carnegie Foundation, 2006). Engagement, a form of scholarship that bridges teaching, research and service, brings the university's intellectual resources to bear on societal needs (Association of Public and Land Grant University's Council on Engagement and Outreach (APLU CEO)).

Goal: Members of the Montana State University community will be leaders, scholars and engaged citizens of their local, national and global communities, working together with community partners to exchange and apply knowledge and resources to improve the human prospect.

Engagement improves scholarship, enhances the learning experience, and magnifies MSU's impact on external constituencies (APLU CEO). As a land-grant institution, MSU has a strong foundation of engagement with the local community, Montana, the nation and, indeed, the world. Members of the MSU community aspire to engage in diverse ways across many communities.

MSU faculty, staff, and students also actively participate in service and outreach. MSU's Extension is the model for this kind of interaction with the community. The emphasis in this plan on engagement in addition to service and outreach underscores the reciprocity that can emerge for the benefit of all participants.

With this goal, MSU renews its land-grant commitment: increasing opportunities for and participation in service, outreach, and engagement by all MSU community members, fostering cultural attunement to better understand and engage diverse communities here in Montana and around the world, and creating focused leadership development.

MSU is nationally recognized for enabling students to apply their knowledge for the improvement of society:

- Through a rigorous application process, MSU earned the Carnegie Foundation for the Advancement of Teaching's Community Engagement Classification, which acknowledges superior integration of learning and service to others. MSU is one of 173 public institutions and one of just 51 RU/VH institutions in this exclusive group.
- MSU received the prestigious C. Peter Magrath University Community Engagement Award in 2011 from the Association of Public and Land-grant Universities. The award recognizes a four-year public university that embraces outreach and community engagement.

continued

Engagement *continued*

- MSU's student chapter of Engineers Without Borders is a campus organization that enables students across a broad array of disciplines, not just engineering fields, to apply what they learn in the classroom to real-world problems, to developing solutions that change people's lives for the better. In addition, several students who participated in such opportunities have gone on to win Fulbright, Rhodes and Boren awards to further their education with the goal of helping individuals to improve the human prospect.
- In addition to seven Agricultural Research Centers, Montana State University Extension faculty and staff serve each of Montana's 56 counties and seven tribal offices across the state. The MSU Extension publications list includes dozens of free brochures covering topics as diverse as home gardening, energy efficiency, and family economics.

Objective E.1: Strategically increase service, outreach and engagement at MSU.

Metric E.1.1: By 2013, MSU will have a campus-wide coordinating infrastructure to support and advance engagement, outreach and service.

Technical note: *Development of this infrastructure is currently underway.*

Metric E.1.2: By 2019, the number of students, faculty and staff involved in outreach activities will increase, with particular attention to underserved areas and minority populations.

Technical note: *These data are not currently collected, though this can be accomplished via yearly self-reporting. Staff should be surveyed for current and potential new engagement activities. The Council on Leadership, Outreach and Engagement should be consulted.*

Metric E.1.3: By 2019, the number of students, faculty and staff involved in service activities will increase.

Technical note: *These data are not currently collected, though this can be accomplished via yearly self-reporting. The Council on Leadership, Outreach and Engagement should be consulted.*

Metric E.1.4: By 2019, all MSU students and faculty will have an engagement experience during their time at MSU.

Technical note: *These data are not currently collected. It would be easiest to track this for students if the experiences were transcripted. At least one committee is currently considering whether or not an "E" course designation should be added to the current curriculum. There are also very preliminary discussions of a Core 3.0. Faculty engagement is not yet systematically measured and requires self-reporting in a faculty activity reporting system.*

continued

Engagement *continued*

Metric E.1.5: By 2019, MSU staff will have increased opportunities for engagement experiences.

Technical Note: *These data are not currently collected, though this can be accomplished via yearly self-reporting.*

Metric E.1.6: By 2019, MSU will have increased the percentage of students actively participating in student organizations.

Technical note: *The number of groups registered with the Office of Activities and Engagement is reportable, but the number of students involved may not be.*

Objective E.2: MSU graduates will have global and multicultural understanding and experiences.

Metric E.2.1: By 2019, the percentage of MSU students participating in cross-cultural study, work or service experiences, incorporating both academic preparation and post-experience reflection, will double.

Technical note: *We will need a clear definition of what counts as "meaningful cross-cultural study". Diversity courses are required in the Core 2.0 curriculum. Additional service- and experiential-learning, credit-bearing activities are also measurable, however noncredit-bearing activity is not currently collected centrally.*

Objective E.3: MSU students, faculty and staff will have increased opportunities for leadership development.

Metric E.3.1: By 2019, the number of opportunities for leadership development and practice will have increased. Awareness of the opportunities will have also increased.

Technical Note: *The infrastructure to support this will need to exist. Data are not currently collected, though this can be accomplished via a combination of participation tracking (seminar attendance, committee membership, etc.), self-reporting and performance review input.*

Metric E.3.2: By 2019, the percentage of MSU students, faculty and staff participating in leadership development activities will increase.

Technical Note: *The infrastructure to support this will need to exist. Data are not currently collected though this can be accomplished via a combination of participation tracking (seminar attendance, committee membership, etc.), self-reporting and performance review input.*

Integration

Integrating learning, discovery, and engagement is the marquee feature of this MSU strategic plan. Traditionally, land-grant universities have educated students, conducted research and provided outreach to their communities and states. MSU has gone a step further by regularly integrating research and teaching, practicing service-learning, and combining research with outreach. With this plan, MSU now boldly defines the 21st century land-grant university as one where learning, discovery, and engagement merge seamlessly to the benefit of students, faculty, staff, and the wider community.

Goal: By integrating learning, discovery and engagement, and by working across disciplines, the MSU community will improve the world.

All members of the MSU community will have the opportunity to transcend the boundaries between learning, discovery, and engagement. This powerful integration will set MSU apart as a fully-formed land grant institution, committed to improving the world through education, research, and outreach, and by working across disciplinary boundaries to address the complex challenges facing the future.

MSU undergraduates integrate learning and discovery through hands-on research and creative activity required in the Core 2.0 curriculum. In addition, an increasing number of service-learning courses are being offered, and the number of students enrolling in these courses has increased. Graduate students integrate learning, discovery, and engagement within their professions through internships and practica, by engaging their discipline-based communities, and through new discoveries that have a demonstrated broader impact on society. Faculty and staff integrate their work by bringing new discoveries into the classroom, students into the lab, field, and studio, knowledge from one discipline to another, and research and creative products to the wider community.

This goal pushes MSU into the forefront in bridging these missions. Through substantial curricular experiences, students will not only acquire knowledge and experiences that will improve their individual futures, but they will also positively transform the community. By working with other scholars, students, and community partners across disciplinary boundaries, faculty and staff will magnify the impact of their research and creative activities. And when outreach involves students as well as faculty and staff, the full power of the institution to change lives is realized. MSU must recognize and reward success in integration across its land grant activities and across disciplines.

continued

Integration *continued*

MSU has demonstrated success in cross-disciplinary and integrated learning, discovery, and engagement:

- The Sustainable Foods and Bioenergy Systems program illustrates how, through integration, students engage with the content they learn in the classroom on a much deeper level when they participate in the operation of Townes Harvest, a community supported vegetable garden. Through the garden, students grow crops that help feed the local community, including donations to the local food bank and reduced-cost vegetables for senior citizens in nearby rural communities. The SFBS program leverages the strengths of the College of Agriculture and the College of Education, Health and Human Development, fostering interdisciplinary learning, discovery and community engagement.
- MSU's After School Partnership with the Bozeman Public Schools and the Greater Gallatin Valley United Way enables students in the Department of Education to take what they learn in the classroom directly to the community with after-school supplementary instruction, supervised teaching, performance-driven research, and other innovative opportunities to integrate learning, discovery, and engagement.
- Montana State University's Center for Native Health Partnerships creates community-based research projects and partnerships to improve Native American health. Projects include opportunities for Native students to conduct summer research projects on their home reservations.

Objective I.1: Increase the integration of learning, discovery and engagement.

Metric I.1.1: By 2019, all graduating students will have had a substantial curricular experience that integrates learning, discovery and engagement.

Technical note: *There are a variety of current programs that seem to fulfill this objective, but we don't currently collect (and transcript) them. This will be a new reporting requirement. If included in Core 3.0, this objective will be met for all bachelor degree recipients. There will be a need to develop measurements that demonstrate the integration of the three for graduate students.*

Metric I.1.2: By 2019, department role and scope documents will include substantial integration of learning, discovery and engagement.

Technical note: *Role and scope documents will undergo systematic review as part of the faculty collective bargaining agreement.*

Metric I.1.3: By 2019, community-based research projects will increase by 50 percent.

Technical note: *These data will need to be collected from a faculty activity reporting system.*

continued

Integration *continued*

Metric I.1.4: By 2019, faculty scholarly products with undergraduate and graduate students will increase 50 percent.

Technical note: *This is not currently collected systematically. Faculty will need to identify and report these. The information might come from a faculty activity reporting system*

Objective I.2: Increase work across disciplines.

Metric I.2.1: By 2019, the number of students completing interdisciplinary programs will increase 30 percent.

Technical note: *Degrees and certificates awarded in identified majors are reported here: http://www.montana.edu/opa/facts/GradsByYear.html*

Metric I.2.2: By 2019, MSU will increase interdisciplinary research and creative projects on campus.

Technical note: *This is not currently collected. Faculty will need to identify and report these. The information might come from a faculty activity reporting system*

Access

Land-grant universities were established by Congress in 1862 with the explicit intent to educate the sons and daughters of the industrial classes. MSU continues to fulfill that intent, believing that education serves society as a whole through job creation, stronger civic participation, and a reduction in the societal costs borne by a less educated populace. MSU does not turn away qualified Montanans and will continue to provide access to a quality education for all students to improve the state and the well-being of its citizens.

Goal: Montana State University is committed to widening access to higher education and ensuring equality of opportunity for all.

Providing access to higher education for a larger and more diverse population was the goal of the 1862 act that established land-grant universities. Today, broadening access to MSU means new opportunities for students from different places, representing different backgrounds and learning in different ways. Not only do individual students, who might not otherwise have educational opportunities, benefit when access is widened, but all students benefit from exposure to diversity of experiences and ideas. Numerous studies demonstrate that a diverse student body leads to important educational benefits such as the reduction of prejudice; growth in cognitive abilities, criti¬cal thinking skills and self-confidence; the promotion of civic engagement and skills needed for professional development and leadership; and improved curricula and classroom environments (American Educational Research Association).

MSU has made great strides in its ability to meet the educational needs of any qualified Montanan with the desire to pursue further education. Through the addition of new two-year and four-year degree programs and certifications, technologies that enable both synchronous and asynchronous learning for place-bound students, innovative course offerings that address contemporary demands, and increased financial aid coupled with low tuition, MSU has been able to open new doors for students.

MSU must continue to expand educational opportunities while protecting the excellent quality of education for which MSU is known. This goal couples enrollment growth across all sectors with targeted efforts to increase diversity for the benefit of all students.

MSU welcomes and nurtures students from across the state and around the globe:

- Over the last four years, MSU has increased resident student enrollment 9%—while the number of the state's high school graduates has declined.

continued

Access *continued*

- MSU's American Indian/Alaska Native students have a long history and a strong presence on campus. MSU set an enrollment record of 545 American Indian students in Fall 2011 and is poised to beat the record in 2012. Thanks to programs like Designing our Communities and Caring for our Own, American Indian students find support throughout their time at MSU, as well as an opportunity to integrate learning, discovery and engagement for their tribal communities.
- In 2012, MSU launched an online bachelor's degree completion program for students who have completed two years of college credits. Allowing students to complete degrees from anywhere in the world, the program offers a flexible, multi-disciplinary education appropriate for a variety of careers.
- MSU has been named a "Military Friendly School" by GI Jobs magazine, placing MSU in the top 15 percent of more than 7,000 colleges, universities and trade schools with programs that support veterans.
- International students bring a distinctive perspective to campus. MSU enrolls more than 500 international students from more than 70 countries, including more than 30 students from Turkey enrolled in a novel dual-degree, cross-institutional engineering program.
- In 2012-13, MSU will increase financial aid, particularly to Montana students, by $1.1 million.

Objective A.1: Educate more students while maintaining the quality of programs.

Metric A.1.1: By 2019, the number of Montana undergraduate students enrolled will surpass 9,900 (a 15 percent increase).

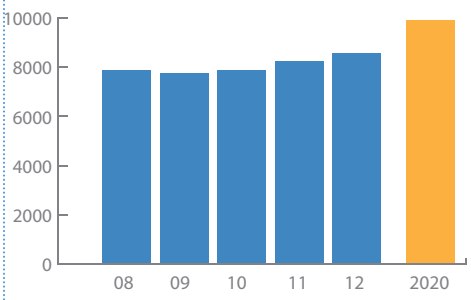
Technical note: *Fall 2011 headcount resident UG enrollment was nearly 8,600. A 15 percent increase will move that figure to 9,900. This target will require MSU to increase recruitment of recent high school graduates, increase opportunities for nontraditional Montana students and improve retention of those students once they enter MSU.*

Metric A.1.2: By 2019, the number of new transfer enrollments will increase 15 percent to approximately 1,100.

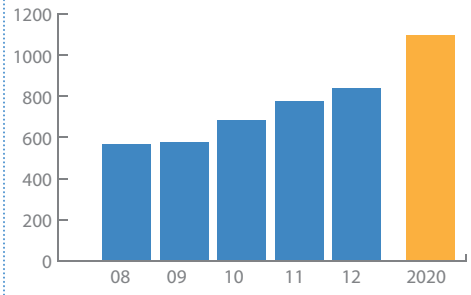
Technical note: *Available in Registrar Report A-B: http://www.montana.edu/opa/enrollment/index.html.*

Metric A.1.3: By 2019, the number of students enrolled in graduate programs will increase 20 percent to approximately 2,350.

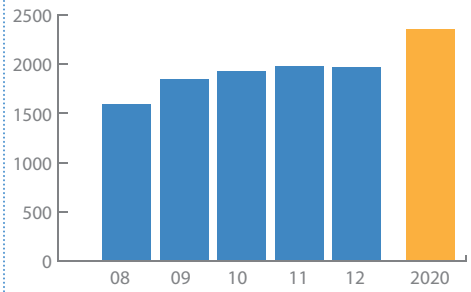
Technical note: *Fall 2011 headcount grad enrollment was 1,965. A 20 percent increase will move that figure to 2,358. This same metric is in the Discovery section of this plan. This metric is consistent with Objective 2.3.1 in the MUS Strategic plan http://mus.edu/data/StratPlan/13_Goal_2_Graduate_Education_2012.pdf.*



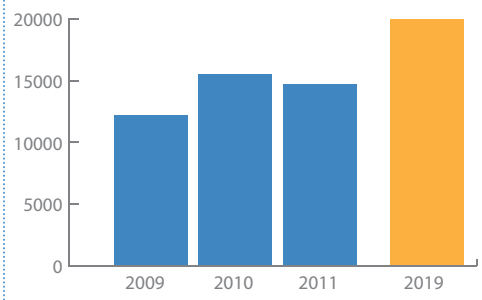
Metric A.1.1: *Montana Undergraduate Enrollment*



Metric A.1.2: *New Transfer Student Enrollment*



Metric A.1.3: *Graduate Student Enrollment*

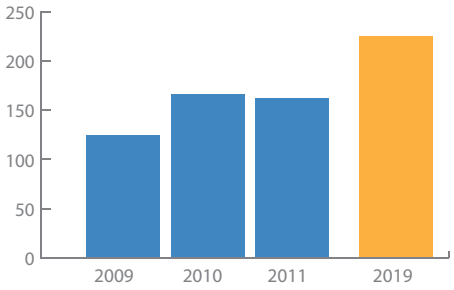


Metric A.1.4: *Online Credits Enrolled*

Access *continued*

Metric A.1.4: **By 2019, the number of credits and courses delivered online will increase 40 percent to approximately 20,000 credits and 225 courses.**

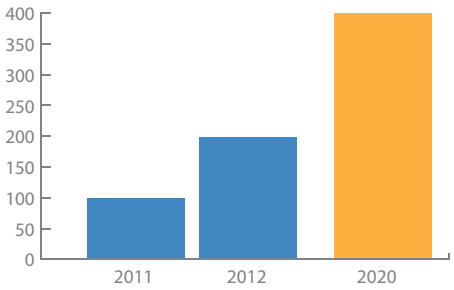
Technical note: *In FY2012, there were 14,755 credits and 484 sections in 162 courses delivered on-line by MSU. A 40 percent increase would take credits to 20,600 and courses to 226. That increase would represent more than 2,000 new enrollments in three-credit courses. These figures are reported annually in to the Office of the Commissioner for Higher Education.*



Metric A.1.4: *Online Courses*

Metric A.1.5: **By 2019, the number of students enrolled in Gallatin College degree and certificate programs will double to 400.**

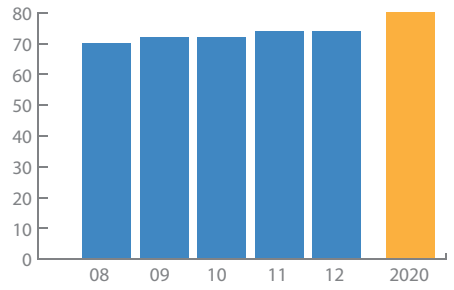
Technical note: *Key Performance Indicators, http://www.montana.edu/opa/kpi/index.html.*



Metric A.1.5: *Gallatin College Enrollment*

Metric A.1.6: **By 2019, the percentage of need met through scholarships and grants for students who were awarded any need-based aid will increase from 74 percent to 80 percent.**

Technical note: *Need-based aid includes federal, state and institutional scholarships and waivers, as well as work study. Need-based aid does not include loans. Increasing the percentage of aid met will likely mean a combination of minimizing costs to students and increasing financial aid funding sources and amounts. Common Data Set, Student Financial Aid, Bookmark H, Line I. http://www.montana.edu/opa/cdsindex.html*



Metric A.1.6: *Percent of Financial Need Met*

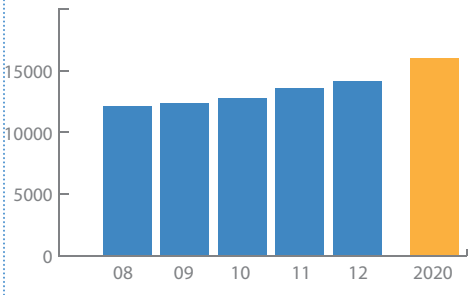
Metric A.1.7: **By 2019, the total student population will increase 15 percent to 16,000.**

Technical note: *Fall 2011 headcount enrollment was 14,153. Growing MSU's graduate student population, Gallatin College population and undergraduate retention rates as specified in this plan will bring total enrollment to approximately 16,350.*

Objective A.2: Diversify the student body

Metric A.2.1: **By 2019, the number of Native American students enrolled will increase to 800 (a 45 percent increase).**

Technical note: *Between 2010 and 2011, enrollments by Indian students increased 9 percent. This target represents a further increase of 45 percent over the next six years. This metric counts American citizen students identifying as American Indian/Alaska Native with or without any other racial or ethnic identifications. This metric is consistent with OCHE race and ethnicity definitions, but differs from federal race and ethnicity reporting.*



Metric A.1.7: *Total Headcount Enrollment*

Metric A.2.2: **By 2019, the number of other under-represented minority students enrolled will increase to 1300 (a 40 percent increase).**

Technical note: *MSU's ethnic and racial minorities currently make up less than 7 percent of the student population. The targeted increase will increase under-represented minority enrollment to more than 8 percent*

Access *continued*

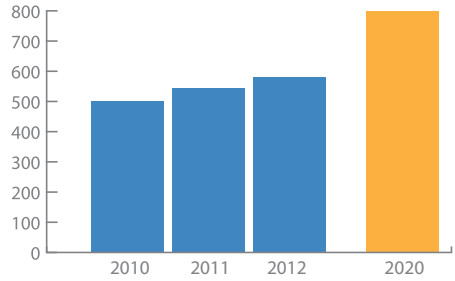
of the campus population. This metric counts American citizen students identifying as Hispanic, Asian, Black or Native Hawaiian with or without any other racial or ethnic identifications. This metric is consistent with OCHE race and ethnicity definitions, but differs from federal race and ethnicity reporting. Non-responses and international students are excluded.

Metric A.2.3: By 2019, the number of international students enrolled will increase to 660 (a 20 percent increase).

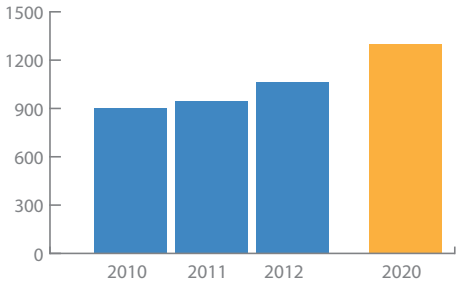
Technical note: *In Fall 2011, MSU enrolled 553 international students or 4 percent of the student body. This metric counts non-US citizens regularly enrolled in MSU credit-bearing courses. ACE Language Institute students or other short-term, non-credit program participants are not included. This definition is consistent with OCHE and federal definitions.*

Metric A.2.4: By 2019, the number of nontraditional students enrolled in undergraduate and Gallatin College programs will increase to 3,200 (a 20 percent increase).

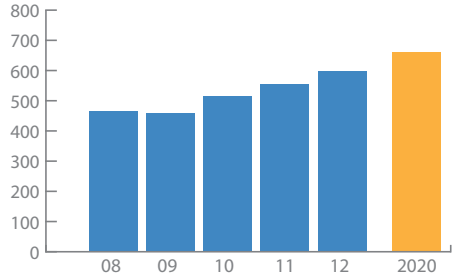
Technical note: *In Fall 2011, 2,655 students aged 24 and over enrolled as undergraduates at MSU, about 22 percent of the undergraduate population. Among newly admitted students, the proportion 24 and older is only 14 percent. To achieve this target, we will need to recruit and retain additional nontraditional students. Metric taken from fall enrollment reports*



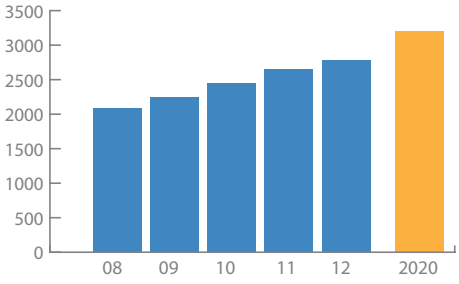
Metric A.2.1: *Native American Student Headcount Enrollment*



Metric A.2.2: *Other Under-Represented Ethnicity and Race Headcount Enrollment*



Metric A.2.3: *International Student Headcount Enrollment*



Metric A.2.4: *Nontraditional Age Student Headcount Enrollment*

Stewardship

As a public institution, MSU recognizes and honors its obligation to the many constituents who invest their time, financial resources, energy and support. MSU deeply values the public trust granted to it and is committed to continued good stewardship of its resources.

Goal: As steward of a land-grant institution, MSU will responsibly manage its human, physical, economic and environmental resources in an open and sustainable manner.

MSU's success rests squarely on the dedicated people who have efficiently transformed the investment of the students and their families, taxpayers, donors, and grantors into academic and support programs of the highest quality. Continued wise stewardship is crucial to retain and recruit excellent people, maintain and improve physical infrastructure, continue to effectively raise and efficiently invest funds, and minimize our impact on the Last Best Place.

MSU has efficiently and effectively stewarded its human, physical, financial, and environmental resources for many years. Moving forward requires appropriate investments coupled with careful management in each of those areas to maintain quality and make progress toward the learning, discovery, engagement, integration and access goals in this plan.

MSU is always striving for resource efficiency and operational transparency.

- MSU's reaccreditation by the Northwest Commission on Colleges and Universities in 2010 praised MSU for its efficient use of resources. The accreditation report was "complimentary of MSU faculty, staff and administration for being named to the Carnegie Foundation's highest classification for research universities on a budget that was much less than peer institutions," affirming and recognizing MSU's efficiency.
- MSU adds tremendous value to the state through its efficient use of resources and investments. An economic impact study conducted by the Bureau of Business Economic Research at the University of Montana revealed that the Bozeman campus returns $2.60 in tax revenue for every $1 invested.
- Current investments in energy efficiency renovations for auxiliary buildings will provide annual savings of $370,000 in utility costs for the 2 million sq. ft. of residence halls, student services buildings, athletic facilities, and other auxiliary buildings on campus.
- The student-run university recycling program started as a pilot project in the fall of 2008 and has more than doubled in size from 2009 to 2011. The program currently diverts approximately nine percent of campus waste from ending up in the landfill.

Stewardship *continued*

- MSU has extended the useful life of many campus buildings by investing in accessibility enhancements for the disabled, classroom renovations, and energy efficiency improvements.
- Launched in 2012, the OpenMSU initiative is a comprehensive process to understand and improve the internal operations, business practices, and employee morale of our campus service provider organizations.

Objective S.1: Human Resources. Attract, develop and retain the best faculty and staff to achieve the MSU mission.

Metric S.1.1: By 2019, increase the average MSU staff salary to the representative peer market average.

Technical note: *Comparative wage data are collected and analyzed periodically. Most classified and professional positions may be compared to local, state and national averages for similar positions as appropriate for the recruiting and compensation market. State-collected and higher-education specific wage data are used as benchmarks. CUPA-HR averages for doctoral-granting institutions are used for most professional and some classified positions that are recruited nationally or compensated similarly across institutions. Montana Department of Labor OES statistics are used for most classified positions, with county level estimates available in some cases. MUS and state policy effectively control starting wages for classified and most professional positions.*

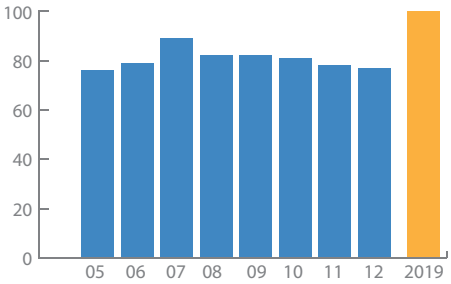
Metric S.1.2: By 2019, increase the average MSU faculty and administrative salary to at least 80 percent of the representative peer market average.

Technical Note: *Faculty and administrators tend to be recruited from regional/national pools and should be compared to regional/national peer sets. The average tenure-track faculty member's salary is currently 76 percent of the national average for the appropriate discipline and rank and the average administrator's salary is 69 percent of the national average for similar positions. Tenurable faculty and full-time adjuncts are typically compared to Oklahoma State University Faculty Salary Survey averages for public and land-grant RU/VH institutions within discipline and rank. The current CBA governs the use of these data for salary adjustments. Administrator salaries are compared to CUPA-HR Compensation Survey averages for all doctoral-granting participating institutions within similar job title/role definitions.*

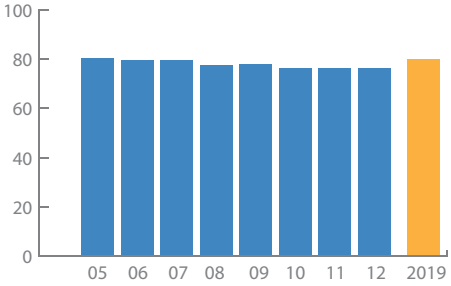
Metric S.1.3: By 2019, faculty and staff participation in professional development opportunities will increase 20 percent.

Technical note: *Participation is not currently reported anywhere, so this will require some additional reporting. Figures can be obtained for the most well-developed campus based programs like sabbaticals, BEST awards, DEAL and Leadership MSU.*

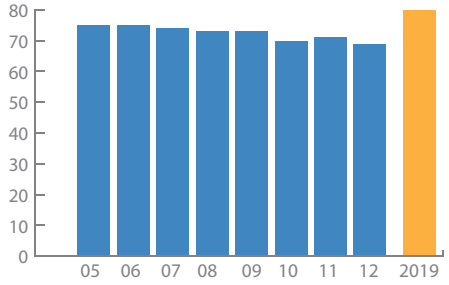
continued



Metric S.1.1: *MSU Average Staff Employee Percent of Peer Salaries (Mid-Level Classified and Professional Staff)*



Metric S.1.2: *MSU Average Faculty Percent of Peer Salaries*



Metric S.1.2: *MSU Average Administrator Percent of Peer Salaries*

Stewardship *continued*

Objective S.2: Physical Resources. Enhance aesthetic appeal and functional quality of MSU physical resources to support high quality learning, research and work environments.

Metric S.2.1: By 2019, all university classrooms and scheduled learning spaces will utilize current educational technologies and environments to meet the needs of a variety of educational experiences in order to enhance student learning outcomes.

Technical note: *Recognizing the value of diverse pedagogies and correlating improved student success with attributes of the learning environment, a tiered system of technology classification exists for ranking MSU classrooms, as defined in the MSU Classroom Design Guidelines: the greater the technological presence the higher the tier. The following illustrates the 2019 target percentages of learning spaces per tier: tier 3 or higher-10 percent; tier 2-70 percent; tier 1-10 percent; and tier 0–10 percent.*

Metric S.2.2: By 2019, MSU will increase accessibility to campus facilities, in accordance with the Campus ADA Transition.

Technical note: *Progress will be tracked by the ADA committee through periodic follow-up inventories.*

Metric S.2.3: By 2015, MSU will develop and implement a comprehensive master plan.

Objective S.3: Economic Resources. Increase and effectively allocate resources in support of the MSU Strategic Plan.

Metric S.3.1: By 2019, budgeting processes will reflect alignment with the MSU strategic plan.

Technical note: *MSU will align and justify budgets at all levels and from all sources with the goals in this strategic plan and the unit-level plans that will be developed to reach university goals. This includes the implementation of an allocation model by FY13 under the leadership of the Budget Council and documenting the alignment of new initiative funding with the MSU strategic plan.*

Metric S.3.2: Efficiency and effectiveness of mission support processes will show improvement by 2019.

Technical note: *The ongoing "Open MSU" initiative is laying the groundwork necessary to align resources with business service improvements. These ideas and administrative process improvements will continue to develop over time.*

Metric S.3.3: By 2019, fiscal resources will increase in support of the MSU Strategic Plan.

Technical note: *Explicit goals for external fundraising will not be announced until a campaign is ready to begin.*

Stewardship *continued*

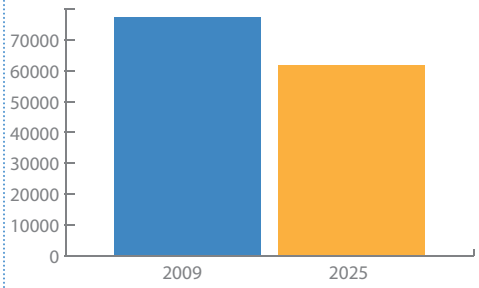
Objective S.4: **Environmental Resources. Promote sustainable stewardship and a culture of resource conservation at MSU.**

Metric S.4.1: **MSU will achieve a 20 percent reduction in Greenhouse Gas Emissions (GHG) from 2009 levels by 2025.**

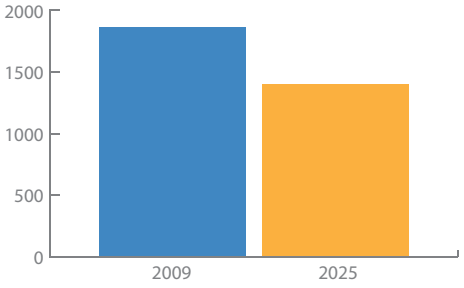
Technical note: *Goal taken from MSU's Climate Action Plan. Progress will be reported biannually to the American College & University Presidents Climate Commitment and to MSU's Campus Sustainability Advisory Council.*

Metric S.4.2: **MSU will achieve a 25 percent increase in waste diverted from landfill from 2010 levels by 2020, in addition to implementing campus-wide source reduction and responsible purchasing policies.**

Technical note: *Goal taken from MSU's Climate Action Plan. Progress will be reported biannually to MSU's Campus Sustainability Advisory Council.*



Metric S.4.1: *Reduction in Greenhouse Gas Emissions*



Metric S.4.2: *Reduction in waste sent to landfill*

Read the full plan at:
www.montana.edu/strategicplan

Email:
StrategicPlan@montana.edu

MONTANA
STATE UNIVERSITY
Mountains & Minds

Montana State University-Bozeman
Revenue and Expenditure Trends

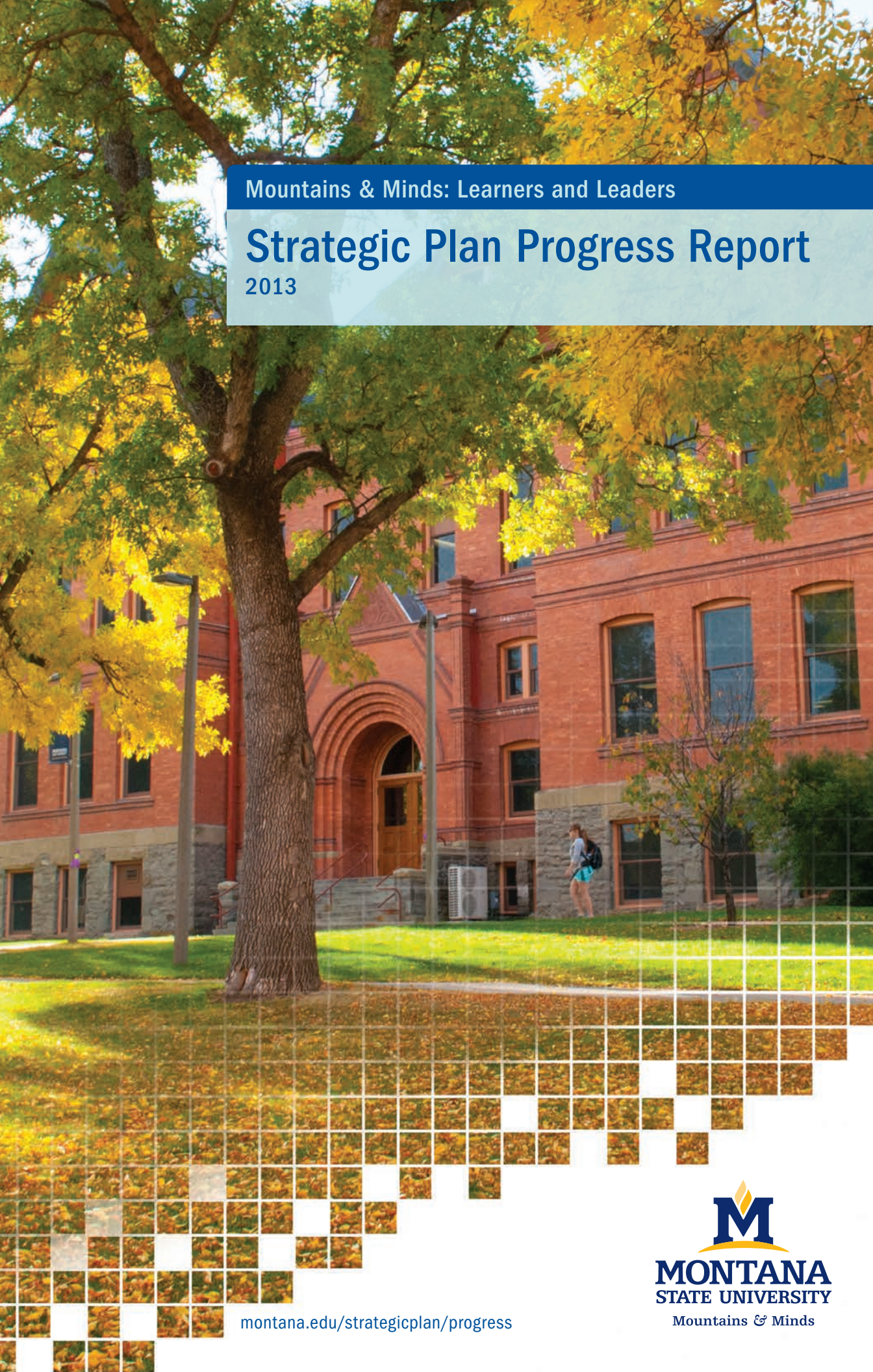
9-Aug-13

Revenues (BUD300-Actuals)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY2012	FY2013	Est. FY 2014
Tuition and Fees									
Registration Fee	788,016	783,593	778,076	801,086	817,633	861,349	898,162	931,191	951,057
Resident Tuition	31,628,100	33,818,586	33,509,742	33,412,901	35,228,798	37,953,162	40,906,686	42,590,321	42,737,407
Non-resident Tuition	25,656,446	27,624,450	29,945,844	31,508,759	34,214,365	38,956,392	42,715,983	50,297,787	53,902,978
WUE Tuition	2,528,259	2,432,427	2,024,742	2,160,660	2,460,357	3,086,514	3,645,049	4,810,283	5,064,528
Subtotal Tuition	**59,812,805**	**63,875,463**	**65,480,328**	**67,082,320**	**71,903,520**	**79,996,068**	**87,267,718**	**97,698,391**	**101,704,913**
% Change		6.79%	2.51%	2.45%	7.19%	11.25%	9.09%	11.95%	4.10%
Admissions Fees	235,635	255,955	279,411	308,489	387,860	371,179	441,523	451,107	400,000
Program Tuition & Fees	1,480,264	1,523,701	1,430,541	1,461,253	1,849,308	2,036,713	2,127,122	2,158,203	2,607,261
Total Tuition & Fees	**62,316,720**	**66,438,712**	**67,968,356**	**69,653,148**	**74,958,321**	**83,265,309**	**90,734,525**	**101,238,892**	**105,663,231**
% Change		6.61%	2.30%	2.48%	7.62%	11.08%	8.97%	11.58%	4.37%
State Allocations									
Hi-Ed General Fund Revenue	34,964,302	35,260,599	39,167,180	43,187,308	31,122,274	30,264,863	39,768,280	39,231,060	44,416,077
Hi-Ed Millage Revenue	4,696,538	4,799,696	6,058,190	5,633,650	6,411,309	5,956,544	5,718,123	6,171,375	6,105,039
HB645 Stimulus Revenue				-	12,598,258	12,325,241			
Total State Allocations	**39,660,840**	**40,060,295**	**45,225,370**	**48,820,958**	**50,131,841**	**48,546,648**	**45,486,403**	**45,402,435**	**50,521,116**
% Change		1.01%	12.89%	7.95%	2.69%	-3.16%	-6.30%	-0.18%	11.27%
Other Revenue	1,737,743	2,303,263	3,036,889	2,074,738	2,374,958	2,395,986	2,390,275	6,868,875	2,611,487
Waivers									
Grand Total (Excludes Waivers)	**101,977,560**	**106,499,007**	**113,193,726**	**118,474,106**	**125,090,162**	**131,811,957**	**136,220,928**	**146,641,327**	**156,184,347**
Adjusted Total	103,715,303	108,802,270	116,230,615	120,548,844	127,465,120	134,207,943	138,611,203	153,510,202	158,795,834
Tuition as % of Total	58.65%	59.98%	57.85%	56.62%	57.48%	60.69%	64.06%	66.62%	65.12%
Tuition & Fees as % of Total	61.11%	62.38%	60.05%	58.79%	59.92%	63.17%	66.61%	69.04%	67.65%
State Allocations as % of Total	38.89%	37.62%	39.95%	41.21%	40.08%	36.83%	33.39%	30.96%	32.35%
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Expenditures	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Est. FY 2014
Beginning Base Budget	95,811,036	103,319,088	111,001,479	114,849,483	120,010,502	124,839,904	126,944,234	131,159,351	139,952,751
Base Adjustments:									
Core 2.0 -- Provost	318,100								
Core 2.0 -- Student Success	30,000								
UD Nursing	197,199								
Student Teaching Placement	63,000								
Grad Program Enhancements	400,000	200,000							
Stewardship of Physical Assets	359,000								
IT O&M and Security	308,229								
Retention Initiatives	75,000								
Architecture Expansion			260,000		83,129				
Nursing Expansion			150,000						
Univ Development Investments			150,000						
Credit Card Costs			73,494	123,494					
Summer Session					100,000				
Streamline					85,000				
Emergency Notification					36,000				
English 121					28,630				
Base Reductions					(1,262,079)				
Provost Enrollment Growth							1,555,200	600,000	600,000
Provost Enrollment Growth (from add'l tuition revenue)							1,500,000	2,000,000	
Student Success Enr Growth							143,445		
Campus Safety (from add'l tuiiton revenue)								200,000	300,000
MT Resident Scholarships							500,000	500,000	1,365,000
Sustainability								30,000	70,000
Nopper Lease									61,948
Medical Lab Science ($102K to base; $22,557 to benefit pool)									124,557
University Police - Athletic Security Events									90,000
Athletics Pay Plan Adj's ($172,945 salary; $39,889 benefits)									212,834
Communications Services Photographer, Advertising, & Ops Incr									216,004
HR Position Adj's (Faculty & Labor Relations & Talent Acquisition)									171,244
Emergency Response Funding									130,000
Marching Band Expansion									40,000
USP student stipends (in lieu of waivers)									30,000
Subtotal	**1,750,528**	**200,000**	**633,494**	**123,494**	**(929,320)**	**-**	**3,698,645**	**3,330,000**	**3,411,587**

Salaries & Benefits:	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Est. FY 2014
Faculty	1,368,045	1,709,732	1,557,776	1,571,495	539,451	297,217	317,620	458,574	411,644
GTA/GRA	65,664	113,554	118,533	83,615	22,925				
Classified	770,400	775,405	803,619	801,302	218,110	77,676	51,840	51,840	
Admin/Prof	445,875	573,924	590,816	642,561	128,743				
Health Ins/Other Benefit Incrs	776,617	794,868	653,838	760,917	1,059,541	947,616			1,621,775
Retirement Actuarial Incrs	298,403		488,625	18,439					
Univ Police Salary Adjs					154,723				
$450 OTO					332,553				
Modest Investments in HR/Annualizations							1,936,532	3,042,119	3,231,791
Subtotal	**3,725,004**	**3,967,483**	**4,213,207**	**3,878,329**	**2,456,046**	**1,322,509**	**2,305,992**	**3,552,533**	**5,265,210**
Operations Inflation									
President	6,116	18,031	19,680	20,427	9,364				
Provost	160,052	164,052	179,181	178,922	85,925				
VP Admin & Finance	167,216	160,603	43,832	44,082	21,291				
VP Research	4,809	4,929	4,864	10,988	5,379				
VP Student Success	17,155	17,583	19,121	18,926	9,333				
Subtotal	**355,348**	**365,198**	**266,678**	**273,345**	**131,292**	**-**	**-**	**-**	**-**
Extra Sections	375,000								
Library Acquisitions	236,781	259,275	209,194	223,838	304,958	329,354	303,351	324,586	347,307
IT License Software Support	51,490	19,146	54,515	54,709	123,607	151,109	123,920	146,775	124,367
SABHRS/Audit/WW	35,035	(13,068)	(1,747)	(53,993)	45,797	(53,983)	60,443	(28,136)	67,373
Institutional Memberships									88,940
Utilities	437,555	74,520	15,262	148,401	348,978	116,866	14,285	87,981	(38,623)
New Space					141,926	292,632	140,129	16,631	
Off Campus Rent	13,847	11,508	23,012	37,909		9,500	48,366	(30,633)	11,516
Property/Liability Insurance	557,752	(31,465)	(312,246)	(124,859)	83,986	4,316	104,371	(32,236)	293,374
Other Operating Inflation									139,235
Subtotal	**1,707,460**	**319,916**	**(12,010)**	**286,005**	**1,049,252**	**849,794**	**794,865**	**484,968**	**1,033,489**
Base Expenditure Adjs Total	**7,538,340**	**4,852,597**	**5,101,369**	**4,561,173**	**2,707,270**	**2,172,303**	**6,799,502**	**7,367,501**	**9,710,286**
Revenues minus Base Expenses	**365,927**	**630,585**	**127,767**	**1,138,188**	**4,747,348**	**7,195,736**	**4,867,467**	**14,983,350**	**9,132,797**

Non-Base Adjustments:	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Est. FY 2014
Retention & Recruitment Costs	345,630	345,630	345,630	345,630	620,411	620,411	1,342,110	1,482,094	1,535,094
Accreditation Costs			30,000	125,000	125,000				
D2L					105,283	109,283	110,547	110,547	110,547
Program Fee Distributions								200,000	200,000
Enrollment Growth							600,000	600,000	600,000
Extended University/Study Abroad						821,162	908,296	1,428,108	1,418,038
Student Success Commitments						349,171	349,171	349,171	359,171
Nat Amer Indian Retention						800,000			
Dist Ed Faculty Development						500,000			
OTO Distribution to Provost						622,231			
OTO Distribution to Student Success						277,002	280,000	280,000	380,000
Strategic Investments (Recurring & OTO)							543,164	1,543,624	1,987,378
Advancing MSU Intitatives/Commitments								4,439,862	1,042,101
Subtotal	**345,630**	**345,630**	**375,630**	**470,630**	**850,694**	**4,099,260**	**4,133,288**	**10,433,406**	**7,632,329**
Reserves									
Retirement	49,893	(166,687)	(170,890)	605,980	262,313	4,426	119,720		
Stipends	420,758	180,703	(81,941)	(88,130)	119,627	909,287	314,872	1,364,312	
Scholarships	12,646	165,000	14,700	731,397	345,244	896,244	371,685	1,137,470	
Revolving	500,000	-	176,559	860,384	3,832,915	1,572,808		2,065,881	
Subtotal	**983,297**	**179,016**	**(61,572)**	**2,109,631**	**4,560,099**	**3,382,765**	**806,277**	**4,567,663**	**-**
Total Non-Base Transactions	**1,328,927**	**524,646**	**314,058**	**2,580,261**	**5,410,793**	**7,482,025**	**4,939,565**	**15,001,069**	**7,632,329**
Rev/Exp Balance + Non-Base	**(963,000)**	**105,939**	**(186,291)**	**(1,442,073)**	**(663,445)**	**(286,289)**	**(72,098)**	**(17,719)**	**1,500,468**
Contingency Commitments									1,482,065
									1,482,065
Rev/Exp/Congingency Balance									18,403



Mountains & Minds: Learners and Leaders

Strategic Plan Progress Report

2013

MONTANA STATE UNIVERSITY

Mountains & Minds

montana.edu/strategicplan/progress

Dear Colleague,

September marks the first anniversary of the adoption of Montana State University's bold strategic plan, *Mountains and Minds: Learners and Leaders*. As we celebrate this anniversary, we take a few moments to reflect on the progress we have already made in achieving our goals.

In the words of our vision statement, MSU is "a welcoming, adventurous community of students, faculty and staff distinguished by its commitment to address the world's greatest challenges." This community devoted more than 18 months to develop the plan with participation across the university and our local and statewide constituents.

Montana State University's Strategic Plan sets overarching goals for the university and relies on every member of the MSU community—students, faculty, staff, alumni, and our community partners—to contribute to its success.

The plan is intended to guide and inform those making strategic decisions, without constraining the tactics that will help MSU achieve its goals. Each University unit is empowered to envision its future, develop its own paths to these goals, and contribute to the University's success in diverse and creative ways. Indeed, as you will see in these pages, there has been exciting action across the University to achieve the plan's goals.

Celebrate our success with me as we look forward to a second year of progress.

Sincerely,

Waded Cruzado
President

Learning

MSU has always prepared graduates to meet the challenges of tomorrow. Successful, sought-after graduates are part of our legacy, and preparing students is central to our mission. MSU students learn in the classroom, lab, studio and field, through a hands-on, student-centered curriculum that integrates learning, discovery, and engagement in and out of the classroom.

Goal: MSU prepares students to graduate equipped for careers and further education.

Objective L.1: Assess, and improve where needed, student learning of critical knowledge and skills.

Objective L.2: Increase graduation rates at MSU.

Objective L.3: Increase job placement and further education rates.

Library Commons, a recently renovated space for optimal study.

Strategies

- Clarify, systematize and automate the process for assessment of learning outcomes
- Target success in key introductory level courses with supplemental instruction, flipped classrooms, co-curricular study options, resource centers and peer mentoring
- Dramatically expand tutoring services
- Bring support centers to the students through expanded hours, added locations and renovated facilities
- Improve and add to advising and student success programs

Budget alignment *(2012–13 investments unless otherwise noted)*

- $3.1 million in new tenure-track faculty lines in 2011–12 and 2012–13
- $1.4 million for additional class sections to serve growing enrollment in 2011–12 and 2012–13
- $25 million gift to fund construction of new Jake Jabs College of Business and Entrepreneurship and develop new college programs
- $150,000 to support strategic investment proposals for math, statistics, and chemistry instructional redesign and enhancement
- $455,000 for Office of Student Success programs like Smarty Cats tutoring, financial literacy and career coaching
- $1 million in renovated classroom and collaboration spaces
- $7 million investment in new suite-style residence hall to enhance retention
- $11 million investment in residence and dining hall upgrades since 2011

Successes

1 TEAL classroom successes—In support of its learning objectives, MSU conducted a pilot test of a technology-enhanced active learning, or TEAL, classroom in 2012-2013. The TEAL classroom in Gaines Hall enabled 240 undergraduate and graduate students from all eight of MSU's colleges to collaborate on assignments during class hours in a high-tech space equipped with flat screens and data ports for laptop computers. A key feature of TEAL classrooms is the "flipped" structure of the course so students read or view lecture materials outside of class and actively solve problems in class. This innovative new teaching method and incorporation of technology has demonstrated significant improvement. In the case of Statistics 216, for example, the TEAL classroom resulted in a 68 percent decrease in students having to retake the course.

2 Banner Year—Twenty-five MSU students won or earned honorable mentions for major scholarships and awards during the 2012-13 academic year:

- 1 Marshall Scholar
- 1 Rhodes Scholar
- 1 Newman Scholar
- 1 Fulbright Scholar
- 1 Udall Scholar
- 4 Goldwater Scholars
- 1 National Defense Science and Engineering Fellowship
- 7 National Science Foundation Graduate Research Fellowships

Bryan Vadheim, MSU's first Marshall Scholar

3 Success in Student Competitions—Student competitions are a way to validate MSU's academic excellence compared to other institutions across the country. In the past year MSU students excelled in a broad spectrum of competitions across many disciplines.

- Animal science students won the Western Region Academic Quadrathlon and placed third in the national competition.
- Business students took third in the John Ruffatto Business Plan competition.
- Finance students won first at the region's Chartered Financial Analysts Institute Research Challenge and advanced to the North American competition.
- Civil engineering students earned a first-place trophy at the estimating competition of Associated Schools of Construction.
- MSU engineering students recently won the Judges Innovation Award at NASA's fourth annual Lunabotics Mining Competition at the Kennedy Space Center.

The student-designed lunar excavator at the NASA competition

4 Investing in Students—MSU has invested in a variety of support programs that help students succeed. Students have access to free peer-tutoring through the **Smarty Cats** program, and during the 2012-2013 academic year 15,000 hours of tutoring were provided. Writing assistance is available in a renovated and expanded **Writing Center** and at a satellite center located in the library. **DegreeWorks**, a recently launched online tool, enables students to map out their college path and stay on track to graduate, giving advisors time to focus on individual counseling.

Renovated Writing Center, Wilson Hall

Discovery

Innovative and significant research and creative activities are a recognized hallmark of MSU, where faculty, students and staff all participate in the creation of knowledge and art.

Goal: MSU will raise its national and international prominence in research, creativity, innovation and scholarly achievement, and thereby fortify the university's standing as one of the nation's leading public research universities.

Objective D.1: Elevate the research excellence and recognition of MSU faculty.

Objective D.2: Enhance infrastructure in support of research, discovery and creative activities.

Objective D.3: Expand the scale, breadth and quality of doctoral education.

MSU's Department of Chemistry and Biochemistry is highly successful in grants and contracts.

Strategies

- Improve support for faculty active in research and creative activity through enhanced professional development, additional financial support and facilities improvements
- Increase the number of grant-active faculty through strengthened grant-writing support, expanded participation across disciplines, and opportunity hires
- Expand interdisciplinary efforts in research, creative activity and graduate education
- Increase capacity and strengthen recruiting for high quality graduate programs by improving the number and amount of graduate stipends, encouraging more faculty to advise doctoral students, and establishing timely pathways to degree completion

Budget alignment *(2012–13 investments unless otherwise noted)*

- $3.1 million in new tenure-track faculty lines since 2011 (also supports the Learning goal)
- $1.5 million in additional salary and research support to retain MSU's talented faculty
- $6.3 million in new faculty startup packages
- $325,000 allocated for 2013-14 for 18 new competitively awarded graduate assistantships, plus $170,000 awarded in strategic investment proposal process for enhanced graduate recruiting and 11 additional graduate assistantships in specific programs
- $80,000 for Native American graduate students in science and engineering

Successes

1 **Cooley Lab Renovation**—MSU's Cooley Laboratory, a hub for biomedical research, recently enjoyed a $14.9 million renovation that transformed the building into a state-of-the-art facility for research teams from the departments of microbiology, immunology and infectious diseases, and cell biology and neuroscience. Cooley is the first facility at MSU to earn a prestigious LEED Gold certification from the U.S. Green Building Council for energy-efficient design and construction.

2 **Faculty Excellence**—In the past year, MSU faculty members have earned many prestigious awards and fellowships in their respective fields. Four faculty fellows were named in their disciplines:

- Earth Sciences professor and director of the Montana Institute on Ecosystems **Cathy Whitlock** was named a Fellow of the American Association for the Advancement of Science (AAAS).
- Land Resources and Environmental Sciences research professor and director of the Montana Water Center **Duncan Patten** was named a Fellow of the Ecological Society of America (ESA).
- **Marcy Barge,** a professor in the Department of Mathematical Sciences, was named a Fellow of the American Mathematical Society (AMS).
- **Mark Young,** a professor in the Department of Plant Sciences and Plant Pathology, has been named a Fellow in the American Academy of Microbiology.

3 **Breakthrough Discoveries**—MSU research has led to many significant discoveries. As a result, MSU holds more than 200 active technology licenses, nearly 90 issued patents and 14 plant variety certificates.

4 **Growing Graduate Education**—In the past year MSU has made great strides in expanding its graduate and doctoral education.

- The Board of Regents approved a **Doctorate of Nursing Practice** and the **Professional Masters in Science and Engineering Management** programs with the first cohort of students enrolling in fall 2013.
- The Montana Legislature increased the capacity of the **WWAMI Medical Education Program** by 50 percent and supported the creation of a **Veterinary Medicine Program** that will enable 10 Montana students to complete their first year of veterinary school at MSU.
- MSU renewed its focus on **growing PhD programs in 2013 through strategic investments** in graduate assistantships, improvements in tracking and advising graduate students through key checkpoints, and a Graduate Education Summit.

Renovated Cooley Lab received LEED Gold certification.

AAAS Fellow Cathy Whitlock works with students in the lab.

Agriculture professor Barry Jacobsen patented a disease-fighting technology.

Engagement

Engagement is the collaboration between MSU and its local, state, national and global communities for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity (Carnegie Foundation, 2006). Engagement, a form of scholarship that bridges teaching, research and service, brings the university's intellectual resources to bear on societal needs (Association of Public and Land Grant University's Council on Engagement and Outreach, APLU CEO).

Goal: Members of the Montana State University community will be leaders, scholars and engaged citizens of their local, national and global communities, working together with community partners to exchange and apply knowledge and resources to improve the human prospect.

Objective E.1: Strategically increase service, outreach and engagement at MSU.

Objective E.2: MSU graduates will have global and multicultural understanding and experiences.

Objective E.3: MSU students, faculty and staff will have increased opportunities for leadership development.

Nursing students provide basic health care and education in Honduras.

Strategies

- Build support structure to connect MSU students, staff and faculty with engagement information and opportunities
- Emphasize engagement and outreach in faculty hiring and development; provide training and professional development opportunities for service learning and engagement
- Build on the success of and partner with MSU Extension, Museum of the Rockies and other externally-facing MSU programs
- Create platform for leadership development through Year of Engaged Leadership

Budget alignment *(2012–13 investments unless otherwise noted)*

- $250,000 in institutional support for MSU Extension and Montana Agricultural Experiment Station in 2012–13
- $300,000 in support of the Local Government Center
- $30,000 for the newly formed Outreach and Engagement Council

MSU student chapter of Engineers Without Borders is committed to bringing clean water to Kenya.

Successes

1. **Rural Leadership**—MSU Extension developed the Real Montana program to build a network of informed and engaged leaders to advance the agriculture and natural resource industries in Montana. Starting in fall 2013, a 20-member class of individuals from a broad range of industries across Montana will participate in a two-year cycle of classes designed to heighten knowledge and enhance skills of emerging leaders.

2. **Student-Athlete ALL Challenge**—MSU student athletes contributed 2700 hours of community service in 2012-13 while maintaining a team GPA of 3.15 or above for 13 consecutive semesters.

3. **Protecting and Preserving Fossils**—A team from MSU and the local community of Ekalaka, Montana, have breathed new life into old fossils at the Carter County Museum. Carter County is home to the Hell Creek geologic formation, the site of some of the most prized fossils in the world. Led by Nate Carroll, a paleontology graduate student who is also the acting curator of the museum, MSU volunteers have brought energy and expertise to the museums paleontology, cultural and horticulture displays and collections. Carroll has led the effort to get the museum approved as a federal repository of dinosaur fossils.

4. **Engineers Without Borders**—The MSU student chapter of Engineers Without Borders (EWB) works to design and build clean water systems in Kenyan villages. This allows more children to attend school rather than spending their day walking miles to retrieve clean water for their homes. EWB projects involve students from all disciplines including engineering, sociology, film and education.

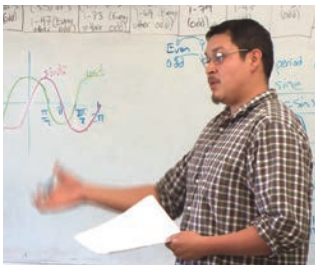
5. **Educational Enhancement**—Since 2011, almost 1,000 MSU education students have gained extra experience by tutoring and leading activities in after-school programs around Gallatin County. The "After School Partnership" enables students to provide service to the community and the opportunity to enhance and refine their skills.

6. **Grants for Graduate Nurses**—MSU's College of Nursing received the Advanced Education Nursing Traineeship grant from the U.S. Department of Health and Human Services' Health Resources and Services Administration, which would provide applicants up to $9,000 per year. Nursing graduates provide primary or mental health care in a variety of settings in rural underserved areas.

7. **Improving Education**—A collaborative program between MSU and Little Big Horn College has received a four-year grant from the U.S. Department of Education. The grant will enable the Indian Leadership Education and Development program, or I LEAD, to continue and expand the scope of its work. The program is designed to train American Indian educators and improve schools on and near Indian reservations in Montana and several neighboring states.

Graduate student Nate Carroll participates in a fossil dig.

Education students gain experience in area schools.



A student in the I LEAD program passes on new instructional methods to his peers.

Integration

Integrating learning, discovery and engagement is the marquee feature of this MSU strategic plan. Traditionally, land-grant universities have educated students, conducted research and provided outreach to their communities and states. MSU has gone a step further by regularly integrating research and teaching, practicing service-learning, and combining research with outreach. With this plan, MSU now boldly defines the 21st century land-grant university as one where learning, discovery and engagement merge seamlessly to the benefit of students, faculty, staff and the wider community.

Goal: By integrating learning, discovery and engagement, and by working across disciplines, the MSU community will improve the world.

Objective I.1: Increase the integration of learning, discovery and engagement.

Objective I.2: Increase work across disciplines.

Engineering students apply knowledge to design equipment that helps people with physical disabilities.

Strategies

- Align workload, promotion and tenure processes with strategic goals, including integration activities
- Strengthen support for student involvement in discovery and engagement through new and existing programs
- Highlight and build upon successes in interdisciplinary curriculum and research through interdisciplinary faculty hires, highlighted areas of research strengths, and new interdisciplinary academic programs

Budget alignment *(2012–13 investments unless otherwise noted)*

- $75,000 annually to support new faculty lines, beginning in 2013, in Sustainable Foods and Bioenergy Systems program
- $300,000 annually to support new faculty lines to begin in 2013 and 2014 addressing interdisciplinary field of Rural Health
- $100,000 annually to support new faculty line to begin in 2013 or 2014 in new interdisciplinary, multi-campus Materials Science program
- $147,000 College of Agriculture infrastructure investment in Horticulture Farm serving integrated teaching, research and outreach programs

Student-designed model of the historic Fort Custer

Successes

1 **One-of-a-Kind**—Based on the Carnegie Classification, MSU is one of only 108 colleges and universities in the nation (out of more than 4,600) that maintain "very high research activity." Of those 108, only 51 are also classified by Carnegie as having significant commitment to community engagement. Of those 51, MSU is the only institution whose Carnegie enrollment profile is "very high undergraduate." This means that MSU students have unique access to cutting-edge research and creative opportunities—and to an engaging educational experience that fully integrates learning, discovery and outreach.

2 **Celebrating Einstein**—MSU hosted one of the world's first events to celebrate the centennial of Einstein's theory of General Relativity. MSU, NASA, the National Science Foundation and the Montana Space Grant Consortium held a free public celebration and an international scientific workshop in Bozeman. The workshop drew approximately 60 scientists from the United States, Europe and Japan who work on relativity and experimental tests of Einstein's theories. The public celebration, titled "Celebrating Einstein," expressed the concepts of general relativity, black holes and gravitational waves through creative expressions including art, music compositions, dance (including one from Cirque du Soleil), film, architecture, education and physics.

3 **Everest Education Expedition**—The MSU Everest Education Expedition represented a seamless integration of learning, research and outreach. MSU geology professor Dave Lageson, graduate student Travis Corthouts, and a team of The North Face global athletes, led by Conrad Anker, a Bozeman resident, traveled to Mount Everest to study glacial ecology and other research areas. During the expedition, the team collected data and shared their adventure and scientific research with more than 1,000 students in classrooms across Montana. Suzi Taylor in Extended University received a national CASE Gold award for the accompanying curriculum.

4 **Towne's Harvest Garden**—Towne's Harvest is a campus-based community supported agriculture garden that is run primarily by students. The garden is closely affiliated with the sustainable foods and bioenergy systems program and enables students to see the entire cycle from cultivation to consumption. Produce is sold to community members or donated to the local food bank.

5 **Community Design Center**—Using photographs, drawings, maps and written descriptions students in MSU's School of Architecture Community Design Center created a replica of the historic Fort Custer. The model is among several displays created by the students for the new Centennial Gallery of the Big Horn County Historical Museum and Visitors Center in Hardin, Montana, which opened during Hardin's 100th anniversary celebration.

The black (w)hole art installation at the Celebrating Einstein festival.

Student Travis Courtouts sends a dispatch to Montana students from Everest.

The Towne's Harvest produce stand on the MSU campus.

Access

Land-grant universities were established by Congress in 1862 with the explicit intent to educate the sons and daughters of the industrial classes. MSU continues to fulfill that intent, believing that education serves society as a whole through job creation, stronger civic participation, and a reduction in the societal costs borne by a less educated populace. MSU does not turn away qualified Montanans and will continue to provide access to a quality education for all students to improve the state and the well-being of its citizens.

Goal: Montana State University is committed to widening access to higher education and ensuring equality of opportunity for all.

Objective A.1: Educate more students while maintaining the quality of programs.

Objective A.2: Diversify the student body.

Gallatin College MSU helps individuals prepare for a career change or transition to college.

Strategies

- Enhance financial aid offerings and limit cost increases so that MSU remains affordable
- Address growing student debt issues through financial literacy programs, advising, appropriate course loads and career coaching
- Expand course and program offerings, delivery times and instructional methods to meet the needs of a more diverse student audience
- Actively recruit from diverse student pools and support students with specific needs once enrolled at MSU, e.g. nontraditional aged students, veterans and American Indian students

Budget alignment *(2012–13 investments unless otherwise noted)*

- $135,000 in new Native American student recruitment, retention and success strategies funded through a competitive process through 2014
- $400,000 to support new and growing Gallatin College academic and workforce programs
- $500,000 over the last three years to support new online programs, online degree completion and Core at Night, to serve distant and working populations
- $1 million in institutional support of veteran students through the Yellow Ribbon program
- $1 million increase in institutional scholarships over the previous year

Condoleezza Rice speaks with MSU veteran students.

Successes

1 **Online Degree Completion**—A variety of new online courses that can be taken individually or as part of MSU's new online degree completion program were recently announced. The program, which offers a bachelor of arts degree in liberal studies, is designed for graduates of two year programs; anyone who has completed two years of college; military personnel and veterans; people who need a bachelor's degree to advance on the job; and anyone interested in the broad-based education of a liberal studies degree.

2 **Women in STEM**—MSU received a $3.4 million grant to enhance participation of women faculty members by improving the work environment for the entire campus. The five-year ADVANCE Institutional Transformation Grant from the National Science Foundation focuses on ways to broaden the participation of women in the STEM fields of science, technology, engineering and mathematics and social and behavioral sciences. Those are two areas where MSU women are outnumbered by men.

3 **American Indian recruitment, retention and success**—MSU continues to enhance and build on successful Native American student-focused programs with new scholarships and activities. Native American student enrollment reached an all-time high in fall 2012, growing faster than the student population as a whole.

- MSU has strengthened partnerships with Montana's tribal colleges through programs like American Indian Research Opportunities, and student support programs like Engineering's Designing Our Communities, Early Childhood Education Distance Partnership, and Nursing's Caring for Our Own Program.
- MSU has secured external funding for the BRIDGES, McNair Scholars and Indian Leadership Education and Development Programs. In addition Native American graduate students will continue to be supported through the Sloan Indigenous Scholars program and the Washington Foundation.

4 **Veteran Friendly**—MSU's Veteran Center celebrated its first anniversary in 2012, coinciding with a 6 percent increase in veteran student enrollment and the first campus-wide celebration of Veterans Week, which culminated in a moving halftime ceremony at the Bobcat Football game. With vast experience as leaders and public servants, MSU student veterans actively contribute to engagement and leadership development at MSU as well increasing the visibility of nontraditional aged students. In recognition of the great work of MSU's veteran center staff, MSU has been named a veteran-friendly school, and the Veterans Center director regularly serves on regional and statewide task forces.

5 **Enrollment Increases**—MSU set a new enrollment record in fall 2012 with 14,660 students attending classes at the Bozeman campus. Subpopulations of students that increased include: undergraduate, freshman, Native American, veteran, out-of-state and Gallatin College. In addition, MSU attracted 126 of the 205 Montana University System Honors Scholarship recipients.

Chemistry professor Valerie Copie mentors a student.

MSU's Early Childhood Education Distance Partnership Program helps tribal communities throughout Montana.

Stewardship

As a public institution, MSU recognizes and honors its obligation to the many constituents who invest their time, financial resources, energy and support. MSU deeply values the public trust granted to it and is committed to continued good stewardship of its resources.

Goal: As steward of a land-grant institution, MSU will responsibly manage its human, physical, economic and environmental resources in an open and sustainable manner.

Objective S.1: Human Resources. Attract, develop and retain the best faculty and staff to achieve the MSU mission.

Objective S.2: Physical Resources. Enhance aesthetic appeal and functional quality of MSU physical resources to support high quality learning, research and work environments.

Objective S.3: Economic Resources. Increase and effectively allocate resources in support of the MSU Strategic Plan.

Objective S.4: Environmental Resources. Promote sustainable stewardship and a culture of resource conservation at MSU.

Sustainability is a priority on the MSU campus.

Strategies

- Develop our human resources through improved salaries and training opportunities
- Improve administrative processes to make MSU more effective and enhance the work environment
- Invest in functional and aesthetic improvements to our physical infrastructure
- Invest in energy saving building upgrades

Budget alignment *(2012–13 investments unless otherwise noted)*

- $5 million in employee raises outside the state pay plan with approval from the Board of Regents Regents in 2011-12 and 2012-13
- $300,000 in additional merit and market increases for faculty
- $1.5 million in additional salary and research support committed to retain high achieving faculty (also supports the Discovery goal)
- $100,000 investment in professional development
- $335,000 investments in OpenMSU to improve administrative support processes
- $2 million investments in technological, functional and aesthetic upgrades to classrooms, collaboration spaces
- $100,000 in support of the Office of Sustainability
- $8.6 million investment in efficiency program to reduce energy, water and operations waste

MSU is a Tree Campus USA.

Successes

1 **Jabs Hall**—MSU broke ground on the new Jabs Hall, future home of the Jake Jabs College of Business and Entrepreneurship. The new building, made possible by a generous $25 million gift from MSU alumnus Jake Jabs, will feature an emphasis on sustainability, flexible classroom and workspace, and natural light, addressing stewardship of our physical spaces as well as the environment.

2 **Top Environmental Program**—MSU's Sustainable Food and Bioenergy Systems program has been named one of the 10 best college environmental programs in the United States by Mother Nature Network. Mother Nature Network, or MNN, recognized the colleges and universities for incorporating sustainability into the curriculum. MNN is an online network that promotes environmental and social responsibility. Other universities with programs in the top 10 include Cornell University, Duke University, Arizona State University and Yale University.

3 **OpenMSU**—During the 2012-13 academic year, OpenMSU, a comprehensive effort to make work at MSU more effective and more satisfying, moved from data gathering and recommendations to implementation on several projects like electronic document management and workflow, improved personnel recruitment processes, and streamlined purchasing.

4 **Tree Campus USA designation**—The Arbor Day Foundation has named Montana State University a 2012 Tree Campus USA in honor of its commitment to effective campus forest management and for engaging staff and students in conservation goals. MSU achieved the designation by meeting Tree Campus USA's five standards, which include maintaining a tree advisory committee, a campus tree-care plan, dedicated annual expenditures toward trees, an Arbor Day observance and student service-learning projects.

5 **Promoting Pollution Prevention**—In 2013, 22 organizations received Ecostar Pollution Prevention awards, which are coordinated by MSU Extension's Housing and Environmental Health Program and funded in part by the EPA. The 22 EcoStar award winners represent 17 communities from across the state. The Ecostar award program recognizes small businesses, institutions and nonprofits that are leading efforts in Montana to voluntarily focus on pollution prevention and create a more environmentally sustainable model for business and education.

6 **Sustainable 16**—MSU is one of 16 universities and colleges selected for the "Sustainable 16" in the second annual Environmental March Madness Tournament. Contest organizers at Enviance, the GreenBiz Group and Qualtrics selected institutions that demonstrated excellence in environmental degree programs and curriculum, environmental opportunities for students and campus sustainability efforts.

Construction is underway with Jabs Hall scheduled to open in fall 2015.

Students in Sustainable Foods study all aspects from crops to consumption.

OpenMSU helps create a more satisfying work environment.

Selected Plan Metrics

Learning		2009-10	2010-11	2011-12	2012-13
Objective L.2: Increase graduation rates at MSU.					
L.2.1	Bachelor Graduation Rate (entering cohort from 6 years prior)	48%	47%	51%	49%
L.2.3	Workforce Certificates and Associate Degrees Awarded (Summer, Fall, Spring)*		22	51	66
L.2.4	FTFTF Retention Rate (entering cohort from prior Fall)	72%	74%	74%	74%
Objective L.3: Increase job placement and further education rates.					
L.3.1	Employed in Major Field or Position of Choice (one year post-grad)	57%	66%	63%	64%
L.3.2	Graduate School Enrollment (one year post-grad)	20%	25%	22%	18%

** Gallatin College began awarding degrees and certificates in 2010-11*

Discovery		2009-10	2010-11	2011-12	2012-13
Objective D.3: Expand the scale, breadth and quality of doctoral education.					
D.3.2	Graduate student headcount	1,924	1,980	1,965	1,888
D.3.2	Doctoral student headcount	401	396	397	420
D.3.3	Graduate Degrees Awarded (Summer, Fall, Spring)	519	548	591	557
D.3.3	Doctoral Degrees Awarded (Summer, Fall, Spring)	45	56	53	49

Access		2009-10	2010-11	2011-12	2012-13
Objective A.1: **Educate more students while maintaining the quality of programs.**					
A.1.1	Montana Undergrad Headcount Enrollment (Fall)	7,893	8,240	8,586	8,680
A.1.2	New Transfer Students (Summer and Fall)	801	913	973	988
A.1.5	Gallatin College Headcount Enrollment (Fall)		100	199	228
A.1.6	Percent Financial Need Met (prior AY)	72%	74%	74%	72%
A.1.7	Total Headcount Enrollment (Fall)	12,764	13,559	14,153	14,660
Objective A 2: **Diversify the student body.**					
A.2.1	Native American Student Headcount Enrollment (Fall)‡		500	545	580
A.2.2	Other Under-Represented Ethnicity and Race Headcount Enrollment (Fall)‡		904	947	1,065
A.2.3	International Student Headcount Enrollment (Fall)	460	516	553	599
A.2.4	Nontraditional Age Student Headcount Enrollment (Fall)	2,247	2,447	2,655	2,781

‡ *Federal race and ethnicity cateogries changed in 2010, making historic comparisons impossible*

Stewardship		2009-10	2010-11	2011-12	2012-13
Objective S.2: **Physical** Resources. Enhance aesthetic appeal and functional quality of MSU physical resources to support high quality learning, research and work environments.					
S.2.1	Percent of classrooms with technology rated tier 3 or above *(Recorded periodically)*	2%			2%
S.2.1	Percent of classrooms with technology rated tier 2 *(Recorded periodically)*	58%			70%
Objective S.4: **Environmental Resources. Promote sustainable stewardship and a culture of resource conservation at MSU.**					
S.4.1	Greenhouse Gas Emissions (Montana) *(Not yet measured for 2012-13)*	77,375		71,287	
S.4.2	Diverted waste from landfill *(Not yet measured for 2012-13)*	6.0%	7.2%	9.5%	

MSU by the Numbers

Enrollment

Fall 2012 Undergraduate Headcount Enrollment	12,772
Fall 2012 Graduate Headcount Enrollment	1,888

Faculty

Fall 2012 Full-time Faculty	580
Fall 2012 Part-time Faculty	337
Student to Faculty Ratio	17:1

Degrees

2012-13 Certificates and Associate Degrees Awarded	66
2012-13 Bachelors Degrees Awarded	1,881
2012-13 Master Degrees Awarded	508
2012-13 Doctoral Degrees Awarded	49

Fall 2012 Enrollment by College

	Undergrad	*Graduate*	*Total*
Agriculture	859	148	1,007
Arts & Architecture	1,235	113	1,348
Business	1,151	46	1,197
Education & HHD	1,437	365	1,802
Engineering	2,581	187	2,768
Graduate School	0	280	280
Letters & Science	3,066	483	3,549
Nursing	884	83	967
Gallatin College	228	0	228
University College	1,331	0	1,331
Other	0	183	183
Total	12,772	1,888	14,660

Student enrollment continues to grow.

Fall 2012 Enrollment by Gender

Female	6837
Male	7823

Fall 2012 Enrollment by Race and Ethnicity *(individuals may be counted more than once if self-identified with more than one race or ethnicity)*

American Indian/Alaska Native	580
Asian	270
Black/African American	172
Hispanic	431
Native Hawaiian/Pacific Islander	61
White	13146
International	599
Unknown/Other	191

Fall 2012 Undergraduate Enrollment by Age

Under 24 years old	9991
24 years old and older	2781

First-Time Full-Time Freshmen

High School GPA	3.41
ACT Comprehensive Score	25.2
SAT Score	1707

Employees

Fall 2012 Full-time Employees, including Faculty	2334
Fall 2012 Part-time Employees, including Faculty	720


CELEBRATE
THE Year
OF ENGAGED
LEADERSHIP
2013–2014
MONTANA
STATE UNIVERSITY

MONTANA
STATE UNIVERSITY
Mountains & Minds

Office of the President
PO Box 172420
Bozeman, MT 59717-2420

MONTANA STATE UNIVERSITY

January 15, 2013

Dear Colleagues,

This month marks the completion of my first two years at Montana State University as Provost and Vice President for Academic Affairs. It has been an especially rewarding time for me because the accomplishments of MSU's academic community have instilled great pride and devotion. I feel honored to be part of a university with an extraordinary faculty who are clearly dedicated to their research, teaching and outreach endeavors, and who have successfully elevated MSU into the top tier of institutions in each of those categories.

MSU has many opportunities to develop its academic reputation among great universities in the country. I appreciate the ongoing support of faculty, staff and students at MSU and wanted to share with you some of the many accomplishments that Academic Affairs has had during the past two years. These accomplishments would not have been possible without a leadership team of associate provosts, deans and associate deans, department heads, faculty and many others across the campus.

Faculty

- Faculty Recruitment
  - 2011, 27 searches (25 assistant professors, 2 full professors).
  - 2012, 37 searches (35 assistant professors, 2 associate professors).
  - 2013, 11 faculty hired to date (10 assistant professors, 1 associate professor), 27 searches
  - Currently open (19 assistant, 4 assistant/associate, 3 associate/full, 1 full), and several additional searches approved.
  - 29 of these lines resulted from new funding.
  - The student faculty ratio has remained fairly consistently around 17:1 since 2008.
- Faculty Diversity
  - ADVANCE grant assistance with hires of women in STEM and SBS.
  - Additional interviews of women, 4 searches (provost provides majority of supplemental funds).
  - Tenure-track Diversity Depth Hires, 2.
  - Tenure-track new/leveraged lines, 2 with 2 additional ones under consideration.
  - Bridge Hires/Partner tenure track accommodations, 4.
  - Initiated ACE Internationalization Lab for external review and recommendations for campus globalization.
- Faculty Development
  - Created a Board of Regents-approved Center for Faculty Excellence with base funding to provide ongoing enrichment to all faculty in teaching, research and service.

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Mountains & Minds

- Revised the sabbatical funding model to remove the limit on the number of awards from about 13/year to 18, 16 and 21 in 2011, 2012, and 2013, respectively.
- Faculty Recognition
  - Selection of most annual faculty award recipients decentralized to appropriate faculty constituencies and Councils.
  - Recognition of 19, 21, and 31 faculty in 2011, 2012 and 2013, respectively, at Spring Convocation.
  - Received Board of Regents approval for two new Regents Professors.

Research

- MSU's expenditures from sponsored research programs reached a record $112 million in fiscal year 2012, a 9.3% increase over fiscal year 2011.
- Created a model for joint faculty appointments between departments and the Institute on Ecosystems.
- Three new interdisciplinary positions for tenure-track faculty have been created in 2012-2013 to advance key areas of interdisciplinary research (EPSCoR Institute on Ecosystems and Rural Family Health).
- Augment research start-up funding for new faculty (with VPR).
- With input from Deans and Department heads, assigned space in Cooley Lab that re-establishes a presence of the Department of ImID on the campus core (with VPR).
- Created a subcommittee on Research Council to establish criteria for research space allocations on campus (with VPR).
- Garnered over $1M funding (five years) from DoEd to renew the McNair Scholars Program.
- Obtained Regents approval for a new doctoral program – Doctor of Nursing Practice, that will increase MSU doctoral degree conferral by 30% when activated.

Board of Regents approval of academic initiatives

2011

- Writing Option within BA in English (January 2011).
- Department Name Change to Graduate School (January 2011).
- Department Name Change to School of Music (January 2011).
- Professional Masters of Science and Engineering Management (March 2011).
- Certificate (Graduate): College Teaching (March 2011).
- Certificate (Graduate): Northern Plains Transition to Teaching Program (March 2011).
- Certificate of Applied Science – Bookkeeping (May 2011).
- Certificate of Applied Science – Medical Assistant (May 2011).
- Rename Motion Picture/Video/Theatre option in Film and Photography to Option in Film (May 2011).
- Offer the Montana Dietetic Internship Program (May 2011).
- Certificate: International Engineering (September 2011).
- Dual Degree Program between Civil Engineering MSU and Gazi University (September 2011).
- Option in Conservation Biology and Ecology within BS in Biological Science (September 2011).

- Rename option in Fish and Wildlife Management within BS in Biological Sciences to Fish and Wildlife Ecology and Management (September 2011).
- Dual Degree Program between MSU Microbiology, Immunology and Infectious Diseases, and Plant Sciences and Plant Pathology and the Department of Biotechnology at Ankara University (September 2011).
- China Studies Minor (November 2011).
- Food, Family and Community Health Sciences Option (November 2011).
- MS in Land Resources and Environmental Sciences (Plan B) – online delivery (November 2011).

2012

- Major in Religious Studies (March 2012).
- Associate of Arts Degree, Gallatin College (March 2012).
- Associate of Science Degree, Gallatin College (March 2012).
- Certificate of Applied Science – Residential Building Performance (March 2012).
- Certificate of General Studies, Gallatin College (March 2012).
- BA in Liberal Studies Quaternity Option – online delivery (March 2012).
- Termination of Religious Studies Options in History and Philosophy (March 2012).
- Elementary Education, Music Education, Technology Education – credit requirement reduction (May 2012).
- Finance Minor (May 2012).
- Certificate (Graduate): Professional Practice of Architecture.
- Minor in Business Administration (September 2012).

2013

- Termination of Master's Degree of Nursing-Advance Practice (January 2013).
- Termination of Post-Master's Family Nurse Practitioner Certificate (January 2013).

Administrative Initiatives

- Substantial reorganization of Academic Affairs staffing with two associate provosts (David Singel, Ron Larsen) now covering the prior work of 3 vice provosts.
- Hired new deans in:
    - Arts and Architecture (Cornwell)
    - Business (Aytes)
    - Education, Health and Human Development (Ransdell)
    - Letters and Sciences (Rae)
    - Library (Arlitsch)
- Initiated an external review of MSU IT capabilities that led to the hiring of a Chief Information Officer (Dewitt Latimer).
- Successfully increased the base funding for Academic Affairs. For fiscal years 2011, 2012 and 2013, $15.1M (61%) of all new institutional revenues (base dollars, from both state and tuition funds) have been directed to Academic Affairs. $4.9M in one-time-only funds were also provided during that time frame.
    - Distributed $2.8M in base dollars from extra section enrollment growth to the deans and academic units. These funds were previously held centrally.

    - Increased college base budgets based on Delaware benchmark data - $400K.
    - In 2011-2012, enrollment based funding adjustments were made to colleges totaling $1.5M. An additional $1.5M was allocated for new faculty lines. In 2012-13, $2M was targeted for new faculty hires with 14 new positions released thus far.
    - Strategic Investment proposal funding in 2012 added $787K to academic affairs initiatives.
- Implementation of a Collective Bargaining Agreement:
    - Promotion, market and merit adjustments for faculty of >$1M.
    - Development of a template for Workload and Role and Scope Documents.
    - Assignment of NTT faculty to ranks.
    - Hired Debora Barkley to support CBA implementation (with Human Resources).
- Reorganization of Academic Affairs office space and staff to create a welcoming, service-oriented environment with back-up support for walk-in and phone traffic.
- Through Advancing MSU, one-time-only funding in 2012 has been directed to Academic Affairs ($1.46M) for academic support, software for DegreeWorks and faculty reporting, and for upgrades to student/faculty gathering spaces. Most of these funds are still in the process of being expended.
- Successful nomination of Robert Marley for an ACE Fellowship and Lynda Ransdell for the Harvard Management Development Program. Also Nancy Cornwell has been nominated for the Scripps Howard Academic Leadership Academy.
- Implementing a new "TEAL" (Technology Enhanced/Active Learning) classroom in Gaines Hall with development of a second in Wilson.
- Initiation of student-requested activities courses.
- Enhanced the program review process by providing more detailed guidelines and more follow-through on evaluator's recommendations.
- Accreditation:
    - Year One Accreditation Report accomplished with follow-up.
    - Board-approved Core Themes identified and developed through a consultative process.
    - Assessment of student learning outcomes of Core 2.0 is in progress.
- Faculty Senate collaboration on policy and procedures for:
    - Approval of degree candidates.
    - Decentralizing more curriculum decision-making to the faculty (e.g., course approvals).
    - Combined the new program review functions of UGSC and Faculty Senate Academic Affairs Committee into a single Program Review Committee
    - Emeritus Faculty.
    - Honorary Degrees.
    - Regent's Professorships.
- Transitioned two successful graduate programs from self-support funding to base funding (Native American Studies, Science and Natural History Filmmaking).

Student Enrollment- Academics

- Created a new timeslot for classes during the week by shaving 5 min off of each "time between classes" for Tuesday/Thursday classes.

- Created a new teaching lab for Anatomy and Physiology to relieve the backlog of students and allow each semester of the two semester sequence to be offered every semester.
- Improved the sequence in which students may register for classes (with Registrar).
- Created a winter graduation (with Registrar).
- More than doubled the number of on-line programs.
- Improved scheduling with the purchase of Ad Astra platinum analytics.
- Developed better documentation and document management for response to enrollment pressure.
- Offered to increase tuition waiver support for graduate students to promote degree completion.
- Moved the "early" late fee penalty so that there is no longer a reason for graduate students to put off registration (allows for speedier appointments and better course planning).

Student Recruitment/Retention

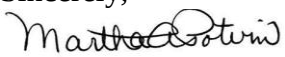
- Created base funding for research endeavors in the Undergraduate Scholars Program.
- An Advising Task Force, as a four campus initiative, resulted in support for:
    - Degree Works for advising and degree audit (4-campus implementation).
    - A presentation to the BOR on advising.
    - Department entry of advisors info into MYINFO.
    - First Annual Statewide Advising Summit in Bozeman: Advising Millennials Under the Big Sky, Sept. 27-28, 2012.
    - Financial literacy sessions.
    - Expanded peer advising.
- Distributed $100K for retention initiatives Spring 2011.
- Distributed $300K to the Graduate Dean to address recruitment efforts and fellowships to attract top graduate students (with VPR).
- A modest investment in the Math Department has resulted in higher pass rates in some introductory courses.
- Distributed $240K to date (2 years) for Native American Recruitment/Retention initiatives (ongoing).
- Led Higher Education Summit Task Force (now called Graduation Success Team) resulting in initiatives for:
    - Successful 1-credit pilot courses offered the week before fall 2012 semester.
    - Math placement exam with on-line remedial opportunities for summer 2012 (pilot).
    - "Freshman 15."
    - Newly emerging committees for 2013 for summer/mini-courses/J-term, accelerated masters degrees, barrier/gateway courses, 3-year degrees, dual credit courses, on-line seamless model.

During the fall 2012 semester, the Deans' Council developed a draft strategic plan for Academic Affairs that aligns with the University strategic plan. The plan benefitted from the early stages of the research strategic plan being developed by the Research Council. The draft of the Academic Strategic Plan can be found on the Provost's website at:

http://www.montana.edu/wwwprov/StrategicPlans/AcademicStrategicPlan20Dec12.pdf. An open forum will be held on January 17, 2013 from 3-5 p.m. in Ballroom B of the Student Union and comments on the plan are welcome.

Finally, I would like to express my gratitude to the faculty for their hard work every day in keeping academic excellence in the forefront of all that they do. It is the collection of individual achievements, in teaching and mentoring our students, in research and in scholarly and creative pursuits, and in serving our communities and our professions that make our institution great.

Sincerely,



Martha A. Potvin
Provost/ Vice President for Academic Affairs

MONTANA STATE UNIVERSITY
INCENTIVE PROGRAM FOR RESEARCHERS

100.00 **Introduction**

The MSU Incentive Program for Researchers has been developed to enhance sponsored research and scholarly activities. By providing the opportunity for tenured and tenure track faculty to be eligible for annual incentive payments, the program provides incentives for faculty to secure externally-funded research grants and contracts. The program is in addition to and complements existing summer salary policies and procedures for Academic Year (AY) faculty.

101.00 **Purpose**

A. The purpose of the program is to encourage faculty to secure externally-funded research, scholarship and sponsored program projects, and reward those who successfully secure extramural funds by providing an annual payment to the faculty member in November. This program replaces certain compensation policies and practices which are hereby discontinued as described below.

B. The incentive payment is intended as a one-time, annual supplement to the recipient's regular base salary (Institutional Base Salary or IBS). The payment is not part of the IBS [Insert link] for any purpose. The incentive payment is subject to the applicable federal and state taxes and FICA withholdings. The incentive payment does not affect a recipient's eligibility for merit or other salary increases.

C. The expected outcomes of this program include:

- Increased number of extramural funding proposal submissions
- Improved success rate for extramural funding awards
- Improved recruitment and retention of research-active faculty
- Increased generation of institutional facility and administrative (F&A) cost recovery
- Increased compensation for participating employees

102.00 **Participation in the Program**

A. Participation in the program requires eligible faculty to charge at least 10% effort and related portion of his/her Institutional Base Salary and fringe benefits in a federal or state grant/contract budget. The faculty member will draw salary from the grant/contract account proportionate to his/her effort devoted to the project, thereby creating funds for this incentive program.

B. Under exceptional circumstances and on a case-by-case basis, faculty may be eligible for the program if they successfully acquire significant external funding from sources that do not allow for inclusion of salary in the grant/contract budget. Such exceptional circumstances must be justified by the

dean and department head and approved by VPR and the Provost. In such case, the annualized effort for the employee approved on the grant/contract submission will be used to calculate the recovered salary for the parameters for incentive payment calculations.

C. Incentive payments are contingent upon the faculty member meeting the eligibility requirements and complying with the terms and conditions of the Program. The incentive payment made under the program shall not exceed 75 percent of the net recovered salary and shall not exceed 25 percent of the faculty member's institutional base salary for the year in which the incentive payment is earned. The payment will be subject to all normal withholding for taxes and benefits.

D. Incentive payments may not be paid from federal or state grants/contracts. Incentive payments will be paid from institutional accounts. The source of funds in these accounts will normally be funds recovered from charging a portion of the faculty member's salary to grant/contract funds. The payment may not be made by offsetting salary from one grant/contract account to another grant/contract.

E. Under normal circumstances, a faculty member's effort charged to a grant/contract will be attributed to the research portion of the faculty member's workload. For pre-approved cases where the faculty member has already fulfilled the effort related to research portion of his/her workload, incentive payments from recovered salary will occur only after the amount of funds necessary to acquire the services needed to fulfill the teaching, advising and other responsibilities of the faculty member carrying out the grant/contract funded research has been determined and set aside for such purposes.

103.00 **Program Terms and Conditions**

A. All tenured and tenure-track faculty members, except those currently on University Sponsored Research Appointments (USRA), are eligible for the program. The program is in addition to and complements existing summer salary policies and procedures for AY faculty.

B. To be approved, eligible faculty members must have:

(1) received at least "meets expectations" in their most recent annual review in all assigned duties; and

(2) demonstrated proper fiscal and administrative management of all grants/contracts for which he/she is/was principal investigator, including: compliance with all relevant institutional, state, and federal research-related policies; and completion of time and effort reports in a timely and accurate manner, as determined by the their department head/director and MSU Office of Sponsored Programs.

The program will be implemented in compliance with all applicable federal regulations and policies of MSU.

C. To be eligible for the incentive program, a grant or contract must pay all direct costs and the maximum facility and administrative (F&A) costs. Except that, in cases where the funding agency has a

written F&A limit which is less than the institution's officially negotiated rates, the program will apply provided the recovered F&A rate is at least 8% of modified total direct costs.

D. To be eligible for the incentive program, a grant or contract must have been routed and approved by the official University processes established by the MSU Office of Sponsored Programs.

E. To be eligible for the incentive program, a grant or contract may not include provisions for voluntary cost sharing or voluntary in-kind matching. For grants or contracts that involve multiple institutions, this requirement will be enforced for only the MSU portion of the project budget.

F. The incentive program does not apply to external funds obtained from gifts, testing service contracts, private sponsors or contracts or fees for services.

G. Administrative personnel at the rank of Dean or above, as well as the Director of the Montana Agricultural Experiment Station and the Director of the Montana Extension Service, are eligible for incentive compensation under this program only with the prior written approval of the Provost and the President.

H. All incentive payments under the program shall be subject to the availability of financial resources for the program and to any applicable state or federal laws, regulations or policies.

104.00 **Procedures**

A. Intent to participate and to include a grant or contract in the program must be approved by Office of Sponsored Programs as part of the campus routing process for grants and contracts submission. On the ePCF, mark Yes on the "will be included in the IPR".

B. After a grant proposal has been successfully awarded, the faculty member and department head, dean or director will process an EPAF to charge the correct proportion of salary to the appropriate grant or contract. The incentive payment will be contingent upon completion of the approval process, which includes approvals by the faculty member's Department Head/Director (if applicable), Dean, Provost and VPR based on the eligibility guidelines.

C. The first obligation on recovered salary is the payment of any costs incurred to provide services a faculty member will not be providing because of the responsibilities to the grant/contract research/scholarly activities. Only after these obligations have been fully and completely accounted for shall the net recovered salary be available to fund an incentive payment. For the purposes of this incentive program, a buyout of teaching will not normally be approved unless the faculty member has exceeded his/her research percentage assignment.

D. To request an incentive payment for the previous academic year, the faculty member and his/her department head/director will need to initiate a Request to Receive Faculty Incentive and forward to the Office of Sponsored Programs for review. The request shall be submitted no later than August 20 each year. Incentive payments will be made in November.

E. No incentive payment shall exceed 75% of the net recovered salary generated and incentive payment shall not exceed 25% of the employee's Institutional Base Salary (IBS) for the year in which the incentive payment is earned.

F. Eligible faculty must be employed by MSU at the time of the pay-out (November) to receive any incentive payment.

105.00 **Program Termination.**

The Incentive Program for Researchers may be terminated at any time by the President of Montana State University.

106.00 **USRA Appointment Discontinued**

This program replaces the USRA program for faculty and the USRA appointment is hereby discontinued and shall have no further applicability, except as provided herein. Faculty members on USRA appointments for FY 2012-2013 shall continue on USRA appointment until they terminate their employment or voluntarily choose to discontinue their USRA appointment. The USRA appointment must be approved annually by the Provost and VPR. These USRA appointees are not eligible for the Incentive Program for Researchers unless they discontinue their USRA appointment.

FY12 Funded Strategic Investment Proposals

#	Category	Proposal Name	FY12	FY13	FY14	FY15	Base
9	learning	Bioengineering Program	84,464	247,000	247,000	247,000	247,000
4	learning	Sustainable Food & Bioenergy Systems: An Interdisciplinary Degree Program	3,700	105,000	105,000	105,000	105,000
5	learning	Music Technology Program	67,500	67,500	67,500	67,500	67,500
6	learning	Sustainable Funding Plan for the MFA Science & Natural History Filmmaking		40,000	40,000	40,000	40,000
66	stewardship	MSU Student Mental Health Support		275,000	275,000	275,000	275,000
47	stewardship	Content Management System		85,000	85,000	85,000	85,000
11	learning	Doctor of Nursing Practice					135,000
19		Funding for the Office of Student Success		296,588	396,588	441,000	441,000
17	learning	Retention Enhancement via Supplemental Chemistry Instruction (RESCI)		45,000			
23	discovery	Stable Base Funding for the Undergraduate Scholars Program	50,000	189,000	189,000	189,000	189,000
14	learning	Writing Center Director & Development	9,000	61,000	61,000	61,000	61,000
52	stewardship	NCAA Compliance Assistants		50,500	50,500	50,500	50,500
3	learning	Economic Student Retention Investment		30,000	30,000	30,000	30,000
73	engagement	Streamline Transit	80,000	0	0	0	
65	stewardship	Applicant Tracking System	53,500				
1	engagement	Taylor Planetarium Upgrade	45,000				
63	stewardship	Romney Adaptive Reuse	150,000				
TOTALS			**543,164**	**1,491,588**	**1,546,588**	**1,591,000**	**1,726,000**

FY13 Strategic Investment Proposals

Base Strategic Investment Proposals

ID	Category	Title	FY13	FY14	FY15	Base
152	Learning	At-Night Core: Serving Working and Non-Traditional Students				70,786
154	Learning	Increasing student success in high enrollment mathematics and statistics classes	34,483			105,600
173	Stewardship	Content Management Software for MSU Catalog	75,000			15,000
132	Stewardship	Staffing for Web and Digital Communications*				50,000
209	Stewardship	Asset Tracking and Accounting System	72,000			13,000
134	Learning	Retention Enhancement Chemistry Small Group Instruction RECSI II				44,755
106	Stewardship	Student Conduct Software	2,500			25,000
184	Learning	Information Resources for MSU-Wide use	26,281			12,591
159	Stewardship	Internet Connection Backup*	60,000			35,000
171	Learning	Base and Bridge Funding to Accommodate the Unfunded Teaching of BIOB 160 Lecture and BIOB 170IN Lab Classes by LRES and Ecology	11,942			57,959
187	Learning	Support for Courses in the Spatial Sciences				25,627
158	Engagement	Base Funding for Freshman Convocation*				50,000
143	Discovery	College of Engineering Ph.D. Enhancement (Includes SIP #179)				173,295
84	Stewardship	Planning and Program Management Office (PPMO)	130,000			100,000
196	Learning	Strategic Recruitment of Graduate Students to MSU--Bozeman	5,000			46,000
95	Engagement	Expanding the Spirit of the West Marching Band				70,000
107		Associate Dean of Students				97,692
130	Engagement	Marching Band Equipment FY 2013-2015	40,000			
146	Learning	Computer Science Active Learning Laboratory	74,534			
167	Stewardship	Human Resources - relocation*	150,000			
174	Learning	Creative Arts Complex ADA Improvements*	155,000			
166	Access	Transitioning Tribal College Students into MSU STEM Degree Programs	109,819	109,819		
208		Enhanced Career Advising Program	52,008	47,612	47,612	
190	Stewardship	East Cobleigh Outdoor Materials Lab Improvements	75,725			
195	Discovery	Early Undergraduate Research Experiences	35,000			
96	Discovery	Renovation of Cobleigh 308 for Sustainable and Renewable Energy Research	85,000			
207	Access	Return-to-Learn Program	79,094	154,885	157,971	
161	Engagement	'Mountains and Minds' First Year Engagement Initiative: Building a Sense of Place Through Discovery in the Greater Yellowstone GeoEcosystem	121,861	116,861	116,861	
TOTALS			1,395,247	429,177	322,444	992,305

Funding Programs Supporting Graduate Recruiting

Updated: December 24, 2013

This packet contains information and criteria for the following graduate recruiting programs:

- **Graduate Travel Grants**
  Up to $1000 per student to help bring qualified prospective graduate students to campus. ($50K total)

- **Meritorious Awards**
  $5000 awards to attract outstanding graduate students. ($100K total)

- **Presidential Awards**
  $1000 awards to attract outstanding graduate students. (approx. $13K total)

- **PhD Enhancement Funds**
  $18,000 GTA stipends for PhD candidates ($216K total)

Travel Grant Nominations and Criteria

Updated December 24, 2013

Instructions

Send the following information to Melis Edwards (melisenda.edwards@montana.edu) in the Graduate School.

- Academic contact (the individual that is recruiting the student)
- Administrative contact (the individual who will handle the fund transfer)
- Student's Name
- Student's Address, Phone number, Email
- MSU Program of Interest (department and degree title)
- Student's previous institution(s) attended, with GPA
- Degree title for current degree program (e.g., BS in Biological Sciences, or MS in Land Resources)
- GRE Scores (if required by the program)
- Letter of support from a faculty member, indicating the student's prior professional or research experience, if any.

Criteria

- A maximum of two awards are available per department unless additional funds are available. Student nominees will be put on a waiting list if a department nominates more than two prospective students.
- Awards will reimburse actual costs for air travel and lodging of up to $1,000.
- Departments will be responsible for making all travel arrangements for their students including flight and room reservations.
- Graduate Coordinators/Department Heads can submit nominations until all funds are allocated.
- A decision to fund, not fund, or wait list will be made within 5 working days of submission (after being reviewed by the Graduate School.)
- Students do not have to formally apply to the Graduate School to be nominated for the award.
- This award is only for new/prospective graduate students beginning AY 2014-15.

Meritorious Award Nominations and Criteria

Updated December 24, 2013

Instructions

Send the following information to Melis Edwards (melisenda.edwards@montana.edu) in the Graduate School.

- Academic contact (the individual that is recruiting the student)
- Administrative contact (the individual who handles student awards)
- Student's Name
- Student's Address, Phone number, Email
- MSU Program of Interest (department and degree title) – Meritorious Awards are restricted to PhD candidates.
- Student's previous institution(s) attended, with GPA.
- Degree title for current (or most recent) degree program (e.g., BS in Biological Sciences, or MS in Land Resources)
- GRE Scores (if required by the program)
- Letter of support from a faculty member, indicating the student's prior professional or research experience, if any.

Criteria

- A maximum of two awards are available per department unless additional funds are available. Student nominees will be put on a waiting list if a department nominates more than two prospective students.
- Awards will be in the amount of $5,000 (one payment). Awards are dispersed to student accounts. Funds in student accounts are typically available to students only after the start of classes in their first semester.
- Graduate Coordinators/Department Heads can submit nominations until all funds are allocated. It is anticipated that most nominations will be received by February 15, 2014.
- A decision to fund, not fund, or wait list will be made within 5 working days of submission (after being reviewed by the Graduate School.)
- Students do not have to formally apply to the Graduate School to be nominated for the award, but cannot receive the award until they have been admitted and are attending MSU.
- This award is only for new/prospective graduate students beginning AY 2014-15. Meritorious Awards are restricted to PhD candidates, and the majority (due to funding source restrictions) will be in STEM disciplines.

Mildred Livingston Presidential Award Nominations and Criteria

Updated December 24, 2013

Instructions

Send the following information to Melis Edwards (melisenda.edwards@montana.edu) in the Graduate School.

- Academic contact (the individual that is recruiting the student)
- Administrative contact (the individual who handles student awards)
- Student's Name
- Student's Address, Phone number, Email
- MSU Program of Interest (department and degree title)
- Student's previous institution(s) attended, with GPA.
- Degree title for current degree program (e.g., BS in Biological Sciences, or MS in Land Resources)
- GRE Scores (if required by the program)
- Letter of support from a faculty member, indicating the student's prior professional or research experience, if any.

Criteria

- A maximum of two awards are available per department unless additional funds are available. Student nominees will be put on a waiting list if a department nominates more than two prospective students.
- Awards will be in the amount of $1,000 ($500 Fall, $500 Spring). Awards are dispersed to student accounts. Funds in student accounts are typically available to students only after the start of classes in their first semester.
- Graduate Coordinators/Department Heads can submit nominations until all funds are allocated.
- A decision to fund, not fund, or wait list will be made within 5 working days of submission (after being reviewed by the Graduate School.)
- Students do not have to formally apply to the Graduate School to be nominated for the award, but cannot receive the award until they have been admitted and are attending MSU.
- This award is only for new/prospective graduate students beginning AY 2014-15. Both masters and doctoral candidates are eligible for Mildred Livingston Presidential Awards.

PhD Enhancement Funds for GTA Lines

Updated December 24, 2013

The Graduate School is pleased to announce another round of PhD Enhancement Funds for academic year 2014-15. Specifically, $216K from enrollment growth tuition revenues has been allocated to support additional GTA lines. These twelve GTAs will have $18,000 stipends per academic year for 20 hours of instruction each week. These additional GTAs will help us to address enrollment growth in departments, increase PhD productivity, and further the academic preparation of our PhD candidates.

Departments seeking these GTA lines will need to request the lines by providing a rationale addressing:

1. How the lines will lead to increased PhD production
2. The teaching responsibilities that the GTA will cover, and the impact on faculty workloads
3. How the candidates' future academic appointments will be covered

Departments that received PhD Enhancement Funds in AY 2013-14 should describe how the funds have been used to build their PhD programs. PhD candidates funded as GTAs through the AY 2013-14 PhD Enhancement Fund cannot be funded again using AY 2014-15 PhD Enhancement Funds. (For example, the same department can receive funds for the same instructional support, but the funds must go to a different student.)

Requests should be made in the form of a short proposal, and should be submitted electronically to Melis Edwards in the Graduate School (melisenda.edwards@montana.edu) with a copy to your academic dean. Proposals will be reviewed and prioritized according to the following criteria:

- These additional lines are intended to build PhD capacity and productivity within the selected departments. It is anticipated that the program will focus on a limited number of departments, and those departments will receive GTA lines for multiple years.
- Departments' continued participation in the program will depend on availability of funding and demonstrated progress in building PhD productivity (i.e., initially, an increase in number of PhD candidates in the department over time; eventually, an increase in PhDs awarded.)
- The GTAs should help departments accomplish their teaching mission in ways that will also enhance the academic preparation of our PhD candidates (e.g., direct involvement in instruction is preferred to simply grading papers.)
- These GTA lines are not intended to support the same PhD candidate for multiple years. Using the funds to support the same student for multiple years will result in the department losing the funds.
- Stipend funds will be moved into department budgets each year to ensure that the students are accountable to their departments.

Allocation of the GTA lines will be completed as quickly as possible in an effort to assist department recruiting efforts.

Students Paid from Research Grants

Name	Fund Title	PI	PI Home Org
Adams, Stephanie Marie	SYNTHESIZING CRITICAL HISTORICAL, B	Garrott, Robert A	Ecology (415300)
Adkins, Andrew Eugene	Glacier Bay National Park and Prese	Tobias, Ronald	School of Film and Photography (416400)
Almklov, Erik Rochner	Collaborative reseaerch: Effects of	Creel, Scott R	Ecology (415300)
Ancell, Carrie V	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Anderson, Lydia Marie	Willis Haagenson support	Sands, David C	Plant Sciences (412300)
Anderson, Robin L	Collaborative Research: The Online	Lavin, Matthew T	Plant Sciences (412300)
Antonioli, Gabrielle Joy	Mycodiesel? from Various Endophytic	Strobel, Gary A	Plant Sciences (412300)
Antonioli, Gabrielle Joy	ARRA EFRI-HyBi: Fungal Processes fo	Peyton, Brent Michael	Chemical & Biological Engineering (414100)
Appling, Theodore Robert	Wheat virus variety trials and on-f	Burrows, Mary Eileen	Plant Sciences (412300)
Arm, Hannah Rebecca	Career - Engineering Applications o	Codd, Sarah	Mechanical & Industrial Engineering (414500)
Arthun, Nathaniel Robert	Barley for Rural Development	Blake, Thomas K	Plant Sciences (412300)
Azure, Jasmine Rose	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Baertsch, Tara Elizabeth	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Bailey, Bryan Richard	Improved Quality of Montana Hard Re	Nash, Deanna L	Plant Sciences (412300)
Bailey, Bryan Richard	Evaluation of dough strength and ex	Martin, John M	Plant Sciences (412300)
Bailleul, Alida	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Bajaria, Dhaval Nikhil	MEPI Student Leaders Program	Peterson, Norman J	Office of International Programs (419630)
Baker, Stuart Bentley	Collaborative Research: Landscape L	McGlynn, Brian L	Land Resources & Environ Sci (412700)
Ballard, Taylor Elizabeth	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Bandstra, Abbie M	State Water Resources Research Inst	Rupp, Gretchen	MT Water Resource Center (421030)
Bangen, Kevin Michael	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Bares, Amanda Josephine	Compact Eye-Safe Scanning Different	Repasky, Kevin S	Electrical Engineering (414300)
Barkan, Eric David	TWO TECHNICAL STUDIES TO GAIN TECHN	Miller, David A	Mechanical & Industrial Engineering (414500)
Barnett, Lauren Marie	Scan of Protein space for Optical V	Hughes, Thomas E	Cell Biology & Neuroscience (415350)
Bauerle, Anthony P	Infrastructure via Science and Tech	Young, Mark J	Plant Sciences (412300)
Baumbauer, Sara L	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Bean, John Thomas	Winter Wheat Breeding/Genetics	Bruckner, Philip L	Plant Sciences (412300)
Bean, John Thomas	Mining for markers to be used in ma	Sherman, Jamie D	Plant Sciences (412300)
Bean, John Thomas	Winter Wheat Breeding/Genetics	Bruckner, Philip L	Plant Sciences (412300)
Beitelshees, Marie Christine	Dynamics of Excited Electronic Stat	Kohler, Bern	Chemistry (415200)
Bellante, Gabriel John	Hyperspectral Sensor for Large-Area	Repasky, Kevin S	Electrical Engineering (414300)
Beougher, Wesley Alan	TBI Mini-Grant Peters	Peters, John W	Chemistry (415200)
Berardinelli, Seth Daniel	Montana Space Grant 2010-2014 Appre	Des Jardins, Angela Colman	Physics (415400)
Berardinelli, Seth Daniel	ARRA CubSat: Firebird: Focused Inv	Klumpar, David M	Physics (415400)
Bergin, Bridget Ann	Low Cost In-Situ NMR Technologies f	Codd, Sarah	Mechanical & Industrial Engineering (414500)
Berndt, Tyson Richard	Bedrock and Quaternary Geology of t	Lageson, David R	Earth Science (415500)
Bigelow, Hannah M	MRSA on the Northern Cheyenne India	Voyich, Jovanka Marija	Immunology & Infectious Diseases (412800)
Biondich, Kyle Steven	Big Sky Regional Carbon Sequestrati	Miller, Perry Ray	Land Resources & Environ Sci (412700)
Bischoff, Joel Robert	Survival and Behavior of Larval Stu	Guy, Christopher	Ecology (415300)
Blanchard, Heather Susanne	International Collaboration in Chem	Walker, Robert A	Chemistry (415200)
Blaskovich, Christie Lynn	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Bleem, Alissa Catherine	Novel Chemical Analyses of the Biof	Carlson, Ross Peter	Chemical & Biological Engineering (414100)
Bochniak, Victoria Leigh	Site Stewardship in Montana	Fisher, John W	Sociology & Anthropology (415900)
Bochniak, Victoria Leigh	Develop Shelter Curriculum for Proj	Neeley, Michael P	Sociology & Anthropology (415900)
Bold, Alix K	DNA Barcoding to Unlock the Puzzle	Wanner, Kevin	Plant Sciences (412300)
Bowers, Sara Michelle	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Boyd, Mark W	Herbicide Resistance Extension Info	Dyer, William E	Plant Sciences (412300)
Brame, Keenan Adam Busch	Wheat Stem Sawfly IPM: Developing	Weaver, David K	Land Resources & Environ Sci (412700)
Britton, Trevar Michael Wayne	MSU Research and Testing in Support	Amende, Kevin Lee	Mechanical & Industrial Engineering (414500)
Brooke, Dewey Joseph	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Brox, Timothy Ian	Magnetic Resonance Microscopy Studi	Brown, Jennifer Ruth	Chemical & Biological Engineering (414100)
Buerkle, Todd Michael	CAN (LaMeres)/Experimental Program	Des Jardins, Angela Colman	Physics (415400)
Burns, Douglas Robert	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Butler, Carson J	EPSCoR 07-09 Graduates	Young, Mark J	Plant Sciences (412300)
Butler, Carson J	Comparative Studies of Sympatric Bi	Garrott, Robert A	Ecology (415300)
Butler, Carson J	Greater Yellowstone Bighorn Sheep a	Garrott, Robert A	Ecology (415300)
Byers, Celena	NANOSAT 2011-SPACEBUOY-A University	Klumpar, David M	Physics (415400)
Calverley, Matthew David	ARRA Admin COBRE Translational Supp	Quinn, Mark T	Immunology & Infectious Diseases (412800)
Carlsten, Erik Stuber	Experimental Program to Stimulate C	Des Jardins, Angela Colman	Physics (415400)
Carroll, Nathan Robert	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Cartularo, Shane Michael	Physiological and Ecological Evalua	Dyer, William E	Plant Sciences (412300)
Center, Haley Michelle	Partner to Implement Campaign	Galli-Noble, Elizabeth Jane	Land Resources & Environ Sci (412700)
Center, Haley Michelle	Missouri River Watershed Coalition	Galli-Noble, Elizabeth Jane	Land Resources & Environ Sci (412700)
Charette, Shilo Rose	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Chattergoon, Krishna Narine	IDBR: Agile Electronic Focus and Ab	Dickensheets, David L	Electrical Engineering (414300)
Chattergoon, Krishna Narine	STTR Phase II: Bridger Photonics	Dickensheets, David L	Electrical Engineering (414300)
Chittenden, Kallie Grace	Immune Response to Pneumocystis and	Meissner, Natascha Nicole	Immunology & Infectious Diseases (412800)
Chittenden, Kallie Grace	Subunit Vaccines for Brucella Patho	Pascual, David W	Immunology & Infectious Diseases (412800)
Christensen, Isaac Robert	Impact of hepatocyte lineage life h	Schmidt, Edward	Immunology & Infectious Diseases (412800)
Clark, Craig Fontaine	Spring wheat breeding and genetics	Talbert, Luther E	Plant Sciences (412300)
Clark, Craig Fontaine	American Archive Content Inventory	Bock, Phyllis A	ASMSU (444000)
Clem, Elizabeth Cathleen	Engaging Women in Engineering Throu	LaMeres, Brock Jerome	Electrical Engineering (414300)
Colomb, Warren Andrew	PFI:Remote Detection of Chemicals	Babbitt, William Randall	Physics (415400)
Cook, Corey Joseph	BLADE RELIABILITY-EFFECTS	Cairns, Douglas S	Mechanical & Industrial Engineering (414500)
Cook, Corey Joseph	An Advanced Vibrothermography Appro	Mian, AKM Ahsan	Mechanical & Industrial Engineering (414500)
Cooney, Colin Thomas	Assessment of Fisheries Restoration	McMahon, Thomas E	Ecology (415300)
Cope, Lindsey Dale	Hard white wheat: Jump-starting a n	Talbert, Luther E	Plant Sciences (412300)
Cornish, Daniel Louis	NeuroSys - Neuroinformatics for Neu	Jacobs, Gwen A	Computational Biology (421230)
Cornwell, Audra Lee	Infrastructure Support for Small Li	Boles, Jane Ann	Animal & Range Sciences (412400)

Students Paid from Research Grants

Name	Fund Title	PI	PI Home Org
Costle, Kristin Lambers	MSU-Bozeman 2011-2012 Campus Corps	Tanner, Kathryn M	Community Involvement (441150)
Couch, Tucker	MO: Diversity and Ecology of Archae	Young, Mark J	Plant Sciences (412300)
Crasco, Miranda Ann	Montana American Indian Initiative	Camper, Anne K	Dean of Engineering (414001)
Crellin, Charles Trevor	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Dahlberg, Andrew Richard	Atmospheric polarization imaging wi	Shaw, Joseph A	Electrical Engineering (414300)
Davis, Steven D	Montana Apprenticeship Program (MAP	Shelby, Nancy Jane	WWAMI Medical Educ Program (419120)
Devoe, Colleen L	Integrated Design Laboratory	Wood, Thomas R	Architecture (416100)
Dickensheets, Benjamin D	Eng Apprenticeship	Adams, Edward E	Civil Engineering (414200)
Dietrich, Eric Ian	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Diffenderfer, Anna Christine	Development, Integration and Assess	Harmon, Alison	Health & Human Development (413100)
Dillon, Derrick Emmett	PMICE USMC Pack Sample	Swearingen, Will D	Techlink (421210)
Donahue, Larissa Caitlin	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Donovan, Chris Daniel	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Donoven, Casey Ryall	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Dood, Jordan Robert	Dynamics of Excited Electronic Stat	Kohler, Bern	Chemistry (415200)
Dood, Jordan Robert	Dynamics of Excited Electronic Stat	Kohler, Bern	Chemistry (415200)
Dorhauer, Kailyn Nicole	Montana State Office of Rural Healt	Juliar, Kristin	Montana AHEC (421240)
Douchinsky, Alain Whitman	Improving wheat and barley for a ch	Sherman, Jamie D	Plant Sciences (412300)
Downey, Molly Catherine	Defining the role of mast cells dur	Obar, Joshua J	Immunology & Infectious Diseases (412800)
Driscoll, David Robert	CAN-Sofie: Regenerative SOFC Dev fo	Des Jardins, Angela Colman	Physics (415400)
Drummond, Krista Marie	Multimode Laser Radar for High-Conf	Babbitt, William Randall	Physics (415400)
Drummond, Krista Marie	Hybrid micro/nano-optical devices f	Nakagawa, Wataru	Electrical Engineering (414300)
Dupuis, Anita L	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Durban, Margerie Anne Sally	Immune Response to Pneumocystis and	Meissner, Natascha Nicole	Immunology & Infectious Diseases (412800)
Durban, Margerie Anne Sally	Subunit Vaccines for Brucella Patho	Pascual, David W	Immunology & Infectious Diseases (412800)
Durfey, Aubree C	Team Nutrition and Training 2010-20	Bark, Katie	Health & Human Development (413100)
Dye, Robbin Shelby	Evaluation of various materials and	Wichman, David M	AES CARC (412901)
Dye, Robbin Shelby	Spring wheat yield response to soil	Wichman, David M	AES CARC (412901)
Dyk, Alisha Lynn	Development of a Cold Region, Rural	Cuelho, Eli	Western Transportation Institute (414030)
Dyk, Alisha Lynn	Technology Transfer - New UTY Year	Albert, Stephen	Western Transportation Institute (414030)
Dyk, Alisha Lynn	Safe Routes to School, FY11	Lonsdale, Paul Taylor	Western Transportation Institute (414030)
Dyk, Alisha Lynn	UTC California and Oregon Advanced	Veneziano, David	Western Transportation Institute (414030)
Dyk, Alisha Lynn	Safe Routes to School FY12	Lonsdale, Paul Taylor	Western Transportation Institute (414030)
Dykstra, Ellie Harmien	Improving wheat and barley for a ch	Sherman, Jamie D	Plant Sciences (412300)
Dysinger, Hannah Marie	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Eklund, Tracy Lynn	Determining Efficacy of New Yellow	Weaver, David K	Land Resources & Environ Sci (412700)
Eklund, Tracy Lynn	Establishing Mecinus janthinus Inse	Weaver, David K	Land Resources & Environ Sci (412700)
Ellis, Nathaniel W	Development of High-Amylose Dry Pea	Weeden, Norman	Plant Sciences (412300)
Evertz, Loribeth Quinn	ZERT II - Cunningham Task 2	Spangler, Lee H	Research (421001)
Ewan, Levi Austin	Evaluation of Non-Motorized Use: P	McGowen, Patrick Tracy	Civil Engineering (414200)
Ewan, Levi Austin	Livability Benchmarks for Montana T	McGowen, Patrick Tracy	Civil Engineering (414200)
Ewan, Levi Austin	Montana Intercity Bus Service Study	Kack, David Wellington	Western Transportation Institute (414030)
Ewan, Levi Austin	Evaluation of a Variable Speed Limi	Al Kaisy, Ahmed	Civil Engineering (414200)
Exley, Alicia Sarah	FY 2011 CPB Radio CSG	Bock, Phyllis A	ASMSU (444000)
Exley, Alicia Sarah	FY 2011 CPB Radio CSG	Bock, Phyllis A	ASMSU (444000)
Eziashi, Jude Jideofor	Interfacial Stability of Multilayer	Gannon, Paul Edward	Chemical & Biological Engineering (414100)
Fabich, Hilary Teal	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Falk, Dustin LeRoy	ARRA: Sorbent Modified Fly Ash as	Stephens, Jerry E	Civil Engineering (414200)
Fang, Yida	Best Practices and Guidelines for P	Shi, Xianming	Western Transportation Institute (414030)
Feder, ZuZu Rose	Ronald E. McNair Post-Baccalaureat	Young, Gregory D	Music (416500)
Felicia, Dayle Jermaine	Consortium for Community Based Rese	Christopher, Suzanne E	Health & Human Development (413100)
Ferda, Amber Jo	Transformation of Alfalfa	McCoy, Thomas J	Research (421001)
Fischer, Roger Mark	Bridging Tribal Colleges to MSU	Lutz, Paula Marcellus	Dean of Letters & Science (415001)
Flaherty, Patrick John	Fatigue of Composite Materials for	Mandell, John F	Chemical & Biological Engineering (414100)
Flansburg, Christina Mary	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Flentie, Jake Kimball	Biochemical Genomics: Quizzing the	Lu, Chaofu	Plant Sciences (412300)
Flesch, Elizabeth Pearl	Comparative Studies of Sympatric Bi	Garrott, Robert A	Ecology (415300)
Floerchinger, Cody Roger	Alternate Aviation Fuels Experiment	Knighton, Walter B	Chemistry (415200)
Floerchinger, Cody Roger	Measurement of VOC emissions from A	Knighton, Walter B	Chemistry (415200)
Florian-Ospina, Diana Carolina	Coordinated Regional Water Resource	Sigler, William Adam	Land Resources & Environ Sci (412700)
Florian-Ospina, Diana Carolina	Optimizing Establishment of New Yel	Weaver, David K	Land Resources & Environ Sci (412700)
Florian-Ospina, Diana Carolina	Establishing Mecinus janthinus Inse	Weaver, David K	Land Resources & Environ Sci (412700)
Fnu, Srija	TBI Mini-Grant Szilagyi	Szilagyi, Robert	Chemistry (415200)
Ford, Andrew Joseph	A comparison of ?continental? and ?	Willey, David W	Ecology (415300)
Foster, Andrew Joseph	Lab Investigation of Prewet Solid D	Akin, Michelle Rosette	Western Transportation Institute (414030)
Franks, Alan Everett	Improving wheat and barley for a ch	Sherman, Jamie D	Plant Sciences (412300)
French, Joshua Wesley	MO: Diversity and Ecology of Archae	Young, Mark J	Plant Sciences (412300)
Fuentes, Alberto	Equipping Extension Educators to Ad	Steele, Douglas Lee	Extension Service Administration (471001)
Gann, Taylor Codi	Adopting real-time PCR protocols fo	Zidack, Nina K	Plant Sciences (412300)
Gates, Carissa S	MSU-Bozeman 2011-2012 Campus Corps	Tanner, Kathryn M	Community Involvement (441150)
Gauss, Forrest C	ARRA Admin COBRE Translational Supp	Quinn, Mark T	Immunology & Infectious Diseases (412800)
Gilbert, Andrew Michael	Validation of Rehabilitation Strate	Cuelho, Eli	Western Transportation Institute (414030)
Gilbert, Andrew Michael	Evaluation of a New Arch Bridge Tec	Cuelho, Eli	Western Transportation Institute (414030)
Goodman, Rollie D	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Grant, Carly Rae	COBRE Obar Yr. 8	Obar, Joshua J	Immunology & Infectious Diseases (412800)
Gray, Elliot Marshall	Prosthetic System for Distributed N	Gray, Charles M	Computational Biology (421230)
Gray, Elliot Marshall	Distributed Cortical Processing in	Gray, Charles M	Computational Biology (421230)
Gray, Kyle Lee	Nanostructured optics for high-perf	Nakagawa, Wataru	Electrical Engineering (414300)
Green, Kendall Craig	Targeted Grazing For Managing Invas	Kott, Rodney W	Animal & Range Sciences (412400)

Students Paid from Research Grants

Name	Fund Title	PI	PI Home Org
Griffith, Isaac Daniel	Coupled C, N and S cycling in coast	Izurieta, Clemente Ignacio	Computer Science (414600)
Gunderson, Adam Kristopher	NANOSAT 2011-SPACEBUOY-A University	Klumpar, David M	Physics (415400)
Gunderson, Adam Kristopher	Montana Space Grant 2010-2014 Appre	Des Jardins, Angela Colman	Physics (415400)
Gunnink, Paige Catherine	Eng Apprenticeship	Adams, Edward E	Civil Engineering (414200)
Guthmiller, David M	Computing Device Applications of Gr	Craig, Alan	Physics (415400)
Hadwin, Clinton James	Montana Space Grant 2010-2014 Appre	Des Jardins, Angela Colman	Physics (415400)
Hadwin, Clinton James	ARRA CubSat: Firebird: Focused Inv	Klumpar, David M	Physics (415400)
Hagel, Adam David	Feasibility of Reclaimed Asphalt Pa	Berry, Michael Patrick	Civil Engineering (414200)
Halat, David Michael	In Situ Optical Diagnostics for Pro	Walker, Robert A	Chemistry (415200)
Hall, Aaron David	Web Management and Development for	Ross, Rockford J	Computer Science (414600)
Hall, Amber Rochelle	2009 Team Nutrition Training Grant	Bark, Katie	Health & Human Development (413100)
Hall, Amber Rochelle	Team Nutrition and Training 2010-20	Bark, Katie	Health & Human Development (413100)
Hall, Lee Everett	Smithsonian T Rex	Horner, John R	Public Service Museum (419340)
Hall, Nick P	Improved Quality of Montana Hard Re	Nash, Deanna L	Plant Sciences (412300)
Halverson, Luke Daniel	Montana BioDiesel Initiative	Peyton, Brent Michael	Chemical & Biological Engineering (414100)
Hane, Jennifer Susan	CAN (LaMeres)/Experimental Program	Des Jardins, Angela Colman	Physics (415400)
Hansen, Eric Leander	Building Green: Development and Eva	Berry, Michael Patrick	Civil Engineering (414200)
Hansen, Eric Leander	Feasibility of Reclaimed Asphalt Pa	Berry, Michael Patrick	Civil Engineering (414200)
Hansen, Eric Leander	Evaluation of Non-Motorized Use: P	McGowen, Patrick Tracy	Civil Engineering (414200)
Hanson, Larissa M	Selection of Hard Spring and Winter	Giroux, Michael J	Plant Sciences (412300)
Haq, Mohammad Tahdiul	Hybrid micro/nano-optical devices f	Nakagawa, Wataru	Electrical Engineering (414300)
Haraldson, Julia Lynne	Annual Report Card on Poverty in Mo	Haynes, George W	Agricultural Economics & Economics (412100)
Hart, Charles Jay	Studies of the Root Boring Beetle S	Ivie, Michael A	Plant Sciences (412300)
Hart, Charles Jay	Pest survey -- small grains and she	Ivie, Michael A	Plant Sciences (412300)
Hart, Charles Jay	Pest survey -- small grains and she	Ivie, Michael A	Plant Sciences (412300)
Hart, Charles Jay	Pest survey -- small grains and she	Ivie, Michael A	Plant Sciences (412300)
Hatch, Julia Marie	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Hatfield, Jillian P	Sheep Grazing as a Pest Management	Hatfield, Patrick George	Animal & Range Sciences (412400)
Hattersley, Rebecca Ann	Mining for markers to be used in ma	Sherman, Jamie D	Plant Sciences (412300)
Hattersley, Rebecca Ann	Spring wheat breeding and genetics	Talbert, Luther E	Plant Sciences (412300)
Hattersley, Rebecca Ann	Spring wheat breeding and genetics	Talbert, Luther E	Plant Sciences (412300)
Heavrin, Wesley John	Mexican Spotted Owl Field Surveys A	Willey, David W	Ecology (415300)
Heetderks, Tiffany Michiko	Engaging Women in Engineering Throu	LaMeres, Brock Jerome	Electrical Engineering (414300)
Helle, Evan H	Targeted Grazing For Managing Invas	Kott, Rodney W	Animal & Range Sciences (412400)
Hickel, Jeffrey David	Memorandum of Understanding Between	Juliar, Kristin	Montana AHEC (421240)
Hiebert, Melissa Marie	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Hilton, Steven Michael	Montana Sustainable Communities Pro	Davison, Stephanie K	ES 4-H (471003)
Hinnaland, Cole Ethan	Targeted Grazing For Managing Invas	Kott, Rodney W	Animal & Range Sciences (412400)
Hiscock, Dale Heber	Nanostructured optics for high-perf	Nakagawa, Wataru	Electrical Engineering (414300)
Hoffman, Joseph Christopher	Spring wheat breeding and genetics	Talbert, Luther E	Plant Sciences (412300)
Hogan, Justin Allan	ZERT II - Shaw Task 4	Spangler, Lee H	Research (421001)
Holmes, Wyatt	ALTERNATIVES TO TRADITIONAL CONFINE	Hatfield, Patrick George	Animal & Range Sciences (412400)
Holyoak, Nicole Mary	Ridge Waveguide structures in Mg-do	Himmer, Phillip Alexander	Electrical Engineering (414300)
Holyoak, Nicole Mary	Periodically Poled Materials for UV	Dickensheets, David L	Electrical Engineering (414300)
Howells, Alta Emily	TBI Mini-Grant Peters	Peters, John W	Chemistry (415200)
Huffman, Tyler Joseph	Montana Aurora Detector Network for	Shaw, Joseph A	Electrical Engineering (414300)
Huls, Sela Marie	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Hutson, Carla R	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Hydorn, Adam N	Mycodiesel? from Various Endophytic	Strobel, Gary A	Plant Sciences (412300)
Jackson, Emily Helen	UTC Corrosion Monitoring System for	Shi, Xianming	Western Transportation Institute (414030)
Jackson, Emily Helen	UTC Best Practices and Guidelines f	Shi, Xianming	Western Transportation Institute (414030)
Jackson, Kelsey Irene	MSU-Bozeman 2011-2012 Campus Corps	Tanner, Kathryn M	Community Involvement (441150)
Jansen, Jeremiah Mark	Selection of Hard Spring and Winter	Giroux, Michael J	Plant Sciences (412300)
Jesaitis, Andrew Victor	Enhanced Dynamic Range Proteomic An	Dratz, Edward A	Chemistry (415200)
Jin, Yan	BREAD: Inactivating rust resistanc	Huang, Li	Plant Sciences (412300)
Johnson, Ashlee Jade	Sheep Grazing as a Pest Management	Hatfield, Patrick George	Animal & Range Sciences (412400)
Johnson, Ian Christopher	Montana Apprenticeship Program (MAP	Shelby, Nancy Jane	WWAMI Medical Educ Program (419120)
Johnson, Ian Christopher	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Johnson, Jennifer Erin	ZERT II - Shaw J Task 5	Spangler, Lee H	Research (421001)
Johnson, Jennifer Erin	Calibration of Infra-Red Honey Bee	Spangler, Lee H	Research (421001)
Johnson, Sarah Ann	Plant, Season, and Microbial Contro	Stein, Otto R	Civil Engineering (414200)
Josephsen, Danielle R	Evaluation of various materials and	Stougaard, Robert N	AES NWARC (412905)
Josephsen, Danielle R	Orange wheat blossom midge manageme	Stougaard, Robert N	AES NWARC (412905)
Jungwirth, Scott P	WADOT Best Practices for Protecting	Shi, Xianming	Western Transportation Institute (414030)
Kaiser, Kendra Elena	ARRA Collaborative Research: The In	McGlynn, Brian L	Land Resources & Environ Sci (412700)
Kallestad, Britta Karin	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Kanode, Casey Forest	Atmospheric Imaging Assembly (AIA)	McKenzie, David E	Physics (415400)
Kappes, Lenci Robert	Steel Pile Cap/Concrete Pile Cap Br	Berry, Michael Patrick	Civil Engineering (414200)
Keeler, Ethan Gary	Hybrid micro/nano-optical devices f	Nakagawa, Wataru	Electrical Engineering (414300)
Kennedy, Jordan Ruth Margaret	Montana American Indian Initiative	Camper, Anne K	Dean of Engineering (414001)
Kerchner, Keshia Marie	ARRA:Assembling the viral tree of l	Young, Mark J	Plant Sciences (412300)
Kincheloe, Kelsey Lynne	Wool Research 2010	Kott, Rodney W	Animal & Range Sciences (412400)
Kincheloe, Kelsey Lynne	Targeted Grazing For Managing Invas	Kott, Rodney W	Animal & Range Sciences (412400)
Kingston, Kyler Joseph	CAREER: Direct target genes of Zic1	Merzdorf, Christa	Cell Biology & Neuroscience (415350)
Klatt, Christian Gerald	Molecular and Geochemical Analysis	Ward, David M	Land Resources & Environ Sci (412700)
Knutson, Seth Jeffrey	Montana Wind Application Center	Larson, Robb E	Mechanical & Industrial Engineering (414500)
Konigsberg, Evelyn Rivka	Study of the Moth, Schinia Cognata,	Littlefield, Jeffrey	Land Resources & Environ Sci (412700)
Konigsberg, Evelyn Rivka	Weed Bio-Control Treatment	Littlefield, Jeffrey	Land Resources & Environ Sci (412700)
Kowalski, Nicholas Mark	Bedrock and Quaternary Geology of t	Lageson, David R	Earth Science (415500)

Students Paid from Research Grants

Name	Fund Title	PI	PI Home Org
Kozeluh, Craig D	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Krauss, Ryan Walter	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Krob, Tyler James	TWO TECHNICAL STUDIES TO GAIN TECHN	Miller, David A	Mechanical & Industrial Engineering (414500)
Krueger, Karalyn Beth	National Technical Assistance Cente	Albert, Stephen	Western Transportation Institute (414030)
Kudalkar, Priyanka Sushil	Mycodiesel? from Various Endophytic	Strobel, Gary A	Plant Sciences (412300)
Kuntz, Jeffrey Ryan	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Lambert, Adrien	CAN (LaMeres)/Experimental Program	Des Jardins, Angela Colman	Physics (415400)
Langemeier, Jeffrey Barton	Rural Transportation Research, Deve	Albert, Stephen	Western Transportation Institute (414030)
Langemeier, Jeffrey Barton	Professional Capacity Building for	Galarus, Doug E	Western Transportation Institute (414030)
Lau, Cera Elizabeth	Evaluation of various materials and	Stougaard, Robert N	AES NWARC (412905)
Lau, Cera Elizabeth	Orange wheat blossom midge manageme	Stougaard, Robert N	AES NWARC (412905)
LeBer, Bridgette Alayne	GAIA: Slope and Basin Consortium	Gardner, Michael Howard	Earth Science (415500)
Leask, Amy	Mycodiesel? from Various Endophytic	Strobel, Gary A	Plant Sciences (412300)
Leask, Amy	ARRA EFRI-HyBi: Fungal Processes fo	Peyton, Brent Michael	Chemical & Biological Engineering (414100)
Leckie, Katherin Eliza	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Lehnert, Christian Stacy	Evaluation of various materials and	Kephart, Kenneth D	AES SARC (412903)
Lesky, Cheyenne Amber	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Lewis, Brooke Elaine	Caring for Our Own Program	Melland, Helen	Nursing Departments (411600)
Lindahl, Peter Allan	CAREER: Fuel Cell Degradation Diag	Shaw, Steven R	Electrical Engineering (414300)
Lindquist, Jake Raymond	Building better probes for 2 photon	Drobijev, Mikhail	Physics (415400)
Linker, Emily Kaye	Montana State Office of Rural Healt	Juliar, Kristin	Montana AHEC (421240)
Linker, Emily Kaye	Montana State Office of Rural Healt	Juliar, Kristin	Montana AHEC (421240)
Littlewolf Spencer, D. Gaehel	ARRA BRIGE Self-Assembling Sideroph	Richards, Abigail Marie	Chemical & Biological Engineering (414100)
Livingston, Justin David	National Technical Assistance Cente	Albert, Stephen	Western Transportation Institute (414030)
Lokken, Patrick Bucknam	Montana HTAP: High-Technology Assis	Dickensheets, David L	Electrical Engineering (414300)
Lozier, Savannah Cove	WildFIRE PIRE: Feedbacks and Conseq	Whitlock, Cathy	Earth Science (415500)
Lucas, Kilean Scott	FUNDAMENTAL RESEARCH ON THE BIOLOGI	Avci, Recep	Physics (415400)
Luhr, Rachael Lee	Engaging Women in Engineering Throu	LaMeres, Brock Jerome	Electrical Engineering (414300)
Lukes, Sarah Jane	IDBR: Agile Electronic Focus and Ab	Dickensheets, David L	Electrical Engineering (414300)
Lundgren, Lisa Marie	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Lynn, Tiphani R	CRCNS: Neural Population Coding of	Gray, Charles M	Computational Biology (421230)
Lynn, Tiphani R	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Maddio, Megan Therese	ARRA:Assembling the viral tree of l	Young, Mark J	Plant Sciences (412300)
Manning, Colin	Fisheries Unit	Zale, Alexander V	MT Coop Fisheries (415375)
Manning, Colin	Softshells in the Missouri River in	Bramblett, Robert Glenn	MT Coop Fisheries (415375)
Martineau, Dean Crummett	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Mayernik, Brian Thomas	PECASE: MOSES Rocket Investigation	Kankelborg, Charles	Physics (415400)
Mayernik, Brian Thomas	Montana Space Grant 2010-2014 Appre	Des Jardins, Angela Colman	Physics (415400)
Mayernik, Brian Thomas	ARRA CubSat: Firebird: Focused Inv	Klumpar, David M	Physics (415400)
Mayes, Ethan Thomas	ALTERNATIVES TO TRADITIONAL CONFINE	Hatfield, Patrick George	Animal & Range Sciences (412400)
Mays, Janell D	Consortium for Community Based Rese	Christopher, Suzanne E	Health & Human Development (413100)
McCabe, Matthew James	Spring wheat breeding and genetics	Talbert, Luther E	Plant Sciences (412300)
McGunagle, Patrick Timothy	Diversified cropping systems: High	Miller, Perry Ray	Land Resources & Environ Sci (412700)
McKay, Mountain Dawn Squeak	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
McLoughlin, Michael R	Impact of hepatocyte lineage life h	Schmidt, Edward	Immunology & Infectious Diseases (412800)
McLoughlin, Michael R	ARRA Nanopartical Immunoprophylacti	Schmidt, Edward	Immunology & Infectious Diseases (412800)
McWilliams, Taisha Marie	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
McWilliams, Taisha Marie	Montana Basic AHEC	Juliar, Kristin	Montana AHEC (421240)
Mehrens, Kyle L	Coordinated Regional Water Resource	Sigler, William Adam	Land Resources & Environ Sci (412700)
Mends, Morgan Tess	Mycodiesel? from Various Endophytic	Strobel, Gary A	Plant Sciences (412300)
Metcalf, Cyrus Allan	Defense Technology Transfer - CPO 1	Swearingen, Will D	Techlink (421210)
Middleton, Julia Catherine	DPHHS - Dental Recruitment and Rete	Juliar, Kristin	Montana AHEC (421240)
Miles, Josiah Thomas	Hypoxia adaptation and fungal virul	Cramer, Robert Andrew	Immunology & Infectious Diseases (412800)
Miles, Nicholas James	Collaborative Research: Holocene Fi	Whitlock, Cathy	Earth Science (415500)
Miller, Christopher Ryan	CAREER: Fuel Cell Degradation Diag	Shaw, Steven R	Electrical Engineering (414300)
Miller, Connie Marie	Evaluation of various materials and	Wichman, David M	AES CARC (412901)
Miller, Elizabeth Amelia	Spring wheat breeding and genetics	Talbert, Luther E	Plant Sciences (412300)
Miller, Elizabeth Amelia	Evaluation of various materials and	Wichman, David M	AES CARC (412901)
Miller, Kelsey Lynn	EASE Enhancing Access Scholarships	Sherick, Heidi Marie	Dean of Engineering (414001)
Mitchell, Adam Benjamin	Soil Modification as a Restoration	Litt, Andrea	Ecology (415300)
Moen, Drew Roland	ZERT II - Repasky Task 4	Spangler, Lee H	Research (421001)
Moghimi, Seyyed Mohammad Javad	IDBR: Agile Electronic Focus and Ab	Dickensheets, David L	Electrical Engineering (414300)
Monaco, Rachel Ann	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Morris, Dayla Krystal	Environmental Responses to Geologic	Cunningham, Alfred B	Civil Engineering (414200)
Morrissey, Kathryn Leigh	ARRA: Center for the Analysis of Ce	Dratz, Edward A	Chemistry (415200)
Morse, Danielle Leigh	ARRA National Tribal Healthy Homes	Vogel, Michael P	Education (413200)
Moss, Jefferson Jack	Plant, Season, and Microbial Contro	Stein, Otto R	Civil Engineering (414200)
Murrill, Rikki Lynn	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Nehmeh, Adel	MEPI Student Leaders Program	Peterson, Norman J	Office of International Programs (419630)
Nehrir, Amin Reza	Water Vapor Profiling	Repasky, Kevin S	Electrical Engineering (414300)
Nehrir, Amin Reza	Experimental Program to Stimulate C	Des Jardins, Angela Colman	Physics (415400)
Neuman, Laurie Anne	Great Plains Diagnostic Network - M	Burrows, Mary Eileen	Plant Sciences (412300)
Neuman, Laurie Anne	Implementing IPM Certification	Knight, James Everett	Extension Service Administration (471001)
Neuman, Laurie Anne	Plant diseases survey	Burrows, Mary Eileen	Plant Sciences (412300)
Newhouse, Hannah Marie	MBRCT: PhotoBioreactor Optimization	Peyton, Brent Michael	Chemical & Biological Engineering (414100)
Newhouse, Hannah Marie	Montana ICTL Demonstration Program	Peyton, Brent Michael	Chemical & Biological Engineering (414100)
Nguyen, Minh Hoang	GAIA: Slope and Basin Consortium	Gardner, Michael Howard	Earth Science (415500)
Norman, Myra Luisa	COBRE Project 3 - Singel Year 4	Singel, David J	Chemistry (415200)
O'Dea, Justin Kevin	Investigating the Legume Green Fall	Miller, Perry Ray	Land Resources & Environ Sci (412700)

Students Paid from Research Grants

Name	Fund Title	PI	PI Home Org
O'Donnell, Brooke N	Howard Hughes Undergraduate Biology	Jacobs, Gwen A	Computational Biology (421230)
O'Donnell, Brooke N	Undergraduate Science Education Pro	Jacobs, Gwen A	Computational Biology (421230)
O'Neil, Desirae Lynn	Evaluation of various materials and	Kephart, Kenneth D	AES SARC (412903)
O'Neill, Thomas Jerome	Sheep Grazing as a Pest Management	Hatfield, Patrick George	Animal & Range Sciences (412400)
Oliver, Kyle William	STTR Phase II: Bridger Photonics	Dickensheets, David L	Electrical Engineering (414300)
Oliver, Kyle William	MEMS-Based Micro Zoom Lens for Cell	Dickensheets, David L	Electrical Engineering (414300)
Oliver, Kyle William	Periodically Poled Materials for UV	Dickensheets, David L	Electrical Engineering (414300)
Olson, Eric Scott	Evaluation of various materials and	Carlson, Gregg R	AES NARC (412904)
Olson, Eric Scott	Evaluation of various materials and	Kephart, Kenneth D	AES SARC (412903)
Orloff, Lesley Noelle	Cheatgrass (Bromus tectorum) ecolog	Mangold, Jane Marie	Land Resources & Environ Sci (412700)
Orloff, Lesley Noelle	Integration of pathogens, sheep her	Menalled, Fabian Daniel	Land Resources & Environ Sci (412700)
Ovik, Kelsey Joy	Developing Biennial, Early Planted,	Mason, Heather	AES NWARC (412905)
Ovik, Kelsey Joy	Evaluation of various materials and	Stougaard, Robert N	AES NWARC (412905)
Ovik, Kelsey Joy	Orange wheat blossom midge manageme	Stougaard, Robert N	AES NWARC (412905)
Pace, Alexandra Elizabeth	UTC Corrosion Monitoring System for	Shi, Xianming	Western Transportation Institute (414030)
Pace, Alexandra Elizabeth	A Corrosion Monitoring System for E	Shi, Xianming	Western Transportation Institute (414030)
Pallardy, James Michael	BLADE RELIABILITY-EFFECTS	Cairns, Douglas S	Mechanical & Industrial Engineering (414500)
Pankratz, Elle Marie	ARRA EFRI-HyBi: Fungal Processes fo	Peyton, Brent Michael	Chemical & Biological Engineering (414100)
Parker, Robert John	Coord Speed Mgmt Systems to Reduce	Ward, Nicholas John	Industrial & Mgmt Engr (414400)
Parker, Robert John	National Technical Assistance Cente	Albert, Stephen	Western Transportation Institute (414030)
Patel, Jankiben Dineshkumar	Integrated Management Strategies fo	Jacobsen, Barry J	Plant Sciences (412300)
Patel, Jankiben Dineshkumar	Biochemical Genomics: Quizzing the	Lu, Chaofu	Plant Sciences (412300)
Patel, Jankiben Dineshkumar	Understanding carbon dynamics: Agro	Maxwell, Bruce D	Land Resources & Environ Sci (412700)
Patel, Meet N	MRSA on the Northern Cheyenne India	Voyich, Jovanka Marija	Immunology & Infectious Diseases (412800)
Paulson, Steven Delano	Novel Chemical Analyses of the Biof	Carlson, Ross Peter	Chemical & Biological Engineering (414100)
Pearce, Hannah Marvyl	Winter Wheat Breeding/Genetics	Bruckner, Philip L	Plant Sciences (412300)
Pearson, Evan Carl	Defense Technology Transfer - CPO 1	Swearingen, Will D	Techlink (421210)
Pearson, Rachel Lynn	Montana Health Care Workforce Plann	Juliar, Kristin	Montana AHEC (421240)
Pedersen, Todd Christian	Montana ICTL Demonstration Program	Peyton, Brent Michael	Chemical & Biological Engineering (414100)
Peick, Jaclyn Marie	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Pellerin, Henri Albert	Montana Apprenticeship Program (MAP	Shelby, Nancy Jane	WWAMI Medical Educ Program (419120)
Pellerin, Henri Albert	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Penic, Melis	Role of IbpA in maintaining viabili	Franklin, Michael J	Microbiology (415100)
Penney, Jordan J	Developing Biennial, Early Planted,	Mason, Heather	AES NWARC (412905)
Penney, Jordan J	Evaluation of various materials and	Stougaard, Robert N	AES NWARC (412905)
Penney, Jordan J	Orange wheat blossom midge manageme	Stougaard, Robert N	AES NWARC (412905)
Perra, Beau A	ARRA:MT Weatherization Program	Vogel, Michael P	Education (413200)
Peterson, Emily Jane	Montana Sustainable Communities Pro	Davison, Stephanie K	ES 4-H (471003)
Peterson, Emily Jane	Montana Sustainable Communities Pro	Davison, Stephanie K	ES 4-H (471003)
Pettinger, Natasha Wren	Dynamics of Excited Electronic Stat	Kohler, Bern	Chemistry (415200)
Phillips, Nathan Andrew	MEPI Student Leaders Program	Peterson, Norman J	Office of International Programs (419630)
Pincetl, Adrienne Suzanne	ARRA Admin COBRE Translational Supp	Quinn, Mark T	Immunology & Infectious Diseases (412800)
Pioro, Ryan Joseph	Horizons Program Expansion/Poverty	Steele, Douglas Lee	Extension Service Administration (471001)
Podder, Rajit	Development of a handheld probe for	Dickensheets, David L	Electrical Engineering (414300)
Podder, Rajit	STTR Phase II: Bridger Photonics	Dickensheets, David L	Electrical Engineering (414300)
Pollari, Carolyn Ennola	Rural Health Workforce Development	Juliar, Kristin	Montana AHEC (421240)
Pollari, Carolyn Ennola	Montana Health Care Workforce Plann	Juliar, Kristin	Montana AHEC (421240)
Poole, Rhea Alexandra	Montana University Center - Manufac	Holland, Steven L	MT Mfg Extension Center MMEC (414040)
Popovitch, Paul Joseph	ARRA BRIGE Self-Assembling Sideroph	Richards, Abigail Marie	Chemical & Biological Engineering (414100)
Porter, Tucker Fredrick	Regional Biomass Feedstock Partners	Chen, Chengci	AES CARC (412901)
Preftakes, Collin James	Improving IPM of Mosquitoes by Addr	Peterson, Robert K	Land Resources & Environ Sci (412700)
Preftakes, Collin James	Optimizing Control Efficacy and Pla	Peterson, Robert K	Land Resources & Environ Sci (412700)
Prescott, Thomas O	WATER QUALITY FACTORS AFFECTING THE	McMahon, Thomas E	Ecology (415300)
Price, Virginia Elizabeth	Atmospheric Imaging Assembly (AIA)	McKenzie, David E	Physics (415400)
Raftopoulos, Andrew Steve	Targeted Grazing For Managing Invas	Kott, Rodney W	Animal & Range Sciences (412400)
Ragen, Tyler John	Sheep Grazing as a Pest Management	Hatfield, Patrick George	Animal & Range Sciences (412400)
Rahman, Tahsin Mashrur	An Advanced Vibrothermography Appro	Mian, AKM Ahsan	Mechanical & Industrial Engineering (414500)
Ramm, Keaton Michelle	MSU-Bozeman 2011-2012 Campus Corps	Tanner, Kathryn M	Community Involvement (441150)
Rauschendorfer, Darian Dawn	EPSCoR 07-09 Administrative	Young, Mark J	Plant Sciences (412300)
Rauschendorfer, Darian Dawn	Infrastructure via Science and Tech	Young, Mark J	Plant Sciences (412300)
Raymond, Mark C	Mycodiesel? from Various Endophytic	Strobel, Gary A	Plant Sciences (412300)
Redburn, Lauren Christine	Early Care and Education Career Dev	Hancock, Elizabeth P	Health & Human Development (413100)
Redburn, Lauren Christine	Early Care and Education Career Dev	Hancock, Elizabeth P	Health & Human Development (413100)
Reichhardt, Sydney Rose	MSU-Bozeman 2011-2012 Campus Corps	Tanner, Kathryn M	Community Involvement (441150)
Reinhold, Ann Marie	Anthropogenic Habitat Change Effect	Bramblett, Robert Glenn	MT Coop Fisheries (415375)
Reutter, Colin Quinn	Montana Apprenticeship Program (MAP	Shelby, Nancy Jane	WWAMI Medical Educ Program (419120)
Reutter, Colin Quinn	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Revia, Richard Aaron	Student-Centered Learning Strategie	Becker, James P	Electrical Engineering (414300)
Rich, Zachary Tomlinson	Volunteer Monitoring Level 3 Traini	Sigler, William Adam	Land Resources & Environ Sci (412700)
Rich, Zachary Tomlinson	Riparian Storm Water and Riparian O	Sandve, Nikki S	MT Water Resource Center (421030)
Richards, Ryan Roy	Survival and Behavior of Larval Stu	Guy, Christopher	Ecology (415300)
Rinehart, Erin Darling	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Riter, Amanda Suzann	2011 Operation Military Kids Camps	Martz, Jill	ES 4-H (471003)
Robertson, Michelle Diane	Integrated analysis of extremophile	Bothner, Brian	Chemistry (415200)
Robinson, Cameron J	Montana American Indian Initiative	Camper, Anne K	Dean of Engineering (414001)
Robinson, Gaberiella Renee	Montana American Indian Initiative	Camper, Anne K	Dean of Engineering (414001)
Roefaro, Sommer Ann	Evaluation of Non-Motorized Use: P	McGowen, Patrick Tracy	Civil Engineering (414200)
Roessler, Kyle Conrad	Montana American Indian Initiative	Camper, Anne K	Dean of Engineering (414001)
Rose, Thomas J	ARRA CubSat: Firebird: Focused Inv	Klumpar, David M	Physics (415400)

Students Paid from Research Grants

Name	Fund Title	PI	PI Home Org
Roset, Kristin Marie	EPSCoR 07-09 Administrative	Young, Mark J	Plant Sciences (412300)
Roskam, Jade M	Examining Coaching in Elementary (K	Yopp, David	Mathematical Sciences (415700)
Roskos, Colter Eastman	Building Green: Development and Eva	Berry, Michael Patrick	Civil Engineering (414200)
Rothman, Adam Patrick	CMG RESEARCH: IMPACT OF BIOFILMS ON	Klapper, Isaac	Mathematical Sciences (415700)
Roy, Ethan	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Ruegsegger, Gregory Neal	A Stress Reduction Strategy for Dec	Miles, Mary P	Health & Human Development (413100)
Ruegsegger, Gregory Neal	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Rupp, Jennifer Jean	Transformation of Alfalfa	McCoy, Thomas J	Research (421001)
Ruzicka, Jacob Carl	Periodically Poled Materials for UV	Dickensheets, David L	Electrical Engineering (414300)
Ruzicka, Jacob Carl	Nanostructured optics for high-perf	Nakagawa, Wataru	Electrical Engineering (414300)
Rydberg, Skyler Jon	Hybrid micro/nano-optical devices f	Nakagawa, Wataru	Electrical Engineering (414300)
Rydberg, Skyler Jon	Nanostructured optics for high-perf	Nakagawa, Wataru	Electrical Engineering (414300)
Sainju, Nirap N	Sheep Grazing as a Pest Management	Hatfield, Patrick George	Animal & Range Sciences (412400)
Samuelson, Tyler V	Integrated Management Strategies fo	Jacobsen, Barry J	Plant Sciences (412300)
Samuelson, Tyler V	Development of management technique	Jacobsen, Barry J	Plant Sciences (412300)
Scanlon, Ryan Scott	Methane Cycling in Subglacial Sedim	Skidmore, Mark Leslie	Earth Science (415500)
Schaar, Joseph Robert	Mycodiesel? from Various Endophytic	Strobel, Gary A	Plant Sciences (412300)
Schaetzel-Hill, Logan Bek	Using Dendrimers to Design Multival	Cloninger, Mary Jane	Chemistry (415200)
Schaff, Rebecca Joy	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Schaible, George Andrew	Mycodiesel? from Various Endophytic	Strobel, Gary A	Plant Sciences (412300)
Schaible, George Andrew	ARRA EFRI-HyBi: Fungal Processes fo	Peyton, Brent Michael	Chemical & Biological Engineering (414100)
Scherting, Megan Jean	Sheep Grazing as a Pest Management	Hatfield, Patrick George	Animal & Range Sciences (412400)
Schielke, Stephani Sue	Engaging Women in Engineering Throu	LaMeres, Brock Jerome	Electrical Engineering (414300)
Schipf, Kathryn Jean	Engaging Women in Engineering Throu	LaMeres, Brock Jerome	Electrical Engineering (414300)
Schmidt, Hunter C	ARRA:Assembling the viral tree of l	Young, Mark J	Plant Sciences (412300)
Schmit, Amber Michelle	Dissolved Organic Matter in the Cot	Foreman, Christine Marie	Land Resources & Environ Sci (412700)
Schober, Tyler James	Saltcedar effects on mycorrhizal fu	Lehnhoff, Erik Adam	Land Resources & Environ Sci (412700)
Schroeder, Tyler Joseph	Winter Wheat Breeding/Genetics	Bruckner, Philip L	Plant Sciences (412300)
Schuster, Michael Francis	technical study to perform analysis	Miller, David A	Mechanical & Industrial Engineering (414500)
Schwendtner, Daniel	MSGC 2010-2014 Nanasats	Klumpar, David M	Physics (415400)
Seeley, Nicholas Clay	Best Practices and Guidelines for P	Shi, Xianming	Western Transportation Institute (414030)
Segil, Cavin MacLeish	Montana Agroemergency Education and	Tharp, Cecil Irwin	Animal & Range Sciences (412400)
Shaughnessy, Daniel Patrick	ARRA:Assembling the viral tree of l	Young, Mark J	Plant Sciences (412300)
Sherick, Matthew Lawrence	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Sherman, James Clark	Spring wheat breeding and genetics	Talbert, Luther E	Plant Sciences (412300)
Shields, Kenny D	Consortium for Community Based Rese	Christopher, Suzanne E	Health & Human Development (413100)
Shields, Kevin J	Saltcedar effects on mycorrhizal fu	Lehnhoff, Erik Adam	Land Resources & Environ Sci (412700)
Sikorski, Emily Diane Aasheim	Integrated Design Laboratory	Wood, Thomas R	Architecture (416100)
Singh, Barinderjit	Mining for Markers for Marker-Assis	Sherman, Jamie D	Plant Sciences (412300)
Singh, Barinderjit	Spring wheat breeding and genetics	Talbert, Luther E	Plant Sciences (412300)
Sinnema, Kari Lynne	Improved Quality of Montana Hard Re	Nash, Deanna L	Plant Sciences (412300)
Skurski, Tanya Christine	Saltcedar effects on mycorrhizal fu	Lehnhoff, Erik Adam	Land Resources & Environ Sci (412700)
Smaglik, Matthew Robert	Montana Sustainable Communities Pro	Davison, Stephanie K	ES 4-H (471003)
Smaglik, Matthew Robert	Montana Sustainable Communities Pro	Davison, Stephanie K	ES 4-H (471003)
Smith, Benjamin D	Dynamics of Excited Electronic Stat	Kohler, Bern	Chemistry (415200)
Smith, Benjamin D	Dynamics of Excited Electronic Stat	Kohler, Bern	Chemistry (415200)
Smith, Erin Patterson	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Smith, Keith Peter	Defense Technology Transfer - CPO 1	Swearingen, Will D	Techlink (421210)
Smoot, Laurie Allison	Engaging Women in Engineering Throu	LaMeres, Brock Jerome	Electrical Engineering (414300)
Smoot, Laurie Allison	NANOSAT 2011-SPACEBUOY-A University	Klumpar, David M	Physics (415400)
Smoot, Laurie Allison	Montana Space Grant 2010-2014 Appre	Des Jardins, Angela Colman	Physics (415400)
Solomon, Benjamin Hahn	Determination of Factors that Contr	Cooksey, Keith E	Microbiology (415100)
Soukup, Benjamin John	ARRA: Optic Sensor Array for Carbon	Repasky, Kevin S	Electrical Engineering (414300)
Soule, Shelby Elizabeth	BSCS, Phase III, Admin	Spangler, Lee H	Research (421001)
Souther, Elisabeth C	Troops to Teachers 2010-2011	Baker, Larry J	Dean Educ/HHD (413001)
Spaulding, Kyle R	An Advanced Vibrothermography Appro	Mian, AKM Ahsan	Mechanical & Industrial Engineering (414500)
Speakman, Keila Michelle	Virtual Institute for Microbial Str	Fields, Matthew W	Microbiology (415100)
Spendlove, Kelly Tulare	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Stacey, Hillary June	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Stanisich, Jessica Jean	ARRA: Center for the Analysis of Ce	Dratz, Edward A	Chemistry (415200)
Staven, Asa Juel	Studies of the Root Boring Beetle S	Ivie, Michael A	Plant Sciences (412300)
Staven, Asa Juel	Pest survey -- small grains and she	Ivie, Michael A	Plant Sciences (412300)
Staven, Asa Juel	Pest survey -- small grains and she	Ivie, Michael A	Plant Sciences (412300)
Staven, Asa Juel	Pest survey -- small grains and she	Ivie, Michael A	Plant Sciences (412300)
Stearns, Michael Elloit	Infrastructure via Science and Tech	Young, Mark J	Plant Sciences (412300)
Stedje, Erick Michael	Targeted Grazing For Managing Invas	Kott, Rodney W	Animal & Range Sciences (412400)
Steele, Katarzyna Anna	Barley Straw Fructanosic Ethanol fo	Blake, Thomas K	Plant Sciences (412300)
Stein, Luke R	Eng Apprenticeship	Adams, Edward E	Civil Engineering (414200)
Stein, Michael	Spawning of Pallid Sturgeon and Sho	Guy, Christopher	Ecology (415300)
Stenson, Amber Lee	Sensor-Based Nitrogen Fertilization	Walsh, Olga	AES WTARC (412907)
Sterrenberg, Sean Richard	Integrated analysis of extremophile	Bothner, Brian	Chemistry (415200)
Stevens, Cheyenne O'Brien	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Stevens, Lois Lorraine	Consortium for Community Based Rese	Christopher, Suzanne E	Health & Human Development (413100)
Stillman, Tyson Garrey	Winter Wheat Breeding/Genetics	Bruckner, Philip L	Plant Sciences (412300)
Stoltzfus, Caleb Ray	PFI:Remote Detection of Chemicals	Babbitt, William Randall	Physics (415400)
Stone, Carley Jo	Infrastructure Support for Small Li	Boles, Jane Ann	Animal & Range Sciences (412400)
Stringam, Joshua Joseph Snow	Environmental Responses to Geologic	Cunningham, Alfred B	Civil Engineering (414200)
Strunk, Thomas John	Mycodiesel? from Various Endophytic	Strobel, Gary A	Plant Sciences (412300)
Studniarz, Joseph G	Baseline Sound Monitoring at Grant	Maher, Robert C	Electrical Engineering (414300)

Students Paid from Research Grants

Name	Fund Title	PI	PI Home Org
Susorney, Hannah Celiene Meyer	Methane Cycling in Subglacial Sedim	Skidmore, Mark Leslie	Earth Science (415500)
Szemes, Eric George	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Talbot, Tim Charles	Memorandum of Understanding Between	Juliar, Kristin	Montana AHEC (421240)
Tallbull, Meredith	Montana American Indian Initiative	Camper, Anne K	Dean of Engineering (414001)
Talley, Shane Michael	WATER QUALITY FACTORS AFFECTING THE	McMahon, Thomas E	Ecology (415300)
Tavary, Tesha Rose	IDBR: Agile Electronic Focus and Ab	Dickensheets, David L	Electrical Engineering (414300)
Tempero, Tyler Kevin	Mechanical Characterization of Comp	Miller, David A	Mechanical & Industrial Engineering (414500)
Tempero, Tyler Kevin	technical study to perform analysis	Miller, David A	Mechanical & Industrial Engineering (414500)
Thompson, Teena Marie	Consortium for Community Based Rese	Christopher, Suzanne E	Health & Human Development (413100)
Thurman, Lydia S	MEPI Student Leaders Program	Peterson, Norman J	Office of International Programs (419630)
Tikka, Janie Alice	Canola Research - Pacific NW (FY 20	Mason, Heather	AES NWARC (412905)
Tikka, Janie Alice	Spring canola as a rotational crop	Mason, Heather	AES NWARC (412905)
Tikka, Janie Alice	Developing Biennial, Early Planted,	Mason, Heather	AES NWARC (412905)
Till, Rosemary Eileen	Evaluation of various materials and	Stougaard, Robert N	AES NWARC (412905)
Till, Rosemary Eileen	Orange wheat blossom midge manageme	Stougaard, Robert N	AES NWARC (412905)
Toride, Moeko	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Toussaint, Jean-Paul Jacques	Montana BioDiesel Initiative	Peyton, Brent Michael	Chemical & Biological Engineering (414100)
Townsend, Craig	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Trudnowski, Anthony James	An Advanced Vibrothermography Appro	Mian, AKM Ahsan	Mechanical & Industrial Engineering (414500)
Tucker, Nathaniel Garfield	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Udelhoven, Amber Marie	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Vadheim, Bryan Erik	Simulation of Second Hand Smoke	Heys, Jeffrey James	Chemical & Biological Engineering (414100)
Vergeront, Kali Walker	LTAP SPR FY 12	Jenkins, Steven V	Western Transportation Institute (414030)
Versland, McKenzie Lin	Impact of hepatocyte lineage life h	Schmidt, Edward	Immunology & Infectious Diseases (412800)
Vosen, Alana Jessie	Troops to Teachers 2010-2011	Baker, Larry J	Dean Educ/HHD (413001)
Vosen, Alana Jessie	Troops to Teachers 2011-2012	Baker, Larry J	Dean Educ/HHD (413001)
Waits, John Thomas	BREAD: Inactivating rust resistanc	Huang, Li	Plant Sciences (412300)
Ward, Lydia Marie	Improved Quality of Montana Hard Re	Nash, Deanna L	Plant Sciences (412300)
Warthen, Katherine Grace	Microbial Activity in Porous Media	Gerlach, Robin	Chemical & Biological Engineering (414100)
Weas, Heather Christine	MEPI Student Leaders Program	Peterson, Norman J	Office of International Programs (419630)
Weas, Thomas Scott	Advanced Multi-Photon Chromophores	Rebane, Aleksander	Physics (415400)
Webber, Eric Joseph	MSU Research and Testing in Support	Amende, Kevin Lee	Mechanical & Industrial Engineering (414500)
Webster, Kathryn	MSU-Bozeman 2011-2012 Campus Corps	Tanner, Kathryn M	Community Involvement (441150)
Wester, Emmett P	Sheep Grazing as a Pest Management	Hatfield, Patrick George	Animal & Range Sciences (412400)
Wester, Jonathan Ray	Tenderfoot Creek Bair Ranch Researc	Zale, Alexander V	MT Coop Fisheries (415375)
Wharton, Chelsie Brooke	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Wheeler, Abigail	Atmospheric Imaging Assembly (AIA)	McKenzie, David E	Physics (415400)
Wheeler, Lucas Clayton	Bio-Inspired Materials: Protein Cag	Douglas, Trevor	Chemistry (415200)
Wheeler, Lucas Clayton	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Whiston, Linnet	Using Bioindicators to Monitor and	Kerans, Billie L	Ecology (415300)
Whitmore, Laura Michelle	Structure and function of microbial	Inskeep, William P	Land Resources & Environ Sci (412700)
Wichman, Paul Robert	Development and Popularization of A	Chen, Chengci	AES CARC (412901)
Wilder, Alicia Diane	ARRA Collaborative Research: Invest	Feeley, Todd C	Earth Science (415500)
Willich, James Nicholas	Coord Speed Mgmt Systems to Reduce	Ward, Nicholas John	Industrial & Mgmt Engr (414400)
Wing, Alexandre David	Predicting the occurrence and sprea	Rew, Lisa	Land Resources & Environ Sci (412700)
Winter, Zachary Cole Michael	Growth and Physical Properties Meas	Neumeier, John	Physics (415400)
Woerlein, Lisa G	Feasibility of Reclaimed Asphalt Pa	Berry, Michael Patrick	Civil Engineering (414200)
Wolfe, Carin Annette	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Woodruff, David Cary	Museum Support	McKamey, Sheldon M	Public Service Museum (419340)
Workman, Julie Elizabeth	Montana Wind Application Center	Larson, Robb E	Mechanical & Industrial Engineering (414500)
Workman, Julie Elizabeth	BLADE RELIABILITY-EFFECTS	Cairns, Douglas S	Mechanical & Industrial Engineering (414500)
Worthington, Benjamin Joseph	Integrating Biological Control with	Mosley, Jeffrey C	Animal & Range Sciences (412400)
Wright, Amy Louise	New Paradigm for Discovery-Based Le	Dunkel, Florence V	Plant Sciences (412300)
Wright, Thomas Joseph	Montana INBRE II: A Multidisciplina	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Yang, Fan	COBRE - Yr 8 - Yang	Yang, Xinghong	Immunology & Infectious Diseases (412800)
Yoon, Esther Juyoung	Montana Radon Study	Larsson, Laura Stone	College of Nursing (411000)
Young, Colin E	Montana Space Grant Consortium 2009	Des Jardins, Angela Colman	Physics (415400)
Young, Colin E	IRIS-MSU Phase C/D/E EPO	Des Jardins, Angela Colman	Physics (415400)
Young, Jesse James	Establishing Mecinus janthinus Inse	Weaver, David K	Land Resources & Environ Sci (412700)
Young, Kaysha Raechelle	Modeling the Validity and Transfer	Stanley, Laura Michelle	Mechanical & Industrial Engineering (414500)
Young, Kenneth Andrew	Barley for Rural Development	Blake, Thomas K	Plant Sciences (412300)
Young, Kirstyn Cora	GAIA: Slope and Basin Consortium	Gardner, Michael Howard	Earth Science (415500)
Zambare, Neerja Milind	Microbial Activity in Porous Media	Gerlach, Robin	Chemical & Biological Engineering (414100)
Zanoni, William T	Integrated Design Laboratory	Wood, Thomas R	Architecture (416100)
Zerktouni, Khalid	CD4 T cell-mediated lung damage in	Harmsen, Allen G	Immunology & Infectious Diseases (412800)
Zignego, Elizabeth Jean	CTUIR Evaluation of Hydrologic Effe	Poole, Geoffrey	Land Resources & Environ Sci (412700)

Facilities Condition Inventory (FCI)

WHY IS THE FCI PROGRAM UNIQUE?

- Collaborating team that assesses one builidng each month to complete a full campus FCI cycle every three years
- FCI assessment team consists of architect, planner, electrician, custodian, IT Tech, CAD Tech, plumber, HVAC Techs, and carpenter
- Records a snapshot in time of the observable condition of the buildings exterior and interior according to 11 building systems
- Eleven Building Systems include foundation, envelope, floor, roof, finishes, specialties, HVAC, plumbing, electrical, conveying, and safety
- Team members provide history and discuss potential solutions following tour of the building
- Varied and detailed reports can serve as budget, operational and/or planning tools
- Reports include building enhancement issues such as sustainability efforts, building code compliance considerations and accessibility improvements
- Facilities Planning is responsible for FCI training, database operation, and audit scheduling and organization; Facilities Services IT is charged with database management
- MSU has extended the use of its FCI system to include Auxiliaries facilities

In 1992, MSU created a desktop database program, the Facilities Condition Inventory (FCI), to track the variable condition of campus buildings. The FCI program provides an objective, consistent and systematic evaluation of the general condition and deferred maintenance profile of buildings and is a useful methodology in determining comparable condition assessments within a geographical area.

Efficient and cost-effective maintenance of buildings is important, as funding for facilities is more difficult to acquire and construction materials and labor costs continue to increase, potentially leading to replacement projects costing much more. Periodic evaluation of the condition of facilities is also essential for effectively managing budgets, operations, maintenance, and expansion.

MSU has actively shared the program and trained other university units and state agencies. MSU's dedication to refining and sharing the FCI program and its agency and legislative acceptance has enabled MSU to improve its public service to Montanans by its role in assessing the condition of facilities.

MSU's FCI program is based on an APPA's *Leadership in Educational Facilities'* model for facilities audits and employs comparative cost data from a nationally recognized cost estimating system to calculate deficiency estimates. Over time this regimented and systematic assessment of building conditions and FCI reports has provided deficiency details that directly improved funding and resource allocation decisions, improved the effectiveness of day-to-day maintenance operations, assisted administrators and managers in long-range capital planning and informed prioritization of building renewal and deferred maintenance projects. The compilation of records provides a dynamic value of the physical assets and enables a realistic and objective view of the major campus facilities at any given time.

MSU was awarded the 2008 "*Effective and Innovative Practices Award*" from APPA through a competitive recognition of program excellence.

The Rockefeller Institute of Government

Analyzing SUNY Facility Renewal and Backlog Needs

Final Report

September 28, 2007

The Pacific Partners Consulting Group, Inc. www.ppcg.com 408.374.9957

Executive Summary

Purpose and Scope of Study

This study was commissioned by the Rockefeller Institute of Government, on behalf of the State University of New York (SUNY) and the State University Construction Fund (SUCF), to conduct the research and analysis needed to provide a conceptual framework for uniformly and systematically assessing a major portion of the University's ongoing capital facility renewal needs. Capital renewal generally refers to those activities essential to maintaining existing facilities and their supporting infrastructure in a state of good repair. Thus, this study is not undertaken as a one-time effort; instead, it is intended to establish the basis for a continuing, interactive process of informed analysis and methodological refinement over time. Accordingly, the report that follows provides both research conducted to determine available benchmarking and the results of specific analyses performed to identify the annual facility renewal and backlog (i.e. deferred maintenance) needs of the University's State-operated academic facilities. By contrast, the study does not include residential or hospital facilities, which are funded under separate self-sustaining capital investment models. Nor does it include Community Colleges and other enterprise organizations, such as college foundations or auxiliary service corporations.

The study's key objectives were to:

- Identify and analyze prevailing industry standards for annual capital reinvestment and deferred maintenance for public higher education facilities. This analysis will assess the use and validity of Current Replacement Value (CRV) models and comment on its application for higher education systems;
- Assess SUNY academic facilities utilizing available campus and State University of New York Construction Fund (SUCF) data and available records and recommend a model to serve as a standard for annual capital reinvestment for SUNY academic facilities to maintain facilities in a good state of repair;
- Assess SUNY Academic facilities backlog and renewal needs utilizing available campus and SUCF data and available records;
- Benchmark SUNY needs against those of other higher education systems; and
- Provide a final report of research findings and recommendations, which includes an independent, objective proposal for an ongoing annual level of capital reinvestment in SUNY Academic facilities, based on the Current Replacement Value methodology.

Study Participants

The Rockefeller Institute organized and supervised the study conducted by Pacific Partners Consulting Group, Inc. (PPCG), headquartered in Stanford, California. PPCG specializes in analytic and policy studies. Frederick Biedenweg, President of PPCG, has over twenty-five years experience with public and private higher education facilities management. Dr. Biedenweg has published a number of articles on higher education management including: *A Robust Faculty Planning Model*, (published by the Stanford University Press); *Before the Roof Caves In: A Predictive Model for Physical Plant Renewal*, published by the National Association of College University Business Officers (NACUBO) (co-authored by Robert Hutson); *Planning in an Era of Change* (published by the Stanford Faculty Senate) and *Planning for Capital Reinvestment: Alternatives for Facilities Renewal Budgeting* (co-authored with Catherine Gardner and Lynda Weisburg-Swanson), published by NACUBO.

PPCG's system clients, which utilize its Facility Renewal Model methodology include: The University of Texas, The California State University System, Stanford University, Minnesota State Colleges and Universities, Oregon University System, The University of California, The National University of Singapore, The Smithsonian Institution, and The Getty Center and Villa.

PPCG worked in close conjunction with SUCF staff involved in the collection of current building and infrastructure data. SUCF staff knowledgeable with campus facility conditions worked with campus facility and plant staff for each SUNY campus to facilitate the completion of the 2007 Building Condition Assessment Survey (BCAS), a web-based system designed to assign a condition rating to building, site and infrastructure components. The effort included all major buildings (i.e., buildings with 5,000 or more gross square feet) for all State-operated campuses. Infrastructure systems for each campus were similarly reviewed and rated. The BCAS data were provided to verify life cycle and timing of renewal needs for SUNY's building and infrastructure subsystems. This information was analyzed, reconfigured, and entered into PPCG's Facility Renewal Resource Model (FRRM™). The study analyzed the BCAS subsystem condition ratings (excellent, good, fair, poor) and projected renewal and backlog needs.

Study Process: Methodology & Benchmarking

Methodology

In the course of its prior efforts, PPCG has examined the strengths and weaknesses of several differing approaches to planning for capital reinvestment, including: 1) Physical Plant Auditing, 2) Plant Depreciation as a Model for Renewal, 3) Inventory of Components, 4) Fixed Percentage of Current Replacement Value (CRV), and 5) the Life Cycle Model Based on CRV. Based on these efforts, PPCG advocates the use of the latter, the Life Cycle Model Based on CRV, the approach chosen to undertake this study. This method was developed in 1980 at Stanford University, and is currently in use by five higher education systems with over 108 campuses and over 150 million gross square feet of space.

The Life Cycle Model Based on CRV approach was chosen because it provided a tested, comprehensive, cost effective method to size the total current replacement value; identify current backlog and project capital renewal needs in the most reasonable period of time using available SUCF and SUNY data.

This methodology has also been recognized by the National Association for College and University Business Officers (NACUBO), the Association of Physical Plant Administrators (APPA) and the Society for College and University Planners (SCUP) as the "best method" for projecting capital renewal needs.

In general, the Life Cycle Model Based on CRV approach generates a high-level statistical overview of current facility renewal needs and any accumulated backlog based on institution-specific information, including: the age and type of building and its current condition; average building sub-system life cycles; related infrastructure support requirements; and the current cost of replacement – adjusted for regional cost differentials within the state. The Model uses building system life cycles, current replacement values and condition assessment information to develop a 50 year forecast of estimated backlog and renewal costs.

The model is not designed to address facility utilization-related variables such as enrollment levels or projected enrollment growth, or the extent of capital renovations needed to address changing academic mission goals. In addition, it may not account for other costs related to the University's ability to progress capital maintenance projects, such as the creation of "surge" space to allow sequenced access to buildings under rehabilitation or for costs related to modernization of facilities wherein components that are not pre-existing are added, such as adding elevators as part of ADA compliance efforts.

The overall results of this modeling are cost forecasts for current capital renewal needs and capital maintenance backlog, generated by the relative condition and known life cycle of major building components and sub-systems, over a 50-year renewal schedule for each campus and system-wide.

Benchmarking

There is a wealth of reliable sources for higher education statistics related to demographics, enrollments, educational attainment, teacher levels, graduation rates, etc. However, there is not a corresponding availability of tested statistics related to higher education capital facilities. Consistent capital facilities data collection is still in its early stages of development. Respected higher education capital facility advocacy organizations, such as The Association of Physical Plant Administrators (APPA), The National Association for College and University Business Officers (NACUBO) and The Society for College and University Planners (SCUP) are still struggling with the need to develop uniform standards for the reporting and collection of this information. What data is available is often not uniformly reported by each higher education institution, may not be subjected to verification or vetted to assure comparability. As a result, there is little available data to benchmark SUNY's capital facilities against.

PPCG has worked closely with several public higher education systems using the Life Cycle Model Based on CRV approach which include: University of Texas (15 campuses), the California State University System (24 campuses), the Oregon University System

(seven campuses), the University of California (nine campuses), and the Minnesota State Colleges and Universities System (53 campuses).

Due to the limited availability of any other reliable, uniformly-collected, industry-recognized, higher education facility data to serve as a benchmark for SUNY, PPCG relied upon data drawn from its pool of public higher education system clients (cited above) to serve that function (see Section 7). As a result, the benchmark data being compared to SUNY's experience benefits from uniformity in the definitions used in PPCG's prior analyses, including consistency in the methods of data collection and subsequent reviews for accuracy. PPCG applied those same conventions in the collection, review and analysis of SUNY's data. This assures that SUNY is objectively compared against five recognized and respected peer higher education systems.

SUNY: General Overview & Summary Findings

SUNY educational facilities consist of 32 state-operated campuses, two contract colleges (Cornell and Alfred Ceramics), along with System Administration, which includes the recent acquisition of Levin Institute. The total SUNY academic system is comprised of 1,800+ buildings with a total of 54.6 million gross square feet. Its infrastructure systems includes 160 miles of electrical distribution, 31 million square feet of parking, 50 miles of steam distribution and 450 athletic fields. Figure 3.2 is a system-wide histogram showing GSF (gross square feet) by construction date for the educational facility buildings. This chart demonstrates that substantial portions of SUNY buildings were constructed during the late 1960's and early 1970's. Figure 7.1 reveals that 73% of SUNY's Buildings are in excess of 30 years old.

SUNY system-wide educational facilities have a total Current Replacement Value (CRV) of $25.7 billion, including $22.9 billion for buildings, and $2.8 billion for supporting infrastructure. (Figure 8.1) Further, the SUNY State-operated system as a whole currently has a $3.2 billion backlog of deferred capital maintenance, including $2.5 billion for building system renovations and $0.7 billion for renewal of supporting infrastructure. The largest contributors to the building backlog are renovations or replacements related to 1) HVAC Controls/Equipment/Distribution Systems ($1.2 billion); 2) Exterior Walls, Roofs, Doors and Windows ($544 million); 3) Electrical Equipment/Power Wiring and Lighting ($253 million); 4) Built-in Equipment and Specialties - primarily found in "complex" facilities such as science labs or clinical space ($131 million) and 5) Interior Finishes ($130 million). Major backlog categories for infrastructure components include 1) Utility Distribution and Generation (primarily steam systems) and 2) Hardscape (surface parking, plazas, sidewalks, etc.)

An additional $2.0 billion in capital reinvestment is required over the next five years to avoid the accumulation of additional backlog. It is important to note that this estimate, like the above estimate of total renewal backlog, is expressed in 2007 dollars only; no adjustments have been made to anticipate future annual cost inflation or escalation amounts.

The most serious need identified by the study, in both backlog and annual renewal needs, involves infrastructure subsystems which support facility operations, especially in the area of aging underground distribution systems (Figure 6.1). Persisting problems with these systems at the levels currently evidenced is likely to lead to more expensive emergency repairs occasioned by major system failures.

SUNY: Comparisons to Other Systems

In Section 7, Benchmark Data**,** the SUNY System is compared to that of the five higher education peer systems mentioned previously. In Figures 7.1 through 7.5, the following benchmarks are compared:

- Facility Condition Index (FCI) – Simply stated the FCI is the percent of a System's current replacement value (CRV) that is beyond its useful life, in other words, it's already in "backlog". Figure 7.1 reflects:
  - On average, 11% of SUNY's building systems are in backlog, compared to an optimum level of 5% or under.
  - SUNY's system-wide average FCI is in middle range of six public systems compared (range is 6% to 23%)
- Percentage of Buildings Over 30-years Old – Figure 7.3 demonstrates that SUNY has the second highest system-wide average (73%) Percentage of Buildings Over 30-years Old.
- Buildings with Complex Systems – Figure 7.2 reflects that SUNY's system-wide average of buildings with complex systems is 11%. SUNY is comparable to the California State University System (by State-mandate the CSU system's primary focus is teaching), which also reports 11%. Those systems with a medical and/or research focus are 28% or higher (University of Texas, Oregon State University and University of California are 28% or higher).
- Annual Renewal Requirements as a Percent of CRV – Figure 7.4 reveals that SUNY statewide systems require an average annual renewal investment of 1.6% of its total building CRV. By comparison, California State University and the Minnesota State College & University System, the two state-mandated teaching college systems have a lower percentage of 1.4%. The other three systems, which are predominantly tier-one research universities, all have a higher Annual Renewal percentage of 1.7%. SUNY has a blending of teaching and research facilities.
- Average Annual Infrastructure as a Percent of Average Annual Building Renewal – Figure 7.5 reflects that SUNY requires an additional 14% added to average annual building renewal for infrastructure renewal. The average of all systems is 16.5%.

Study Findings and Recommendations

A few key charts are highlighted here which describe the range of findings applicable to SUNY capital planning and needs forecasting.

Buildings: Figure 5.1 illustrates the major building systems or components driving SUNY's current backlog of $2.5 billion for academic buildings. This chart also shows that another $1.7 billion will be needed to address upcoming building renewal needs between 2008 and 2012.

In*frastructure*: Figure 6.1 arrays the estimated $0.7 billion in current statewide infrastructure backlog by major component, and Figure 6.2 shows that an additional $0.3 billion is needed between 2008 and 2012 just to stay current ($53 million per year).

Combined: the building and infrastructure backlog total $3.2 billion. In addition, SUNY needs to invest approximately $2.0 billion ($400 million annually) in new renewal over the next five years to assure that SUNY's backlog does not continue to grow.

It is recommended that SUNY develop and implement an investment strategy to fully fund the Annual Renewal needs and reduce the backlog over time.

Scenarios are provided in Section 8 of the study that illustrate how the backlog will grow or diminish depending upon how quickly SUNY and the State wish to act. SUNY will require a Total Annual Renewal and Backlog Reduction Investment range of $400 million just to prevent the backlog from growing, and up to $700 million to virtually eliminate the backlog over the next ten years. Please note that all cost figures here are expressed in 2007 dollars; for simplicity of analysis and comparison, no further adjustments to anticipate future inflation or cost escalation are included.

Total Annual Renewal & Backlog Reduction Investment	**Net Impact on Backlog**
$200 Million	Backlog grows to a minimum of $4 billion in five years; and in excess of $5 billion in 10 years.
$400 Million	Backlog remains relatively constant
$560 Million	Backlog reduced by 50% in 10 years
$700 Million	Backlog almost eliminated in 10 years

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1. Introduction

The following report presents the results of a research study to analyze the facility renewal and backlog needs of the State University of New York (SUNY) academic facilities (residential, hospital, enterprise and Community College facilities are not included), as commissioned by The Rockefeller Institute of Government. The findings of the study are based upon an analytical approach developed by The Pacific Partners Consulting Group, Inc. (PPCG). The approach combines a high level statistical view of facilities renewal with institution specific information on buildings, system life cycles, infrastructure, and costs.

The study used data provided by SUNY and the State University Construction Fund (SUCF) on facility inventory and component conditions for each of the 1,815 SUNY academic buildings. The study also analyzed the web-based system condition ratings (excellent, good, fair, poor) and projected renewal and backlog needs identified by the SUNY and SUCF 2007 Building Condition Assessment Survey (BCAS), conducted for all State-operated campuses including all major buildings (i.e. buildings with 5,000 or more gross square feet). SUCF staff knowledgeable with campus facility conditions worked in conjunction with campus facility and plant staff to rate 29 components for each building. Infrastructure systems for each campus were similarly reviewed and rated. The BCAS effort included the majority of the System's 1,815 academic buildings with 54.6 million gross square feet, 160 miles of electrical distribution, 31 million square feet of parking, 50 miles of steam lines and 450 athletic fields. In addition, cost data were collected on actual construction and major renovation projects, throughout the SUNY system, over the past several years. This information was analyzed, reconfigured, and entered into PPCG's Facility Renewal Resource Model (FRRM™).

The FRRM™ model uses building system Life Cycles and Current Replacement Value (CRV) costs[1] on a system-by-system basis to produce profiles for each building with estimated dates for renovation based upon the conditions information provided by the SUNY campuses. From this data, a 50-year forecast of estimated backlog and renewal costs was developed for each building, campus, and the SUNY system overall. Model results were reviewed by the SUCF staff for validity prior to finalizing this report. The model is not designed to address facility utilization-related variables, such as enrollment levels, projected enrollment growth, or the extent of capital renovations needed to address changing academic mission goals. In addition, it may not account for other costs related to the University's ability to progress capital maintenance projects, such as the creation of "surge" space to allow sequencing access to buildings under rehabilitation or for costs related to modernization of facilities to add components that are not pre-existing, such as adding elevators as part of ADA compliance efforts.

[1] These costs were derived from actual SUNY projects and benchmarked against higher education construction and renovation projects as well as industry-based standards.

The objectives of the study were to:

- Identify and analyze prevailing industry standards for annual capital reinvestment in and deferred maintenance for public higher education facilities. This analysis will determine the use and validity of Current Replacement Value (CRV) models and comment on their application for higher education systems.
- Assess SUNY academic facilities utilizing available State University of New York Construction Fund (SUCF) data and available records and recommend a model to serve as a standard for annual capital reinvestment for SUNY academic facilities to maintain facilities in a good state of repair.
- Assess SUNY Academic facilities backlog and renewal needs utilizing available SUCF data and available records.
- Benchmark SUNY needs against those of other higher education systems.
- Provide a final report of research findings and recommendations, which include an independent, objective proposal for an ongoing annual level of capital reinvestment in SUNY Academic facilities, based on the Current Replacement Value methodology.

1.1 Project Approach

Working with a "Working Group" of State University Construction Fund (SUCF) and Rockefeller Institute staff, Pacific Partners led a process to tailor the study to meet the unique requirements of the Rockefeller Institute, SUCF and SUNY.

A comprehensive review of the Life Cycle/CRV approach and methodology was conducted to provide an understanding of both the mechanics of developing a Life Cycle/CRV model and to contrast it with other methods of projecting renewal costs. Specifications for the FRRM™ model including: building types; sub-systems; infrastructure categories; life cycles; and costs for the SUNY facilities were developed with the Working Group based on industry standards, PPCG's experience with over 120 higher education clients, and SUNY actual facility projects. The cost data used to estimate renewal requirements were derived from a database developed by Pacific Partners, which includes actual project costs for more than ten million gross square feet of educational space. These costs are benchmarked against industry standards, adjusted for regional costs and evaluated against actual new construction and renovation experience at SUNY. The research approach was tailored to accommodate the types of buildings and special construction factors specific to SUNY.

SUCF provided data on each building that included the campus, the building name, the construction date, and the gross square feet (GSF) of the building, as well as other information. SUCF also provided campus ratings for each component in each building of poor, fair, good, or excellent. PPCG took these ratings and assigned an expected remaining life to each component based on the rating,

the overall life cycle of the component and the construction year of the building. As an example, components rated poor were assigned either to the backlog (needing immediate renewal) or to needing renewal in 2008 or 2009. Components were then aggregated into subsystems using a weighted average based on the renewal cost of the various components.

A Note about Costs: **ALL** costs in this report are in **2007 dollars**. That is, there are NO escalation factors for one year to the next.

1.2 Methodologies Reviewed

During the course of this study, five methodologies for analyzing capital reinvestment in and deferred maintenance for public higher education facilities were examined:

The Physical Plant Audit

Entails building by building physical inspection to document the condition of campus facilities and identify deferred maintenance in such areas as: structures; foundations and substructures; roofing and exterior walls; heating, ventilation, and air conditioning (HVAC); plumbing, electrical, safety systems; and ceilings, floors, interior walls and conveying systems.

Strengths: Provides detailed and specific lists of buildings and components in need of maintenance; clearly identifies degree of deterioration; provides immediate estimates of cost to repair or replace; allows priorities to be set based on levels of degradation and other factors.

Weaknesses: Identifies only today's maintenance needs; it does not distinguish between current renewal needs versus deferred (or backlogged) needs; does not provide long-term planning information; and the cost for SUNY would be substantial.

Inventory of Components

Each component is identified along with installation date and cost. Components past their theoretical life are considered as being in backlog.

Strengths: Every component is tracked; actual component costs are used; and Renewal Curves can be generated.

Weaknesses: Every component is tracked; costs are not based on current installations; maintenance is significant; implementation cost is substantial; and backlog is frequently over estimated.

Plant Depreciation as a Model for Renewal

A "Depreciation Reserve" can be established and funded based upon annual depreciation calculations, which are determined by spreading the cost of original construction and improvements over the useful life of the facility.

Strengths: Recognizes the depletion of assets; is based upon commonly accepted accounting principles; and is easy to implement if depreciation accounting is already in place.

Weaknesses: Does not estimate deferred maintenance; does not predict annual renewal needs; is based on historical costs not expected current replacement costs; and does not provide adequate funding for renewal.

Fixed Percentage of Current Replacement Value (CRV)

Total current campus replacement value calculated based on published construction costs. An annual allocation of 1.5%-2.5% for plant renewal recommended by the Society of College and University Planning (SCUP), Association of Physical Plant Auditors (APPA), and National Association of College and Business University Business Officers (NACUBO).

*Strengths: It is e*asy to understand; easy to adjust the percentage; is analogous to endowment management; and is inexpensive to implement.

Weaknesses: There is no commonly accepted standard to define the "right" percentage and little connection with actual need.

Life Cycle Model Based on Current Replacement Value (CRV) of Facility Subsystems

Long-term renewal and deferred maintenance needs are estimated using facility types, gross square feet (GSF), and construction dates. Life cycle and replacement costs are predicted for each subsystem category based on standards and recent institutional experience.

- Predicts when to replace or renovate building subsystems;
- Projects renewal cost by year;
- Estimates the magnitude of deferred maintenance;
- Targets facilities and/or subsystems most likely in need of a physical audit; and
- Provides many different ways of looking at the information and data.

Strengths: Tailored to individual systems; accommodates cyclical nature of facilities wear-out; benchmarked against industry standards; estimates both facility renewal needs and deferred maintenance (backlog).

Weaknesses: Lacks the specificity of a physical plant audit; and lacks the simplicity of formula driven funding solutions.

PPCG recommended using the latter, the life cycle model based on CRV, as the approach chosen for this study. This method was developed in 1980 at Stanford University, and is recognized by NACUBO, APPA and SCUP as the "best method" for projecting capital renewal needs. It has been validated in multiple higher education environments and is currently in use by over 108 campuses in five higher education systems. Several factors support the use of the Life cycle Model Based on CRV for SUNY:

- Model has worked well for other higher education systems;
- SUNY can be benchmarked against national data;
- Currently in use by clients with over 150M GSF of space;
- Utilizes SUNY's existing building inventory data;
- SUNY's 2007 Building Condition Assessment Survey (BCAS) data can be cross-walked and incorporated;
- Draws from a database of life cycles and costs developed from actual construction and renovation projects; and
- Model may be tailored to address SUNY building types, subsystems site factors and unique experience.

Additional advantages to using the life cycle model based on CRV:

- Provides immediate and long term view of both deferred maintenance (DM) and on-going capital renewal needs;
- A living forecast, not a snapshot in time;
- Provides a consistent methodology across multiple buildings and/or sites; and
- Recognizes and identifies SUNY renewal cycles.

1.3 Organization of the Report

This report presents the methodology, assumptions, and findings of the analysis of SUNY's facilities renewal and backlog needs. It contains a subset of the actual FRRM™ reports reviewed by SUCF and Rockefeller Institute staff. They are presented in six sections: Assumptions, Validation Data, Backlog of Deferred Maintenance, Renewal Projections, Infrastructure, and Summary.

Assumptions

The Assumptions section lists each of the subsystem categories defined for the SUNY buildings and infrastructure, and provides estimated replacement or renewal costs for each subsystem. It also provides sample components for each subsystem. The cost

data were developed using detailed building project costs provided by SUCF, cost data from other academic institutions, and industry standards. A complete list of the SUCF buildings included in the cost analysis can be found in this section.

Validation Data

The Validation Data section consists of a gross square footage (GSF) summary table for each building type and campus, and a histogram showing GSF of construction by construction date for the education facility buildings. The purpose of the validation data is to assure that all building data received from SUCF have been entered into the FRRM™ model correctly and that buildings have been assigned the appropriate building type.

Building Backlog

The Backlog of Deferred Maintenance (DM) section details the backlog and five-year renewal needs by subsystem and ten-year estimates by campus. (Building Backlog does not include infrastructure.) A Facilities Conditions Index (FCI) is provided for each campus. (FCI is calculated by dividing the total building backlog by the current replacement value.)

Building Renewal Projections

This section provides a graph showing projections of annual facility reinvestment needs for the SUNY system over a period of 50 years (the graph does not include infrastructure). The average annual renewal calculation dampens the effect of year-to-year swings by applying a five-year smoothing to the actual model results. Backlog of deferred maintenance (DM) and 5-year forecast totals by campus are provided, as well as a backlog and 10-year forecast by subsystem. These reports provide both a near-term perspective for each institution's needs, as well as a longer view.

Infrastructure

This section provides details of the infrastructure costs by major components (e.g. roads, landscape and hardscape, utility distribution systems, and utility generation systems) for each campus.

Benchmarks

Benchmarks are provided that compare the SUNY system to other Higher Education Systems.

Summary

Included in this section are summary reports for each campus, benchmark data, and estimated investment required to bring down the backlog of deferred maintenance.

2. Assumptions

The following section includes all of the detailed definitions, costs, and methodologies used in configuring the FRRM™ model for the SUNY analysis. These assumptions were developed with assistance from SUCF staff.

Building Subsystems, Life Cycles and Example Components

Please note that a number of subsystems have life cycles that are listed as "lifetime." In these instances, the subsystem is assumed to last as long as the building – and therefore no renewal is assumed. Other subsystems, such as connecting the building to the campus electrical system, are included under infrastructure rather than as a building system. The sample components provided for each subsystem are not meant to be all inclusive, only illustrative.

Subsystem Cost Assumptions

The costs in this section were derived from actual SUNY new construction and major renovation projects. In each case, the detailed project costs were adjusted for inflation (based on the years of construction to adjust to 2007 dollars). Further adjustments address regional index factors and special considerations. Buildings with basic systems were then separated from buildings with complex systems. Weighted averages[2] were then used to calculate renewal costs per gross square feet (GSF) of the building project. The resulting weighted average costs were then compared to a PPCG database of more than 10 million GSF of higher education construction projects. The cost numbers on these assumption pages reflect this information as well as the judgment of PPCG staff[3]. A list of 39 SUNY building projects, totaling almost two million gross square feet, that were used for this analysis is included as Figure 2.4.

Regional Index Factors[4]

These factors adjust the costs based on the physical location of the campus within New York State and were provided by SUCF.

Special Consideration Definitions and Costs

Special Considerations reflect systematic increased (or decreased) costs due to a special characteristic of the building. These increases (or decreases) are listed, by subsystem, in Figure 2.6.

[2] Costs that were more than two standard deviations from the mean were excluded from these weighted averages.
[3] These numbers were also subject to detailed reviews by SUCF staff – who made numerous useful suggestions that have been incorporated into these numbers.
[4] Syracuse is given a factor of 1.0 and the campuses' regional index factors are relative to Syracuse

Infrastructure Assumptions and Costs

For the purpose of this report, infrastructure includes essential non-building structures that support the campus. Examples include roads, surface parking, utility generation systems, utility distribution systems and athletic fields.

2.1 Building Sub-system Categories

Sub-system[5]	Average Life Cycle
1. Roofing – SUNY Standard	25 years
2. Building Exteriors, Doors and Windows	70 years
3. Building Exteriors – Walls	30 years
4. Elevators and Conveying Systems	25 years
5. HVAC – Controls	20 years
6. HVAC – Equipment	25 years
7. HVAC - Distribution Systems	50 years
8. Electrical Equipment	30 years
9. Lighting	20 years
10. Power Wiring	70 years
11. Plumbing Fixtures	25 years
12. Plumbing -Rough-in	50 years
13. Fire Protection Systems	40 years
14. Fire Detection Systems	20 years
15. Built-in Specialties and Equipment	25 years
16. Interior Finishes	15 years
Other Categories Not Included	
17. Foundations	Lifetime
18. Sub-grade Drainage and Waterproofing	As needed
19. Vertical Elements	Lifetime
20. Horizontal Elements	Lifetime
21. Interior Partitions	As needed
22. Site Preparation	Lifetime
Costs Included in Above Categories	
23. Mark Ups	Included
24. Removal Costs	Included in above @ 15 %
25. Soft Costs	Included in above @ 25 %

[5] IT Equipment is not included.

2.1.a Building Subsystem Component Examples

1. Roofing **Life Cycle: 25 Years**

- Sheet metal flashing
- Rigid insulation at roof
- Roof hatches
- Skylights
- Applied membranes at roofs and decks

2. Building Exteriors, Doors And Windows **Life Cycle: 70 Years**

Renewable items include:

- Exterior doors and door hardware
- Exterior windows, frames, glass and glazing

3. Building Exteriors – Walls And Stairs **Life Cycle: 30 Years**

Exteriors include pre-stressed concrete, brick, cinderblock, metal, etc.
Renewable items include

- Re-caulking, sealing, sandblasting, replacing plaster, etc
- Brick pointing, caulking, sealing, railings

4. Elevators And Conveying Systems **Life Cycle: 25 Years**

- Elevators, escalators, and dumbwaiters
- Cables
- Control Systems
- Any vertical, motorized transportation

5. HVAC – Controls **Life Cycle: 20 Years**

- Control Systems

6. HVAC – Equipment **Life Cycle: 25 Years**

- Exchangers and circulating pumps
- Fan coil units
- Condensing units
- Exhaust and ventilation units
- Local chillers and boilers
- Rooftop AC and heating units, window units

7. HVAC – Distribution Systems **Life Cycle: 50 Years**

- Ductwork
- Grilles, diffusers, piping, storage and insulation

2.1.a Building Subsystem Component Examples continued

8. Electrical Equipment — **Life Cycle: 30 Years**
- Building transformers, service panels and fuses
- Emergency power within the building
- Light fixtures, power receptacles

9. Lighting — **Life Cycle: 20 Years**
- Building lighting systems

10. Power Wiring — **Life Cycle: 70 Years**
- Conduit and wire

11. Plumbing Fixtures — **Life Cycle: 25 Years**
- Floor and roof drains
- Condensate drain piping
- Water closets, lavatories, service sinks (in non-public areas)

12. Plumbing Rough-In — **Life Cycle: 50 Years**
- Sanitary sewer waste and vent piping
- Domestic and industrial water supply
- Air, gas and vacuum piping
- All building service piping within 5' of building

13. Fire Protection Systems — **Life Cycle: 40 Years**
- Fire sprinkler systems
- Gas or halon systems

14. Fire Detection Systems — **Life Cycle: 20 Years**
- Fire alarm detection devices, horns, strobes, heat detectors, pull stations

15. Built-In Specialties & Equipment — **Life Cycle: 25 Years**
- Casework, shelving, and bench-tops
- Chalk boards, marker boards and tackable wall surfaces
- Operable partitions
- Fume Hoods
- Autoclaves, glassware washers, cold rooms, dark room equipment

2.1.a Building Subsystem Component Examples continued

16. Interior Finishes **Life Cycle: 15 Years**

- Interior doors and hardware
- Carpet, resilient flooring and floor covering
- Vinyl wall covering
- Ceilings

Other Categories Not Included:

17. Foundations **Life Cycle: Lifetime**

- Basement excavation and disposal of excavated material
- Temporary or permanent shoring for support of excavation at below grade structure
- Concrete piles, piers, footings, grade beams, caissons
- Sub-grade drainage and waterproofing required at foundation system

18. Sub-Grade Drainage And Waterproofing **Life Cycle: As Needed**

19. Vertical Elements **Life Cycle: Lifetime**

- All columns and pilasters
- All exterior wall framing including plaster, gypsum board and insulation
- Applied fire proofing
- Stairs with at least one story height

20. Horizontal Elements **Life Cycle: Lifetime**

- Grade and non grade floors
- Beams, girders, trusses, joists and decking
- Concrete topping slabs
- All roof and ceiling framing
- Applied fire proofing
- Ceiling insulation

21. Interior Partitions **Life Cycle: As Needed**

- Interior wall framing including gypsum wall board
- Insulation
- Non wear finishes such as gypsum board, acoustical tiles, plaster soffits and ceramic tile
- Interior windows, glass and glazing

2.1.a Building Subsystem Component Examples continued

22. Site Preparation — **Life Cycle: Lifetime**

- Site clearing and grading
- Site demolition
- Hazardous material abatement

23. Mark Ups — **Included**

- General conditions, contractor's administration costs
- Overhead and profit, fee for profit of performing work
- Insurance and bonds
- Escalation (to establish 2007 base costs)
- Contingency or market factor

24. Removal Costs — **Included In Above @ 15%**

- Cost allowance associated with removing old and worn out system prior to renewal
- Does not include removal of associated systems in the vicinity of system to be removed

25. Soft Costs — **Included In Above @ 25%**

- Costs associated with design, management and inspection of renewal project
- Planning and design
- Management and inspection
- Specifications and bidding
- Change Orders (assumed to average 6.5%)

2.2 Renewal Cost Assumptions

(Costs are per GSF and include 25% soft and 15% Removal)

	Building Type			
	Complex	**Basic**	**Simple**	**Small**
Subsystem				
1. Roofing - SUNY Standard	$10.00	$10.00	$10.00	
2. Building Exteriors, Doors and Windows	$23.50	$23.50	$1.00	
3. Building Exteriors - Walls	$11.50	$11.50	$7.00	
4. Elevators and Conveying Systems	$4.00	$4.00	$3.00	
5. HVAC - Controls	$11.50	$9.00	$0.50	
6. HVAC - Equipment	$17.50	$13.00	$1.00	
7. HVAC - Distribution Systems	$35.00	$22.00	$4.50	
8. Electrical - Equipment	$20.00	$13.00	$1.00	
9. Lighting	$4.00	$4.00	$2.50	
10. Power Wiring	$10.00	$7.00	$1.00	
11. Plumbing Fixtures	$8.00	$4.50	$0.50	
12. Plumbing Rough-In	$17.50	$11.00	$2.50	
13. Fire Protection	$6.00	$6.00	$2.50	
14. Fire Detection	$4.00	$4.00	$1.50	
15. Built-in Equipment & Specialties	$30.00	$6.00	$0.00	
16. Interior Finishes	$14.00	$14.00	$0.00	
17. Small Buildings (one subsystem)				$87.75

2.3 Regional Cost Index Factors*

Campus	Regional Index Factor	Campus	Regional Index Factor
Albany	1.04	Envir Sci/For	1
Alfred Ceramics	1	Farmingdale	1.43
Alfred State Col	1	Fredonia	0.97
Binghamton	1	Geneseo	1.03
Brockport	1.05	Maritime	1.47
Buffalo College	1.09	Morrisville	1
Buffalo Univ	1.09	New Paltz	1.2
Canton	1	Old Westbury	1.4
Cobleskill	1.03	Oneonta	1.03
Cornell - AG	1.02	Optometry	1.47
Cornell - Gen AG	1.02	Oswego	1.03
Cornell - Gen SVS	1.02	Plattsburgh	1
Cornell - I&LR	1.02	Pottsdam	1
Cornell - Vet	1.02	Purchase	1.32
Cortland	1.01	Stony Brook	1.43
Delhi	1.06	SUNY IT	0.99
Downstate	1.47	Sys Adm	1.04
Empire State	1.04	Upstate	1

*Source: SUCF

2.4 SUNY Buildings Used for Cost Assumptions

	Buildings with Basic Systems		GSF	
1	New Paltz	Athletic Center	61,262	
2	Utica/Rome	Library/Communication	66,045	
3	Cobleskill	Dairy Complex	42,410	
4	Albany	Art/Studio	22,927	
5	Binghamton	Classroom	13,723	
6	Binghamton	Field House	156,436	
7	Cortland	Stadium	32,850	
8	Cornell	MVR Rehab Expansion	35,347	
9	Albany	Public Safety	10,042	
10	Cobleskill	Salt Storage	1,304	
11	Bufalo-North	Math	33,629	
12	Oneonta	Field House	94,035	
13	Ag & Life Sci	Research Greenhouse	13,346	
14	Cobleskill	Day Care	15,418	
15	Empire	2 Union Ave	51,309	
16	Syracuse	Academic Building	46,725	
17	Oswego	Rec Ctr	115,421	
18	Purchase	Academic	48,461	
19	Albany	Admin	56,237	
20	Morisville	Academic	38,300	
21	Buffalo College	Campus Center-Phase 1	25,469	12559(new)/12910(Rehab)
22	Morrisville	Rehab/Addition, Hoticulture Bldg	9,782	7670(new)/2112(rehab)
23	Fredonia	Renovate/Addition-Cranston Hall	93,546	75403(new)/18143(renov)
24	Canton	Student Union	54,400	
25	Oswego	Rich Hall	53,742	
26	Fredonia	Steele Hall Natatorium	36,500	
27	Morrisville	Auto Tech	50,250	
28	Empire State	Rehab 28 Union	12,642	
29	Cortland	Brockway Hall	36,870	
30	Utica/Rome	Kunsela Hall	40,635	
		Total	**1,369,063**	

	Buildings with Complex Systems			GSF
1	Albany	Life Sciences		194,369
2	Albany	Husted Hall	Rehab	50,175
3	Brooklyn	Anatomy	Relocate	19,590
4	Farmingdale	Bioscience		37,427
5	Farmingdale	Luptin	Rehab	27,121
6	Geneseo	Science	Rehab	104,681
7	HSC	Labs	Rehab	25,640
8	Stony Brook	Plaza	Repairs	56,693
9	Oneonta	Science	Rehab	78,370
			Total	**594,066**

2.5 Special Consideration Definitions[6]

1. Parking Structures
Joint use parking buildings, such as a joint office and parking building, should be split into two buildings and entered appropriately.

2. Buildings with 5 to 8 Levels
A floor is counted as a level if it has assignable square feet – regardless of whether the assignable square feet are located above or below grade. Not included (as a level) is the lowest floor (i.e. basement) or highest floor (penthouse) if that floor contains only mechanical equipment or control rooms.

3. Buildings with Chillers
A building is assigned a "chiller" special consideration if there are chillers within the building that are the primary source of cooling for that building. (Central chillers are considered part of the infrastructure and not included in the building subsystems.)

4. Historic Buildings
A building is considered Historic if it is on a National, State, or Local Registry.

5. Back-up Generators
Buildings that have Back-up Generators dedicated to that building should be labeled "Back-up Generator."

6. Libraries

7. Environmental Remediation
Buildings constructed prior to 1973 are assumed to have environmental remediation needs. The cost of environmental remediation is assumed to occur when the HVAC Distributions System needs replacement.

8. Increment for Major Rehab
A building is labeled "Major Rehab" when the intention is to gut-and-replace the building. The costs for this sort of project are significantly higher than for just renewing the systems.

[6] Special Consideration applies only to specific buildings.

2.6 Special Consideration Costs

Sub-system	Historic Buildings	Building Levels		Boiler or Chiller	Back-up Generator	Library	Environmental Remediation	Major Rehab	Parking (relative to Simple)
		5 to 8 levels	9 or more						
1. Roofing - SUNY Standard	+ 12%								
2. Building Exteriors, Drs and Wndw	+ 22%	+15%	+25%						($0.50)
3. Building Exteriors - Walls	+ 22%	+15%	+25%						($5.00)
4. Elevators and Conveying Systems		+15%	+25%						
5. HVAC - Controls		+15%	+25%						
6. HVAC - Equipment		+15%	+25%	+ $6.00	+ $3.50				
7. HVAC - Distribution Systems	+17%	+15%	+25%				+ $10.00		($2.75)
8. Electrical - Equipment		+15%	+25%						
9. Lighting	+ 7%	+15%	+25%						
10. Power Wiring	+17%	+15%	+25%						
11. Plumbing Fixtures	+17%	+15%	+25%						
12. Plumbing Rough-In	+17%	+15%	+25%						($1.50)
13. Fire Protection	+17%	+15%	+25%						($2.00)
14. Fire Detection		+15%	+25%						($1.00)
15. Built-in Equip & Specialties	+ 7%	+15%	+25%			+ $18.00			$1.00
16. Interior Finishes	+17%	+15%	+25%						
*** Applied to GSF Building Costs**								+ $62/gsf to bldg costs	

* Environmental Remediation- limited to HVAC Distribution Systems for buildings constructed prior to 1973.

2.7 Infrastructure Assumptions

Inclusions and Method of Measurement

The unit of measurement is intended to capture the majority of the cost and be easy to measure. The unit rates have been adjusted for peripheral or secondary issues.

1. Roads

Unit of measurement is Lane-Linear Feet (LLF)

- A four lane road would have 4 LLF per linear foot, a two lane road 2 LLF per linear foot and so on.

2. Landscape and Hardscape

Courtyard areas are intended to be the central or signature spaces that have hard surfaces, built-in planters, furniture and lighting. Landscaping should not be counted as part of the courtyard space.
Unit of measurement is square foot surface area.

Sidewalks include pedestrian walkways adjacent to roads and structures.
Unit of measurement is square foot of surface area.

Maintained landscape covers areas of mature planting and irrigation including median strips.
Unit of measurement is square foot of surface area.

Pedestrian pathways/bikeways 6'-8' wide shall be measured per linear foot.

Surface Parking (multi story parking structures are included as buildings) is measured in square feet.

3. Utilities - Distribution

Utility Distribution refers to the distribution of utilities outside of the buildings.

Gas service: Unit of measurement is linear feet.
Chilled water: Unit of measurement is linear feet.
Steam service: Unit of measurement is linear feet.
Water supply: will include potable, fire and domestic.
The unit of measurement is the combined linear footage greater than 6" diameter.
Sanitary Sewers: Unit of measurement is linear feet of sewer pipes.
Storm Drainage: Unit of measurement is linear feet of drainage pipes.
Site Lighting: Unit of measurement is the number of light poles.

4. Utilities - Generation

Electrical

- Switchgear capacity: This is the total campus capacity based on the high/medium voltage switchgear KVA rating. Include all switchgear maintained by the campus. Unit of measurement is total KVA.
- Transformers: There are two units of measurement. (1) is total KVA to transform higher level KV (greater than 15 KV) to medium (5 – 15KV) level KV. (2) is total KVA of transformers required to convert medium voltage (5 – 15 KV) to lower voltage (600V). Please note that building transformers are included in buildings as a part of the "electrical equipment" and therefore should not be counted here.

HVAC Equipment

- Unit of measurement for cooling will be total central capacity in tons.
- Unit of measurement for heating will be the total central capacity in MBTUH.
- Pumping units will be total capacity in gallons per minute (G.P.M.).

5. Athletic Fields

Baseball/Softball Fields: Unit of measurement is the number of fields.
Football/Soccer/Lacrosse Fields: Unit of measurement is the number of fields.
Basketball/Tennis Courts: Unit of measurement is the number of courts.

2.8 Infrastructure Cost Assumptions

	UoM	$ per Unit	Life Cycle	$/Year
1 Roads	LLF	$155.00	25	$6.20
2 Landscape and Hardscape				
a. Surface parking	SF	$3.75	25	$0.15
b. Signature Courtyard Areas	SF	$21.00	50	$0.42
c. Sidewalks	SF	$5.50	40	$0.14
d. Maintained Landscape Area	SF	$0.70	20	$0.04
e. Sidewalks	SF	$5.50	40	$0.14
3 Utilities Distribution				
a. Power Cabling (in duct banks)				
Primary Main Loop (15kV)	LF	$84.00	50	$1.68
b. Water Supply (fire and domestic)	LF	$70.00	50	$1.40
c. Gas Service to Buildings	LF	$42.00	50	$0.84
d. Steam (insulated)				
greater than 6" diameter	LF	$281.00	40	$7.03
e. Chilled Water (not insulated) [2 pipe system]	LF	$372.00	50	$7.44
f. Sanitary Sewers	LF	$70.00	100	$0.70
g. Storm Sewers	LF	$105.00	100	$1.05
h. Site Lighting	count	$10,000.00	20	$500
4 Utilities Generation				
a. Electrical				
Campus Switchgear Capacity	KVA	$211.00	50	$4.22
Campus Transformers	KVA	$126.00	50	$2.52
b. HVAC Equipment (CEF)				
Cooling	tons	$1,053.00	25	$42.12
Heating	Mbtu/hr	$35.00	20	$1.75
5 Athletic Fields				
a. Baseball/Softball Fields	count	$790,000.00	25	$31,600.00
b. Football/Soccer/Lacrosse Fields	count	$1,140,000.00	25	$45,600.00
c. Tennis/Basketball Courts	count	$34,000.00	30	$1,133.00

3. Validation Data

The Validation Data section that follows includes information about the buildings in the SUNY system that was imported to the FRRM™ for the renewal analysis. The purpose of the validation reports is to verify that the information about the buildings is correct and reasonable.

Buildings with **complex** systems include wet-labs, research and animal care facilities.
Buildings with **basic** systems are offices, classrooms and libraries. These represent the bulk of the SUNY buildings.
Buildings with **simple** systems consist of warehouses and parking structures.
Small Buildings are buildings under 5,000 gsf.

Figure 3.1 *GSF Summary by Building Type*, shows the gross square footage (gsf) by building type for each campus. Across the system, buildings with Basic systems (or Basic buildings) account for almost 80% of the square footage, complex buildings account for a little over 16% with the remaining 4% split between simple and small buildings. Small buildings, which account for only 2.5% of the total gross square feet of the system,[7] are 48% of the SUNY buildings by count (876 buildings are "small").

These percentages vary significantly among individual campuses, with Downstate and Upstate having a considerably higher percentage of complex buildings.

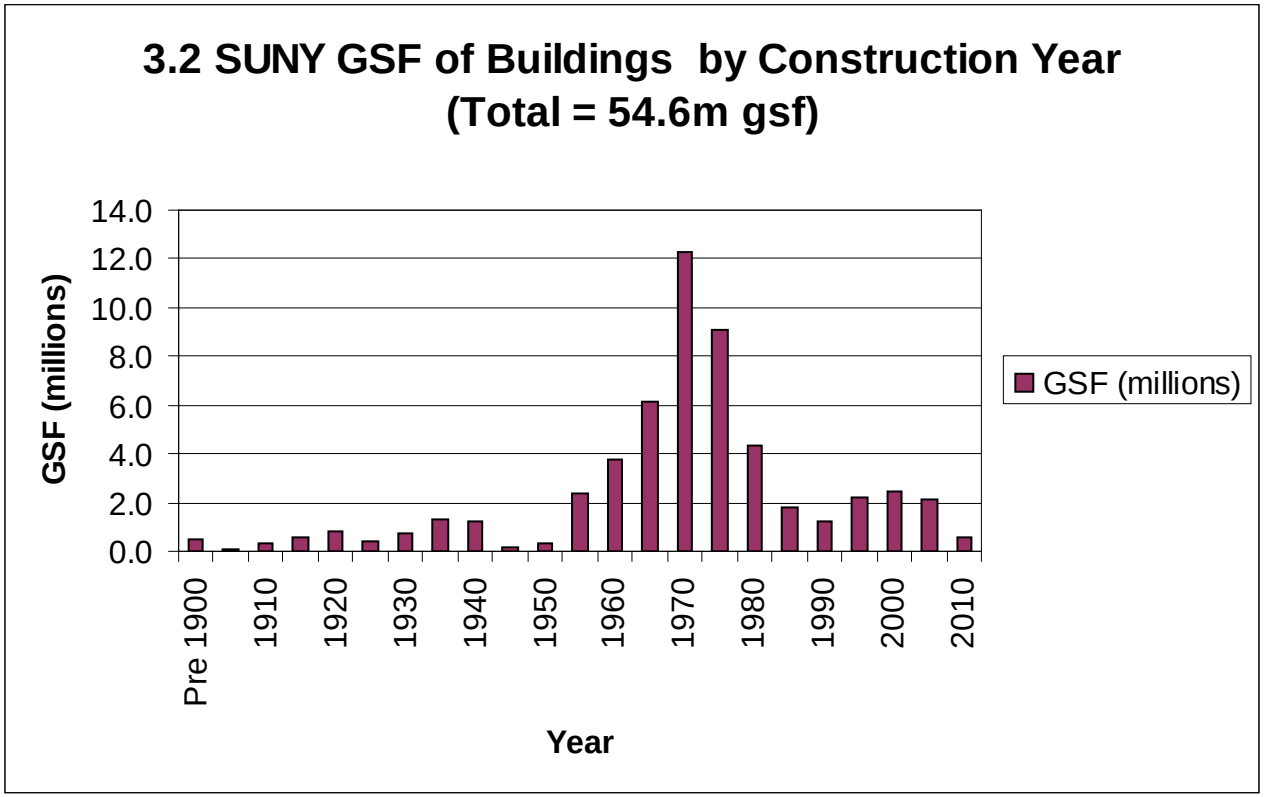
Figure 3.2 *SUNY GSF of Buildings by Construction Year,* is a system-wide histogram showing gsf of buildings by construction date (for the educational facility buildings). This chart demonstrates that a substantial portion of the SUNY buildings were constructed during the late 1960's and early 1970's. Please note that the 1970 bar reflects construction from 1966 to 1970.

[7] These small buildings are included in the analysis, with appropriate life cycle costs. However, individual component assessment information for each building was not provided nor do these small buildings have detailed information by subsystem.

3.1 Gross Square Feet Summary by Building Type

Campus	BASIC	COMPLEX	SIMPLE	SMALL	TOTAL
Albany	2,681,439	497,443		7,821	**3,186,703**
Alfred Ceramics	239,032	148,036		9,189	**396,257**
Alfred State Col	568,621	132,834	10,560	65,066	**777,081**
Binghamton	2,795,294	511,799	18,330	12,528	**3,337,951**
Brockport	1,730,170	76,470		24,300	**1,830,940**
Buffalo College	2,043,650	178,094		5,285	**2,227,029**
Buffalo Univ	5,428,658	1,703,419	75,574	44,170	**7,251,821**
Canton	488,862	12,054		15,030	**515,946**
Cobleskill	647,923	35,450	7,254	74,067	**764,694**
Cornell - AG	2,074,982	391,875	16,114	291,546	**2,774,517**
Cornell - Gen AG	280,746	173,886	48,257	103,066	**605,955**
Cornell - Gen SVS	451,828			4,988	**456,816**
Cornell - I&LR	264,265				**264,265**
Cornell - Vet	172,780	655,243	55,238	108,249	**991,510**
Cortland	1,534,616	1,423		57,302	**1,593,341**
Delhi	668,700	9,588		20,571	**698,859**
Downstate	228,913	873,258	274,000	5,220	**1,381,391**
Empire State	33,595				**33,595**
Envir Sci/For	550,400	302,379	5,979	190,445	**1,049,203**
Farmingdale	942,839	250,559		32,551	**1,225,949**
Fredonia	1,167,570	61,973		14,814	**1,244,357**
Geneseo	1,232,789	179,204	6,200	2,811	**1,421,004**
Maritime	414,759		12,312	24,498	**451,569**
Morrisville	908,106	43,368	44,427	52,993	**1,048,894**
New Paltz	1,078,607	238,537		29,373	**1,346,517**
Old Westbury	711,478	69,386	10,360	35,336	**826,560**
Oneonta	1,334,022	78,388		21,139	**1,433,549**
Optometry		298,000			**298,000**
Oswego	2,089,042	115,421		14,370	**2,218,833**
Plattsburgh	1,333,701		29,237	13,100	**1,376,038**
Potsdam	1,410,319	101,400	5,009	1,073	**1,517,801**
Purchase	1,674,812	89,035		16,434	**1,780,281**
Stony Brook	4,988,000	1,071,090	82,380	63,014	**6,204,484**
SUNY IT	478,231		6,569	10,128	**494,928**
Sys Adm	377,437		255,000	2,023	**634,460**
Upstate	331,012	650,701		6,426	**988,139**
Grand Total	**43,357,198**	**8,950,313**	**962,800**	**1,378,926**	**54,649,237**
Percent	79.3%	16.4%	1.8%	2.5%	100.0%

3.2 Histogram of GSF by Construction Year



Please note that each bar reflects a five year cohort (e.g. 1970 includes construction from 1966 to 1970).

4. Building Backlog

The building backlog of deferred maintenance section details the backlog of renewal needs and costs by campus and subsystem along with the Facilities Condition Index for each campus. The Facilities Condition Index or FCI is defined as the backlog divided by the building current replacement value (CRV). The ideal is to maintain an FCI under .05 (i.e. a backlog of less than 5% of CRV).

Figure 4.1, *Building Backlog Costs by Campus and Subsystem,* shows the building backlog by subsystem and campus. The largest contributions to the backlog are: exterior doors and windows ($388m); HVAC controls, equipment and distribution ($1.2 billion); electrical equipment ($138m); built-in equipment and specialties [primarily in complex buildings] ($131m); and interior finishes ($130m). These systems represent over 80% of the identified backlog.

Figure 4.2, *Building Backlog, Current Replacement Value and FCI by Campus*, provides the FCI for each campus. Downstate, Maritime, Brockport and Cornell Gen SVS all have FCI's of above .15. FCI's of .2 and higher frequently indicate a deteriorating situation where the backlog rapidly cascades into additional systems resulting in expensive emergency repairs.

(Infrastructure backlog is included in Section 6.)

4.1 Building Backlog Costs by Campus and Subsystem ($ 000's)

Subsystem / Campus	Roofing	Exterior Walls	Ext. Doors & Windows	Elevators	HVAC Controls	HVAC Equip	HVAC Distrib.	Electrical Equip.	Lighting	Power Wiring
Albany	$4,418	$3,602	$32,489	$370	$6,951	$11,350	$41,377	$1,335	$338	$2,167
Alfred Ceramics	$27	$862	$3,550						$109	$153
Alfred State Col	$781	$94	$2,143		$330	$252	$449	$325	$90	$197
Binghamton	$281	$1,717	$15,107	$3,732	$6,224	$16,667	$30,354	$6,444	$3,853	$5,533
Brockport	$2,417	$5,861	$24,217	$482	$1,142	$10,355	$32,105	$10,733	$3,458	$5,147
Buffalo College	$1,737	$1,568	$7,963	$299	$2,263	$10,091	$31,899	$1,663	$1,434	$6,244
Buffalo Univ	$4,767	$15,687	$21,969	$5,019	$19,816	$61,207	$122,162	$21,118	$6,434	$12,594
Canton	$836	$645	$4,535		$1,658	$255			$125	
Cobleskill	$1,240	$2,639	$7,532		$763	$1,954	$3,312	$3,804	$432	$2,021
Cornell - AG	$1,847	$1,776	$7,920	$1,162	$3,124	$5,808	$23,147	$4,142	$407	$2,082
Cornell - Gen AG	$613	$769	$1,919	$211	$1,896	$2,128	$1,613	$2,678	$581	$1,121
Cornell - Gen SVS	$463	$623	$5,828	$954	$1,638	$3,099	$7,954	$3,099	$1,176	$1,618
Cornell - I&LR	$188	$885		$179	$391		$1,564		$125	
Cornell - Vet	$367	$998	$3,868	$377	$4,134	$7,096	$16,132	$1,027	$216	$7
Cortland	$180	$323	$5,684	$116	$2,890	$7,997	$15,904	$280	$585	$889
Delhi	$931	$1,348	$4,674	$81	$1,884	$1,137	$2,019	$329	$77	$292
Downstate	$669	$6,349	$30,686	$6,447	$11,109	$22,400	$54,771	$16,632	$924	$11,467
Empire State					$120		$842		$18	
Envir Sci/For	$466	$1,379	$4,197	$815	$2,122	$7,977	$19,049	$4,393	$348	$217
Farmingdale	$2,984	$2,632	$14,917	$2,818	$2,937	$7,492	$10,677	$2,214	$1,703	$1,699
Fredonia	$508	$1,590	$8,495	$1,050	$4,246	$2,260	$5,044	$3,074	$591	
Geneseo	$915		$7,385	$247	$3,590	$8,849	$22,537	$2,384	$2,042	$2,700
Maritime	$1,251	$439	$4,012	$1,074	$1,893	$3,034	$9,586	$6,343	$1,103	$3,858
Morrisville	$420	$1,393	$5,749	$278	$1,306	$2,598	$6,311	$2,126	$266	$1,103
New Paltz	$1,483	$1,504	$6,143	$1,013	$3,068	$5,478	$14,075	$4,658	$692	$2,454
Old Westbury	$719	$5,262	$13,922	$2,125	$2,805	$6,142	$7,195	$5,954	$850	$2,403
Oneonta	$403	$482	$3,622	$197	$3,535	$12,187	$16,313	$2,005	$193	$1,488
Optometry			$1,609	$2,190	$4,723	$7,187	$14,374			$1,369
Oswego	$1,826	$10,971	$16,028	$2,442	$9,259	$15,647	$32,415	$736	$371	
Plattsburgh	$1,581	$880	$5,822	$180	$2,851	$5,974	$10,716	$1,428	$599	$863
Potsdam		$224	$6,901		$3,523	$3,574	$14,400	$1,044	$1,239	$1,494
Purchase	$1,536	$9,531	$20,396	$4,165	$8,118	$19,295	$24,742	$1,135	$84	$322
SUNY IT	$455								$241	
Stony Brook	$4,749	$29,980	$86,910	$9,221	$21,632	$52,469	$112,515	$24,982	$5,558	$4,227
Sys Adm	$218	$1,166	$966	$688	$1,784	$4,849	$8,249	$180	$469	$110
Upstate	$166	$758	$1,203	$124	$1,785	$3,580	$8,659	$1,405	$374	$1,940
Total	**$41,442**	**$113,937**	**$388,361**	**$48,056**	**$145,510**	**$330,388**	**$722,461**	**$137,670**	**$37,105**	**$77,779**
Percent	1.7%	4.6%	15.8%	2.0%	5.9%	13.4%	29.4%	5.6%	1.5%	3.2%

4.1 Building Backlog Costs by Campus and Subsystem ($ 000's) – Continued

Subsystem / Campus	Plumbing Fixtures	Plumbing Rough-in	Fire Protection	Fire Detection	Built-in/ Specialties	Interior Finishes	Small	Major Rehab	Total	Percent
Albany	$3,556		$111	$878	$7,194	$3,791			$119,929	4.9%
Alfred Ceramics	$9				$1,634	$565			$6,908	0.3%
Alfred State Col	$131				$592	$117			$5,499	0.2%
Binghamton	$4,078		$292	$3,341	$5,155	$2,849			$105,627	4.3%
Brockport	$3,635		$498	$2,022	$1,161	$4,241			$107,475	4.4%
Buffalo College	$2,703			$1,943	$8,544	$5,118			$83,467	3.4%
Buffalo Univ	$11,795	$1,772	$5,681	$21,870	$43,026	$12,903		$9,988	$397,808	16.2%
Canton	$772				$3,044	$287			$12,156	0.5%
Cobleskill	$587	$259	$141	$331	$282	$1,640		$834	$27,771	1.1%
Cornell - AG	$1,570				$6,841	$1,189			$61,015	2.5%
Cornell - Gen AG	$921		$196	$756	$2,772	$1,065	$264		$19,504	0.8%
Cornell - Gen SVS	$1,110				$1,282	$2,293			$31,136	1.3%
Cornell - I&LR	$230					$215			$3,777	0.2%
Cornell - Vet	$1,034	$62	$24		$7,240	$1,080			$43,662	1.8%
Cortland	$590			$545	$5,715	$3,633			$45,330	1.8%
Delhi	$1,581		$328	$294	$590	$948			$16,515	0.7%
Downstate	$2,716		$4,966	$480	$4,160	$8,587			$182,364	7.4%
Empire State	$56					$100			$1,136	0.0%
Envir Sci/For	$245				$1,040	$1,410			$43,658	1.8%
Farmingdale	$3,182	$1,404	$1,955	$1,053	$1,854	$5,863			$65,382	2.7%
Fredonia	$599		$194	$1,975	$1,571	$1,493			$32,689	1.3%
Geneseo	$2,791			$3,638	$2,810	$2,718			$62,606	2.5%
Maritime	$1,817				$1,395	$2,507			$38,312	1.6%
Morrisville	$595		$823		$341	$1,139			$24,449	1.0%
New Paltz	$2,224	$1,346	$734	$434	$1,189	$4,648		$115	$51,258	2.1%
Old Westbury	$953			$22	$1,457	$4,659			$54,468	2.2%
Oneonta	$1,865	$151	$528	$55	$2,696	$1,399		$2,338	$49,457	2.0%
Optometry	$3,285		$1,643			$1,150			$37,529	1.5%
Oswego	$3,936		$944		$2,112	$6,743			$103,432	4.2%
Plattsburgh	$394		$73		$863	$1,768			$33,992	1.4%
Potsdam	$790			$438	$489	$2,561			$36,677	1.5%
Purchase	$1,484				$3,577	$8,238			$102,624	4.2%
SUNY IT	$279								$975	0.0%
Stony Brook	$9,148		$838	$909	$7,260	$31,203			$401,600	16.3%
Sys Adm	$1,333				$1,835	$219			$22,068	0.9%
Upstate	$1,222				$1,189	$2,049			$24,455	1.0%
Total	**$73,216**	**$4,994**	**$19,969**	**$40,984**	**$130,910**	**$130,388**	**$264**	**$13,275**	**$2,456,709**	**100.0%**
Percent	3.0%	0.2%	0.8%	1.7%	5.3%	5.3%	0.0%	0.5%	100.0%	

4.2 SUNY Backlog, Current Replacement Value and FCI by Campus

Campus	Backlog	CRV	FCI (*)
Albany	$119.9	$1,225	0.10
Alfred Ceramics	$6.9	$167	0.04
Alfred State Col	$5.5	$262	0.02
Binghamton	$105.6	$1,283	0.08
Brockport	$107.5	$660	0.16
Buffalo College	$83.5	$866	0.10
Buffalo Univ	$397.8	$3,120	0.13
Canton	$12.2	$170	0.07
Cobleskill	$27.8	$250	0.11
Cornell - AG	$61.0	$1,025	0.06
Cornell - Gen AG	$19.5	$214	0.09
Cornell - Vet	$43.7	$450	0.10
Cornell Gen SVS	$31.1	$192	0.16
Cornell I&LR	$3.8	$100	0.04
Cortland	$45.3	$544	0.08
Delhi	$16.5	$243	0.07
Downstate	$182.4	$923	0.20
Empire State	$1.1	$14	0.08
Envir Sci/For	$43.7	$406	0.11
Farmingdale	$65.4	$635	0.10
Fredonia	$32.7	$430	0.08
Geneseo	$62.6	$526	0.12
Maritime	$38.3	$222	0.17
Morrisville	$24.4	$335	0.07
New Paltz	$51.3	$611	0.08
Old Westbury	$54.5	$402	0.14
Oneonta	$49.5	$508	0.10
Optometry	$37.5	$263	0.14
Oswego	$103.4	$769	0.13
Plattsburgh	$34.0	$454	0.07
Potsdam	$36.7	$523	0.07
Purchase	$102.6	$832	0.12
Stony Brook	$401.6	$3,457	0.12
SUNYIT	$1.0	$160	0.01
Sys Adm	$22.1	$197	0.11
Upstate	$24.5	$504	0.05
Total	**$2,456.7**	**$22,942**	**0.11**

(*) FCI is calculated by the Backlog divided by the CRV

5. Building Backlog and Renewal Projections

This section provides five and ten-year forecasts of building backlog and renewal needs, along with the average annual amount of investment required for renewal costs in 2007 dollars.

Figure 5.1, *Building Backlog and 5-year Renewal Needs by Subsystem;* shows those systems which are driving the renewal needs over the next five years. (The next five years of renewal will add an additional $1.7 billion in building renewal needs to the $2.5 billion in backlog.)

Figure 5.2, *Building Backlog and 10-year Renewal Forecast by Campus;* shows the 10-year renewal forecast by campus. The total 10-year need is $6.0 billion dollars.

Figure 5.3, *Average Annual Renewal Needs vs. Current Replacement Value by Campus;* demonstrates that the average annual need varies between 1.4% and 1.7%. This, however, is an average value and does not reflect the year-by-year variances that occur for an individual campus.

Figure 5.4, *System-wide Renewal Curve For 50-Years*; shows how the annual renewal needs for the system vary by year. The dotted line is the actual year-by-year numbers. These vary from a low of $220 million (in 2009 and 2020) to a high of $540 million in 2021. The heavy solid line dampens the effect of the year-to-year swings by applying a five-year running average (smoothing) to the actual model results. Renewal curves for individual campuses are likely to have wider variances.

5.1 Building Backlog and 5-Year Renewal Needs by Subsystem ($,000's)

Subsystem	Backlog	2008	2009	2010	2011	2012	Total
1. Roofing - SUNY Standard	$41,442	$4,073	$2,731	$6,903	$6,036	$7,837	$69,022
2. Exteriors - Doors, Windows	$388,361	$26,437	$20,054	$3,380	$0	$0	$438,232
3. Building Exteriors - Walls	$113,937	$10,088	$15,085	$38,977	$26,725	$23,603	$228,415
4. Elevators and Conveying Systems	$48,056	$8,250	$3,491	$4,202	$7,592	$6,379	$77,970
5. HVAC -Controls	$145,510	$18,685	$16,558	$31,163	$28,409	$36,589	$276,914
6. HVAC - Equipment	$330,388	$41,702	$21,188	$42,027	$53,185	$32,659	$521,149
7. HVAC - Distribution Systems	$722,461	$51,630	$39,039	$10,560	$1,578	$14,967	$840,235
8. Electrical - Equipment	$137,670	$23,432	$8,117	$27,751	$25,027	$36,764	$258,761
9. Lighting	$37,105	$6,933	$13,564	$16,571	$15,999	$18,284	$108,456
10. Power Wiring	$77,779	$4,743	$6,144	$0	$0	$272	$88,938
11. Plumbing Fixtures	$73,216	$10,717	$12,004	$19,354	$21,515	$13,312	$150,118
12. Plumbing Rough-in	$4,994	$15,707	$6,390	$18,614	$9,917	$21,287	$76,909
13. Fire Protection Systems	$19,969	$2,332	$1,739	$0	$0	$0	$24,040
14. Fire Detection Sytems	$40,984	$8,728	$11,068	$9,561	$12,170	$18,157	$100,668
15. Built-in Equipment and Specialties	$130,910	$49,435	$10,533	$20,910	$31,479	$33,400	$276,667
17. Interior Finishes	$130,388	$28,246	$25,177	$113,684	$134,831	$142,048	$574,374
18. All Renewal - SMALL	$264	$9,174	$6,446	$8,360	$4,700	$8,849	$37,793
19. Major Rehab Increment	$13,279	$410	$0	$0	$0	$0	$13,689
Total	$2,456,713	$320,722	$219,328	$372,017	$379,163	$414,407	$4,162,350

Note: only subsystems with backlog or renewal needs in the next five years are included in this report.

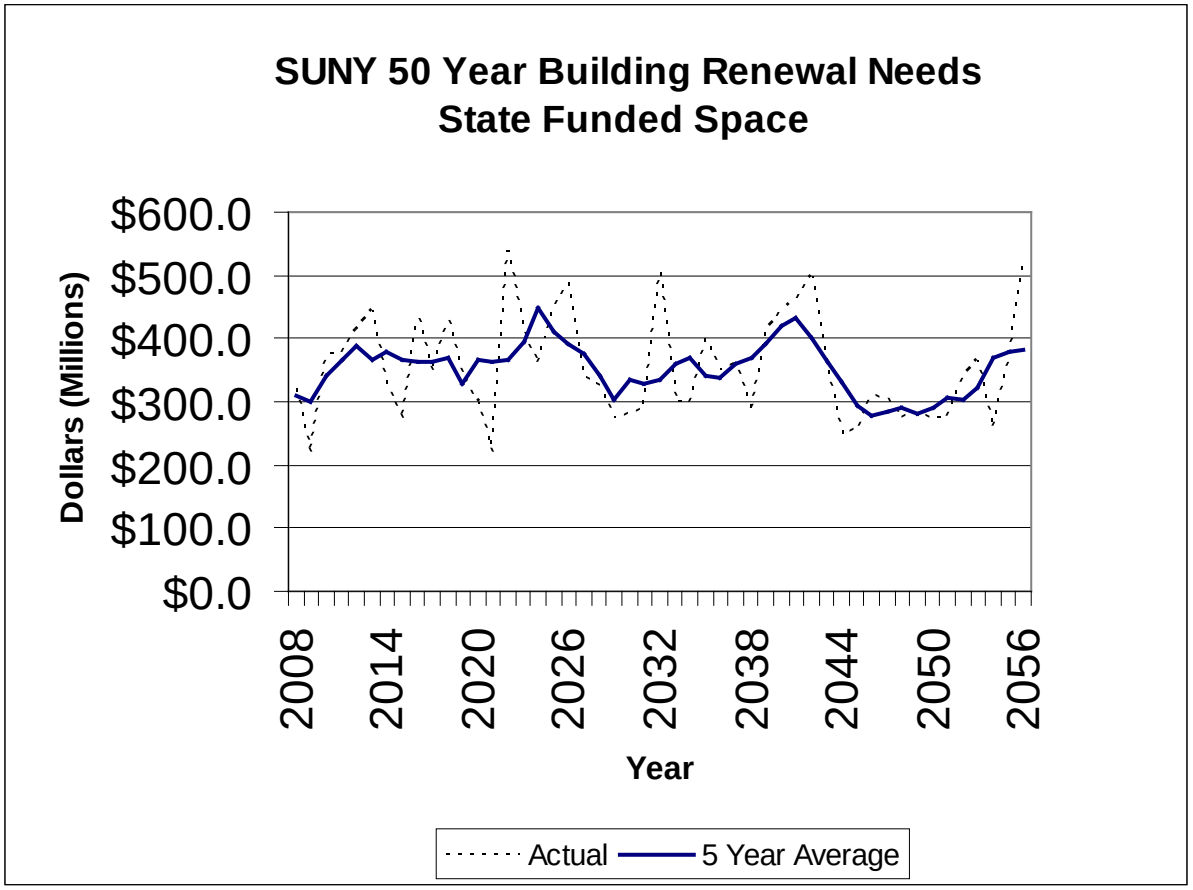
5.2 SUNY Building Backlog and 10-Year Renewal Forecast by Campus ($ millions)

Campus	Backlog	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Albany	$119.9	$14.7	$15.3	$16.5	$21.8	$10.8	$11.9	$19.3	$12.4	$56.5	$17.6	$316.7
Alfred Ceramics	$6.9	$0.4	$0.2	$4.1	$1.4	$1.8	$8.0	$5.1	$1.2	$1.5	$0.3	$30.9
Alfred State Col	$5.5	$2.0	$3.6	$4.4	$3.4	$4.4	$4.2	$6.2	$4.9	$9.9	$3.5	$52.0
Binghamton	$105.6	$13.2	$6.1	$40.0	$16.9	$6.0	$22.0	$21.2	$12.9	$14.8	$14.9	$273.6
Brockport	$107.5	$16.1	$8.8	$7.6	$10.7	$10.5	$13.6	$15.1	$18.7	$8.6	$8.0	$225.2
Buffalo College	$83.5	$10.1	$12.2	$9.9	$32.7	$19.6	$16.0	$5.2	$8.9	$31.5	$11.3	$240.9
Buffalo Univ	$397.8	$39.7	$26.2	$40.4	$47.8	$60.1	$50.5	$32.5	$29.7	$41.6	$27.1	$793.4
Canton	$12.2	$1.2	$1.8	$1.7	$4.3	$7.4	$1.3	$1.3	$1.1	$3.0	$20.2	$55.5
Cobleskill	$27.8	$2.2	$2.8	$5.4	$3.9	$4.8	$4.5	$7.4	$11.5	$4.9	$2.5	$77.7
Cornell - AG	$61.0	$15.4	$6.6	$26.4	$17.6	$15.8	$30.9	$7.7	$21.3	$12.0	$9.2	$223.9
Cornell - Gen AG	$19.5	$1.8	$6.3	$9.6	$2.2	$5.3	$2.3	$2.3	$3.9	$0.8	$3.5	$57.5
Cornell Gen SVS	$31.1	$1.5	$0.0	$1.7	$0.0	$2.4	$6.1	$0.6	$1.5	$4.3	$13.8	$63.0
Cornell I&LR	$3.8	$0.4	$0.6	$0.0	$0.1	$4.6	$2.6	$0.0	$0.4	$0.2	$1.0	$13.7
Cornell - Vet	$43.7	$8.1	$3.1	$5.2	$5.4	$7.5	$3.1	$1.2	$1.4	$1.8	$14.7	$95.2
Cortland	$45.3	$7.9	$4.3	$10.1	$12.7	$28.3	$6.1	$7.5	$2.5	$5.1	$27.2	$157.0
Delhi	$16.5	$2.2	$1.6	$2.3	$3.5	$2.7	$3.5	$9.4	$4.1	$1.9	$4.7	$52.4
Downstate	$182.4	$29.9	$14.9	$13.9	$14.8	$6.0	$1.3	$4.9	$8.9	$35.6	$4.3	$316.9
Empire State	$1.1	$0.0	$0.8	$0.8	$0.0	$0.2	$0.1	$0.0	$0.2	$0.0	$0.0	$3.2
Envir Sci/For	$43.7	$13.1	$2.0	$5.8	$7.8	$5.2	$3.5	$2.8	$6.6	$2.3	$14.2	$107.0
Farmingdale	$65.4	$4.2	$8.3	$7.7	$8.8	$19.2	$10.5	$11.0	$6.2	$7.8	$8.5	$157.6
Fredonia	$32.7	$4.9	$1.3	$8.1	$4.1	$5.7	$14.4	$1.7	$2.4	$4.7	$14.1	$94.1
Geneseo	$62.6	$5.8	$10.0	$6.0	$11.4	$7.4	$5.1	$8.3	$8.6	$10.2	$16.3	$151.7
Maritime	$38.3	$4.4	$5.6	$2.1	$4.5	$13.0	$4.3	$4.0	$0.9	$1.0	$9.2	$87.3
Morrisville	$24.4	$1.6	$2.9	$2.1	$6.6	$7.6	$5.4	$8.0	$4.5	$6.0	$5.6	$74.7
New Paltz	$51.3	$10.2	$6.1	$13.0	$9.7	$9.0	$8.4	$19.9	$5.7	$10.3	$2.9	$146.5
Old Westbury	$54.5	$6.1	$5.7	$17.1	$16.2	$10.8	$1.2	$6.0	$9.1	$6.8	$4.6	$138.1
Oneonta	$49.5	$3.8	$11.4	$5.3	$8.1	$10.5	$7.7	$10.4	$2.6	$13.3	$6.8	$129.4
Optometry	$37.5	$8.2	$0.0	$1.3	$4.0	$0.0	$5.2	$0.0	$11.3	$0.0	$2.7	$70.2
Oswego	$103.4	$15.8	$10.1	$7.1	$10.6	$12.3	$10.7	$5.5	$4.5	$15.0	$18.9	$213.9
Plattsburgh	$34.0	$16.4	$3.9	$12.8	$7.6	$11.1	$9.8	$8.7	$3.4	$13.6	$6.2	$127.5
Potsdam	$36.7	$1.8	$4.0	$5.5	$13.6	$14.1	$9.0	$13.0	$4.8	$20.9	$10.8	$134.2
Purchase	$102.6	$16.3	$8.3	$12.1	$10.7	$12.6	$30.2	$11.7	$9.1	$15.2	$12.7	$241.5
Stony Brook	$401.6	$35.4	$19.5	$54.2	$38.5	$70.5	$126.7	$60.9	$32.6	$51.0	$28.5	$919.4
SUNYIT	$1.0	$0.8	$0.1	$5.8	$0.0	$1.9	$3.1	$0.1	$7.9	$0.8	$1.2	$22.7
Sys Adm	$22.1	$4.4	$2.3	$4.4	$2.7	$1.6	$1.4	$0.1	$1.5	$11.3	$0.2	$52.0
Upstate	$24.5	$0.6	$2.7	$1.8	$15.2	$3.6	$1.4	$7.8	$3.9	$9.0	$0.5	$71.0
Total	$2,456.7	$320.7	$219.4	$372.2	$379.3	$414.3	$446.0	$326.8	$271.1	$433.2	$347.7	$5,987.5

5.3 Average Annual Renewal Needs as a Fraction of CRV by Campus

Campus	CRV ($ millions)	Average Annual Renewal ($ millions)	Average Annual Renewal/ CRV
Albany	$1,225	$19.2	0.016
Alfred Ceramics	$167	$2.7	0.016
Alfred State Col	$262	$4.2	0.016
Binghamton	$1,283	$20.5	0.016
Brockport	$660	$11.3	0.017
Buffalo College	$866	$14.7	0.017
Buffalo Univ	$3,120	$50.3	0.016
Canton	$170	$2.9	0.017
Cobleskill	$250	$4.2	0.017
Cornell - AG	$1,025	$16.4	0.016
Cornell - Gen AG	$214	$3.4	0.016
Cornell Gen SVS	$192	$2.8	0.015
Cornell I&LR	$100	$1.4	0.014
Cornell - Vet	$450	$6.3	0.014
Cortland	$544	$9.5	0.017
Delhi	$243	$4.0	0.016
Downstate	$923	$14.4	0.016
Empire State	$14	$0.2	0.016
Envir Sci/For	$406	$6.4	0.016
Farmingdale	$635	$10.3	0.016
Fredonia	$430	$6.9	0.016
Geneseo	$526	$8.5	0.016
Maritime	$222	$3.6	0.016
Morrisville	$335	$5.3	0.016
New Paltz	$611	$9.8	0.016
Old Westbury	$402	$6.7	0.017
Oneonta	$508	$8.3	0.016
Optometry	$263	$3.7	0.014
Oswego	$769	$12.3	0.016
Plattsburgh	$454	$7.7	0.017
Potsdam	$523	$8.6	0.017
Purchase	$832	$14.0	0.017
Stony Brook	$3,457	$55.7	0.016
SUNYIT	$160	$2.5	0.015
Sys Adm	$197	$3.1	0.016
Upstate	$504	$7.8	0.015
Total	**$22,942**	**$369.6**	**0.016**

5.4 SUNY 50-Year Renewal Graph



6. Infrastructure

This section provides details of the infrastructure costs by major components (e.g., roads, landscape and hardscape, utility distribution systems, and utility generation systems). PPCG data were used to estimate average annual renewal needs for infrastructure by campus as well as to estimate the Current Replacement Value of the infrastructure.

SUCF cost data and condition assessment data were used to estimate backlog for infrastructure. If an infrastructure component was assessed to be in poor condition, then it was assigned to the backlog.

Infrastructure, as a whole, is harder to measure, harder to assess, and harder to assign a remaining useful life to than building systems. For this reason, PPCG knows of no campus that has created renewal curves that include their entire infrastructure[8]. Instead, campuses create three to five-year infrastructure renewal plans and use the average annual renewal need to approximate long term renewal needs.

Figure 6.1, *Backlog of Infrastructure Report*, comes from data supplied by SUCF and BCAS. The SUCF staff estimates the infrastructure backlog to be approximately $700 million. The majority of this is in the Utility Distribution and Generation (primarily steam systems) [$420 million] and Landscape and Hardscape (surface parking, plazas and sidewalks) [$138 million].

Figure 6.2, *Infrastructure Renewal Summary by Category*, shows the average annual infrastructure need by campus and by major category (Roads, Landscape & Hardscape, Utility Distribution, Utility Generation, and Athletic Fields.) Note that the Utility Distribution category has the highest annual renewal needs.

Figure 6.3*, Infrastructure Summary*, lists the Infrastructure Current Replacement Value, Backlog, and Average Annual Renewal for each campus. Infrastructure Renewal divided by Infrastructure CRV shows approximately what share of the campus infrastructure needs renewal each year. The numbers are generally in the 2% range, reflecting the long life cycles for many infrastructure items.

The Infra FCI column (backlog divided by CRV) ranges from .67 to .00, with an average across the system of 0.25.

[8] The one exception to this is the Getty Museum, which was constructed from scratch in 1997.

Campuses with Infrastructure FCI over 0.3 include[9]

Alfred Ceramics	.37
Buffalo College	.48
Cornell – AG	.62
Cornell – Gen AG	.39
Cornell – Gen SVS	.67
Delhi	.30
Envir Science/Forestry	.59
Fredonia	.62
Maritime	.44
New Paltz	.44
Oneonta	.30
Oswego	.33
Sys Adm	.62

These ratios are unusually high. This may reflect a cause for concern and should be examined carefully to determine a) why the infrastructure backlog is so high and b) what should be done to reduce this backlog to minimize campus-wide infrastructure failures (especially in campus heating systems).

[9] Downstate also has a large FCI number, but this is the result of a large fuel storage problem that extends well beyond typical renewal and backlog needs.

6.1 Infrastructure Backlog by Campus ($ 000's) – Systems Rated Poor by SUCF

Campus	Athletic Fields	Site Lighting	Utility Distribution	Utility Generation	Roads	Landscape & Hardscape	Telephone & Data	Misc.	Total	Percent
Albany			$12,136	$8,066	$626	$6,996	$3,850	$3,448	$35,121	5.0%
Alfred Ceramics		$163	$628	$325		$178		$25	$1,318	0.2%
Alfred State Col			$6,203			$4		$20	$6,227	0.9%
Binghamton		$5,680	$6,385	$15,101	$2,014	$3,850	$5,189	$182	$38,400	5.5%
Brockport	$5,214	$1,700	$12,621	$5,000	$718	$5,693	$6,000	$1,374	$38,320	5.5%
Buffalo College		$1,213	$12,765	$12,559	$1,035	$3,503	$1,573	$8,172	$40,819	5.9%
Buffalo Univ		$14,700	$24,268	$7,063	$2,263	$34,507	$3,000	$549	$86,350	12.4%
Canton	$105	$750	$1,031		$481	$497		$149	$3,013	0.4%
Cobleskill	$368	$458	$1,529	$1,918	$1,265	$2,358	$1,253	$105	$9,253	1.3%
Cornell - AG		$450	$4,720	$0	$996	$123	$0	$0	$6,290	0.9%
Cornell - Gen AG		$252	$2,697	$1,915	$140	$105	$600	$17	$5,726	0.8%
Cornell Gen SVS			$12,397	$12,635	$0	$125			$25,157	3.6%
Cornell I&LR						$1,250			$1,250	0.2%
Cornell - Vet									$0	0.0%
Cortland			$3,251	$2,485		$1,706	$1,031	$116	$8,590	1.2%
Delhi	$1,823		$6,567		$410	$2,783	$1,483	$101	$13,165	1.9%
Downstate			$1,103		$1,000	$1,513		$4,695	$8,311	1.2%
Empire State									$0	0.0%
Envir Sci/For			$806	$3,500	$81	$121	$399	$111	$5,017	0.7%
Farmingdale	$437	$1,181	$5,102	$1,651	$1,080	$8,760	$10,500	$536	$29,246	4.2%
Fredonia			$28,047	$13,129		$3,206	$2,500	$1,000	$47,882	6.9%
Geneseo	$2,188		$9,839		$271	$3,900		$763	$16,961	2.4%
Maritime		$669	$9,129		$375	$834	$731	$4,700	$16,438	2.4%
Morrisville									$0	0.0%
New Paltz	$207		$22,671	$9,187		$5,582	$3,112	$6,624	$47,382	6.8%
Oneonta			$10,602		$132	$509		$13	$11,255	1.6%
Optometry									$0	0.0%
Oswego	$2,100		$8,537		$21	$3,446		$22	$14,126	2.0%
Old Westbury		$1,664	$18,900	$5,500		$746	$2,360	$1,151	$30,321	4.4%
Plattsburgh	$228		$5,404	$81	$722	$2,878		$385	$9,697	1.4%
Pottsdam			$137		$26	$2,159		$38	$2,359	0.3%
Purchase		$906	$6,794	$1,980	$1,107	$19,263	$855	$410	$31,314	4.5%
Stony Brook			$59,550	$23,782		$18,700	$0	$424	$102,455	14.7%
SUNYIT						$2,505	$0	$27	$2,532	0.4%
Sys Adm		$500	$741			$200	$0	$33	$1,474	0.2%
Upstate			$225			$2			$227	0.0%
Total	$12,668	$30,285	$294,784	$125,877	$14,763	$137,999	$44,435	$35,186	$695,995	100.0%
Percentage	1.8%	4.4%	42.4%	18.1%	2.1%	19.8%	6.4%	5.1%	100.0%	

6.2 Average Annual Infrastructure Needs by Category and Campus ($ 000's)

Campus	Roads	Landscape & Hardscape	Utility Distribution	Utility Generation	Athletic Fields	Total
Albany	$383	$595	$437	$2,623	$219	**$4,257**
Alfred Ceramics	$0	$8	$57	$0	$0	**$65**
Alfred State Col	$141	$122	$230	$59	$111	**$663**
Binghamton	$1,185	$449	$942	$286	$595	**$3,457**
Brockport	$443	$391	$1,739	$126	$848	**$3,547**
Buffalo College	$318	$392	$507	$112	$141	**$1,471**
Buffalo Univ	$1,392	$1,583	$1,795	$2,663	$205	**$7,638**
Canton	$283	$117	$220	$0	$84	**$705**
Cobleskill	$383	$129	$222	$65	$151	**$950**
Cornell - AG	$199	$7	$0	$0	$0	**$206**
Cornell - Gen AG	$84	$39	$70	$20	$32	**$246**
Cornell - Gen SVS	$0	$1	$1,207	$351	$0	**$1,559**
Cornell - I&LR	$0	$43	$0	$0	$0	**$43**
Cornell - Vet	$0	$0	$0	$0	$0	**$0**
Cortland	$175	$194	$430	$329	$356	**$1,484**
Delhi	$128	$175	$283	$25	$202	**$812**
Downstate	$0	$24	$58	$8	$0	**$89**
Empire State	$0	$3	$1	$0	$0	**$4**
Envir Sci/For	$48	$24	$36	$25	$0	**$133**
Farmingdale	$636	$453	$681	$26	$285	**$2,082**
Fredonia	$265	$295	$494	$65	$249	**$1,367**
Geneseo	$164	$192	$366	$122	$373	**$1,218**
Maritime	$227	$71	$184	$164	$115	**$762**
Morrisville	$5	$96	$266	$167	$393	**$927**
New Paltz	$266	$298	$888	$121	$610	**$2,183**
Old Westbury	$454	$127	$656	$6	$238	**$1,481**
Oneonta	$80	$114	$614	$0	$243	**$1,051**
Optometry	$0	$1	$0	$0	$0	**$1**
Oswego	$13	$392	$563	$299	$474	**$1,740**
Plattsburgh	$142	$189	$392	$120	$215	**$1,057**
Potsdam	$8	$177	$143	$229	$182	**$739**
Purchase	$669	$350	$413	$596	$222	**$2,249**
Stony Brook	$1,547	$1,112	$2,935	$913	$772	**$7,278**
SUNY IT	$321	$125	$260	$0	$116	**$822**
Sys Adm	$8	$7	$34	$0	$0	**$49**
Upstate	$32	$30	$98	$195	$0	**$355**
Total	**$10,001**	**$8,323**	**$17,220**	**$9,714**	**$7,432**	**$52,689**

6.3 Infrastructure Summary ($ 000's)

Campus	Infrastructure Current Replacement Value	Infra. Backlog	Infrastructure Average Annual Renewal	Building Average Annual Renewal	Infra FCI (Bkl/CRV)	Infra renewal/ Infra CRV	infra renewal/ building renewal
Albany	$251,952	$35,121	$4,257	$19,169	0.14	0.017	22%
Alfred Ceramics	$3,555	$1,318	$65	$2,692	0.37	0.018	2%
Alfred State Col	$36,825	$6,227	$663	$4,189	0.17	0.018	16%
Binghamton	$173,799	$38,400	$3,457	$20,540	0.22	0.020	17%
Brockport	$211,523	$38,320	$3,547	$11,272	0.18	0.017	31%
Buffalo College	$84,716	$40,819	$1,471	$14,749	0.48	0.017	10%
Buffalo Univ	$439,155	$86,350	$7,638	$50,271	0.20	0.017	15%
Canton	$37,780	$3,013	$705	$2,894	0.08	0.019	24%
Cobleskill	$49,381	$9,253	$950	$4,167	0.19	0.019	23%
Cornell - AG	$10,145	$6,290	$206	$16,365	0.62	0.020	1%
Cornell - Gen AG	$14,796	$5,726	$246	$3,405	0.39	0.017	7%
Cornell - Gen SVS	$37,778	$25,157	$1,559	$2,832	0.67	0.041	55%
Cornell - I&LR	$5,100	$1,250	$43	$1,443	0.25	0.008	3%
Cornell - Vet	$0	$0	$0	$6,313	0.00	0.000	
Cortland	$74,812	$8,590	$1,484	$9,476	0.11	0.020	16%
Delhi	$43,731	$13,165	$812	$3,995	0.30	0.019	20%
Downstate	$3,699	$8,311	$89	$14,443	**	0.024	1%
Empire State	$307	$0	$4	$219	0.00	0.013	2%
Envir Sci/For	$8,552	$5,017	$133	$6,371	0.59	0.016	2%
Farmingdale	$110,802	$29,246	$2,082	$10,272	0.26	0.019	20%
Fredonia	$76,654	$47,882	$1,367	$6,912	0.62	0.018	20%
Geneseo	$71,643	$16,961	$1,218	$8,513	0.24	0.017	14%
Maritime	$37,629	$16,438	$762	$3,557	0.44	0.020	21%
Morrisville	$41,130	$0	$927	$5,338	0.00	0.023	17%
New Paltz	$108,130	$47,382	$2,183	$9,813	0.44	0.020	22%
Old Westbury	$64,551	$11,255	$1,481	$6,689	0.17	0.023	22%
Oneonta	$46,520	$14,126	$1,051	$8,264	0.30	0.023	13%
Optometry	$44	$0	$1	$3,658	0.00	0.023	0%
Oswego	$90,681	$30,321	$1,740	$12,313	0.33	0.019	14%
Plattsburgh	$59,311	$9,697	$1,057	$7,706	0.16	0.018	14%
Potsdam	$34,937	$2,359	$739	$8,643	0.07	0.021	9%
Purchase	$123,110	$31,314	$2,249	$14,019	0.25	0.018	16%
Stony Brook	$384,420	$102,455	$7,278	$55,688	0.27	0.019	13%
SUNY IT	$46,797	$2,532	$822	$2,475	0.05	0.018	33%
Sys Adm	$2,368	$1,474	$49	$3,110	0.62	0.021	2%
Upstate	$19,609	$227	$355	$7,778	**	0.018	5%
Total	**$2,805,942**	$695,996	$52,689	$369,553	0.25	0.019	14%

** These data are anomalous and will be given further review.

7. Benchmark Data

One of the objectives of this study is to benchmark SUNY academic facility needs against those of other higher education systems. Despite a wealth of reliable sources for higher education statistics related to demographics, enrollments, educational attainment, teacher levels, graduation rates, etc., higher education benchmark data on capital facilities renewal, backlog, and infrastructure are difficult to find. Various higher education organizations, such as APPA (the Association of Physical Plant Administrators), SCUP (The Society for College and University Planners) and NACUBO (the National Association for College and University Business Officers) have collected capital facility related data, but much of it has been self-reported and not subject to verification. This has resulted in incomplete data and inconsistent results. Even major studies have resorted to estimates, based on back-of-the-envelope analysis by experts.

The benchmark data presented in this section are from PPCG system clients. The data have been collected in a consistent manner, reviewed for accuracy by each campus and system and are among the best higher education facilities benchmarking data available. PPCG has worked closely with several public higher education systems using the Life Cycle Model Based on CRV approach. Among these client systems included for this study are two systems, that by State-mandate, focus on teaching and three systems that have a substantial medical and/or research focus:

The two State-mandated teaching systems are:

- California State University System (24 campuses); and
- Minnesota State Colleges and Universities (53 campuses)

The three medical and/or research facilities include:

- University of Texas (15 campuses);
- Oregon University System (7 campuses); and
- University of California (9 campuses).

Correspondingly, SUNY, with its 35 campuses, has a blend of teaching and research campuses. In the following analyses, the SUNY capital facilities are compared to those of the above-cited PPCG system clients in the five following areas:

- Facility Condition Index (FCI);
- Percent of Buildings with Complex Systems;
- Percentage of Buildings over 30-years Old;
- Average Annual Renewal as a Percent of CRV; and
- Average Annual Infrastructure as a Percent of Average Annual Building Renewal.

Facilities Condition Index (FCI)

The Facility Condition Index (FCI) is an industry recognized standard for measuring the general condition of capital facilities. It may be calculated at the building, campus and system levels. This section focuses on the building FCI at the system level (infrastructure is excluded). The building FCI is calculated taking the total cost of the system's building backlog (deferred maintenance) divided by the total current replacement value of the system. An FCI of .05 or below generally reflects that the overall system is in reasonably good condition. Stated more plainly, an FCI of .05 would mean that 5% of the overall system is in need of repair.

SUNY has a total building backlog of $2,457 million (See Figure 4.2). By dividing SUNY's backlog by its total current replacement value of $22.9 billion, the result reveals that SUNY has a building FCI of .11. This means that 11% of the SUNY system academic buildings are beyond their useful life and are in a state of backlog.

SUNY's FCI of .11 is in the lower end of the range when compared against five peer higher education systems in Figure 7.1. Only the University of Texas has a lower FCI (.06)[10]. SUNY's FCI is comparable to the two State-mandated teaching systems: California State University (.11) and the Minnesota State Colleges and Universities (.12). The remaining research systems: The Oregon University System and the University of California report higher FCIs (.18 and .23, respectively).

There are several factors that influence a system's FCI. Two prominent factors include the percentage of buildings with complex systems and the age of the facilities.

Percentage of Buildings with Complex Systems

Figure 7.2, reveals that about 11% of the SUNY buildings have complex systems. As noted in the FCI analysis, SUNY is again in the same range as the two State-mandated teaching systems (California State University (11%) and the Minnesota State Colleges and Universities (7%). SUNY is significantly below the medical and/or research systems, which report a Percent of Buildings with Complex Systems in the range of 29% to 43%. Two systems included in the latter group also have the highest FCIs: the University of California and Oregon University System. Since complex buildings are significantly more expensive to maintain and renew (even more so than the difference in the replacement values) it is not surprising that these two systems have higher FCIs.

[10] Figure 7.3 reveals that the University of Texas also has the lowest percentage of buildings over 30-years old (32%).

Percentage of Buildings over 30-years old

Figure 7.3, indicates that 73% of SUNY buildings are over 30-years old. Only the University of California has a higher rate (75%). As noted above, the University of Texas (UT), which has the lowest FCI, also has the lowest percentage of buildings over 30-years old (32%).

Average Annual Renewal as a Percent of CRV

Figure 7.4*, Average Annual Renewal as a Percent of CRV,* shows what percentage of the building Current Replacement Value (CRV) should, on average, be spent each year on renewal. The two teaching systems: California State University and the Minnesota State Colleges and Universities require an average 1.4%. The three medical/and or research systems: University of Texas, University of California and the Oregon University System each require an average 1.7%. SUNY requires an average 1.6%. SUNY has both Tier-1 Research Universities and colleges that focus exclusively on teaching. This difference in mission (along with the percent of the systems that are complex buildings) help explain these differences in average annual renewal as a percent of CRV.

Average Annual Infrastructure as a Percentage of Average Annual Building Renewal

In addition to identifying an annual level of support for building renewal, each system must also address infrastructure[11] renewal. The Infrastructure Summary, Figure 6.3, shows that SUNY requires an annual infrastructure investment equal to 14% of its annual investment for building renewal. This is calculated by dividing the Infrastructure Average Annual Renewal of $52.5 million by the Building Average Annual Renewal of $369.6 million.

Figure 7.5 demonstrates that SUNY infrastructure needs fall in the middle of the range of systems. Infrastructure can vary widely based upon a number of factors including the size of the campus and the percentage of utility services provided by the local community or city. In the SUNY experience, a single building campus, like Optometry, has far less infrastructure than does Albany and likewise requires far less Average Annual Infrastructure Renewal.

[11] See Section 6 for a definition of what is included in Infrastructure

7.1 Benchmark Data – Facilities Condition Index

System	Low	Average	High
University of Texas (15)	0.00	**0.06**	0.11
California State University (24)	0.03	**0.11**	0.36
SUNY (36)	**0.02**	**0.11**	**0.20**
Minnesota State Colleges and Universities (53)	0.01	**0.12**	0.27
Oregon University System (7)	0.06	**0.18**	0.24
University of California	0.07	**0.23**	0.32

These variances are high because of the age of the campuses, the types of buildings and special considerations.

7.2 Benchmark Data – Percentage of Buildings with Complex Systems

System	Low	Average	High
Minnesota State Colleges and Universities (53)	0%	**7%**	21%
California State University (24)	0%	**11%**	24%
SUNY (36)	**2%**	**11%**	**20%**
University of Texas (15)	0%	**29%**	56%
Oregon University System (7)	0%	**32%**	42%
University of California	26%	**43%**	68%

7.3 Benchmark Data- Percentage of Buildings Over 30 Years Old

System	Low	Average	High
University of Texas (15)	2%	**32%**	47%
California State University (24)	8%	**56%**	100%
Minnesota State Colleges and Universities (53)	0%	**63%**	98%
Oregon University System (7)	2%	**66%**	2%
SUNY (36)	**0%**	**73%**	**100%**
University of California	44%	**75%**	92%

7.4 Benchmark Data – Average Annual Renewal as a Percentage of CRV

System	Low	Average	High
California State University (24)	1.2%	**1.4%**	1.5%
Minnesota State Colleges and Universities (53)	1.1%	**1.4%**	1.9%
SUNY (36)	**1.4%**	**1.6%**	**1.7%**
University of Texas (15)	1.5%	**1.7%**	1.8%
Oregon University System (7)	1.6%	**1.7%**	1.8%
University of California	1.6%	**1.7%**	1.8%

7.5 Benchmark Data – Average Annual Infrastructure as a Percentage of Average Annual Building Renewal

System	Low	Average	High
Minnesota State Colleges and Universities (53)	1.0%	**9.0%**	71.0%
Oregon University System (7)	8.0%	**13.0%**	30.0%
SUNY (36)	**1.0%**	**14.0%**	**55.0%**
University of Texas (15)	1.0%	**16.0%**	52.0%
University of California	6.0%	**19.0%**	28.0%
California State University (24)	14.0%	**28.0%**	100.0%

8. SUNY Backlog and Renewal - Funding Needs and Options

Included in this section are summary reports for each campus and estimated investment required to bring down the backlog of deferred maintenance.

Figure 8.1, *System-wide Summary - CRV, Backlog and FCI*, shows the building, infrastructure and total Facilities Condition Index for each campus. The system-wide average FCI, including buildings and infrastructure, is 0.12. This means that 12% of SUNY's building and infrastructure systems are in backlog. However, there are a number of campuses that are substantially above this level. This is especially true in the infrastructure category, where 13 campuses have FCIs above 0.30 (i.e. backlog greater than 30% of total CRV). These require thorough examination as well as a multi-year plan to reduce the backlog. Otherwise, these campuses should expect infrastructure failures requiring emergency repairs.

Figure 8.2, *System-wide Summary – CRV, Average Annual Renewal and Average Renewal as a percentage of CRV;* show the building, infrastructure and total average annual renewal needs as a percentage of CRV. The system-wide total is 1.6%. This number is in line with experience at other systems.

Figure 8.3, System-*wide Summary – 5-year FCI,* shows the five-year FCI for buildings and infrastructure. The five-year FCI is the sum of the backlog, plus 2008, 2009, 2010, 2011 and 2012 (five years) renewal needs. This index is growing in popularity because it shows the five-year renewal and backlog needs instead of the more traditional FCI which only shows the backlog.

Figure 8.4, *Backlog Growth at $200 Million Investment*, shows what will happen to the SUNY system if the investment in backlog and renewal is $200 million per year. In this scenario, the SUNY backlog will grow to slightly over $4 billion by the year 2012 and $5 billion by the year 2016. [Note: all dollars in this report are expressed as 2007 dollars.]

Figure 8.5, *Backlog Growth at $400 Million Investment*, shows that if the annual investment in backlog and renewal is $400 million the backlog will essentially remain flat over the next ten years.

Figure 8.6, *Backlog Reduction at $560 Million Investment*, shows that the backlog will be cut in half in the next ten years.

Figure 8.7 *Backlog Reduction at $700 Million Investment*, shows that the backlog is almost eliminated by 2017. Thereafter, only funding for buildings and infrastructure annual renewal will be required.

8.1 SUNY System-wide Summary – CRV, Backlog, and FCI

	CRV (millions of dollars)			Backlog (millions)			FCI		
Campus	Building CRV	Infra CRV	Total CRV	Building Backlog	Infra Backlog	Total Backlog	Building FCI	Infra FCI	Total FCI
Albany	$1,225	$252	$1,477	$120	$35	$155	0.10	0.14	0.10
Alfred Ceramics	$167	$4	$171	$7	$1	$8	0.04	0.37	0.05
Alfred State Col	$262	$37	$299	$6	$6	$12	0.02	0.17	0.04
Binghamton	$1,283	$174	$1,457	$106	$38	$144	0.08	0.22	0.10
Brockport	$660	$212	$872	$108	$38	$146	0.16	0.18	0.17
Buffalo College	$866	$85	$951	$84	$41	$124	0.10	0.48	0.13
Buffalo Univ	$3,120	$439	$3,559	$398	$86	$484	0.13	0.20	0.14
Canton	$170	$38	$208	$12	$3	$15	0.07	0.08	0.07
Cobleskill	$250	$49	$299	$28	$9	$37	0.11	0.19	0.12
Cornell - AG	$1,025	$11	$1,036	$61	$6	$67	0.06	0.62	0.06
Cornell - Gen AG	$214	$14	$228	$20	$6	$25	0.09	0.39	0.11
Cornell Gen SVS	$192	$38	$230	$31	$25	$56	0.16	0.67	0.24
Cornell I&LR	$100	$5	$105	$4	$1	$5	0.04	0.25	0.05
Cornell - Vet	$450	$0	$450	$44	$0	$44	0.10	0.00	0.10
Cortland	$544	$75	$619	$45	$9	$54	0.08	0.11	0.09
Delhi	$243	$44	$287	$17	$13	$30	0.07	0.30	0.10
Downstate	$923	$4	$927	$182	$8	$191	0.20	**	0.21
Empire State	$14	$0	$14	$1	$0	$1	0.08	0.00	0.08
Envir Sci/For	$406	$9	$415	$44	$5	$49	0.11	0.59	0.12
Farmingdale	$635	$111	$746	$65	$29	$95	0.10	0.26	0.13
Fredonia	$430	$77	$507	$33	$48	$81	0.08	0.62	0.16
Geneseo	$526	$72	$598	$63	$17	$80	0.12	0.24	0.13
Maritime	$222	$38	$260	$38	$16	$55	0.17	0.44	0.21
Morrisville	$335	$41	$376	$24	$0	$24	0.07	0.00	0.06
New Paltz	$611	$108	$719	$51	$47	$99	0.08	0.44	0.14
Old Westbury	$402	$65	$467	$55	$11	$66	0.14	0.17	0.14
Oneonta	$508	$47	$555	$50	$14	$64	0.10	0.30	0.11
Optometry	$263	$0	$263	$38	$0	$38	0.14	0.00	0.14
Oswego	$769	$91	$860	$103	$30	$134	0.13	0.33	0.16
Plattsburgh	$454	$59	$513	$34	$10	$44	0.07	0.16	0.09
Potsdam	$523	$35	$558	$37	$2	$39	0.07	0.07	0.07
Purchase	$832	$123	$955	$103	$31	$134	0.12	0.25	0.14
Stony Brook	$3,457	$384	$3,841	$402	$102	$504	0.12	0.27	0.13
SUNYIT	$160	$47	$207	$1	$3	$4	0.01	0.05	0.02
Sys Adm	$197	$2	$199	$22	$1	$24	0.11	0.62	0.12
Upstate	$504	$20	$524	$25	$0	$25	0.05	**	0.05
Total	$22,942	$2,806	$25,748	$2,457	$696	$3,153	0.11	0.25	0.12

** These data are anomalous and will be given further review.

8.2 System-wide Summary – CRV, Average Annual Renewal and Average Renewal as a Percentage of CRV

	CRV (millions of dollars)			Average Annual Renewal			Renewal as a percent of CRV		
Campus	Building CRV	Infra CRV	Total CRV	Building Renewal	Infra Renewal	Total Renewal	Building	Infra	Total
Albany	$1,225	$252	$1,477	$19.2	$4.3	$23.4	1.6%	1.7%	1.6%
Alfred Ceramics	$167	$4	$171	$2.7	$0.1	$2.8	1.6%	1.8%	1.6%
Alfred State Col	$262	$37	$299	$4.2	$0.7	$4.9	1.6%	1.8%	1.6%
Binghamton	$1,283	$174	$1,457	$20.5	$3.5	$24.0	1.6%	2.0%	1.6%
Brockport	$660	$212	$872	$11.3	$3.5	$14.8	1.7%	1.7%	1.7%
Buffalo College	$866	$85	$951	$14.7	$1.5	$16.2	1.7%	1.7%	1.7%
Buffalo Univ	$3,120	$439	$3,559	$50.3	$7.6	$57.9	1.6%	1.7%	1.6%
Canton	$170	$38	$208	$2.9	$0.7	$3.6	1.7%	1.9%	1.7%
Cobleskill	$250	$49	$299	$4.2	$1.0	$5.1	1.7%	1.9%	1.7%
Cornell - AG	$1,025	$11	$1,036	$16.4	$0.2	$16.6	1.6%	2.0%	1.6%
Cornell - Gen AG	$214	$14	$228	$3.4	$0.2	$3.7	1.6%	1.7%	1.6%
Cornell Gen SVS	$192	$38	$230	$2.8	$1.6	$4.4	1.5%	4.1%	1.9%
Cornell I&LR	$100	$5	$105	$1.4	$0.0	$1.5	1.4%	0.8%	1.4%
Cornell - Vet	$450	$0	$450	$6.3	$0.0	$6.3	1.4%	0.0%	1.4%
Cortland	$544	$75	$619	$9.5	$1.5	$11.0	1.7%	2.0%	1.8%
Delhi	$243	$44	$287	$4.0	$0.8	$4.8	1.6%	1.9%	1.7%
Downstate	$923	$4	$927	$14.4	$0.1	$14.5	1.6%	2.4%	1.6%
Empire State	$14	$0	$14	$0.2	$0.0	$0.2	1.6%	1.3%	1.6%
Envir Sci/For	$406	$9	$415	$6.4	$0.1	$6.5	1.6%	1.6%	1.6%
Farmingdale	$635	$111	$746	$10.3	$2.1	$12.4	1.6%	1.9%	1.7%
Fredonia	$430	$77	$507	$6.9	$1.4	$8.3	1.6%	1.8%	1.6%
Geneseo	$526	$72	$598	$8.5	$1.2	$9.7	1.6%	1.7%	1.6%
Maritime	$222	$38	$260	$3.6	$0.8	$4.3	1.6%	2.0%	1.7%
Morrisville	$335	$41	$376	$5.3	$0.9	$6.3	1.6%	2.3%	1.7%
New Paltz	$611	$108	$719	$9.8	$2.2	$12.0	1.6%	2.0%	1.7%
Old Westbury	$402	$65	$467	$6.7	$1.5	$8.2	1.7%	2.3%	1.7%
Oneonta	$508	$47	$555	$8.3	$1.1	$9.3	1.6%	2.3%	1.7%
Optometry	$263	$0	$263	$3.7	$0.0	$3.7	1.4%	2.3%	1.4%
Oswego	$769	$91	$860	$12.3	$1.7	$14.1	1.6%	1.9%	1.6%
Plattsburgh	$454	$59	$513	$7.7	$1.1	$8.8	1.7%	1.8%	1.7%
Potsdam	$523	$35	$558	$8.6	$0.7	$9.4	1.7%	2.1%	1.7%
Purchase	$832	$123	$955	$14.0	$2.2	$16.2	1.7%	1.8%	1.7%
Stony Brook	$3,457	$384	$3,841	$55.7	$7.3	$63.0	1.6%	1.9%	1.6%
SUNYIT	$160	$47	$207	$2.5	$0.8	$3.3	1.5%	1.8%	1.6%
Sys Adm	$197	$2	$199	$3.1	$0.0	$3.2	1.6%	2.1%	1.6%
Upstate	$504	$20	$524	$7.8	$0.4	$8.1	1.5%	1.8%	1.6%
Total	$22,942	$2,806	$25,748	$369.6	$52.7	$422.3	1.6%	1.9%	1.6%

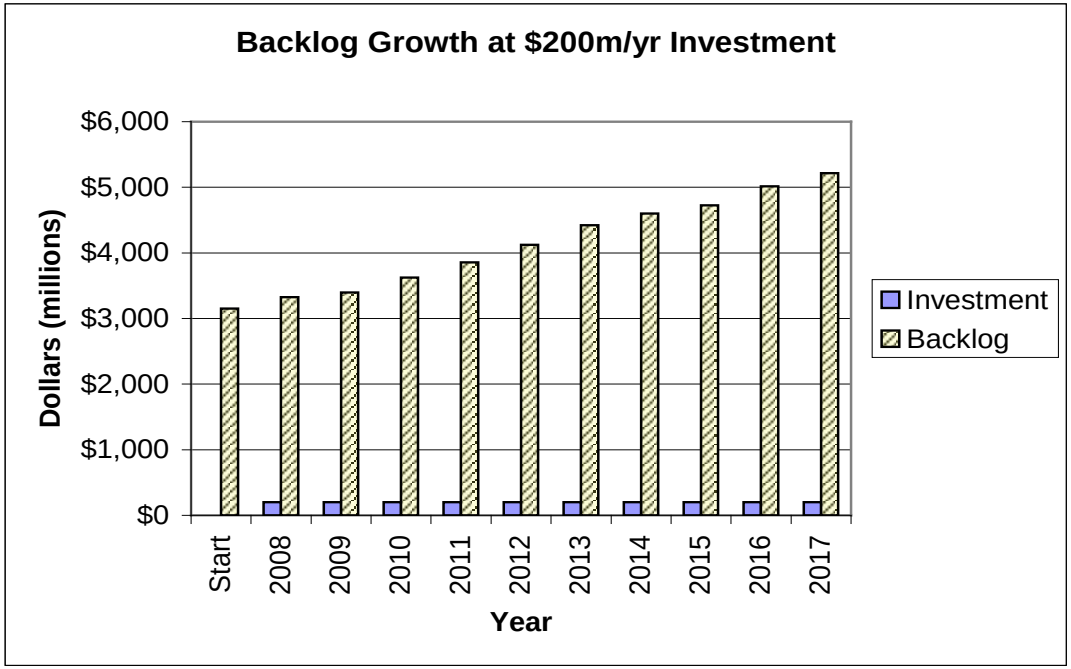
8.3 SUNY System-wide Summary Five-Year FCI

	CRV (millions of dollars)			Backlog and 5-year Renewal Needs ($ millions)			5-year FCI		
Campus	Building CRV	Infra CRV	Total CRV	Building	Infra	Total	Building	Infra	Total
Albany	$1,225	$252	$1,477	$199	$56	$255	0.16	0.22	0.17
Alfred Ceramics	$167	$4	$171	$15	$2	$16	0.09	0.41	0.10
Alfred State Col	$262	$37	$299	$23	$10	$33	0.09	0.26	0.11
Binghamton	$1,283	$174	$1,457	$188	$56	$243	0.15	0.32	0.17
Brockport	$660	$212	$872	$161	$56	$217	0.24	0.26	0.25
Buffalo College	$866	$85	$951	$168	$48	$216	0.19	0.57	0.23
Buffalo Univ	$3,120	$439	$3,559	$612	$125	$737	0.20	0.28	0.21
Canton	$170	$38	$208	$29	$7	$35	0.17	0.17	0.17
Cobleskill	$250	$49	$299	$47	$14	$61	0.19	0.29	0.20
Cornell - AG	$1,025	$11	$1,036	$143	$7	$150	0.14	0.67	0.14
Cornell - Gen AG	$214	$14	$228	$45	$7	$52	0.21	0.50	0.23
Cornell Gen SVS	$192	$38	$230	$37	$33	$70	0.19	0.87	0.30
Cornell I&LR	$100	$5	$105	$10	$1	$11	0.10	0.29	0.10
Cornell - Vet	$450	$70	$520	$73	$0	$73	0.16	0.00	0.14
Cortland	$544	$75	$619	$109	$16	$125	0.20	0.21	0.20
Delhi	$243	$44	$287	$29	$17	$46	0.12	0.39	0.16
Downstate	$923	$4	$927	$262	$9	$271	0.28	n/a	0.29
Empire State	$14	$0	$14	$3	$0	$3	0.21	0.07	0.20
Envir Sci/For	$406	$9	$415	$78	$6	$83	0.19	0.63	0.20
Farmingdale	$635	$111	$746	$114	$40	$153	0.18	0.36	0.21
Fredonia	$430	$77	$507	$57	$55	$112	0.13	0.71	0.22
Geneseo	$526	$72	$598	$103	$23	$126	0.20	0.32	0.21
Maritime	$222	$38	$260	$68	$20	$88	0.31	0.53	0.34
Morrisville	$335	$41	$376	$45	$5	$50	0.13	0.11	0.13
New Paltz	$611	$108	$719	$99	$58	$158	0.16	0.54	0.22
Old Westbury	$402	$65	$467	$110	$19	$129	0.27	0.29	0.28
Oneonta	$508	$47	$555	$89	$19	$108	0.17	0.41	0.19
Optometry	$263	$0	$263	$51	$0	$51	0.19	0.00	0.19
Oswego	$769	$91	$860	$159	$39	$198	0.21	0.43	0.23
Plattsburgh	$454	$59	$513	$86	$15	$101	0.19	0.25	0.20
Potsdam	$523	$35	$558	$76	$6	$82	0.14	0.17	0.15
Purchase	$832	$123	$955	$163	$42	$205	0.20	0.34	0.21
Stony Brook	$3,457	$384	$3,841	$620	$139	$759	0.18	0.36	0.20
SUNYIT	$160	$47	$207	$10	$7	$16	0.06	0.14	0.08
Sys Adm	$197	$2	$199	$38	$2	$39	0.19	0.86	0.20
Upstate	$504	$20	$524	$48	$2	$50	0.10	0.10	0.10
Total	$22,942	$2,806	$25,748	$4,163	$959	$5,122	0.18	0.34	0.20

8.4 Backlog Growth at $200 Million Investment ($ millions)

Needs

	Start	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Buildings	$2,457	$321	$219	$372	$379	$414	$446	$327	$271	$433	$348
Infrastructure	$696	$53	$53	$53	$53	$53	$53	$53	$53	$53	$53
Total	$3,153	$374	$272	$425	$432	$467	$499	$380	$324	$486	$401
Investment		$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Backlog	$3,153	$3,326	$3,399	$3,624	$3,856	$4,124	$4,423	$4,602	$4,727	$5,013	$5,213

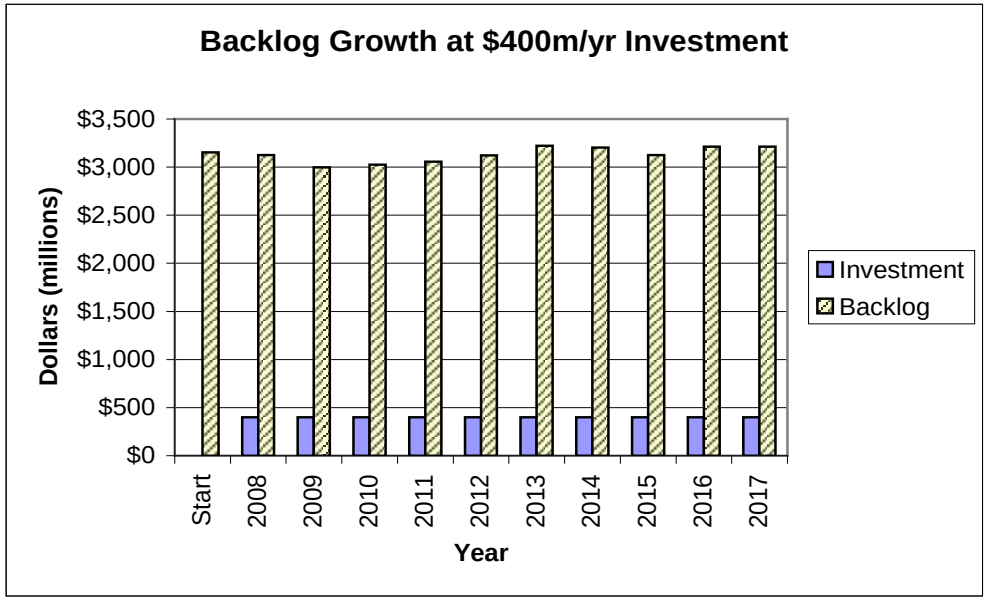


This scenario causes the backlog to grow from $3B to $5B in ten years.

8.5 Backlog Growth at $400 million Investment ($ millions)

Needs

	Start	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Buildings	$2,457	$321	$219	$372	$379	$414	$446	$327	$271	$433	$348
Infrastructure	$696	$53	$53	$53	$53	$53	$53	$53	$53	$53	$53
Total	$3,153	$374	$272	$425	$432	$467	$499	$380	$324	$486	$401
Investment		$400	$400	$400	$400	$400	$400	$400	$400	$400	$400
Backlog	$3,153	$3,126	$2,999	$3,024	$3,056	$3,124	$3,223	$3,202	$3,127	$3,213	$3,213

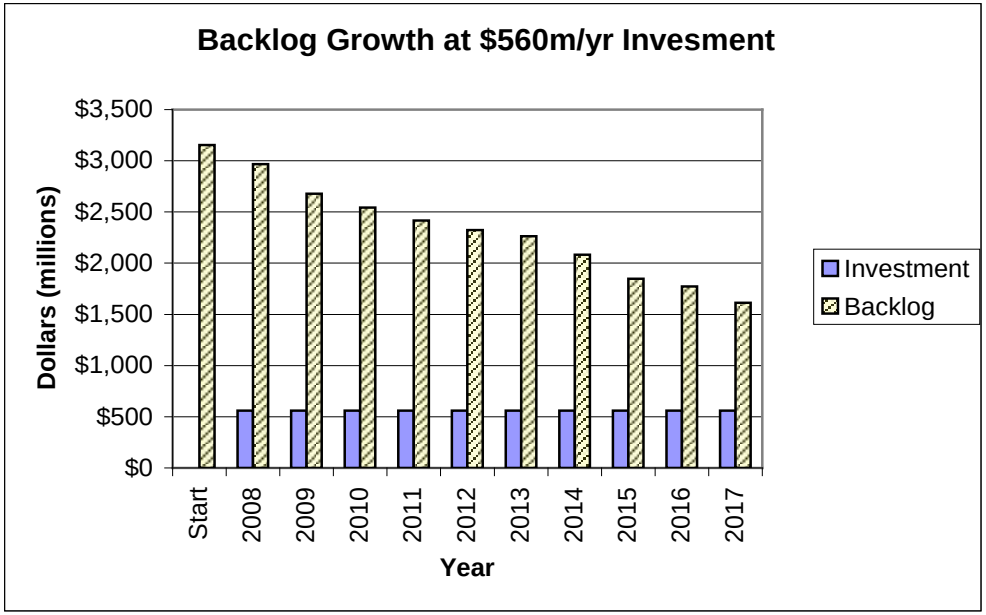


In this scenario, the backlog remains relatively constant.

8.6 Backlog Reduction at $560 Million Investment ($ millions)

Needs

	Start	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Buildings	$2,457	$321	$219	$372	$379	$414	$446	$327	$271	$433	$348
Infrastructure	$696	$53	$53	$53	$53	$53	$53	$53	$53	$53	$53
Total	$3,153	$374	$272	$425	$432	$467	$499	$380	$324	$486	$401
Investment		$560	$560	$560	$560	$560	$560	$560	$560	$560	$560
Backlog	$3,153	$2,966	$2,679	$2,544	$2,416	$2,324	$2,263	$2,082	$1,847	$1,773	$1,613

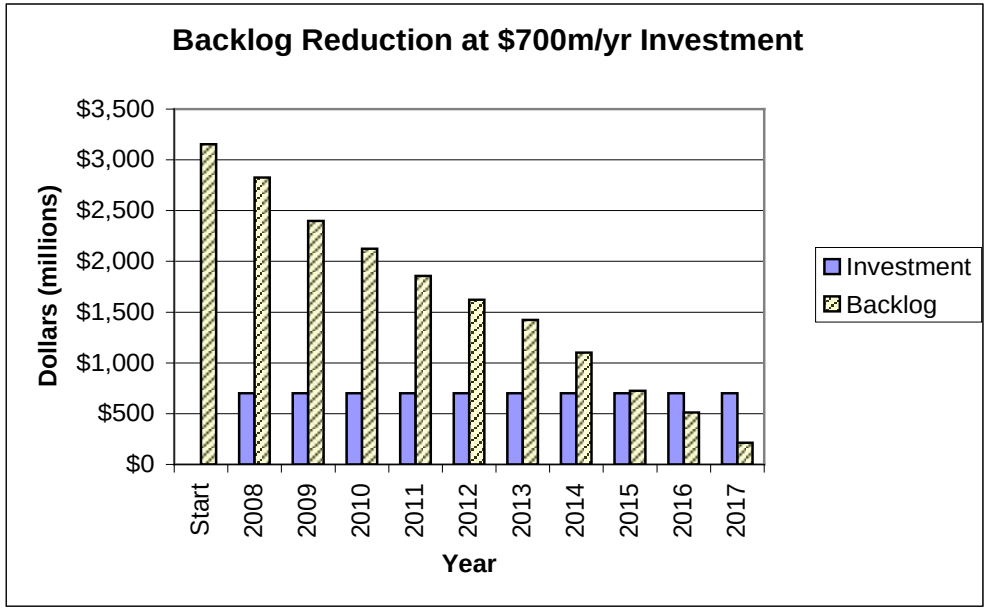


In this scenario, the backlog is reduced by 50% in ten years.

8.7 Backlog Reduction at $700 Million Investment ($ millions)

Needs

	Start	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Buildings	$2,457	$321	$219	$372	$379	$414	$446	$327	$271	$433	$348
Infrastructure	$696	$53	$53	$53	$53	$53	$53	$53	$53	$53	$53
Total	$3,153	$374	$272	$425	$432	$467	$499	$380	$324	$486	$401
Investment		$700	$700	$700	$700	$700	$700	$700	$700	$700	$700
Backlog	$3,153	$2,826	$2,399	$2,124	$1,856	$1,624	$1,423	$1,102	$727	$513	$213



In this scenario, the backlog is almost eliminated in ten years.

9. Concluding Summary

Purpose & Scope of Study

The study was commissioned by the Rockefeller Institute of Government, on behalf of the State University of New York (SUNY) and the State University Construction Fund (SUCF), to conduct the research and analysis needed to provide a conceptual framework for uniformly and systematically assessing a major portion of the University's ongoing capital facility renewal needs. It is intended to establish the basis for a continuing, interactive process of informed analysis and methodological refinement over time. The report provides: research conducted to determine available benchmarking; analyses identifying the annual facility renewal and backlog (i.e., deferred maintenance) needs of the University's State-operated academic facilities; and an independent, objective proposal for an ongoing annual level of capital reinvestment in SUNY Academic facilities, based on the Current Replacement Value methodology.

Study Participants

Rockefeller Institute organized and supervised the study conducted by The Pacific Partners Consulting Group, Inc. (PPCG), headquartered in Stanford, California. PPCG worked in close conjunction with SUCF staff involved in the collection of current SUNY building and infrastructure data.

Study Process: Methodology & Benchmarking

Methodology

The study examined the strengths and weakness of several differing approaches to planning for capital reinvestment, including: 1) Physical Plant Auditing, 2) Plant Depreciation as a Model for Renewal, 3) Inventory of Components, 4) Fixed Percentage of Current Replacement Value (CRV) to calculate Annual Renewal, and 5) the Life Cycle Model Based on CRV.

The latter approach, the Life Cycle Model Based on CRV, was chosen to undertake this study. This model generates a high-level statistical overview of current facility renewal needs and any accumulated backlog based on institution-specific information, including: the age and type of building and its current condition; average building sub-system life cycles; related infrastructure support requirements; and the current cost of replacement – adjusted for regional cost differentials within the state.

Benchmarking

Due to the limited availability of any other reliable, uniformly-collected, industry-recognized higher education facility data to serve as a benchmark for SUNY, PPCG relied upon data drawn from its pool of public higher education system clients to serve that function: University of Texas (15 campuses), the California State University System (24 campuses), the Oregon University System (7 campuses), the University of California (9 campuses), and the Minnesota State College and University System (53 campuses).

SUNY: General Overview & Summary Findings

SUNY consists of 32 State-operated campuses, two contract colleges (Cornell and Alfred Ceramics), along with System Administration, which includes the recent acquisition of Levin Institute. The total SUNY academic system is comprised of 1,800+ buildings with a total of 54.6 million gross square feet. Substantial portions of SUNY buildings were constructed during the late 1960's and early 1970's.

The study shows that SUNY system-wide academic facilities have a total Current Replacement Value (CRV) of $25.7 billion, including $22.9 billion CRV for buildings alone, and $2.8 billion in the CRV for supporting infrastructure. Further, the SUNY State-operated system as a whole currently has a $3.2 billion backlog of deferred capital maintenance, including $2.5 billion for building system renovations and $0.7 billion for renewal of supporting infrastructure. The largest contributors to the building backlog are renovations or replacements related to 1) HVAC Controls/Equipment/Distribution Systems ($1.2 billion); 2) Exterior Walls, Roofs, Doors and Windows ($544 million); and 3) Electrical Equipment/Power Wiring and Lighting ($253 million). Major backlog categories for infrastructure components include 1) Utility Distribution and Generation (primarily steam systems) and 2) Hardscape (surface parking, plazas, sidewalks, etc.)

Pursuant to the CRV methodology, the study also estimates the need for an additional $2.0 billion in capital reinvestment over the next five years to avoid the accumulation of additional backlog. It is important to note that this estimate, and the above estimate of total renewal backlog, is expressed in 2007 dollars only; no adjustments have been made to anticipate future annual cost inflation or escalation amounts.

The most serious concern identified by the study involves the level of need currently identified for the infrastructure supporting facility operations – especially in the area of aging underground distribution systems. Persisting problems in this area could lead to more expensive emergency repairs occasioned by major system failures.

SUNY: Comparisons to Other Systems

- 11% of SUNY's building systems are in *backlog* (vs. optimum level of 5% or under).
  - Advanced age of facilities serve to increase Facility Condition Index (FCI).
  - SUNY's system-wide average FCI is in middle range of 6 public systems.
- SUNY has a high *Percentage of Buildings over 30-years Old* (73%).
- SUNY's system-wide average of *buildings with complex systems* is 11%.
  - SUNY is comparable to the California State University System, who also reports 11%.
  - University of Texas, Oregon State University and University of California are 28% or higher.
- SUNY requires an average annual renewal investment of 1.6% of its total building CRV.
  - Range of all systems benchmarked: 1.4% to 1.7% of total building CRV.
  - The two state-mandated teaching college systems have a lower percentage of 1.4%.
  - The research institution systems have a higher percentage of 1.7%.
  - SUNY has a blending of teaching and research facilities.
- SUNY requires an additional 14% added to average annual building renewal for infrastructure renewal.
  - The average of all systems benchmarked is 16.5%.

Study Findings and Recommendations:

Over the next five years, SUNY academic facilities will require an investment of $2.0 billion to adequately renew its capital facilities. This includes $1.7 billion for building renewal, and $0.3 billion for infrastructure.

The $2.0 billion over the next five years does not address the reduction of the current $3.2 billion backlog. Depending on how quickly SUNY and the State wish to reduce the backlog, SUNY will require a Total Renewal and Backlog Reduction Investment in the range of $400 million to $700 million ***per year***. The following table illustrates the net impact on backlog utilizing four progressive capital investment levels:

Total Annual Renewal & Backlog Reduction Investment	**Net Impact on Backlog**
$200 Million	Backlog grows to a minimum of $4 billion in 5 years; or excess of $5 billion in 10 years
$400 Million	Backlog remains relatively constant
$560 Million	Backlog reduced by 50% in 10 years
$700 Million	Backlog almost eliminated in 10 years

Please note that all cost figures cited here are expressed in 2007 dollars.

10. Glossary of Terms and Acronyms Used

APPA	The Association of Physical Plant Administrators.
Average Annual Renewal	The average cost per year to keep up with facility renewal needs.
Backlog	The Backlog includes all subsystems that have no remaining useful life and need immediate replacement. (See Deferred Maintenance)
BCAS	Building Condition Assessment Survey.
Basic (Building Type)	Buildings with *basic* systems include offices, classrooms and libraries. These represent the bulk of the SUNY buildings.
Complex (Building Type)	Buildings with *complex* systems include wet-labs, patient care, and animal care facilities.
Simple (Building Type)	Buildings with *simple* systems consist of warehouses and parking structures.
Small (Building Type)	*Small* Buildings include buildings under 5,000 GSF.
CSU	California State University System (24 campuses).
Component	Sub-systems are made up of building components (e.g. motors, fans, condensing units).
CRV	Current Replacement Value - the cost to replace (in kind).
Deferred Maintenance	A system is in deferred maintenance if it is past its useful life and needs immediate replacement. (See Backlog)
Escalation	Inflation.
FCI	Facility Condition Index - The backlog divided by the Current Replacement Value.
FRRM™	Facility Renewal Resource Model (FRRM™) - a web-based software application to track renewal and backlog needs.
GPM	Gallons per minute.
GSF	Gross square footage.
Infrastructure	Facilities that support the campus but are not buildings. Examples include roads, courtyards, utility distribution systems, utility generation systems and athletic fields.
Infrastructure Renewal	The cost to renew infrastructure systems.
KV	Kilovolt.
KVA	Kilovolt Amps.
LF	Linear Foot.
Life Cycle	The expected useful life of a subsystem as determined by industry standards.
LLF	Lane linear foot.
Mark Ups	Construction overhead costs that Include insurance, escalation fees, overhead, and profit.
MBTUH	One thousand British thermal units per hour.
MnSCU	Minnesota State College and University System (53 campuses).
NACUBO	The National Association for College and University Business Officers.
OUS	Oregon University System (7 campuses).
PPCG	Pacific Partners Consulting Group, Inc.
Ratings	Criteria provided by SUCF for evaluating building conditions – Excellent, Good, Fair, Poor.
Regional Index	Regional Index Factors are adjustments based on the location of the campus.
Removal Costs	Removal Costs are the cost of removing the old system, prior to installing or upgrading a new system.
Renewal	Renewal is replacement or renovation of systems (usually when the system is past its useful life).
Renewal Curve	A renewal curve is a 50 year forecast of renewal needs by campus or by system.
SCUP	The Society for College and University Planners.
Soft Costs	Soft Costs include design, inspection, specifications, bidding, and change orders.
Subsystems	Buildings are made up of Systems (HVAC) and Sub-systems (HVAC Distribution, HVAC Equipment, HVAC Controls, etc).
SUCF	State University Construction Fund.
SUNY	State University of New York System (35 campuses).
UC	University of California System (9 campuses plus field stations).
UT	University of Texas System (15 campuses).

Comparison of SUNY Renewal and Backlog -2007 to 2011

December 2012

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1.1 Introduction

The State University of New York (SUNY) and the State University Construction Fund (Fund) commissioned the Rockefeller Institute of Government to complete an initial assessment of SUNY state-operated and statutory campuses renewal and backlog needs in 2007. In 2011, the Fund contracted with Sightlines/ Pacific Partners Consulting Group (PPCG) to update the 2007 study. This report presents the 2011 results compared to the report completed in 2007. In addition, this document illustrates the impact of the investments made over the previous five years by both the State and SUNY.

1.2 General Overview & Summary Findings for 2007

The initial study focused on creating a standardized approach to both categorize the condition of SUNY's academic facilities on the state-operated and statutory campuses and to provide a high level statistical analysis of backlog and renewal needs and the investment levels needed to address capital maintenance needs of the largest public higher education system in the country. This comprehensive report successfully cataloged the condition of over 1,800 academic buildings and associated infrastructure.

The 34 institutions had a total current replacement value (CRV[1]) of $25.7 billion in 2007, comprised of $22.9 billion for buildings and $2.8 billion for supporting infrastructure. The backlog of deferred capital maintenance in 2007 for these 34 institutions was $3.2 billion, comprised of $2.4 billion for building system renovations and $695.9 million for renewal of supporting infrastructure with a facilities condition index (FCI[2]) of 12 percent. These results were reported in 2007 dollars. Therefore, to make a comparison to 2011 survey results, it is necessary to add inflation to the 2007 levels. The 2011 costs were calculated by escalating the original 2007 subsystem cost estimates by actual 2008 through 2011 inflation as measured by the Fund using published labor rates by the New York State Department of Labor along with actual material costs and escalation rates from prominent trade publications. The cumulative increase was 14.3 percent and is reflected in the results.

1.3 General Overview & Summary Findings for 2011

Working with the support of SUNY and the Fund, Sightlines employed the same methodology and process originally designed for the 2007 study. On its second review, SUNY and the Fund utilized lessons learned in 2007 and were able to produce a more comprehensive survey. In addition, five years of performing work on these critical components have produced a better understanding of facilities needs.

Total CRV for SUNY state-operated and statutory academic facilities is now $30.0 billion. This number is comprised of $26.7 billion for buildings and $3.3 billion for supporting infrastructure. Further, the SUNY state-operated and statutory system as a whole

[1] Current Replacement Value (CRV) is the cost associated with replacing the building and its sub-systems. These costs were determined using actual project costs from SUNY campuses.

[2] Facilities Condition Index (FCI) is calculated by dividing the backlog by the CRV generating a figure that represents the percent of deficiencies in the building.

currently has a $3.1 billion backlog of deferred capital maintenance, comprised of $2.5 billion for building system renovations and $593.6 million for renewal of supporting infrastructure resulting in a combined FCI of 10 percent.

1.4 Projected 2011 Results Compared to Actual 2011 – Results Overview *($ in millions)*

A reasonable method for a forecast of the 2011 accumulated backlog is to take the 2007 backlog, identified in the original study, and add the renewal needs projected for 2008, 2009, 2010, and 2011 (adjusting for inflation). By comparing this forecast with the actual accumulated backlog, one can ascertain whether or not an individual campus "made progress" in reducing its backlog. The chart below presents this analysis for each of the campuses and for the SUNY System as a whole. The variance column shows the difference between the forecast and the actual backlog between the campuses. Based upon the updated 2011 study, the backlog was calculated at $3.1 billion. Therefore, the estimated backlog reduction over the past five years was $2.3 billion. This confirms that the significant capital investments in SUNY state-operated and statutory academic facilities made by the State resulted in a major improvement in campus facilities and infrastructure by preventing the backlog from increasing.

Campus ($ in millions)	Total 2007 Accumulated Backlog	2007-2011 Projected Backlog Growth	Plus 2008/2011 cost escalation	Projected 2011 Backlog With No Investment	Total 2011 Accumulated Backlog	Variance (2011 Reported Backlog versus projected)
University at Buffalo	$484.2	$192.5	$96.8	$773.4	$239.0	($534.4)
Cornell	$197.5	$120.1	$45.4	$363.1	$204.8	($158.3)
University at Albany	$155.0	$87.5	$34.7	$277.2	$124.5	($152.7)
Binghamton University	$144.0	$86.7	$33.0	$263.7	$121.3	($142.4)
The College of Brockport	$145.8	$55.0	$28.7	$229.5	$94.0	($135.5)
Purchase College	$133.9	$57.7	$27.4	$219.0	$120.2	($98.8)
SUNY New Paltz	$98.6	$48.0	$21.0	$167.7	$78.1	($89.6)
SUNY Oswego	$117.6	$51.1	$24.1	$192.8	$113.5	($79.3)
Buffalo State College	$124.3	$71.7	$28.0	$224.0	$146.9	($77.1)
SUNY Plattsburgh	$43.7	$45.7	$12.8	$102.2	$29.0	($73.2)
Farmingdale State College	$94.6	$39.0	$19.1	$152.7	$82.0	($70.7)
SUNY Fredonia	$80.6	$24.7	$15.1	$120.4	$50.1	($70.3)
College at Oneonta	$60.7	$33.6	$13.5	$107.8	$45.7	($62.0)
DMC	$190.7	$74.6	$37.9	$303.2	$245.4	($57.8)
Old Westbury	$84.8	$52.7	$19.7	$157.2	$101.4	($55.8)
Geneseo	$79.6	$38.7	$16.9	$135.2	$84.7	($50.5)
Cortland College	$53.9	$42.3	$13.8	$110.0	$63.2	($46.7)
Stony Brook University	$504.1	$182.1	$98.1	$784.3	$738.7	($45.6)
Maritime College	$54.7	$21.0	$10.8	$86.5	$49.5	($37.0)
System Admin	$23.5	$14.0	$5.4	$43.0	$7.5	($35.5)
SUNY Potsdam	$39.0	$29.1	$9.7	$77.9	$43.8	($34.1)
ESF	$48.7	$29.4	$11.2	$89.3	$59.6	($29.6)
SUNY Delhi	$29.7	$13.3	$6.1	$49.1	$25.4	($23.7)
Alfred State College	$11.7	$17.0	$4.1	$32.8	$10.5	($22.3)
SUNY Cobleskill	$37.0	$19.4	$8.1	$64.5	$43.4	($21.1)
SUNY Canton	$15.2	$12.7	$4.0	$31.8	$11.8	($20.0)
Upstate Medical University	$24.7	$22.4	$6.7	$53.8	$38.0	($15.7)
Ceramics	$8.3	$6.2	$2.1	$16.5	$4.0	($12.5)
College of Optometry	$37.5	$13.5	$7.3	$58.3	$47.1	($11.2)
SUNYIT	$3.5	$10.7	$2.0	$16.2	$12.9	($3.2)
Empire State College	$1.1	$1.6	$0.4	$3.2	$0.0	($3.2)
Morrisville State College	$24.4	$18.4	$6.1	$49.0	$68.8	$19.8
Grand Total	**$3,153**	**$1,532.3**	**$670.0**	**$5,354.9**	**$3,104.8**	**($2,250.1)**

1.5 Backlog Reduction versus Investment

In the time between April 2007 and September 2011, the State and SUNY have invested a total of $2.4 billion on projects that focused - either in whole or in part - on the reduction of the capital maintenance backlog at SUNY's state-operated and statutory academic campuses. This effort resulted in a total reduction of the expected backlog at these institutions of $2.3 billion (41.7 percent), from the projected level of $5.3 billion to the actual level of $3.1 billion, holding the backlog to the 2007 level.

This positive outcome was repeated at all but one campus[3], and it is anticipated that successes in backlog reduction would be even higher if the time frame of this report had been extended by another year. Component rating data for the comparison was collected up until September 15, 2011, which was the time frame used to evaluate the impact of the capital investments. Several capital projects are underway that will further improve subsystems currently in backlog.

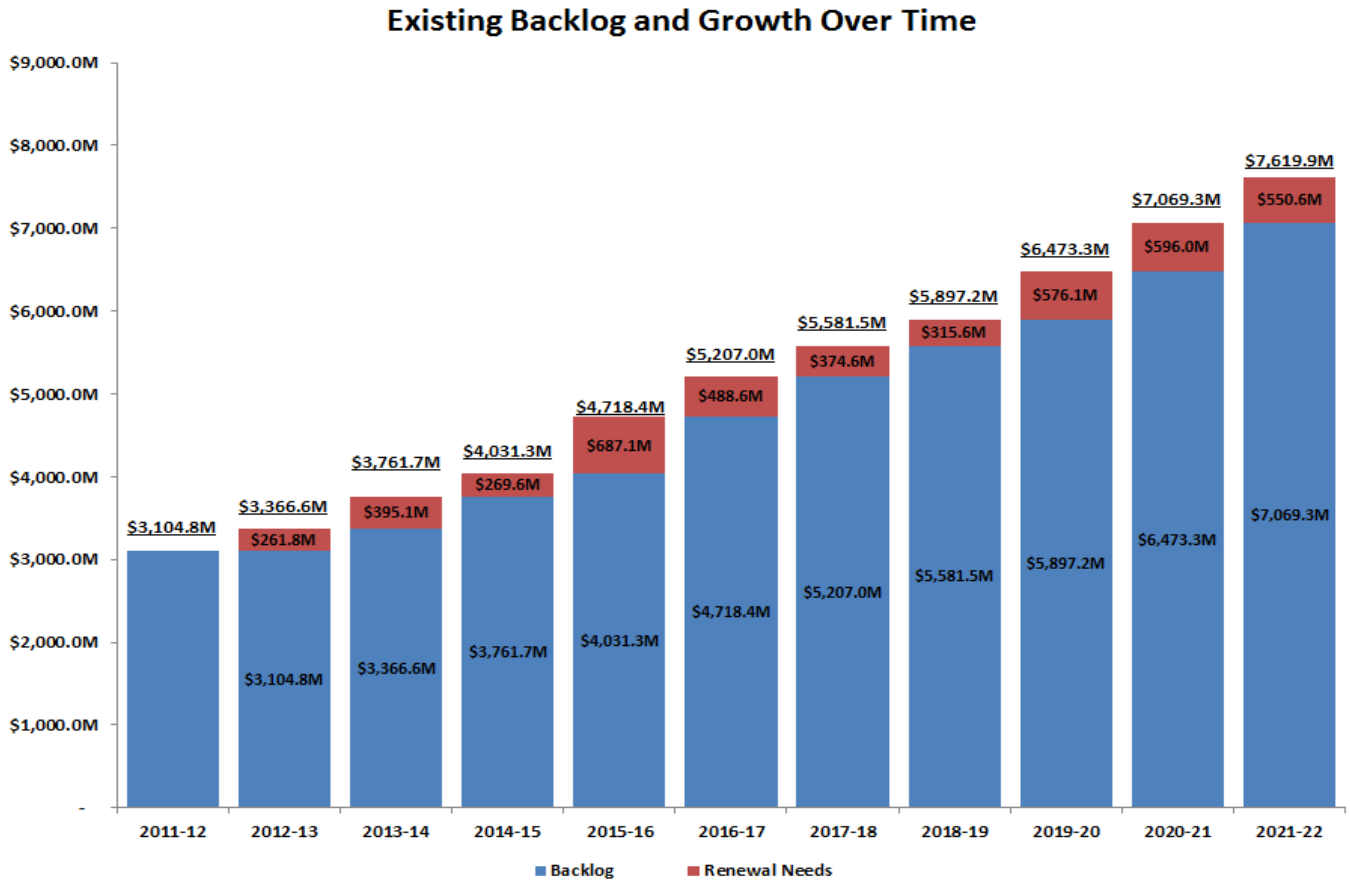
[3] Morrisville's increased backlog figure has several contributing features, but most markedly is the cause of several – expensive – rehabilitation projects and the re-examining of component rating levels set in 2007.

CAMPUS ($ in millions)	Projected 2011 Backlog Assuming No Investment	2011 Actual Backlog	Backlog Reduction	% Difference	Investment in Critical Maintenance Projects - All Sources	Backlog Reduction in Excess of Investments
University at Albany	$277.2	$124.5	($152.7)	-55%	$108.5	$44.2
Ceramics	$16.5	$4.0	($12.5)	-76%	$22.3	($9.8)
Alfred State College	$32.8	$10.5	($22.3)	-68%	$36.7	($14.4)
Binghamton University	$263.7	$121.3	($142.4)	-54%	$89.5	$52.9
The College at Brockport	$229.5	$94.0	($135.5)	-59%	$69.5	$66.0
Buffalo State College	$224.0	$146.9	($77.1)	-34%	$115.2	($38.1)
University at Buffalo	$773.4	$239.0	($534.4)	-69%	$398.1	$136.3
SUNY Canton	$31.8	$11.8	($20.0)	-63%	$25.3	($5.3)
SUNY Cobleskill	$64.5	$43.4	($21.1)	-33%	$26.1	($5.0)
Cornell	$363.1	$204.8	($158.3)	-44%	$125.2	$33.1
Cortland College	$110.0	$63.2	($46.7)	-42%	$62.9	($16.2)
SUNY Delhi	$49.1	$25.4	($23.7)	-48%	$32.6	($8.9)
DMC	$303.2	$245.4	($57.8)	-19%	$94.3	($36.5)
Empire State College	$3.2	$0.0	($3.2)	-100%	$3.0	$0.2
ESF	$89.3	$59.6	($29.6)	-33%	$12.1	$17.5
Farmingdale State College	$152.7	$82.0	($70.7)	-46%	$71.1	($0.4)
SUNY Fredonia	$120.4	$50.1	($70.3)	-58%	$64.1	$6.2
Geneseo	$135.2	$84.7	($50.5)	-37%	$63.9	($13.4)
Maritime College	$86.5	$49.5	($37.0)	-43%	$44.7	($7.7)
Morrisville State College	$49.0	$68.8	$19.8	40%	$34.4	($54.2)
SUNY New Paltz	$167.7	$78.1	($89.6)	-53%	$73.7	$15.9
Old Westbury	$157.2	$101.4	($55.8)	-36%	$34.0	$21.8
College at Oneonta	$107.8	$45.7	($62.0)	-58%	$67.0	($5.0)
College of Optometry	$58.3	$47.1	($11.2)	-19%	$19.6	($8.4)
SUNY Oswego	$192.8	$113.5	($79.3)	-41%	$81.2	($1.9)
SUNY Plattsburgh	$102.2	$29.0	($73.2)	-72%	$71.6	$1.6
SUNY Potsdam	$77.9	$43.8	($34.1)	-44%	$56.8	($22.7)
Purchase College	$219.0	$120.2	($98.8)	-45%	$71.7	$27.1
Stony Brook University	$784.3	$738.7	($45.6)	-6%	$356.3	($310.7)
SUNYIT	$16.2	$12.9	($3.2)	-20%	$9.0	($5.8)
System Admin	$43.0	$7.5	($35.5)	-83%	$31.8	$3.7
Upstate Medical University	$53.8	$38.0	($15.7)	-29%	$60.4	($44.7)
	$5,354.9	**$3,104.8**	**($2,250.1)**	**-42%**	**$2,432.6**	**($182.5)**

It is important to note that while the above chart illustrates where SUNY state-operated and statutory academic campuses stand now, capital backlog is not an issue that can ever be fully and completely eliminated. The continued impact of time and use will take a toll on a facilities buildings and infrastructure, causing new backlog to accrue over time.

1.6 Growth of Backlog: Illustration of Growth and Comparison with Peer Institutions

Reinvestment in SUNY's buildings and infrastructure is needed in order to prevent further deterioration. When excluding outside impacts (i.e. further investment from existing or new funding sources, inflationary impact on the cost of component improvement, and the addition of new buildings and infrastructure with associated components) backlog is projected to grow to $4.5 billion by 2021-22 resulting in a total backlog of $7.6 billion without inflation. Assuming a CRV of nearly $30.0 billion, this would result in an FCI of 16 percent by 2016-17 and 25 percent by 2021-22.



While such a rate of degradation is common, a comparison of SUNY against other higher education systems shows that not all systems deteriorate at the same pace. SUNY is not facing the same challenges. Out of eight public higher education systems surveyed, the rate of SUNY's state-operated and statutory academic facilities backlog growth is in the top three, behind only the University's of Hawaii and Texas which are decaying quicker.

Growth of Backlog Comparison with Peer Institutions

	Facility Condition Index (FCI)								
State Systems	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2011-2012 thru 2016-2017 Growth	% Growth	Rank Lowest to Highest
California State University	0.11	0.12	0.13	0.14	0.14	0.15	0.04	36%	1
University of California	0.23	0.25	0.27	0.30	0.32	0.34	0.11	48%	2
City University of New York	0.13	0.14	0.16	0.17	0.19	0.20	0.07	54%	3
Minnesota State Colleges and Universities	0.10	0.12	0.13	0.15	0.16	0.17	0.07	70%	4
Oregon University System	0.18	0.21	0.23	0.26	0.28	0.31	0.13	72%	5
State University of New York	0.09	0.10	0.11	0.12	0.15	0.16	0.07	78%	6
University of Hawaii	0.06	0.08	0.09	0.10	0.11	0.12	0.06	100%	7
University of Texas	0.03	0.06	0.08	0.09	0.11	0.12	0.09	300%	8

1.7 Conclusion

The 2007 study emphasized the need for significant and sustained investment in order to achieve reduction of backlog at SUNY's state-operated and statutory academic facilities. This essential funding would ensure that the physical integrity of the facilities was maintained while making headway on priority facility concerns that have an impact on the continued safety of students and staff.

The 2011 study reveals that investments by the State have had a significant impact. Backlog growth from 2007 to 2011 was estimated to be $5.3 billion ($4.3 billion buildings / $1.0 billion infrastructure), but due to capital investments – coupled with SUNY and the Fund's planning efforts – this has been reduced by $2.2 billion or 42 percent to $3.1 billion ($2.5 billion buildings / $593.5 million infrastructure). Accordingly, the Facility Condition Index (FCI) of this sector of the SUNY System has been reduced from 12 percent to 10 percent overall. However, without continued funding and support from the State, these gains will quickly vanish. Over the next five years alone, combined building and infrastructure backlog is projected to grow by 70 percent, bringing the FCI to 16 percent. In the next ten years, the FCI is expected to reach 24 percent for buildings and 37 percent for infrastructure if no investment is made, bringing the total FCI to 25 percent.

The cyclical nature of facility maintenance requires consistent investment to keep pace with decline. While the State may have competing priorities for limited capital funding, lack of routine improvements only postpone long term need. Immediate and sustained investment reduces New York's financial exposure by avoiding costly emergency repairs to poorly maintained facilities and helps to maintain safe, healthy facilities.

Deficiency Category Summary
2/28/2013

		2007		2008		2009		2011		2013	
2	Damage/ Wear Out	29,819,808	7.67%	28,226,135	8.17%	31,594,227	7.44%	30,299,549	6.78%	32,499,995	6.80%
3	Codes and Standards	5,448,571	1.40%	5,140,373	1.49%	5,652,436	1.33%	5,558,753	1.24%	5,380,641	1.13%
4	Envronmental Improvements	1,933,823	0.50%	2,063,141	0.60%	2,445,029	0.58%	2,011,034	0.45%	1,882,692	0.39%
5	Energy Conservation	4,166,603	1.07%	4,592,422	1.33%	5,416,422	1.28%	5,524,438	1.24%	5,536,993	1.16%
6	Aeshetics	1,550,482	0.40%	911,641	0.26%	1,182,591	0.28%	776,837	0.17%	523,439	0.11%
		42,919,287	11.04%	40,933,712	11.85%	46,290,705	10.91%	44,170,611	9.88%	45,823,760	9.59%

Comparison of Objectives and Metrics in the Year One Report (Core Themes) and Strategic Plan (Goals)

The MSU Strategic Plan was completed approximately 18 months after submission of the Year One Report. The Goals and Objectives of the Strategic Plan are closely aligned with the Core Themes and Objectives of the Year One Report, as illustrated in the following side-by-side comparison tables.

Core Theme 1: Educate students

Updated Year One Report	Strategic Plan
No Comparable Objective in Year One Report	***Objective L.1: Assess, and improve where needed, student learning of critical knowledge and skills.***
	Metric L.1.1: By 2019, MSU will achieve targets for mastery of disciplinary knowledge as developed in departmental learning assessment plans.
	Metric L.1.2: University measures of undergraduate student mastery of critical thinking, oral communication, written communication, quantitative reasoning, understanding of diversity and understanding of contemporary issues in science will be developed by 2014. Targets set in learning assessment plans will be met by 2019.

Updated Year One Report	Strategic Plan
Objective 1: Increase graduation rates at Montana State University.	***Objective L.2: Increase graduation rates at MSU***
6-year bachelor's graduation rate will increase from 51% to 62%.	Metric L.2.1: By 2019, the bachelor's graduation rate will increase from 51 percent to 65 percent as measured by the six-year graduation rate.
Graduate degrees awarded will increase from 548 to 650.	Metric L.2.2: By 2019, the number of graduate degrees awarded will increase from 548 to 625 per year. The number of doctoral degrees awarded will increase from 56 to 80 per year.
Associate degrees conferred will increase from 38 to 70.	Metric L.2.3: B By 2019, the number of associate degrees conferred will increase from 38 to 70 per year. Workforce certificates conferred will increase from 35 to 65 per year.
First time, full time freshmen fall-to-fall retention will increase from 74% to 82%.	Metric L.2.4: By 2019, the first time, full time freshmen fall-to-fall retention rate will increase from 74 percent to 82 percent.

Updated Year One Report	Strategic Plan
Objective 2: Increase Job Placement and Further Education Rates.	***Objective L.3: Increase job placement and further education rates.***
Percent of graduates entering Montana workforce will increase from 38 to 45.	Metric L.3.1: By 2019, the percent of graduates employed full time in their field or in positions of their choosing will increase from an average of 62 percent to 70 percent.
Percent of graduates pursuing an advanced degree will increase from 22% to 25%.	Metric L.3.2: By 2019, the percent of graduates pursuing an advanced degree will increase from an average of 21 percent to 25 percent.

Core Theme 2: Create Knowledge and Art

Updated Year One Report	Strategic Plan
Objective 1: Elevate the research excellence and recognition of our faculty.	***Objective D.1: Elevate the research excellence and recognition of our faculty.***
By 2014, MSU will have a mechanism for quantifying the research excellence and recognition of our faculty.	[process indicator]
By 2018, the new metric describing the research excellence and recognition of our faculty will have increased from the 2014 baseline by 10%	
By 2018, the number of peer-reviewed publications reported in faculty activity data will increase by 15% from 750 to 860.	
	Metric D.1.1: By 2019, MSU will attract and retain faculty of national and international recognition, including society fellows, artists with museum-level exhibitions, acclaimed writers and critics, and performers, filmmakers, and composers whose work engages audiences at leading venues.
	Metric D.1.2: By 2019, national and international recognition of MSU faculty will improve as measured through scholarly and creative accomplishments.
	Metric D.1.3: By 2019, MSU will improve its rank among Carnegie Classified Research Universities—Very High Research Activity (RU/VH) institutions on four measures: STEM R&D expenditures (current rank 94); Non-STEM R&D expenditures (rank 92); Number of science and engineering research staff (rank 96); and doctoral conferrals (rank 106).

Updated Year One Report	Strategic Plan
No equivalent objective in Year One report.	***Objective D.2: Enhance infrastructure in support of research, discovery and creative activities.***
	Metric D.2.1: By 2019, funding for capital projects from public and private sources will increase in order to provide state-of-the-art laboratory, studio and other space-related resources for MSU's growing community of scholars and artists.
	Metric D.2.2: By 2019, MSU will increase grant-sponsored investment in centers, core facilities and resources to expand state-of-the-art tools, expertise and opportunities for research and creative activities.

Updated Year One Report	Strategic Plan
Objective 2: Expand the scale and breadth of doctoral education.	***Objective D.3: Expand the scale, and breadth, and quality of doctoral education.***
By 2018, the percentage of tenure-track faculty who participate in doctoral education will increase from 47% (est.) to 60%.	Metric D.3.1: The percentage of faculty who advise doctoral students will increase by 2019.
The number of graduate students will grow from 14% to 16% of total enrollment by 2018, primarily by increasing PhD student enrollment.	Metric D.3.2: Increase the graduate population by 20% to approximately 2,350 by 2019, with an emphasis on increasing doctoral student enrollment.
By 2014, we will establish a process for quantifying the number of graduate students presenting at national and international meetings, publishing in journals, and earning high-profile fellowships.	[process indicator]
	Metric D.3.3: By 2019, the number of graduate degrees awarded will increase from 548 to 625 per year. Science, technology, engineering and mathematics (STEM) master's and doctoral degrees will increase to 325. All doctoral degrees awarded will increase from 56 to 80 per year.
By 2018, increase the number of graduate students presenting at national and international meetings, publishing in journals, and earning high-profile fellowships from the 2014 baseline by 15%	Metric D.3.4: The number and proportion of graduate students presenting at national and international meetings, publishing in eminent academic outlets, earning high-profile fellowships, securing prizes from national and international competitions and garnering prestigious first job placements will increase by 2019.

Updated Year One Report	Strategic Plan
Objective 3: Improve key rakings among	***Included in Objective 1 in Strategic Plan***

very high research activity institutions.	
MSU will improve its rank among RU/VH institutions on four measures: STEM R&D expenditures (from 94 to 92); Non-STEM R&D expenditures (from 92 to 90); Number of S&E research staff (from 96 to 94); and Doctoral conferrals (from 106 to 104).	[moved to objective 1 (as D.1.3)]

Core Theme 3: Serve Communities

Updated Year One Report	Strategic Plan
Objective 1: Strategically increase meaningful engagement at MSU.	***Objective E.1: Strategically increase service, outreach and engagement at MSU.***
By 2013, MSU will have a campus-wide coordinating infrastructure to support and advance engagement.	Metric E.1.1: By 2013, MSU will have a campus-wide coordinating infrastructure to support and advance engagement, outreach and service. [process indicator]
By 2014, MSU will have a mechanism for identifying student organizations with a focus on engagement activities.	[process indicator]
By 2014, MSU will have a mechanism for tracking student involvement in engagement activities.	[process indicator]
By 2018, all MSU graduates, faculty and staff will have a meaningful engagement/outreach experience during their time at MSU.	Metric E.1.2: By 2019, the percentage of students, faculty and staff involved in service, outreach and engagement activities, with particular attention to underserved areas and minority populations, will increase. Metric E.1.3: By 2019 the number of MSU service, outreach, and engagement activities will increase. Metric E.1.4: By 2019, MSU will have increased the percentage of students actively participating in student organizations.

Updated Year One Report	Strategic Plan
Objective 2: Fulfill the land-grant mission by increasing participation in outreach.	***No directly comparable objective in Strategic Plan***
By 2014, MSU will have a mechanism for quantifying the number of faculty, staff and students involved in outreach activities, including the ability to track activities in underserved areas and involving minority populations.	[process indicator]
By 2018, the number of students, faculty and staff involved in outreach and engagement activities will increase from the 2014 baseline by 10%.	[moved to 1 as E.1.2]

Updated Year One Report	Strategic Plan
Objective 3: Create graduates with global and multi-cultural understanding.	***Objective E.2: MSU graduates will have global and multi-cultural understanding and experiences.***
By 2014, MSU will have a mechanism for quantifying the number of students involved in cross cultural study, work and/or service experiences.	[process indicator]
By 2018, the percentage of MSU students participating in meaningful cross cultural study, work and/or service experiences, incorporating both academic preparation and post-trip reflection, will increase from the 2014 baseline by 20%.	Metric E.2.1: By 2019, the percentage of MSU students participating in cross-cultural study, work or service experiences, incorporating both academic preparation and post-experience reflection, will double.

Updated Year One Report	Strategic Plan
No comparable objective in Year One Report.	***Objective E.3: MSU students, faculty and staff will have increased opportunities for leadership development.***
	Metric E.3.1: By 2019, the number of opportunities for leadership development and practice will have increased. Awareness of the opportunities will have also increased.
	Metric E.3.2: By 20199, the percentage of MSU students, faculty, and staff participating in leadership development activities will increase.

Core Theme 4: Integrate Learning, Discovery and Engagement

Updated Year One Report	Strategic Plan
Objective 1: Increase the integration of learning, discovery and engagement.	***Objective I.1: Increase the integration of learning, discovery and engagement.***
By 2018, 100% of graduates will have curricular experiences that integrate learning and discovery, or learning and engagement.	
By 2018, 50% of graduates will have a substantial curricular experience that integrates learning, discovery and engagement.	Metric I.1.1: By 2019, all graduating students will have had a substantial curricular experience that integrates learning, discovery and engagement.

	Metric I.1.2 : By 2019, department role and scope documents will include substantial integration of learning, discovery, and engagement. Metric I.1.3: By 2019, community-based research projects will increase by 50%. Metric I.1.4: By 2019, faculty scholarly products with undergraduate and graduate students will increase 50%.

Updated Year One Report	Strategic Plan
No comparable objective in Year One Report.	***Objective I.2: Increase work across disciplines.*** Metric I.2.1: By 2019, the number of students completing interdisciplinary programs will increase 30%. Metric I.2.2: By 2019, MSU will increase interdisciplinary research and creative projects on campus.

Updated Year One Report	Strategic Plan
Objective 2: Increase faculty/student broader impacts.	***No directly comparable objective in Strategic Plan***
By 2018, faculty scholarly products with undergraduate and graduate students will increase by 50% from 422 to 633.	[moved, as I.1.4]
By 2014, MSU will have a mechanism for quantifying the number of community-based research projects.	[process indicator]
By 2018, community-based research projects will increase by from the 2014 baseline by 20%.	[deleted]

Access (Not one of the Core Themes)

Updated Year One Report	Strategic Plan
The Year One Report did not include Access as a Core Theme.	***Objective A.1: Educate more students while maintaining the quality of programs.*** Metric A.1.1: By 2019, the number of Montana undergraduate students enrolled will surpass 9,900 (a 15 percent increase). Metric A.1.2: By 2019, the number of new transfer enrollments will increase 15 percent to approximately

	1,100. Metric A.1.3: By 2019, the number of students enrolled in graduate programs will increase 20 percent to approximately 2,350 Metric A.1.4: By 2019, the number of credits and courses delivered online will increase 40 percent to approximately 20,000 credits and 225 courses. Metric A.1.5: By 2019, the number of students enrolled in Gallatin College degree and certificate programs will double to 400. Metric A.1.6: By 2019, the percentage of need met through scholarships and grants for students who were awarded any need- based aid will increase from 74 percent to 80 percent. Metric A.1.7: By 2019, the total student population will increase 15 percent to 16,000.

Updated Year One Report	Strategic Plan
The Year One Report did not include Access as a Core Theme.	***Objective A.2: Diversify the student body.*** Metric A.2.1: By 2019, the number of Native American students enrolled will increase to 800 (a 45 percent increase). Metric A.2.2: By 2019, the number of other under-represented minority students enrolled will increase to 1300 (a 40 percent increase). Metric A.2.3: By 2019, the number of international students enrolled will increase to 660 (a 20 percent increase). Metric A.2.4: By 2019, the number of nontraditional students enrolled in undergraduate and Gallatin College programs will increase to 3,200 (a 20 percent increase).

Core Theme 5: Stewardship (from the original Year One Report)

Updated Year One Report	Strategic Plan
Objective: The public trusts the institution to operate openly and use resources wisely.	***No directly comparable objective, but concept incorporated in many objectives.***

Updated Year One Report	Strategic Plan
Objective: The faculty and staff are well-qualified and supported.	***Objective S.1: Human Resources. Attract, develop and retain the best faculty and staff to achieve the MSU mission.***
Metrics were not clearly articulated in the original Year One report.	Metric S.1.1: By 2019, increase the average MSU staff salary to the representative peer market average. Metric S.1.2: By 2019, increase the average MSU faculty and administrative salary to at least 80 percent of the representative peer market average. Metric S.1.3: By 2019, faculty and staff participation in professional development opportunities will increase 20 percent.

Updated Year One Report	Strategic Plan
Objective: MSU will support Native American students, programs, and communities. ***Objective: MSU will be an inclusive community, supporting and encouraging diversity.***	***Native American support and diversity included in Access goal in S. P. Objective A.2.***

Updated Year One Report	Strategic Plan
Objective: Our physical infrastructure (e.g., buildings, equipment, open spaces) will be well-maintained and useful.	***Objective S.2: Physical Resources. Enhance aesthetic appeal and functional quality of MSU Physical resources to support high quality learning, research and work environments.***
Metrics were not clearly articulated in the original Year One report.	Metric S.2.1: By 2019, all university classrooms and scheduled learning spaces will utilize current educational technologies and environments to meet the needs of a variety of educational experiences in order to enhance student learning outcomes. Metric S.2.2: By 2019, MSU will increase accessibility to campus facilities, in accordance with the Campus ADA Transition. Metric S.2.3: By 2015, MSU will develop and implement a comprehensive master plan.

Updated Year One Report	Strategic Plan
Objective: Our publicly provided resources are used efficiently and effectively.	***Objective S.3: Economic Resources. Increase and effectively allocate resources in support***

	of the MSU Strategic Plan.
Metrics were not clearly articulated in the original Year One report.	Metric S.3.1: By 2019, budgeting processes will reflect alignment with the MSU strategic plan. Metric S.3.2: Efficiency and effectiveness of mission support processes will show improvement by 2019. Metric S.3.3: By 2019, fiscal resources will increase in support of the MSU Strategic Plan.

Updated Year One Report	Strategic Plan
Objective: Natural resources are used efficiently and sustainably. ***Objective: MSU nurtures a culture of resource conservation and ecological literacy among students, faculty and staff.***	***Objective S.4: Environmental Resources. Promote sustainable stewardship and a culture of resource conservation at MSU.***
Metrics were not clearly articulated in the original Year One report.	Metric S.4.1: MSU will achieve a 20 percent reduction in Greenhouse Gas Emissions (GHG) from 2009 levels by 2025. Metric S.4.2: MSU will increase waste diverted from landfill to 25% by 2020, in addition to implementing a campus wide source reduction and responsible purchasing policies.

September 17-18, 2014

ITEM 164-2010-R0914

Approval of Updated Core Themes

THAT

The Board of Regents of Higher Education approve the Montana State University updated Core Themes.

EXPLANATION

The Board of Regents approved the Montana State University Core Themes during the November 15-16, 2012 meeting (Item 157-2001+R1112). MSU's new strategic plan was presented to the Board at the same meeting. Since that time it has become apparent that MSU has two very similar, but not identical planning documents. We are asking the Board to approve an update to the Core Themes to bring them into alignment with the goals of MSU's strategic plan.

Current Core Themes	Strategic Plan Goals
1. Educate students	Learning
2. Create Knowledge and Art	Discovery
3. Serve Communities	Engagement
4. Integrate Learning, Discovery and Engagement	Integration
	Stewardship
	Access

There is already a high degree of correlation between the current Core Themes and the goals of the Strategic Plan, but our requested update would simply use the Goals of the Strategic Plan as our updated Core Themes, effectively making the Goals and Core Themes identical. This will allow MSU to use a single planning document, the Strategic Plan, to guide decision-making in the future while fulfilling the needs of accreditation.

The Core Themes after alignment with the Goals of the Strategic Plan are updated as follows:

Core Theme 1. Learning

- Objective L.1: Assess, and improve where needed, student learning of critical knowledge and skills.
- Objective L.2: Increase graduation rates at MSU.
- Objective L.3: Increase job placement and further education rates.

Core Theme 2. Discovery

- Objective D.1: Elevate the research excellence and recognition of our faculty.
- Objective D.2: Enhance infrastructure in support of research, discovery and creative activities.
- Objective D.3: Expand the scale, and breadth, and quality of doctoral education.

Core Theme 3. Engagement

- Objective E.1: Strategically increase service, outreach and engagement at MSU.
- Objective E.2: MSU graduates will have global and multi-cultural understanding and experiences.
- Objective E.3: MSU students, faculty and staff will have increased opportunities for leadership development.

Core Theme 4. Integration

- Objective I.1: Increase the integration of learning, discovery and engagement.
- Objective I.2: Increase work across disciplines.

Core Theme 5. Access

- Objective A.1: Educate more students while maintaining the quality of programs.
- Objective A.2: Diversify the student body.

Core Theme 6. Stewardship

- Objective S.1: Human Resources. Attract, develop and retain the best faculty and staff to achieve the MSU mission.
- Objective S.2: Physical Resources. Enhance aesthetic appeal and functional quality of MSU Physical resources to support high quality learning, research and work environments.
- Objective S.3: Economic Resources. Increase and effectively allocate resources in support of the MSU Strategic Plan.
- Objective S.4: Environmental Resources. Promote sustainable stewardship and a culture of resource conservation at MSU.

ATTACHMENTS

None

Interim Targets for Metrics in the Strategic Plan

The MSU Strategic Plan was completed approximately 12 months after submission of the Year One Report and the target dates were generally set to 2019. This document indicates the interim targets that will be used for the Year Seven report in 2017.

Core Theme 1: Learning

Strategic Plan	Interim Target
Objective L.1: Assess, and improve where needed, student learning of critical knowledge and skills.	
Metric L.1.1: By 2019, MSU will achieve targets for mastery of disciplinary knowledge as developed in departmental learning assessment plans.	By 2017, 70% of targets for mastery of disciplinary knowledge as developed in departmental learning assessment plans will be met.
Metric L.1.2: University measures of undergraduate student mastery of critical thinking, oral communication, written communication, quantitative reasoning, understanding of diversity and understanding of contemporary issues in science will be developed by 2014. Targets set in learning assessment plans will be met by 2019.	By 2017, 70% of targets set in learning assessment plans will be met.

Strategic Plan	Interim Target
Objective L.2: Increase graduation rates at MSU	
Metric L.2.1: By 2019, the bachelor's graduation rate will increase from 51 percent to 65 percent as measured by the six-year graduation rate.	By 2017, the bachelor's graduation rate will increase from 51 percent to 61 percent as measured by the six-year graduation rate.
Metric L.2.2: By 2019, the number of graduate degrees awarded will increase from 548 to 625 per year. The number of doctoral degrees awarded will increase from 56 to 80 per year.	By 2017, the number of graduate degrees awarded will increase from 548 to 600 per year. The number of doctoral degrees awarded will increase from 56 to 72 per year.
Metric L.2.3: B By 2019, the number of associate degrees conferred will increase from 38 to 70 per year. Workforce certificates conferred will increase from 35 to 65 per year.	By 2017, the number of associate degrees conferred will increase from 38 to 60 per year. Workforce certificates conferred will increase from 35 to 56 per year.
Metric L.2.4: By 2019, the first time, full time freshmen fall-to-fall retention rate will increase from 74 percent to 82 percent.	By 2017, the first time, full time freshmen fall-to-fall retention rate will increase from 74 percent to 80 percent.

Strategic Plan	Interim Target
Objective L.3: Increase job placement and further education rates.	
Metric L.3.1: By 2019, the percent of graduates employed full time in their field or in positions of their choosing will increase from an average of 62 percent to 70 percent.	By 2017, the percent of graduates employed full time in their field or in positions of their choosing will increase from an average of 62 percent to 67 percent.
Metric L.3.2: By 2019, the percent of graduates pursuing an advanced degree will increase from an average of 21 percent to 25 percent.	By 2017, the percent of graduates pursuing an advanced degree will increase from an average of 21 percent to 24 percent.

Core Theme 2: Discovery

Strategic Plan	Interim Target
Objective D.1: Elevate the research excellence and recognition of our faculty.	
Metric D.1.1: By 2019, MSU will attract and retain faculty of national and international recognition, including society fellows, artists with museum-level exhibitions, acclaimed writers and critics, and performers, filmmakers, and composers whose work engages audiences at leading venues.	
Metric D.1.2: By 2019, national and international recognition of MSU faculty will improve as measured through scholarly and creative accomplishments.	
Metric D.1.3: By 2019, MSU will improve its rank among Carnegie Classified Research Universities—Very High Research Activity (RU/VH) institutions on four measures: STEM R&D expenditures (current rank 94); Non-STEM R&D expenditures (rank 92); Number of science and engineering research staff (rank 96); and doctoral conferrals (rank 106).	

Strategic Plan	Interim Target

Objective D.2: Enhance infrastructure in support of research, discovery and creative activities.	
Metric D.2.1: By 2019, funding for capital projects from public and private sources will increase in order to provide state-of-the-art laboratory, studio and other space-related resources for MSU's growing community of scholars and artists.	
Metric D.2.2: By 2019, MSU will increase grant-sponsored investment in centers, core facilities and resources to expand state-of-the-art tools, expertise and opportunities for research and creative activities.	

Strategic Plan	Interim Target
Objective D.3: Expand the scale, and breadth, and quality of doctoral education.	
Metric D.3.1: The percentage of faculty who advise doctoral students will increase by 2019.	
Metric D.3.2: Increase the graduate population by 20% to approximately 2,350 by 2019, with an emphasis on increasing doctoral student enrollment.	Increase the graduate population by 14% to approximately 2,140 by 2017, with an emphasis on increasing doctoral student enrollment.
Metric D.3.3: By 2019, the number of graduate degrees awarded will increase from 548 to 625 per year. Science, technology, engineering and mathematics (STEM) master's and doctoral degrees will increase to 325. All doctoral degrees awarded will increase from 56 to 80 per year.	By 2017, the number of graduate degrees awarded will increase from 548 to 600 per year. All doctoral degrees awarded will increase from 56 to 73 per year.
Metric D.3.4: The number and proportion of graduate students presenting at national and international meetings, publishing in eminent academic outlets, earning high-profile fellowships, securing prizes from national and international competitions and garnering prestigious first job placements will increase by 2019.	

Core Theme 3: Engagement

Strategic Plan	Interim Target

Objective E.1: Strategically increase service, outreach and engagement at MSU. Metric E.1.1: By 2013, MSU will have a campus-wide coordinating infrastructure to support and advance engagement, outreach and service. Metric E.1.2: By 2019, the percentage of students, faculty and staff involved in service, outreach and engagement activities, with particular attention to underserved areas and minority populations, will increase. Metric E.1.3: By 2019 the number of MSU service, outreach, and engagement activities will increase. Metric E.1.4: By 2019, MSU will have increased the percentage of students actively participating in student organizations.	

Strategic Plan	Interim Target
Objective E.2: MSU graduates will have global and multi-cultural understanding and experiences. Metric E.2.1: By 2019, the percentage of MSU students participating in cross-cultural study, work or service experiences, incorporating both academic preparation and post-experience reflection, will double.	

Strategic Plan	Interim Target
Objective E.3: MSU students, faculty and staff will have increased opportunities for leadership development. Metric E.3.1: By 2019, the number of opportunities for leadership development and practice will have increased. Awareness of the opportunities will have also increased. Metric E.3.2: By 2019, the percentage of MSU students, faculty, and staff participating in leadership development activities will increase.	

Core Theme 4: Integration

Strategic Plan	Interim Target

Objective I.1: Increase the integration of learning, discovery and engagement.	
Metric I.1.1: By 2019, all graduating students will have had a substantial curricular experience that integrates learning, discovery and engagement.	By 2019, 70% of graduating students will have had a substantial curricular experience that integrates learning, discovery and engagement.
Metric I.1.2 : By 2019, department role and scope documents will include substantial integration of learning, discovery, and engagement.	By 2017, 70% of department role and scope documents will include substantial integration of learning, discovery, and engagement.
Metric I.1.3: By 2019, community-based research projects will increase by 50%.	By 2017, community-based research projects will increase by 35%.
Metric I.1.4: By 2019, faculty scholarly products with undergraduate and graduate students will increase 50%.	By 2017, faculty scholarly products with undergraduate and graduate students will increase 35%.

Strategic Plan	Interim Target
Objective I.2: Increase work across disciplines.	
Metric I.2.1: By 2019, the number of students completing interdisciplinary programs will increase 30%.	By 2017, the number of students completing interdisciplinary programs will increase 20%.
Metric I.2.2: By 2019, MSU will increase interdisciplinary research and creative projects on campus.	

Core Theme 5: Access

Strategic Plan	Interim Target

Objective A.1: Educate more students while maintaining the quality of programs.	
Metric A.1.1: By 2019, the number of Montana undergraduate students enrolled will surpass 9,900 (a 15 percent increase).	By 2017, the number of Montana undergraduate students enrolled will surpass 9,500.
Metric A.1.2: By 2019, the number of new transfer enrollments will increase 15 percent to approximately 1,100.	By 2017, the number of new transfer enrollments will increase to approximately 1,050.
Metric A.1.3: By 2017, the number of students enrolled in graduate programs will increase 20 percent to approximately 2,350.	By 2017, the number of students enrolled in graduate programs will increase to approximately 2,200.
Metric A.1.4: By 2019, the number of credits and courses delivered online will increase 40 percent to approximately 20,000 credits and 225 courses.	By 2017, the number of credits and courses delivered online will increase to approximately 17,600 credits and 200 courses
Metric A.1.5: By 2019, the number of students enrolled in Gallatin College degree and certificate programs will double to 400.	By 2017, the number of students enrolled in Gallatin College degree and certificate programs will increase to 340.
Metric A.1.6: By 2019, the percentage of need met through scholarships and grants for students who were awarded any need- based aid will increase from 74 percent to 80 percent.	By 2017, the percentage of need met through scholarships and grants for students who were awarded any need-based aid will increase from 74 percent to 78 percent.
Metric A.1.7: By 2019, the total student population will increase 15 percent to 16,000.	By 2017, the total student population will increase to 15,300.

Strategic Plan	Interim Target
Objective A.2: Diversify the student body.	
Metric A.2.1: By 2019, the number of Native American students enrolled will increase to 800 (a 45 percent increase).	By 2017, the number of Native American students enrolled will increase to 690.
Metric A.2.2: By 2019, the number of other under-represented minority students enrolled will increase to 1300 (a 40 percent increase).	By 2017, the number of other under-represented minority students enrolled will increase to 1100.
Metric A.2.3: By 2019, the number of international students enrolled will increase to 660 (a 20 percent increase).	By 2017, the number of international students enrolled will increase to 620.
Metric A.2.4: By 2019, the number of nontraditional students enrolled in undergraduate and Gallatin College programs will increase to 3,200 (a 20 percent increase).	By 2017, the number of nontraditional students enrolled in undergraduate and Gallatin College programs will increase to 3,000.

Core Theme 6: Stewardship

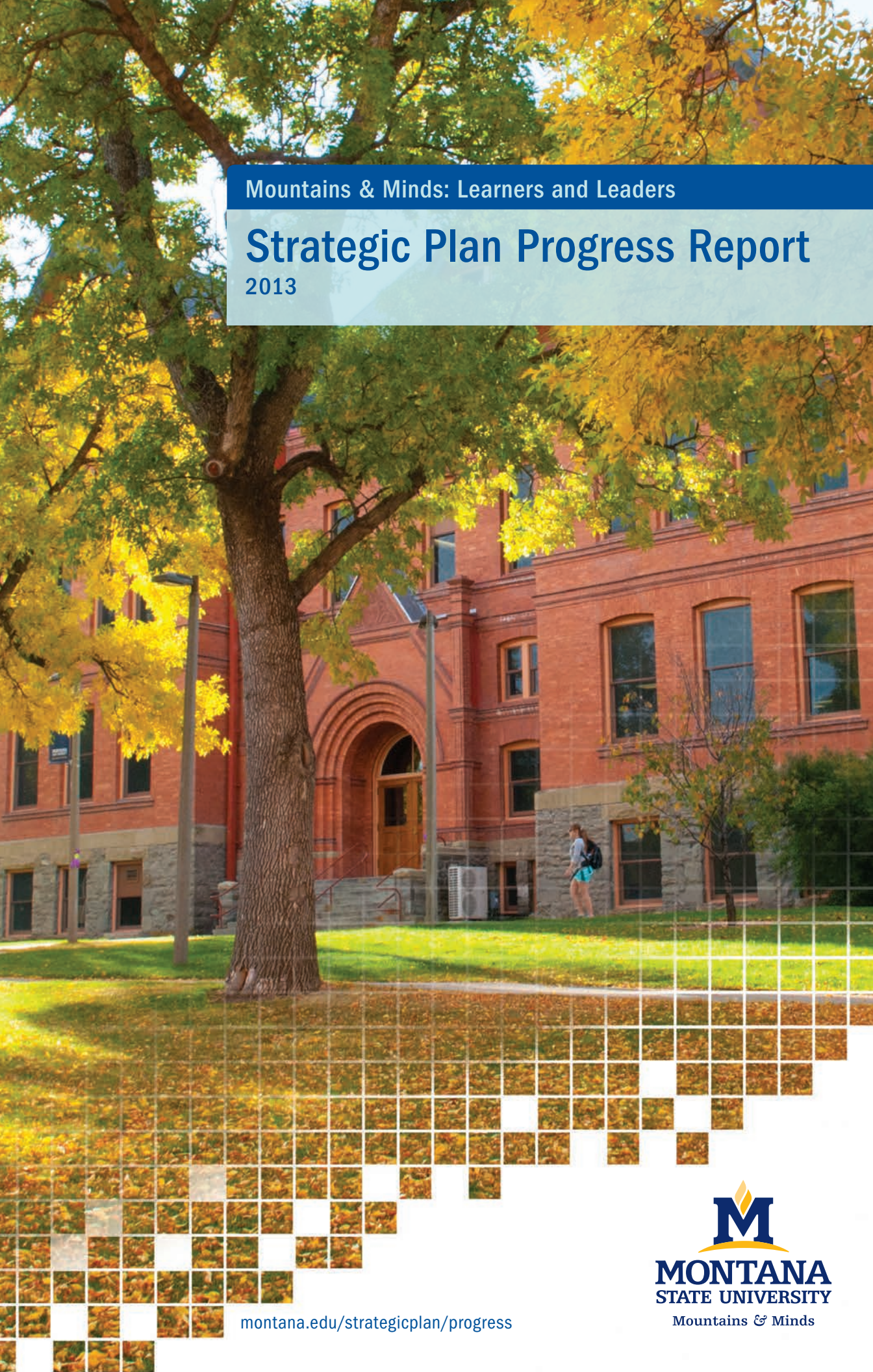
Strategic Plan	Interim Target

Objective S.1: Human Resources. Attract, develop and retain the best faculty and staff to achieve the MSU mission.	
Metric S.1.1: By 2019, increase the average MSU staff salary to the representative peer market average.	By 2017, MSU will demonstrate progress in moving the average staff salary towards the representative peer market average.
Metric S.1.2: By 2019, increase the average MSU faculty and administrative salary to at least 80 percent of the representative peer market average.	By 2017, increase the average MSU faculty and administrative salary to at least 76 percent of the representative peer market average.
Metric S.1.3: By 2019, faculty and staff participation in professional development opportunities will increase 20 percent.	By 2017, faculty and staff participation in professional development opportunities will increase 14 percent.

Strategic Plan	Interim Target
Objective S.2: Physical Resources. Enhance aesthetic appeal and functional quality of MSU Physical resources to support high quality learning, research and work environments.	
Metric S.2.1: By 2019, all university classrooms and scheduled learning spaces will utilize current educational technologies and environments to meet the needs of a variety of educational experiences in order to enhance student learning outcomes.	
Metric S.2.2: By 2019, MSU will increase accessibility to campus facilities, in accordance with the Campus ADA Transition.	
Metric S.2.3: By 2015, MSU will develop and implement a comprehensive master plan.	

Strategic Plan	Interim Target
Objective S.3: Economic Resources. Increase and effectively allocate resources in support of the MSU Strategic Plan.	
Metric S.3.1: By 2019, budgeting processes will reflect alignment with the MSU strategic plan.	
Metric S.3.2: Efficiency and effectiveness of mission support processes will show improvement by 2019.	
Metric S.3.3: By 2019, fiscal resources will increase in support of the MSU Strategic Plan.	

Strategic Plan	Interim Target
Objective S.4: Environmental Resources. Promote sustainable stewardship and a culture of resource conservation at MSU. Metric S.4.1: MSU will achieve a 20 percent reduction in Greenhouse Gas Emissions (GHG) from 2009 levels by 2025. Metric S.4.2: MSU will increase waste diverted from landfill to 25% by 2020, in addition to implementing a campus wide source reduction and responsible purchasing policies.	



Mountains & Minds: Learners and Leaders

Strategic Plan Progress Report

2013

MONTANA STATE UNIVERSITY

Mountains & Minds

montana.edu/strategicplan/progress

Dear Colleague,

September marks the first anniversary of the adoption of Montana State University's bold strategic plan, *Mountains and Minds: Learners and Leaders*. As we celebrate this anniversary, we take a few moments to reflect on the progress we have already made in achieving our goals.

In the words of our vision statement, MSU is "a welcoming, adventurous community of students, faculty and staff distinguished by its commitment to address the world's greatest challenges." This community devoted more than 18 months to develop the plan with participation across the university and our local and statewide constituents.

Montana State University's Strategic Plan sets overarching goals for the university and relies on every member of the MSU community—students, faculty, staff, alumni, and our community partners—to contribute to its success.

The plan is intended to guide and inform those making strategic decisions, without constraining the tactics that will help MSU achieve its goals. Each University unit is empowered to envision its future, develop its own paths to these goals, and contribute to the University's success in diverse and creative ways. Indeed, as you will see in these pages, there has been exciting action across the University to achieve the plan's goals.

Celebrate our success with me as we look forward to a second year of progress.

Sincerely,

Waded Cruzado
President

Learning

MSU has always prepared graduates to meet the challenges of tomorrow. Successful, sought-after graduates are part of our legacy, and preparing students is central to our mission. MSU students learn in the classroom, lab, studio and field, through a hands-on, student-centered curriculum that integrates learning, discovery, and engagement in and out of the classroom.

Goal: MSU prepares students to graduate equipped for careers and further education.

Objective L.1: Assess, and improve where needed, student learning of critical knowledge and skills.

Objective L.2: Increase graduation rates at MSU.

Objective L.3: Increase job placement and further education rates.

Library Commons, a recently renovated space for optimal study.

Strategies

- Clarify, systematize and automate the process for assessment of learning outcomes
- Target success in key introductory level courses with supplemental instruction, flipped classrooms, co-curricular study options, resource centers and peer mentoring
- Dramatically expand tutoring services
- Bring support centers to the students through expanded hours, added locations and renovated facilities
- Improve and add to advising and student success programs

Budget alignment *(2012–13 investments unless otherwise noted)*

- $3.1 million in new tenure-track faculty lines in 2011–12 and 2012–13
- $1.4 million for additional class sections to serve growing enrollment in 2011–12 and 2012–13
- $25 million gift to fund construction of new Jake Jabs College of Business and Entrepreneurship and develop new college programs
- $150,000 to support strategic investment proposals for math, statistics, and chemistry instructional redesign and enhancement
- $455,000 for Office of Student Success programs like Smarty Cats tutoring, financial literacy and career coaching
- $1 million in renovated classroom and collaboration spaces
- $7 million investment in new suite-style residence hall to enhance retention
- $11 million investment in residence and dining hall upgrades since 2011

Successes

1 TEAL classroom successes—In support of its learning objectives, MSU conducted a pilot test of a technology-enhanced active learning, or TEAL, classroom in 2012-2013. The TEAL classroom in Gaines Hall enabled 240 undergraduate and graduate students from all eight of MSU's colleges to collaborate on assignments during class hours in a high-tech space equipped with flat screens and data ports for laptop computers. A key feature of TEAL classrooms is the "flipped" structure of the course so students read or view lecture materials outside of class and actively solve problems in class. This innovative new teaching method and incorporation of technology has demonstrated significant improvement. In the case of Statistics 216, for example, the TEAL classroom resulted in a 68 percent decrease in students having to retake the course.

2 Banner Year—Twenty-five MSU students won or earned honorable mentions for major scholarships and awards during the 2012-13 academic year:

- 1 Marshall Scholar
- 1 Rhodes Scholar
- 1 Newman Scholar
- 1 Fulbright Scholar
- 1 Udall Scholar
- 4 Goldwater Scholars
- 1 National Defense Science and Engineering Fellowship
- 7 National Science Foundation Graduate Research Fellowships

Bryan Vadheim, MSU's first Marshall Scholar

3 Success in Student Competitions—Student competitions are a way to validate MSU's academic excellence compared to other institutions across the country. In the past year MSU students excelled in a broad spectrum of competitions across many disciplines.

- Animal science students won the Western Region Academic Quadrathlon and placed third in the national competition.
- Business students took third in the John Ruffatto Business Plan competition.
- Finance students won first at the region's Chartered Financial Analysts Institute Research Challenge and advanced to the North American competition.
- Civil engineering students earned a first-place trophy at the estimating competition of Associated Schools of Construction.
- MSU engineering students recently won the Judges Innovation Award at NASA's fourth annual Lunabotics Mining Competition at the Kennedy Space Center.

The student-designed lunar excavator at the NASA competition

4 Investing in Students—MSU has invested in a variety of support programs that help students succeed. Students have access to free peer-tutoring through the **Smarty Cats** program, and during the 2012-2013 academic year 15,000 hours of tutoring were provided. Writing assistance is available in a renovated and expanded **Writing Center** and at a satellite center located in the library. **DegreeWorks**, a recently launched online tool, enables students to map out their college path and stay on track to graduate, giving advisors time to focus on individual counseling.

Renovated Writing Center, Wilson Hall

Discovery

Innovative and significant research and creative activities are a recognized hallmark of MSU, where faculty, students and staff all participate in the creation of knowledge and art.

Goal: MSU will raise its national and international prominence in research, creativity, innovation and scholarly achievement, and thereby fortify the university's standing as one of the nation's leading public research universities.

Objective D.1: Elevate the research excellence and recognition of MSU faculty.

Objective D.2: Enhance infrastructure in support of research, discovery and creative activities.

Objective D.3: Expand the scale, breadth and quality of doctoral education.

MSU's Department of Chemistry and Biochemistry is highly successful in grants and contracts.

Strategies

- Improve support for faculty active in research and creative activity through enhanced professional development, additional financial support and facilities improvements
- Increase the number of grant-active faculty through strengthened grant-writing support, expanded participation across disciplines, and opportunity hires
- Expand interdisciplinary efforts in research, creative activity and graduate education
- Increase capacity and strengthen recruiting for high quality graduate programs by improving the number and amount of graduate stipends, encouraging more faculty to advise doctoral students, and establishing timely pathways to degree completion

Budget alignment *(2012–13 investments unless otherwise noted)*

- $3.1 million in new tenure-track faculty lines since 2011 (also supports the Learning goal)
- $1.5 million in additional salary and research support to retain MSU's talented faculty
- $6.3 million in new faculty startup packages
- $325,000 allocated for 2013-14 for 18 new competitively awarded graduate assistantships, plus $170,000 awarded in strategic investment proposal process for enhanced graduate recruiting and 11 additional graduate assistantships in specific programs
- $80,000 for Native American graduate students in science and engineering

Successes

1 **Cooley Lab Renovation**—MSU's Cooley Laboratory, a hub for biomedical research, recently enjoyed a $14.9 million renovation that transformed the building into a state-of-the-art facility for research teams from the departments of microbiology, immunology and infectious diseases, and cell biology and neuroscience. Cooley is the first facility at MSU to earn a prestigious LEED Gold certification from the U.S. Green Building Council for energy-efficient design and construction.

2 **Faculty Excellence**—In the past year, MSU faculty members have earned many prestigious awards and fellowships in their respective fields. Four faculty fellows were named in their disciplines:

- Earth Sciences professor and director of the Montana Institute on Ecosystems **Cathy Whitlock** was named a Fellow of the American Association for the Advancement of Science (AAAS).
- Land Resources and Environmental Sciences research professor and director of the Montana Water Center **Duncan Patten** was named a Fellow of the Ecological Society of America (ESA).
- **Marcy Barge,** a professor in the Department of Mathematical Sciences, was named a Fellow of the American Mathematical Society (AMS).
- **Mark Young,** a professor in the Department of Plant Sciences and Plant Pathology, has been named a Fellow in the American Academy of Microbiology.

3 **Breakthrough Discoveries**—MSU research has led to many significant discoveries. As a result, MSU holds more than 200 active technology licenses, nearly 90 issued patents and 14 plant variety certificates.

4 **Growing Graduate Education**—In the past year MSU has made great strides in expanding its graduate and doctoral education.

- The Board of Regents approved a **Doctorate of Nursing Practice** and the **Professional Masters in Science and Engineering Management** programs with the first cohort of students enrolling in fall 2013.
- The Montana Legislature increased the capacity of the **WWAMI Medical Education Program** by 50 percent and supported the creation of a **Veterinary Medicine Program** that will enable 10 Montana students to complete their first year of veterinary school at MSU.
- MSU renewed its focus on **growing PhD programs in 2013 through strategic investments** in graduate assistantships, improvements in tracking and advising graduate students through key checkpoints, and a Graduate Education Summit.

Renovated Cooley Lab received LEED Gold certification.

AAAS Fellow Cathy Whitlock works with students in the lab.

Agriculture professor Barry Jacobsen patented a disease-fighting technology.

Engagement

Engagement is the collaboration between MSU and its local, state, national and global communities for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity (Carnegie Foundation, 2006). Engagement, a form of scholarship that bridges teaching, research and service, brings the university's intellectual resources to bear on societal needs (Association of Public and Land Grant University's Council on Engagement and Outreach, APLU CEO).

Goal: Members of the Montana State University community will be leaders, scholars and engaged citizens of their local, national and global communities, working together with community partners to exchange and apply knowledge and resources to improve the human prospect.

Objective E.1: Strategically increase service, outreach and engagement at MSU.

Objective E.2: MSU graduates will have global and multicultural understanding and experiences.

Objective E.3: MSU students, faculty and staff will have increased opportunities for leadership development.

Nursing students provide basic health care and education in Honduras.

Strategies

- Build support structure to connect MSU students, staff and faculty with engagement information and opportunities
- Emphasize engagement and outreach in faculty hiring and development; provide training and professional development opportunities for service learning and engagement
- Build on the success of and partner with MSU Extension, Museum of the Rockies and other externally-facing MSU programs
- Create platform for leadership development through Year of Engaged Leadership

Budget alignment *(2012–13 investments unless otherwise noted)*

- $250,000 in institutional support for MSU Extension and Montana Agricultural Experiment Station in 2012–13
- $300,000 in support of the Local Government Center
- $30,000 for the newly formed Outreach and Engagement Council

MSU student chapter of Engineers Without Borders is committed to bringing clean water to Kenya.

Successes

1. **Rural Leadership**—MSU Extension developed the Real Montana program to build a network of informed and engaged leaders to advance the agriculture and natural resource industries in Montana. Starting in fall 2013, a 20-member class of individuals from a broad range of industries across Montana will participate in a two-year cycle of classes designed to heighten knowledge and enhance skills of emerging leaders.

2. **Student-Athlete ALL Challenge**—MSU student athletes contributed 2700 hours of community service in 2012-13 while maintaining a team GPA of 3.15 or above for 13 consecutive semesters.

3. **Protecting and Preserving Fossils**—A team from MSU and the local community of Ekalaka, Montana, have breathed new life into old fossils at the Carter County Museum. Carter County is home to the Hell Creek geologic formation, the site of some of the most prized fossils in the world. Led by Nate Carroll, a paleontology graduate student who is also the acting curator of the museum, MSU volunteers have brought energy and expertise to the museums paleontology, cultural and horticulture displays and collections. Carroll has led the effort to get the museum approved as a federal repository of dinosaur fossils.

4. **Engineers Without Borders**—The MSU student chapter of Engineers Without Borders (EWB) works to design and build clean water systems in Kenyan villages. This allows more children to attend school rather than spending their day walking miles to retrieve clean water for their homes. EWB projects involve students from all disciplines including engineering, sociology, film and education.

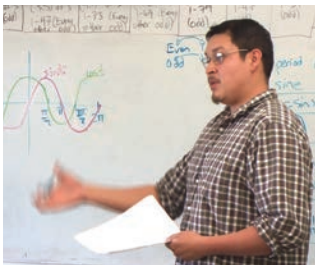
5. **Educational Enhancement**—Since 2011, almost 1,000 MSU education students have gained extra experience by tutoring and leading activities in after-school programs around Gallatin County. The "After School Partnership" enables students to provide service to the community and the opportunity to enhance and refine their skills.

6. **Grants for Graduate Nurses**—MSU's College of Nursing received the Advanced Education Nursing Traineeship grant from the U.S. Department of Health and Human Services' Health Resources and Services Administration, which would provide applicants up to $9,000 per year. Nursing graduates provide primary or mental health care in a variety of settings in rural underserved areas.

7. **Improving Education**—A collaborative program between MSU and Little Big Horn College has received a four-year grant from the U.S. Department of Education. The grant will enable the Indian Leadership Education and Development program, or I LEAD, to continue and expand the scope of its work. The program is designed to train American Indian educators and improve schools on and near Indian reservations in Montana and several neighboring states.

Graduate student Nate Carroll participates in a fossil dig.

Education students gain experience in area schools.



A student in the I LEAD program passes on new instructional methods to his peers.

Integration

Integrating learning, discovery and engagement is the marquee feature of this MSU strategic plan. Traditionally, land-grant universities have educated students, conducted research and provided outreach to their communities and states. MSU has gone a step further by regularly integrating research and teaching, practicing service-learning, and combining research with outreach. With this plan, MSU now boldly defines the 21st century land-grant university as one where learning, discovery and engagement merge seamlessly to the benefit of students, faculty, staff and the wider community.

Goal: By integrating learning, discovery and engagement, and by working across disciplines, the MSU community will improve the world.

Objective I.1: Increase the integration of learning, discovery and engagement.

Objective I.2: Increase work across disciplines.

Engineering students apply knowledge to design equipment that helps people with physical disabilities.

Strategies

- Align workload, promotion and tenure processes with strategic goals, including integration activities
- Strengthen support for student involvement in discovery and engagement through new and existing programs
- Highlight and build upon successes in interdisciplinary curriculum and research through interdisciplinary faculty hires, highlighted areas of research strengths, and new interdisciplinary academic programs

Budget alignment *(2012–13 investments unless otherwise noted)*

- $75,000 annually to support new faculty lines, beginning in 2013, in Sustainable Foods and Bioenergy Systems program
- $300,000 annually to support new faculty lines to begin in 2013 and 2014 addressing interdisciplinary field of Rural Health
- $100,000 annually to support new faculty line to begin in 2013 or 2014 in new interdisciplinary, multi-campus Materials Science program
- $147,000 College of Agriculture infrastructure investment in Horticulture Farm serving integrated teaching, research and outreach programs

Student-designed model of the historic Fort Custer

Successes

1 **One-of-a-Kind**—Based on the Carnegie Classification, MSU is one of only 108 colleges and universities in the nation (out of more than 4,600) that maintain "very high research activity." Of those 108, only 51 are also classified by Carnegie as having significant commitment to community engagement. Of those 51, MSU is the only institution whose Carnegie enrollment profile is "very high undergraduate." This means that MSU students have unique access to cutting-edge research and creative opportunities—and to an engaging educational experience that fully integrates learning, discovery and outreach.

2 **Celebrating Einstein**—MSU hosted one of the world's first events to celebrate the centennial of Einstein's theory of General Relativity. MSU, NASA, the National Science Foundation and the Montana Space Grant Consortium held a free public celebration and an international scientific workshop in Bozeman. The workshop drew approximately 60 scientists from the United States, Europe and Japan who work on relativity and experimental tests of Einstein's theories. The public celebration, titled "Celebrating Einstein," expressed the concepts of general relativity, black holes and gravitational waves through creative expressions including art, music compositions, dance (including one from Cirque du Soleil), film, architecture, education and physics.

3 **Everest Education Expedition**—The MSU Everest Education Expedition represented a seamless integration of learning, research and outreach. MSU geology professor Dave Lageson, graduate student Travis Corthouts, and a team of The North Face global athletes, led by Conrad Anker, a Bozeman resident, traveled to Mount Everest to study glacial ecology and other research areas. During the expedition, the team collected data and shared their adventure and scientific research with more than 1,000 students in classrooms across Montana. Suzi Taylor in Extended University received a national CASE Gold award for the accompanying curriculum.

4 **Towne's Harvest Garden**—Towne's Harvest is a campus-based community supported agriculture garden that is run primarily by students. The garden is closely affiliated with the sustainable foods and bioenergy systems program and enables students to see the entire cycle from cultivation to consumption. Produce is sold to community members or donated to the local food bank.

5 **Community Design Center**—Using photographs, drawings, maps and written descriptions students in MSU's School of Architecture Community Design Center created a replica of the historic Fort Custer. The model is among several displays created by the students for the new Centennial Gallery of the Big Horn County Historical Museum and Visitors Center in Hardin, Montana, which opened during Hardin's 100th anniversary celebration.

The black (w)hole art installation at the Celebrating Einstein festival.

Student Travis Courtouts sends a dispatch to Montana students from Everest.

The Towne's Harvest produce stand on the MSU campus.

Access

Land-grant universities were established by Congress in 1862 with the explicit intent to educate the sons and daughters of the industrial classes. MSU continues to fulfill that intent, believing that education serves society as a whole through job creation, stronger civic participation, and a reduction in the societal costs borne by a less educated populace. MSU does not turn away qualified Montanans and will continue to provide access to a quality education for all students to improve the state and the well-being of its citizens.

Goal: Montana State University is committed to widening access to higher education and ensuring equality of opportunity for all.

Objective A.1: Educate more students while maintaining the quality of programs.

Objective A.2: Diversify the student body.

Gallatin College MSU helps individuals prepare for a career change or transition to college.

Strategies

- Enhance financial aid offerings and limit cost increases so that MSU remains affordable
- Address growing student debt issues through financial literacy programs, advising, appropriate course loads and career coaching
- Expand course and program offerings, delivery times and instructional methods to meet the needs of a more diverse student audience
- Actively recruit from diverse student pools and support students with specific needs once enrolled at MSU, e.g. nontraditional aged students, veterans and American Indian students

Budget alignment *(2012–13 investments unless otherwise noted)*

- $135,000 in new Native American student recruitment, retention and success strategies funded through a competitive process through 2014
- $400,000 to support new and growing Gallatin College academic and workforce programs
- $500,000 over the last three years to support new online programs, online degree completion and Core at Night, to serve distant and working populations
- $1 million in institutional support of veteran students through the Yellow Ribbon program
- $1 million increase in institutional scholarships over the previous year

Condoleezza Rice speaks with MSU veteran students.

Successes

1 **Online Degree Completion**—A variety of new online courses that can be taken individually or as part of MSU's new online degree completion program were recently announced. The program, which offers a bachelor of arts degree in liberal studies, is designed for graduates of two year programs; anyone who has completed two years of college; military personnel and veterans; people who need a bachelor's degree to advance on the job; and anyone interested in the broad-based education of a liberal studies degree.

2 **Women in STEM**—MSU received a $3.4 million grant to enhance participation of women faculty members by improving the work environment for the entire campus. The five-year ADVANCE Institutional Transformation Grant from the National Science Foundation focuses on ways to broaden the participation of women in the STEM fields of science, technology, engineering and mathematics and social and behavioral sciences. Those are two areas where MSU women are outnumbered by men.

3 **American Indian recruitment, retention and success**—MSU continues to enhance and build on successful Native American student-focused programs with new scholarships and activities. Native American student enrollment reached an all-time high in fall 2012, growing faster than the student population as a whole.

- MSU has strengthened partnerships with Montana's tribal colleges through programs like American Indian Research Opportunities, and student support programs like Engineering's Designing Our Communities, Early Childhood Education Distance Partnership, and Nursing's Caring for Our Own Program.
- MSU has secured external funding for the BRIDGES, McNair Scholars and Indian Leadership Education and Development Programs. In addition Native American graduate students will continue to be supported through the Sloan Indigenous Scholars program and the Washington Foundation.

4 **Veteran Friendly**—MSU's Veteran Center celebrated its first anniversary in 2012, coinciding with a 6 percent increase in veteran student enrollment and the first campus-wide celebration of Veterans Week, which culminated in a moving halftime ceremony at the Bobcat Football game. With vast experience as leaders and public servants, MSU student veterans actively contribute to engagement and leadership development at MSU as well increasing the visibility of nontraditional aged students. In recognition of the great work of MSU's veteran center staff, MSU has been named a veteran-friendly school, and the Veterans Center director regularly serves on regional and statewide task forces.

5 **Enrollment Increases**—MSU set a new enrollment record in fall 2012 with 14,660 students attending classes at the Bozeman campus. Subpopulations of students that increased include: undergraduate, freshman, Native American, veteran, out-of-state and Gallatin College. In addition, MSU attracted 126 of the 205 Montana University System Honors Scholarship recipients.

Chemistry professor Valerie Copie mentors a student.

MSU's Early Childhood Education Distance Partnership Program helps tribal communities throughout Montana.

Stewardship

As a public institution, MSU recognizes and honors its obligation to the many constituents who invest their time, financial resources, energy and support. MSU deeply values the public trust granted to it and is committed to continued good stewardship of its resources.

Goal: As steward of a land-grant institution, MSU will responsibly manage its human, physical, economic and environmental resources in an open and sustainable manner.

Objective S.1: Human Resources. Attract, develop and retain the best faculty and staff to achieve the MSU mission.

Objective S.2: Physical Resources. Enhance aesthetic appeal and functional quality of MSU physical resources to support high quality learning, research and work environments.

Objective S.3: Economic Resources. Increase and effectively allocate resources in support of the MSU Strategic Plan.

Objective S.4: Environmental Resources. Promote sustainable stewardship and a culture of resource conservation at MSU.

Sustainability is a priority on the MSU campus.

Strategies

- Develop our human resources through improved salaries and training opportunities
- Improve administrative processes to make MSU more effective and enhance the work environment
- Invest in functional and aesthetic improvements to our physical infrastructure
- Invest in energy saving building upgrades

Budget alignment *(2012–13 investments unless otherwise noted)*

- $5 million in employee raises outside the state pay plan with approval from the Board of Regents Regents in 2011-12 and 2012-13
- $300,000 in additional merit and market increases for faculty
- $1.5 million in additional salary and research support committed to retain high achieving faculty (also supports the Discovery goal)
- $100,000 investment in professional development
- $335,000 investments in OpenMSU to improve administrative support processes
- $2 million investments in technological, functional and aesthetic upgrades to classrooms, collaboration spaces
- $100,000 in support of the Office of Sustainability
- $8.6 million investment in efficiency program to reduce energy, water and operations waste

MSU is a Tree Campus USA.

Successes

1 **Jabs Hall**—MSU broke ground on the new Jabs Hall, future home of the Jake Jabs College of Business and Entrepreneurship. The new building, made possible by a generous $25 million gift from MSU alumnus Jake Jabs, will feature an emphasis on sustainability, flexible classroom and workspace, and natural light, addressing stewardship of our physical spaces as well as the environment.

2 **Top Environmental Program**—MSU's Sustainable Food and Bioenergy Systems program has been named one of the 10 best college environmental programs in the United States by Mother Nature Network. Mother Nature Network, or MNN, recognized the colleges and universities for incorporating sustainability into the curriculum. MNN is an online network that promotes environmental and social responsibility. Other universities with programs in the top 10 include Cornell University, Duke University, Arizona State University and Yale University.

3 **OpenMSU**—During the 2012-13 academic year, OpenMSU, a comprehensive effort to make work at MSU more effective and more satisfying, moved from data gathering and recommendations to implementation on several projects like electronic document management and workflow, improved personnel recruitment processes, and streamlined purchasing.

4 **Tree Campus USA designation**—The Arbor Day Foundation has named Montana State University a 2012 Tree Campus USA in honor of its commitment to effective campus forest management and for engaging staff and students in conservation goals. MSU achieved the designation by meeting Tree Campus USA's five standards, which include maintaining a tree advisory committee, a campus tree-care plan, dedicated annual expenditures toward trees, an Arbor Day observance and student service-learning projects.

5 **Promoting Pollution Prevention**—In 2013, 22 organizations received Ecostar Pollution Prevention awards, which are coordinated by MSU Extension's Housing and Environmental Health Program and funded in part by the EPA. The 22 EcoStar award winners represent 17 communities from across the state. The Ecostar award program recognizes small businesses, institutions and nonprofits that are leading efforts in Montana to voluntarily focus on pollution prevention and create a more environmentally sustainable model for business and education.

6 **Sustainable 16**—MSU is one of 16 universities and colleges selected for the "Sustainable 16" in the second annual Environmental March Madness Tournament. Contest organizers at Enviance, the GreenBiz Group and Qualtrics selected institutions that demonstrated excellence in environmental degree programs and curriculum, environmental opportunities for students and campus sustainability efforts.

Construction is underway with Jabs Hall scheduled to open in fall 2015.

Students in Sustainable Foods study all aspects from crops to consumption.

OpenMSU helps create a more satisfying work environment.

Selected Plan Metrics

Learning		2009-10	2010-11	2011-12	2012-13
Objective L.2: Increase graduation rates at MSU.					
L.2.1	Bachelor Graduation Rate (entering cohort from 6 years prior)	48%	47%	51%	49%
L.2.3	Workforce Certificates and Associate Degrees Awarded (Summer, Fall, Spring)*		22	51	66
L.2.4	FTFTF Retention Rate (entering cohort from prior Fall)	72%	74%	74%	74%
Objective L.3: Increase job placement and further education rates.					
L.3.1	Employed in Major Field or Position of Choice (one year post-grad)	57%	66%	63%	64%
L.3.2	Graduate School Enrollment (one year post-grad)	20%	25%	22%	18%

** Gallatin College began awarding degrees and certificates in 2010-11*

Discovery		2009-10	2010-11	2011-12	2012-13
Objective D.3: Expand the scale, breadth and quality of doctoral education.					
D.3.2	Graduate student headcount	1,924	1,980	1,965	1,888
D.3.2	Doctoral student headcount	401	396	397	420
D.3.3	Graduate Degrees Awarded (Summer, Fall, Spring)	519	548	591	557
D.3.3	Doctoral Degrees Awarded (Summer, Fall, Spring)	45	56	53	49

Access		2009-10	2010-11	2011-12	2012-13
Objective A.1: **Educate more students while maintaining the quality of programs.**					
A.1.1	Montana Undergrad Headcount Enrollment (Fall)	7,893	8,240	8,586	8,680
A.1.2	New Transfer Students (Summer and Fall)	801	913	973	988
A.1.5	Gallatin College Headcount Enrollment (Fall)		100	199	228
A.1.6	Percent Financial Need Met (prior AY)	72%	74%	74%	72%
A.1.7	Total Headcount Enrollment (Fall)	12,764	13,559	14,153	14,660
Objective A 2: **Diversify the student body.**					
A.2.1	Native American Student Headcount Enrollment (Fall)‡		500	545	580
A.2.2	Other Under-Represented Ethnicity and Race Headcount Enrollment (Fall)‡		904	947	1,065
A.2.3	International Student Headcount Enrollment (Fall)	460	516	553	599
A.2.4	Nontraditional Age Student Headcount Enrollment (Fall)	2,247	2,447	2,655	2,781

‡ *Federal race and ethnicity cateogries changed in 2010, making historic comparisons impossible*

Stewardship		2009-10	2010-11	2011-12	2012-13
Objective S.2: **Physical** Resources. Enhance aesthetic appeal and functional quality of MSU physical resources to support high quality learning, research and work environments.					
S.2.1	Percent of classrooms with technology rated tier 3 or above *(Recorded periodically)*	2%			2%
S.2.1	Percent of classrooms with technology rated tier 2 *(Recorded periodically)*	58%			70%
Objective S.4: **Environmental Resources. Promote sustainable stewardship and a culture of resource conservation at MSU.**					
S.4.1	Greenhouse Gas Emissions (Montana) *(Not yet measured for 2012-13)*	77,375		71,287	
S.4.2	Diverted waste from landfill *(Not yet measured for 2012-13)*	6.0%	7.2%	9.5%	

MSU by the Numbers

Enrollment

Fall 2012 Undergraduate Headcount Enrollment	12,772
Fall 2012 Graduate Headcount Enrollment	1,888

Faculty

Fall 2012 Full-time Faculty	580
Fall 2012 Part-time Faculty	337
Student to Faculty Ratio	17:1

Degrees

2012-13 Certificates and Associate Degrees Awarded	66
2012-13 Bachelors Degrees Awarded	1,881
2012-13 Master Degrees Awarded	508
2012-13 Doctoral Degrees Awarded	49

Fall 2012 Enrollment by College

	Undergrad	*Graduate*	*Total*
Agriculture	859	148	1,007
Arts & Architecture	1,235	113	1,348
Business	1,151	46	1,197
Education & HHD	1,437	365	1,802
Engineering	2,581	187	2,768
Graduate School	0	280	280
Letters & Science	3,066	483	3,549
Nursing	884	83	967
Gallatin College	228	0	228
University College	1,331	0	1,331
Other	0	183	183
Total	12,772	1,888	14,660

Student enrollment continues to grow.

Fall 2012 Enrollment by Gender

Female	6837
Male	7823

Fall 2012 Enrollment by Race and Ethnicity *(individuals may be counted more than once if self-identified with more than one race or ethnicity)*

American Indian/Alaska Native	580
Asian	270
Black/African American	172
Hispanic	431
Native Hawaiian/Pacific Islander	61
White	13146
International	599
Unknown/Other	191

Fall 2012 Undergraduate Enrollment by Age

Under 24 years old	9991
24 years old and older	2781

First-Time Full-Time Freshmen

High School GPA	3.41
ACT Comprehensive Score	25.2
SAT Score	1707

Employees

Fall 2012 Full-time Employees, including Faculty	2334
Fall 2012 Part-time Employees, including Faculty	720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Q-core Rationale and Assessment Plan

Updated March 31, 2014

Rationale

The ability to reason quantitatively is essential for citizenship in the 21st Century world. An understanding of data and quantity, and how they are presented and interpreted by the press and on the Internet, is invaluable. Mathematics, Statistics, and logic are used throughout the world as essential tools in many fields, including natural science, engineering, medicine, and the social sciences. In the words of John Allen Paulos,

"…. There are three reasons or, more accurately, three broad classes of reasons to study mathematics. Only the first and most basic class is practical. It pertains to job skills and the needs of science and technology. The second concerns the understandings that are essential to an informed and effective citizenry. The last class or reasons involves considerations of curiosity, beauty, playfulness, and perhaps even transcendence and wisdom."

Learning Outcomes

Students completing a Core 2.0 Quantitative Reasoning (Q) course should demonstrate the ability to

1. interpret and draw inferences from mathematical or statistical models represented as formulas, graphs, or tables,
2. represent mathematical or statistical information numerically and visually, and
3. employ quantitative methods such as arithmetic, algebra, geometry, or statistical inference to solve problems.

Rubrics

Learning Outcome 1: *Interpret and draw inferences from mathematical or statistical models represented as formulas, graphs, or tables.*

Acceptable:

- The student demonstrates the ability to interpret the variables, parameters, and/or other specific information given in the model or statistical output. The interpretation may contain minor flaws.
- The student uses the model to draw inferences about the situation being modeled in a manner that may contain some minor flaw(s).
- The interpretation(s) and/or inference(s) may be incomplete or inaccurate due to a minor flaw, such as a computational or copying error or mislabeling.

Not acceptable:

- The student makes no appropriate attempt to interpret the variables, parameters, estimates, and/or other specific information given in the model due to major conceptual misunderstandings.
- The student either attempts to use the model to make the required inference(s) and/or interpretation(s) but lacks a clear understanding of how to do so, or the student cannot use the model to make the required interpretation(s) or inference(s).

Learning Outcome 2*: represent mathematical or statistical information numerically and visually.*

Acceptable:

- The student understands most of the important aspects of the mathematical or statistical information and employs the appropriate representation(s) to display the information with possible minor flaws.
- The student correctly and accurately employs most of the appropriate and required aspects of the representation to display the information. The representation may be lacking in a minor way.
- There may be misrepresentations of the information due to a minor computational/copying error. The student uses mostly correct format, mathematical or statistical terminology, and/or language.

Not Acceptable:

- The student does not fully understand the important aspects of the mathematical or statistical information and employs the appropriate representation(s) to display the mathematical information with major conceptual flaws.

- The student may show some knowledge of how to employ most of the appropriate and required aspects of the representation to display the information, but the representation or interpretation is lacking in a major way.
- The representations may show some reasonable relation to the information but contain major flaws. The student may use some correct format, mathematical terminology, and/or language, but the representation is incomplete in some major conceptual way.

Learning Outcome 3*: Employ quantitative methods such as arithmetic, algebra, geometry, or statistical inference to solve problems*.

Acceptable:

- The student demonstrates some understanding of the problem and/or can identify specific arithmetic, algebraic, geometric or statistical method(s) needed to solve the problem.
- The student uses the method(s) to solve the problem. The plan for the solution is clear, logical, and evident but may be lacking in a minor way such misreading the problem, or a copying error.
- The solution or interpretation is generally correct or well justified, but may contain minor flaws.

Not Acceptable:

- The student demonstrates at best a slight understanding of the problem. The student has difficulty identifying the specific arithmetic, algebraic, geometric or statistical method(s) needed to solve the problem.
- The student may attempt to use a method(s) that will solve the problem, but the method itself or the implementation of it is generally incorrect. The plan is not evident nor logical.
- The solution or interpretation may contain some correct aspects though there exist major conceptual or logical flaws.

Threshold

For each learning outcome, at least 2/3 of the assignments from selected students should be at an "Acceptable" level as defined above.

Process for Assessing:

1) For each Q-course and each of the learning outcomes, special problem(s) or question)s) on the final exam, or other signature assignment, will be created, appropriate for evaluation using the above rubric.

2) Several sections of each multi-section course will be randomly selected, and then students may be randomly selected from those sections. Special assignments from selected students will be evaluated by two faculty members. At least six students should be evaluated for each course.

3) All assessed assignments should be saved electronically and provided with the assessment reports.

4) The two faculty members will review the special problems and, using the rubrics, determine whether each student's assignment demonstrates each learning outcome at an acceptable or unacceptable level.

5) The percentage of students demonstrating each learning outcome at an acceptable level, as well as the total number assessed, will be provided in a report to the Q-representative of the Core 2.0 Committee and to the Department Head. The report should be well organized following the organization of the Learning Outcomes in this document.

6) If the threshold is not met for a particular Q-course, the supervisor and instructors for the course will meet to determine how the course should be improved to better meet the learning outcomes in the future.

Course Review Schedule

All learning outcomes for seven or eight Q-core courses will be assessed during one semester according to the following schedule (assuming the course is offered that year). Starting in 2018-2019 we will start this same schedule over again, assuming no changes have been made.

2012 – 2013

M 149Q, *Secrets of the Infinite*
M 151Q, *Precalculus*
STAT 217Q, *Intermediate Statistical Concepts*
PHL 236Q, *Logic*

2013 – 2014

M 161Q, *Survey of Calculus*
M 165Q, *Calculus for Technology I*
M 171Q, *Calculus I*
M 181Q, *Honors Calculus I*

2014 – 2015

M 121Q, *College Algebra*
STAT 216Q, *Introduction to Statistics*
STAT 226Q, *Honors Introduction to Statistics*

2015– 2016

M 166Q, *Calculus for Technology II*
M 172Q, *Calculus II*
M 182Q, *Honors Calculus II*

2016 – 2017

M 145Q, *Math for the Liberal Arts*
M 273Q, *Multivariable Calculus*
M 283Q, *Honors Multivariable Calculus*
STAT 201Q, *Statistics in the World*

2017 – 2018

M 133Q, *Geometry and Measurement for K-8 Teachers*
M 147Q, *Language of Mathematics*

Report on Assessment of Core 2.0 Quantitative Reasoning Area

Prepared by Megan Higgs on April 9, 2014

I. Progress with Q assessment as of April, 2014?

We have implemented our complete assessment plan on 5 Q-designated courses (M 149Q Secrets of the Infinite, M 151Q Precalculus, STAT 217Q Intermediate Statistical Concepts, PHL 236Q Logic, and M 181Q Honors Calculus). The proportion of sampled students meeting the learning outcomes was over the stated threshold for all courses.

Despite meeting the goals for all outcomes and all courses, we made several changes to the assessment process based on results and feedback from faculty.

- We increased the threshold from 50% to 67% because we believed 50% was too low for the learning outcomes in the class. The 2/3 was chosen because this seems to be a realistic cutoff to capture the fact that up to 1/3 of assessed assignments may not meet learning outcomes simply because of student ability and motivation, rather than as an indication the course in not adequately meeting Q-core requirements.

- In response to the assessment of M 151, which had lower results than expected, the instructor of the course wrote a detailed description of the problems he saw with the assessment process, mainly that he relied on trying to align questions from the final exam to the outcomes rather than writing questions explicitly created to assess the outcomes. After this, we held a meeting of all instructors involved in teaching the Calculus series to discuss whether this would be a problem for their courses because they are up for assessment during Spring 2014. They feel confident they can appropriately assess the outcomes if they plan ahead and include questions that are easily tied to each learning outcome. The general opinion was that this planning ahead with assessment materials will make the assessment more meaningful and easier for the faculty members involved. I have sent multiple reminders this semester to the faculty in charge of the courses to be assessed and am hoping they will give an assignment or include a page on an exam or the final exam that will be specifically used for the assessment. This will also make it easier to save the student work used in the assessments if we should ever want to go back and review it at a later time. For example, it would be nice to have the work if substantial changes are made the course and we want to compare responses from students before and after the work. I am encouraging instructors to save as many assignments as possible even if they are not randomly selected to be included in the formal Core 2.0 assessment. If it is available on one page it should be easy to scan the papers and save them electronically.

- We also created a template to make it easier for faculty members involved in the assessment process to easily enter the information. The template includes specific places to provide ideas about how the course and/or assignments can be better aligned with the Q Core 2.0 rationale, and/or how the assessment plan can be improved. We hope this will encourage those involved in assessment to think about “closing the loop.”

- Faculty members instructing the courses have been integrally involved in the assessment process so we are sure the information about the assessment is being communicating to the instructors.
- We also created a space on the Department of Mathematical Sciences website to store the results of all of our assessments, both Core 2.0 and undergraduate programs. The results for 2012-2013 are on the webpage and we will add the results from 2013-2014 after assessment is completed for the Spring 2014 semester.

  http://www.math.montana.edu/reports.html

- The Department of Mathematical Sciences also recently created a new service role of Assessment Coordinator. The role of this person will be to send emails to instructors with the relevant assessment information each semester so that assessment does not fall through the cracks because of busy schedules.

- We also found mistake in the list of classes included in the assessment schedule and recently updated that.

II. Where will Quantitative Reasoning be in the assessment process by end of August, 2014.

By the end of Summer 2014 we will have assessed 8 Q-designated courses, adding M 161Q Survey of Calculus, M165Q Calculus for Technology I, and M171Q Calculus I to the list provided in Part I of this report. We will also have all result from the 2013-2014 academic year up on the Department of Mathematical Sciences webpage. We will continue with trying to improve the process as described in Part I of this report.

III. and IV. Learning Outcomes and Assessment Plan

See attached document Core 2.0 Q Assessment Final.pdf

V. Closing the loop

Information on how we have already closed the loop is available is provided in Part I of this progress report. We will continue to use the assessments to improve the assessment process and to inform discussions about how to improve learning for the courses. This is accomplished through meetings of course supervisors, instructors, and the Q representative on the Core 2.0 Committtee.

SOCIOLOGY & CRIMINOLOGY ASSESSMENT PLAN (REVISED SPRING 2014)

MISSION OF THE Sociology/Criminology Program. The program is oriented around the following objectives:

- To provide a well-rounded liberal arts education heavily invested in Sociology.
- To provide students an opportunity to study social worlds, societies and individuals in-depth, including social arrangements, interactions, structures, institutions, and cultures.
- To foster critical reading and thinking, intellectual curiosity, and ethical reasoning.
- To enable students to pursue their own intellectual questions through independent research and learning.
- To help progress our students' communication skills.
- To prepare students for the workforce – in government, business, education, nonprofits – by developing skills in research, synthesis, analysis, and written and oral communication.
- To prepare interested students for graduate-level studies in academic and applied fields.

SOCIOLOGY PROGRAM

PURPOSE OF ASSESSMENT. The Sociology Program engages in assessment as an effective means for enhancing student learning and the fulfillment of our mission. The main priority of our assessment plan is to enable the program and its faculty to systematically study student learning in a way that such learning can be enhanced. Our academic program assessment further enables us to enhance student learning by making a clear conceptual distinction between teaching and learning. We achieve this by focusing on the (a) teaching process through the alignment of learning goals and embedded assessment and the (b) resultant learning outcomes through the analyses of the embedded assessment data and trends. We also strive for a properly executed assessment of our academic programs so that it contributes to our improved teaching and learning in a variety of ways. Specifically, from our assessment, our faculty

1. engage in serious and substantive discussions about important learning outcomes and the education of our students.
2. design and administer good assessment instruments and methods that offer a meaningful way to rigorously evaluate our learning outcomes.
3. reflect on and discuss the assessment results in a forum that facilitates a genuine consideration of possible changes that will enable learning objectives to be more fully realized.

PROGRAM LEARNING OUTCOMES

- *Learning Outcome 1: Sociology as a Discipline*. Our students will demonstrate an understanding of the discipline of sociology and its role in contributing to our understanding of society and changes in society.

- *Learning Outcome 2: Sociological Concepts*. Our students will demonstrate a knowledge, comprehension, and relevance of core sociological concepts.

- *Learning Outcome 3: Sociological/Criminological Theories*. Our students will demonstrate an understanding of the role of theory in sociology/criminology.

- *Learning Outcome 4: Sociological Application*. Our students will formulate research questions based on critical readings and understandings of sociological research.

- *Learning Outcome 5: Oral Communication*. Our students will demonstrate the ability to present materially orally in an organized and effective manner.

- *Learning Outcome 6: Written Communication*: Our students will demonstrate appropriate writing practices and formats and effective written communication and editing skills.

- *Learning Outcome 7: Empiricism*. Our students will demonstrate an understanding of the roles and uses of evidence in qualitative and quantitative methods.

ASSESSMENT PLANNING CHART. PROGRAM: Sociology/Criminology					
	Assessment Year and Targeted Courses				
LEARNING OUTCOME	2011-12	2012-13	2013-14	2014-15	*Assessment Targets*
Learning Outcome 1: Sociology as a Discipline. Our students will demonstrate an understanding of the discipline of sociology and its role in contributing to our understanding of society and changes in society		SOCI414 (Family Violence)			Essay Question
Learning Outcome 2: Sociological Concepts. Our students will demonstrate a knowledge, comprehension, and relevance of core sociological concepts.		SOCI 335 (Juvenile Justice System)			Final Project & Poster
Learning Outcome 3: Sociological Theories. Our students will demonstrate an understanding of the role of theory in sociology.			SOCI455/SOCI 311		Essay Questions
Learning Outcome 4: Sociological Application. Our students will formulate research questions based on critical readings and understandings of sociological research.			SOCI318		Final Project
Learning Outcome 5: Oral Communication. Our students will demonstrate the ability to present materially orally in an organized and effective manner.	SOCI470 (Environmental Sociology)				Discussion Leader
Learning Outcome 6: Written Communication: Our students will demonstrate appropriate writing practices and formats and effective written communication and editing skills.	SOCI499			SOCI499	Final Project
Learning Outcome 7: Empiricism. Our students will demonstrate an understanding of the roles and uses of evidence in qualitative and quantitative methods.				SOCI318	Essay Question

NOTE: SOCI 318 and 499 are required of all sociology/criminology majors. Other courses are electives for sociology and criminology option students.

Assessment Report and Action Plan for Sociology and Anthropology
Fall 2013
Prepared and submitted by the faculty

ANTY 450: Archaeological Theory
Professor: Michael Neeley

Assessment by: Dr. Michael Neeley
Learning Outcome: Students shall understand and articulate key anthropological concepts and theories.

This course provides an in-depth perspective on the methodological and theoretical issues and approaches in the discipline of archaeology. In many ways, it is a complementary course to the capstone offerings (ANTY 425 and ANTY 428) which focus more broadly on anthropological theory and theoretical issues pertinent to social/cultural anthropology. Archaeological theory examines questions of interest to archaeologists and addresses the type of information used, current theoretical and analytical methods, and how this information is applied to enhance our understanding of the past. Specific course outcomes for students include describing the development history of the discipline of archaeology, understanding how archaeological questions are constructed, and assessing and applying current method and theory for understanding the past.

The course material was presented through a combination lecture and discussion. The discussions followed readings in the text (*A History of Archaeological Thought*) and selected readings from archaeological journals. These readings and subsequent discussions gave students an opportunity to examine the role of theory in archaeology and how it has changed over the history of the discipline.

Assignments for the class included three problem sets, each focusing on a different aspect of archaeological methodology (e.g., seriation, culture history and environmental reconstruction, and settlement patterns) and interpretation. In addition there were three exams that covered the theoretical development of the discipline. There was also a final paper project that required the student to apply their understanding of archaeological theory to a topic of their choice. The paper could take one of the three following forms:

(1) A research proposal using historical or archaeological data. This involved selecting an archaeological region or culture for study and identifying a question of interest. Once the question was chosen, a particular theoretical orientation was selected to serve as an interpretive filter for examining the question. This step in the process required the student to realize that theory serves as lens through which to view the archaeological record and helps one identify the necessary data (materials and observations) that link the material remains with theoretical interpretation.

(2) The paper can take the form of a profile of a archaeologist. In this option, the student had to describe the theoretical and material contributions of an archaeologists to the field. Elements to include in this paper were: (1) what did the person research, dig, investigate, and write about?; (2) when did they do this?; (3)

what sort of training did they have and what were their perspectives and philosophical/ theoretical viewpoints?; (4) did this archaeologist's work and approaches change through time?; and (5) what did other archaeologists write about this person?

(3) The student could select one of the following theoretical perspectives and write about its historical development, the basic tenets and ideas of this perspective, examples of successful applications, the strengths and weaknesses of the approach, and the value to the field.

Optimal foraging theory
Behavioral archaeology
Agency
Post-Processual archaeology
Gendered approaches to archaeology
Evolutionary archaeology
Marxist archaeology

To quantify the research outcomes for this course, I used the scores on the paper projects and the final exams as a data source and aligned the outcomes with the proposed scoring method. The scoring method as defined in the document that outlines the anthropology learning outcomes is:

Scale:		
Unacceptable	1	For graded assignments = D, D-, or F
Minimally acceptable	2	For graded assignments = D+/C-
Acceptable	3	For graded assignments = C/C+
Exceeds expectation	4	For graded assignments = B's or A-
Exceptional	5	For graded assignments = A/A+

A total of thirteen papers were submitted by the students. The average score for the final paper was 80%. Using the above scale, this suggests that the class **"exceeds expectations"** for the learning outcome of articulating and understanding key anthropological (archaeological) theories and concepts. However, it is noted that this is at the lower end of this measure. On a student by student basis, three students were in the unacceptable range, one in the minimally acceptable, one in the acceptable, seven in the exceeds expectations, and one in the exceptional range.

For students who were in the unacceptable or minimally acceptable range for the paper project, their outputs typically suffered from: (1) failing to run the topic by the instructor for approval; (2) underdeveloped papers (not up to the minimum requirement of 8 pages); (3) inadequate level of research to support their argument; and (4) scattered or incoherent organization/structure to the paper. It is my opinion that these papers were hastily constructed at the last minute prior to the deadline.

The examination of the final exams reveals a similar pattern. The average score for the final exam was 81%, again suggesting an overall rating of **"exceeds expectations"** for this learning outcome. The individual breakdown consists of two students in the

unacceptable range, none in the minimally acceptable, four in the acceptable, six in the exceeds expectations, and one in the exceptional range.

In the case of the final exams, only two fell into the unacceptable range. In both cases, the did not adequately prepare for the final exam as they were allowed to prepare a single page review guide for the exam. One student did not have a guide prepared, and the other's guide was incomplete for the material covered.

In sum, I believe the assessment indicates that students who take this class (and put forth an honest effort) are successful in meeting the learning outcomes of greater understanding of key anthropological theories and concepts.

Assessment by: Dr. Jack Fisher
Learning Outcome: Students shall understand and articulate key anthropological concepts and theories.

The syllabus for ANTY 450 (Archaeological Theory) clearly indicates that the students will be engaged throughout the course in learning about major theoretical perspectives in archaeology and also key archaeological methods, approaches, and practices. These learning opportunities include reading assignments, exercises in methodology and theory, exams, and a research project.

Four Final Exams and three Research Projects were provided for this assessment. The Final Exam consisted of four essay questions. The questions were well designed to test students' knowledge of important theoretical and conceptual approaches in archaeology, and how these relate to the investigation of major archaeological questions, issues, and practices. The students' results ranged from exceeds expectations to unacceptable. The best students showed a good understanding of the relevant theoretical and conceptual approaches, and were able to relate these in a thoughtful fashion to specific archaeological research questions and/or to how archaeology is practiced today. The students who performed poorly either had not prepared adequately (i.e., had not read the relevant materials), or displayed a poor understanding of the topics, as reflected by answers that were brief and superficial.

The Research Project was an excellent opportunity for students to expand and deepen their knowledge of archaeological theory, concepts, and methods, and to integrate these with one another. The three Research Projects ranged from unacceptable to exceptional. The best students' projects were thorough, well researched, showed good integration of theory to the interpretation of the archaeological record, and were well organized and well written. The unacceptable paper was short, rather superficial, and did not explore theoretical or conceptual issues adequately. Additionally, some errors in spelling and grammar detracted from the quality of this students' work.

Both the Final Exam and Research Project offer students excellent venues for learning about anthropological theory and concepts, and to synthesize and

articulate this knowledge. The sample of students' materials that I have examined convinces me that this course "exceeds expectations" with respect to the designated learning outcome that students shall understand and articulate key anthropological concepts and theories.

ANTY 453: Zooarchaeology
Professor: Jack Fisher

Assessment by: Dr. Jack Fisher
Learning Outcome: Engage in field or laboratory research and carry out preliminary analyses of materials from primary materials and/or collections.

This course provides students with a solid introduction to two key areas in the study of animal bone assemblages from archaeological sites. One of these is ***osteology*** and the ***identification*** of bones and teeth to skeletal element and to taxon. Emphasis is placed on larger mammals found at Montana archaeological sites, but coverage also includes smaller mammals, birds, reptiles, and amphibians. The second area concerns methods and theory for ***analysis*** and ***interpretation*** of archaeological bone assemblages. This includes methods for quantifying bone assemblages; identifying and assessing taphonomic processes; interpreting bone frequencies; identifying and interpreting bone modifications such as stone–tool cut marks, tooth marks, and bone breakage patterns; estimating age-at-death and season-of-death; and inferring & interpreting human activities and behaviors. There is no textbook for this course. Students read numerous articles pertaining to zooarchaeology that are published in professional anthropological journals.

Specific student outcomes include the ability to identify the major bones of the mammalian skeleton, to understand and apply zooarchaeological analytical methods to interpret human behaviors, and to carry out preliminary analysis of zooarchaeological materials using zooarchaeological collections or primary (i.e., published) materials.

Course materials were presented through hands–on learning in osteology and bone identification, and in discussing assigned readings. Students were expected to devote substantial time outside of class to working with bone specimens from the comparative bone collection in the archaeology lab at MSU to learn osteology and bone identification.

Assignments for the class include the following: (1) making detailed drawings of bones from a variety of species provided by the instructor to enhance and reinforce their knowledge and abilities in bone anatomy and identification; (2) writing a 1-2 page synopsis of a small number of journal article reading assignments in which the students were asked to identify the research issue, discusses the materials and methods, specify the major findings and results, and discuss weaknesses and/or strengths of the research; (3) learning and applying to Montana mammals the system of biological taxonomy and classification; (4) learning the major categories of mammalian tooth types; and (4) carrying out zooarchaeological exercises such as analyzing the stage of tooth eruption and wear in bison lower jaws to estimate the age-at-death and season-of-death of the specimens by reference to published criteria. Two bone identification quizzes were given to test students' knowledge and skills in the identification of major bones of the skeleton. There were no formal examinations in this course.

The students, additionally, had to design, carry out, and write up a major research project on an appropriate zooarchaeological topic of their choosing with approval by the

instructor. Several students created a "bone atlas" in which they compared the bones of two or three animal species whose bones are similar in size and shape, such as wolf and mountain lion. This entailed detailed comparisons of actual bones of the species, identification of anatomical criteria that differentiate between the species, making life size drawings of the bones of all the species, and annotating the drawings with descriptions of the anatomical differences between the species. Others carried out an experiment on a topic of zooarchaeological importance, such as animal butchery with stone tools and the resultant cut marks on bones; or, feeding fresh bones to their dog and analyzing the patterns of bone damage and destruction. They presented their experiment, analyses, and results as a written paper. Several students analyzed bones from an archaeological site and presented their results as a paper. Other students based their project entirely on journal articles and/or other publications.

To quantify the research outcomes for this course, I present the scores on the following items as a data source: (1) analysis of bison teeth for age-at-death and season-of-death; (2) a synopsis of a reading assignment; and (3) the final research project. I will quantify the outcome for each of these three assignments. I aligned the outcomes with the anthropology program's Indicators of Student Achievement:

Unacceptable	1	(for graded assignments = D, D-, or F)
Minimally acceptable	2	(for graded assignments = D+/C-)
Acceptable	3	(for graded assignments = C/C+)
Exceeds expectation	4	(for graded assignments = B's or A-)
Exceptional	5	(for graded assignments = A/A+)

1. Bison Teeth: Twenty-four of the 25 students carried out this assignment. The purpose of this assignment in zooarchaeological methods was to give the students hands-on experience in carrying out an analysis of the stage of tooth eruption and wear in several lower jaws of sub-adult bison that had died at different ages and that display corresponding differences in the stage of eruption and wear exhibited by their teeth. These bison lower jaws come from two different archaeological sites in Montana. The students had to assess the stage of eruption and wear for each tooth in these jaws, and from this estimate, by reference to published zooarchaeological criteria, how old the animal was when it died. That knowledge, in turn, provided the basis for estimating the season of year in which the animal was hunted and killed.

   The average score for this exercise is 84% (this excludes a score of "0" for the one student who did not turn in this assignment). This indicates that the class as a whole "**exceeds expectations**" for the learning outcome of engaging in field or laboratory research and carrying out preliminary analyses of materials from primary materials and/or collections. Five students' work was unacceptable. One student's work was acceptable. Eight students' work exceeded expectations, and the work of the remaining 11 students was exceptional.

   Students who performed poorly on this assignment generally did not correctly assess the stage of eruption of individual teeth and/or did not correctly assess the amount of

wear present on individual teeth. The assessment of tooth eruption and wear was discussed and presented to the class as a whole in preparation for this assignment. The results of this assignment suggest that some students struggled in their understanding of these concepts, and that they would benefit from additional instruction in assessing tooth eruption and wear.

2. Synopsis of Reading: Twenty-four students submitted a synopsis of this reading assignment. The purpose of this assignment was to have students critically analyze a professional journal article that focuses on an important methodological topic in zooarchaeology. The average score was 85% (this excludes a score of "0" for the student who did not turn in this assignment). This indicates that the class as a whole "**exceeds expectations**". Two students' work was unacceptable, and two more were minimally acceptable. One student's work was acceptable, 12 students exceeded expectations, and eight were exceptional.

   For students who performed poorly on this assignment, their work typically suffered from superficiality in their analysis of the article as reflected by the failure to: (1) identify the main research issue of the article; (2) assess the weaknesses/strengths of the research; and/or (3) summarize the main research findings and their significance.

3. Research Project: Twenty-two students turned in a final research project. The purpose of this project was to have students carry out a meaningful research project in zooarchaeology. The average score was 84% (this excludes a score of "0" for the three students who did not turn in this assignment). This indicates that the class as a whole "**exceeds expectations**". Two students' work was minimally acceptable, and a further two produced acceptable work. Fourteen students' work exceeded expectations, and five students' work was exceptional.

   For students whose research project was "minimally acceptable" or "acceptable", their product typically suffered from one or more of the following shortcomings: (1) the project was somewhat superficial as reflected by inadequate depth and detail in its substance, analyses, and conclusions; (2) the student presented little or no critical evaluation/assessment appropriate to their project; (3) there were problems with organization and/or with writing (such as clarity of expression and/or punctuation); and (4) the bibliography had missing or incomplete entries.

   These students might benefit from receiving additional guidance and support from the instructor as they design, carry out, and write up their research project.

In sum, assessment of these assignments indicates that this course as a whole is successful in teaching zooarchaeological method and theory and in providing an effective learning environment for students to develop their abilities to successfully carry out zooarchaeological analyses and research.

Assessment by: Dr. Michael Neeley
Learning Outcome: Students shall engage in field or laboratory research and carry out preliminary analyses of materials from primary materials and/or collections.

Based on the syllabus for ANTY 453 (Zooarchaeology), there are numerous assignments in which students can engage in laboratory research with archaeological materials. Two of the assignments were provided for this assessment. One was a lab-based exercise in which students had to identify the age of the animal (bison) at death based upon the tooth eruption pattern. This is an excellent example of a hands-on, lab-based exercise that has direct application to questions of archaeological interest: how old was the animal at death and what was the season (e.g., spring, summer, fall, winter) at death. Five examples of the student work were provided representing a range of skill from exceptional to unacceptable. The best students were able to identify the necessary tooth wear and eruption landmarks to assess the age and seasonality of death. Less skilled students typically could identify the areas of wear, but were unable to properly interpret or contextualize the pattern of wear in order to determine age and seasonality.

The second lab-based example consisted of three of the final student projects. In this case, they created an atlas of selected bones for similar sized species (usually 2-3). This included drawing and labeling several different views of the animal skeletons. In this case, the examples ranged from exceptional to exceeds expectations. Differences in the student outcomes generally involved the level of detail in the projects, particularly as it pertained to the individual skeletal landmarks that differentiate the species from one another.

Both of these assignments are excellent learning tools for students using lab-based skills. Students are able to apply concepts learned through class instruction and apply them to focused exercises and independent projects. From this sample of student materials, I believe that the course "exceeds expectations" in terms of the designated learning outcome of engaging in laboratory research and conducting a preliminary analysis of materials from primary materials and/or collections.

Learning Outcomes Summary for Fall 2012-Spring 2013
ANTHROPOLOGY FACULTY RESPONSE

The faculty of the Anthropology Program met to review the assessment plan for the Fall 2012 and Spring 2013 terms. The reviews were of two upper division courses. The first of these was Anthropology 450, Archaeological Theory, which was assessed to ascertain the success in accomplishing the learning outcome to "understand and articulate key anthropological concepts and theories." The second course was Anthropology 453, Zooarchaeology, which was assessed to measure the learning outcome to "engage in field or laboratory research and carry out preliminary analyses of materials from primary materials and/or collections." The

enrollments for these courses were 15 students (Archaeological Theory) and 30 students (Zooarchaeology). Our review procedures involve having the instructor use the relevant criteria to review his/her own course and have the second specialist in this sub-discipline (archaeology) read a subset of the materials submitted by the students to see if the relevant criteria has been met.

For Archaeological Theory, the instructor (Dr. Neeley) determined that the course, on average, exceeded expectations (4 on a scale of 5) in meeting the learning outcome. The second reviewer (Dr. Fisher), reading a sub-set of the student exams and projects, agreed that the course exceeded expectations in providing students with an opportunity to understand and articulate key anthropological concepts and theories. In the second course, Zooarchaeology, Dr. Fisher assessed that the course had exceeded expectations (4 on a scale of 5) in providing students with lab opportunities to conduct analysis of primary materials or collections. The second reviewer (Dr. Neeley) read a sub-set of the student projects and independently agreed that the course exceeded expectations with regard to the proposed learning outcomes.

While we agree that the courses under review here are successful in meeting the learning outcomes, there are typically a handful of students who are unsuccessful in the course. As part of our assessment, this is an opportunity to reflect upon the methods and strategies used and suggest ways in which the student outcomes can be improved. One concern with student projects is the rush to complete the project at the last minute. These projects generally are under-researched and tend to fail to meet the desired learning outcome. One way to force students to engage in the research process is to require them to submit project ideas, outlines, and drafts at selected times during the semester in order to provide critical feedback for the success of the project. While these benchmarks are often used in lower level anthropology classes with project assignments, implementing them more consistently at the upper level will ensure that students are moving toward their final research goals in a timely manner.

SOCI414: Family Violence

Professor: Steven Swinford

Assessment by: Dr. Steven Swinford

Learning Outcome: Sociology as a Discipline

This learning outcome was assessed by the attached rubric, and all students who took the final exam (n = 34) were scored according to the rubric. The readings for the course were comprised of a combination of peer-reviewed articles and an advanced, comprehensive textbook. The course was divided into four different topical sections (theory/methods, child abuse, intimate partner violence, and elder abuse) with quizzes, papers, and exams covering all material. Classes were conducted as a combination of lecture and discussion of the course readings. Students were frequently called upon to engage in meaningful classroom discussions to the extent possible in a course enrolling more than 30 students.

Of the 34 students, 31 of them received a rubric score at the minimally acceptable level. This indicates that these students met the expectations for this learning outcome. The three students who did not score as minimally acceptable did so due to a lack of preparation for the exam. All three students also missed numerous class meetings as well, often for University athletic competitions. Of the 31 who met the minimal threshold, the distribution of scores were: 6 scored as Exceptional, 8 scored as Exceeds Expectations, 15 scored as Acceptable, and 2 scored as Minimally Acceptable.

Across the six criterion categories in the rubric, students excelled most in the Disciplinary Understanding and Content categories. Organization of answers varied across students and was associated with poor writing skills. The three students who did not achieve the minimally acceptable standard provided answers that lacked understanding, content, and clarity in the presentation of the material. This level of work was not inconsistent with other classroom-based written work from them throughout the semester.

Most answers reflected an understanding of the main disciplinary concepts necessary to answer the question, the content of the course materials (readings and lecture based information), and were organized at a level consistent with a 400-level course. The reading took approximately 180 minutes per week to read if the student took adequate notes while doing so. The instructor encouraged note taking by allowing their use on in-class quizzes. None of the three students who did not meet the minimal standard on the assessment item were ever witnessed using their notes when taking quizzes, an indication that the reading was likely never completed by these students.

Criteria	Excellent 10 points	Approaching Excellence 9 points	Above Average 8 points	Average 7 points	Below Average 6 points	Poor 5 points
Disciplinary Understanding	Successful and original application of disciplinary concepts to topic. Author takes a strong position on the issue and clearly states objectives.	Successful application of disciplinary concepts to topic. Author takes a strong position on the issue and states objectives	Solid application of disciplinary concepts. Author clearly states objectives and takes a moderate position on the issue.	Adequate application of disciplinary concepts. Author adequately states and supports a position on the issue.	Proper use of disciplinary terms, but no application of concepts. These papers weakly state and support a position on the issue.	No attempt to use disciplinary concepts in analysis. These papers do not state a position on the issue.
Content	Content demonstrates understanding of society and change. Analysis is supported by many details or examples.	Content demonstrates understanding of society and change. Analysis is supported by one example.	Content demonstrates understanding of society or change. Analysis is supported by many details or examples.	Content demonstrates understanding of society or change. Analysis is supported by one example.	Content demonstrates limited understanding of society or change. M inimal examples or support.	Content demonstrates no understanding of society or change. No examples or support.
Organization	Organization is unified and logical, with excellent transitions.	Organization is unified and logical, with effective transitions.	Organization is unified and coherent and transitions are used.	Organization is clear enough to follow without difficulty.	Organization may lack clear movement or focus, making the writer's ideas difficult to follow.	No organizational structure.
Writing Skill	There are minimal errors in grammar, usage, and mechanics. An outstanding command of language is apparent.	There are very few errors in grammar, usage, and mechanics. An outstanding command of language is apparent.	While there may be a few errors in grammar, usage, and mechanics, a good command of language is apparent.	A competency with language is apparent, even though there may be some errors in grammar, usage, and mechanics.	Numerous errors in grammar, usage, or mechanics show poor control of language and may at times impede understanding.	Severe problems with grammar, usage, or mechanics show very poor control of language and may significantly impede understanding

SOCI 335: Juvenile Justice System
Professor: Sara Rasch

Assessment by: Dr. Leah Schmalzbauer
Learning Outcome: Sociological Concepts

Soci 335 is an upper-division criminology course whose stated learning objectives are: 1) to understand the evolution of the policies and practices of the juvenile justice system; 2) be able to identify the types of social change that triggered changes in the juvenile justice system; 3) understand the purpose and objectives of juvenile policing and adjudication, and 4) recognize the rationale behind specialized correctional, prevention and intervention programs for juveniles.

I randomly selected nine papers to assess for the students' use of sociological concepts – three A papers, three B papers, and three C papers. There were no D or F papers for this specific assignment. The papers I assessed were three-page reflection papers in which Prof. Rasch assigned the class a specific essay question to which they had to respond. Prof. Rasch assigned three reflection papers throughout the semester, each focused on a particular course reading. Students were required to use two academic references for the paper beyond the course text book, and to engage criminological concepts from the course. Attached is the grading rubric with Prof. Rasch used to grade the papers.

"A" papers:
The A papers were excellent. They were well written, the students structuring their theses around appropriate sociological concepts and staying close to the relevant sociological literature. I was most impressed with the students' ability to develop a sophisticated and coherent argument using concepts from the course. Students interwove concepts into their analysis, thus presenting sophisticated arguments that were also clear.

"B" papers:
The students who earned B's wrote solid papers. Yet, unlike the students who earned A's on their papers, the students in the B group presented arguments which were less clear, and did not define the concepts they used in as complete a manner. While they still demonstrated good use of the outside academic sources, they did not as effectively use the concepts from these sources in their arguments. Overall, the papers, while good, were less clear and coherent.

"C" papers:
These papers though clearly weaker than the A and B papers in my sample, were still not terrible. They were separated from the stronger papers first and foremost by the simplicity and shallowness of their arguments in which they often failed to use appropriate sociological concepts, or did not use them correctly. The papers were short and were much less closely wedded to the academic literature. As a result, they read in large part like opinion pieces, which were not analytically sound. It is clear that these students do not understand the distinction between sociological concepts and media newsbytes. Nor do they fully appreciate the importance of using sociological concepts to develop a clear and coherent argument.

Criteria	Excellent 10 points	Approaching Excellence 9 points	Above Average 8 points	Average 7 points	Below Average 6 points	Poor 5 points
Critical Thinking	Successful and original application of course concepts to topic. Author takes a strong position on the issue and clearly states objectives.	Successful application of course concepts to topic. Author takes a strong position on the issue and states objectives	Solid application of course concepts. Author clearly states objectives and takes a moderate position on the issue.	Adequate application of course concepts. Autho r adequately states and supports a position on the issue.	Proper use of Juvenile Justice terms, but no application of concepts. These papers weakly state and support a position on the issue.	No attempt to use course content in analysis. These papers do not state a position on the issue.
Content	Content directly and logically relates to the main topic. Analysis is supported by many details or examples	Content directly relates to the main topic. Analysis is supported by several details or examples	Content clearly relates to the main topic. Analysis is supported by 1-2 details or examples.	Content generally relates to the main topic. Analysis is mostly supported by details or examples.	Content deviates from main topic. Analysis is weakly supported by details or examples.	Content rarely relates to the main topic. Analysis is not supported by details or examples.
Support and Proper Citations	All sources are accurately documented in the desired format (ASA).	All sources are accurately documented, but there may be some inconsistency in the use of the desired format (ASA).	Most sources are accurately documented in the desired format (ASA).	Most sources are accurately documented, but may not be in the desired format (ASA).	Many sources are not accurately documented, nor are they in the desired format (ASA).	Too many sources are not accurately documented and there is no format used.
Organization	Organization is unified and logical, with excellent transitions.	Organization is unified and logical, with effective transitions.	Organization is unified and coherent and transitions are used.	Organization is clear enough to follow without difficulty.	Organization may lack clear movement or focus, making the writer's ideas difficult to follow.	No organizational structure.
Writing Skill	There are minimal errors in grammar, usage, and mechanics. An outstanding command of language is apparent.	There are very few errors in grammar, usage, and mechanics. An outstanding command of language is apparent.	While there may be a few errors in grammar, usage, and mechanics, a good command of language is apparent.	A competency with language is apparent, even though there may be some errors in grammar, usage, and mechanics.	Numerous errors in grammar, usage, or mechanics show poor control of language and may at times impede understanding.	Severe problems with grammar, usage, or mechanics show very poor control of language and may significantly impede understanding

Learning Outcomes Summary for Fall 2012-Spring 2013
SOCIOLOGY FACULTY RESPONSE

The faculty of the Sociology program discussed the assessment plan for the Fall 2012 and Spring 2013 terms. The reviews were conducted on two different classes: SOCI 335 Juvenile Justice System and SOCI 414 Family Violence. The learning outcomes that were assessed, based on a prior assignment of learning outcomes from our assessment plan, was a) sociology as a discipline (SOCI 414); and b) sociological concepts (SOCI 335). Our review procedures entail using constructed rubrics designed (before use) to evaluate the learning outcomes with samples of student coursework.

Learning Outcome: Sociology as a Discipline

A few of the patterns revealed by the assessment of SOCI 414 (by Steve Swinford) are recurrent themes that prior assessments have found. Our C students struggle with writing assignments and the ability to organize their writing in a clear, concise, and fluid manner. We discussed the possibility of assigning our students a second writing course to strengthen student writing. Scott Myers reported that he had recently talked with a couple of our recent graduates and they each expressed a wish that we would offer a course—early on (at the 100 or 200 level)—that would teach them how to read and write in sociology. Scott reported that he had a similar course at Vanderbilt during his undergraduate years. It was a semester-long course, taken after the introductory course, where students read different types of professional writings as well as a rigorous review of writing in the social sciences.

Steve Swinford also noted that the marginal students (i.e., those who performed poorly in achieving this learning outcome) that the students manifested some of the typical signs of a lack of preparation—no notes present (when students were allowed to use notes on quizzes), poor attendance, and poor performance on other evaluations. While this is clearly a campus-wide problem (indeed, a problem that besets all colleges and universities), the faculty agreed that we need to consider strategies that we can use to respond to this enduring problem among some of our majors.

Learning Outcome: Sociological Concepts

Leah Schmalzbauer noted that while some of the reviewed papers showed that these students could develop a sophisticated and coherent argument using concepts from the field (and discussed in the class), we also have a number of students whose use of the concepts showed a simplicity and shallowness that often reverted to “opinion pieces” instead of properly demonstrating the requisite understanding of sociological concepts. Faculty discussed these findings and possible responses that may reduce this issue, including such simple strategies as emphasizing the importance of learning and using the concepts and not using preconceived notions when writing for a sociology course.

Action Plan

Based upon the assessment and our faculty discussion, the faculty have decided on the following actions:

1. Explore the possibility of adding a lower division course (majors only) that will teach writing and reading in sociology;
    a. The faculty will be meeting shortly about curriculum changes in our major, so we can discuss the possibility of substituting such a course for another required course

2. Considering a policy dictating that faculty make a referral to the Office of Student Success once certain warnings (poor attendance, grade failure, lack of prep) have been triggered

3. Emphasizing (to students) the importance of learning and using the concepts and not using preconceived notions when writing for a sociology course, including specific language in syllabi, reminders before each exam, and other strategies.

Assessment Plan: SCHOOL OF FILM & PHOTOGRAPHY (MFA)

June 24, 2013, Robert Arnold, Director, School of Film & Photography

Master of Fine Arts in Science and Natural History Filmmaking

This Assessment Plan outlines the program learning outcomes for the Master of Fine Arts in Science and Natural History Filmmaking, including where they occur in the curriculum, evidence of student performance for each outcome, expected performance thresholds, a schedule for assessing each outcome, and a description of the process for using assessment data to improve and attain better results.

Program Learning Outcomes

The School of Film and Photography has adopted the following Program Learning Outcomes for the M.F.A. in Science and Natural History Filmmaking. These outcomes are subject to change as the, curriculum evolves to reflect changes in technology and program emphasis and as assessment procedures reveal any areas that may need clarification.

Our graduates will:

1. *possess a general technical and aesthetic proficiency in film and related media.*
2. *understand and appreciate the history and criticism of film and related media, and be able to apply this understanding to original creative productions.*
3. *possess effective oral and written communication skills evidenced in project proposals, artist statements, and/or papers relevant to their chosen discipline.*
4. *be able to successfully plan, communicate, execute, and defend original artistic creations and/or professional projects, in their chosen discipline.*
5. *be able to employ critical thinking skills, informed by integrating areas of knowledge outside of their discipline, in the analysis and creation of films and/or photographs.*
6. *be able to effectively work within the professional/production structures established in traditional, digital, and alternative media.*
7. *possess a working knowledge of the scientific, political and ethical issues currently informing science and natural history production.*

Curriculum Map

The following courses map to the highlighted outcome(s) at the indicated cognitive level (Introductory, Developing, Mastery).

				OUTCOMES						
				1	2	3	4	5	6	7
FILM	504	Film & Documentary Theory	3		I					
FILM	505	Critical Approaches to Natural History Filmmaking	3		I					I
FILM	506	Critical Approaches to Science Films	3		I					D
FILM	510	Fundamentals of Filmmaking	3	I	I	I	I	I		
FILM	515	Science & Natural History Film Production	3	D	D	D	D	D	I	I
FILM	517	Production Management	3	D	D	D	D		D	
FILM	518	Writing for Documentary & Nonfiction Film	3		D	D		D		D
FILM	519	Post Production Workflow	3	D					D	
FILM	523	Second Year Film Preparation	2			D		D		D
FILM	581*	Thesis Writing Preparation	1	D		D				D
FILM	525	Second Year Film Production	3	D	D	D	D	D		D
FILM	526	Alternative Nonfiction Filmmaking	3	D	D	D	D	D		D
FILM	590	Thesis	15	M	M	M	M	M	M	M

*New Course Proposal Pending

Student Performance Data Sources

< indicates with an **X** where assessment data will be collected>

				OUTCOMES						
				1	2	3	4	5	6	7
FILM	504	Film & Documentary Theory	3		X			X		
FILM	505	Critical Approaches to Natural History Filmmaking	3		X			X		X
FILM	506	Critical Approaches to Science Films	3		X			X		X
FILM	510	Fundamentals of Filmmaking	3	X	X	X	X	X		
FILM	515	Science & Natural History Film Production	3	X	X	X	X	X	X	X
FILM	517	Production Management	3	X	X	X	X		X	
FILM	518	Writing for Documentary & Nonfiction Film	3		X	X		X		
FILM	519	Post Production Workflow	3	X					X	
FILM	523	Second Year Film Preparation	2	X			X			X
FILM	581*	Thesis Writing Preparation	1	X		X				X
FILM	525	Second Year Film Production	3	X	X	X	X	X		
FILM	526	Alternative Nonfiction Filmmaking	3	X	X	X	X	X		
FILM	590	Thesis	15	X	X	X	X	X	X	X

*New Course Proposal Pending

Response Threshold

At least 75% of students will be rated “Acceptable” or higher on every category of the scoring rubrics.

Schedules

Outcomes

	Year					
Outcome	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**
1	X		X		X	
2		X		X		X
3	X		X		X	
4	X		X		X	
5		X		X		X
6		X		X		
7			X		X	

Assessment Plan Elements

Each assessment element (Program Outcomes, Course Learning Outcomes, Scoring Rubrics, Curriculum Maps, and Schedules, will be reviewed and updated as necessary at the beginning of each three year assessment cycle.

Course Review

In Spring 2013, Film 515 and 525 were assessed and will be assessed again in Spring 2016.

In Fall 2013 and Fall 2016, FILM 504, FILM 505, FILM 506, and Film 510 will be assessed.

In Spring 2014 and Spring 2017 , FILM 517, 518, and 519 will be assessed.

In Fall 2014 and Fall 201 , FILM 523 and FILM 581 will be assessed.

In Spring 2015 and 2018, Film 526 will be assessed.

In Spring 2015 and Fall 2016 and then again Spring 2018 and into the Fall of the next review cycle, FIM 590 will be assessed. Since FILM 590 is thesis work, assessment will be spread over two semesters in two different academic years to allow a better sampling of thesis work.

This three year cycle will repeat as follows:

	Review Year					
Course	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**
504		x			X	
505			X			
506			x			
510		x		X	x	
515	X			X		
517		X			X	
518		X			X	
519		X			X	
523				X		X
525	X			X		
526			X			X
581				X		X
590			X	X		X

Process for Assessing the Data

Annual Assessment Process

1. Data is collected from identified courses.
2. Random samples of collected assignments are scored by two to four faculty members, not including the instructor, using prepared scoring rubrics.
3. The assessment coordinator tabulates the scores. Areas where the acceptable performance threshold has not been met are highlighted.
4. The scores are presented to the faculty for assessment.
5. The faculty reviews the assessment results, and makes decisions on how to respond.
    - If an acceptable performance threshold has not been met, a faculty response is required. Possible responses:
        - Gather additional data next year to verify or refute the result.
        - Change something in the curriculum to try to fix the problem.
        - Change the acceptable performance threshold.
        - Choose a different assignment to assess the outcome.
    - Faculty can respond to assessment results even if the acceptable performance threshold has been met.
    - It is OK to determine that changes are not needed when students are demonstrating proficiency with each learning outcome.
6. A summary of the year's assessment activities and faculty decisions is reported to the Provost's Office in your Department's Annual Assessment Activities report.

MSU Departmental Assessment Report
Spring 2014

Department: School of Film and Photography

Department Head: Dennis Aig

Assessment Coordinator: Robert Arnold

Date: May 16, 2014

Degrees/Majors/Options Offered by Department
BA in Film and Photography
MFA in Science and Natural History Filmmaking

Assessment reports are to be submitted annually to report assessment activities and results by program. The reports are due every summer with a deadline of September 15th each year.

The use of this template is entirely optional.

Note: These reports have been required by MSU policy since 2004.

Annual Assessment Report

Academic Year: 2013-2014
Department: School of Film and Photography
Program(s): BA in Film and Photography
MFA in Science and Natural History Filmmaking

Please note: Assessment Plan, including outcomes, rubrics, and schedule, were submitted in Academic Year 2012-13.

1. What Was Done

According to our assessment plan, we evaluated learning outcomes 2 and 5 this year in selected courses in the Undergraduate curriculum.

We evaluated outcomes 2, 5, and 6 in the MFA curriculum.

2. What Data Were Collected

Fall 2013

B.A.

2. The final assignment was collected from PHOT 374, PHOT 401, FILM 351, and FILM 372 in the undergraduate curriculum and scored using our "Production Assignment" rubric template.
5. The final assignment was collected from PHOT 374, PHOT 401, FILM 351, and FILM 372 and scored according to the "Production Assignment" rubric.

MFA

2. The final film assignment was collected from FILM 510 and scored according to our 'MFA Production Assignment" rubric.
5. The final written assignment was collected from FILM 504 and scored according to out "Creative Written Rubric."
6. The final film assignment was collected from FILM 510 and scored according to our 'Production" rubric.

Spring 2014

B.A.

2. The final assignment was collected in PHOT 373, and FILM 371, and scored according to our "Production Assignment" rubric.
5. The final assignment was collected from FILM 381 and scored according to our "Written assignment" rubric.

MFA

2. The final assignment was collected from FILM 517 and FILM 518 and scored according to our "Production Assignment" rubric.
5. The final written assignment was collected from FILM 518 and scored according to our "Production Assignment" rubric

3. What Was Learned

BA

2. A majority (more than 75%) of our students "understand and appreciate the history and criticism of photography and/or film," although the fall students fell slightly below this threshold.

5. Students demonstrated an ability to "employ critical thinking skills informed by integrating areas of knowledge outside their chosen discipline" with a total average of 66% of those enrolled, with the spring classes again outpacing the fall with scores that met or surpassed out threshold of 75%.

MFA

2. A majority of the MFA students demonstrated an ability to "understand and appreciate the history and criticism of film and related media," with the percentage ranging from a low of 67% to a high of 100% depending on the semester and the class.

5. A majority of the students demonstrated an ability to "employ critical thinking skill."

6. A majority of students were able to "effectively work within the professional/production structures" of their field

4. How We Responded

BA

2. We are revising our rubrics for next year to allow us to pinpoint specific weaknesses more precisely and asking instructors to include the rubrics in selected assignments.

5. To create a more consistent outcome among the students, we are making "critical thinking" a production imperative beginning with freshman classes.

MFA

2. Because many of our MFA students come from science backgrounds, it often takes several of them at least a semester to develop a more aesthetic sensibility toward film history and criticism; to expedite this process, we are sending out reading /viewing lists to the students the summer preceding enrollment to help accelerate the process.

5. While the students' performance in this area improves the longer they are in the program, we are exploring new exercises in the first semester to more fully integrate critical thinking into the curriculum.

6. The students do well in this area, and we will reinforce this area of strength by continuing to emphasize the importance of this ability.

Note: Results of the assessment will be shared with faculty at the AY 2014-15 Startup Meeting on August 21, 2014.

Group wants to match more MSU students, Montana communities on meaningful projects

November 22, 2013 -- By Evelyn Boswell, MSU News Service

Nathan Carroll, an MSU graduate student from Ekalaka, is one of the co-founders of a group that matches college students with communities. He confers here with a young scientist who attended the 2013 Dino Shindig in Ekalaka. (Photo courtesy of Nathan Carroll).

BOZEMAN – Six Montana State University students who wanted to collaborate with a Montana community on innovative, meaningful projects spent last summer revamping the Carter County Museum in Ekalaka.

Now the organizers want to match more students and communities on projects that combine outreach and student research. Some available projects are explained on the new website that the Student Community Outreach ProjEct (SCOPE) launched. SCOPE will also hold a meeting at noon Monday, Dec. 2, to explain the program. The meeting will be held in Ballroom B of MSU's Strand Union Building. Anyone interested is invited to attend.

"This concept isn't new at all," said Shelby Rogala, a 2012 MSU graduate and SCOPE's interim director. "We are a land-grant university. This is our mission. But we hope to make it more accessible and more supported."

MSU students from any discipline have the background and abilities to benefit a community, Rogala said. The core group that worked in Ekalaka majored in earth sciences, history, graphic design, landscape design and film. Some of the participants had worked together on MSU's student newspaper, the Exponent. Some were active in MSU's student government.

The students, while in Ekalaka, prepared dinosaur fossils and redid an area of the Carter County Museum devoted to Native American artifacts. They organized a two-day Dino Shindig that drew more than 560 visitors to this southeast Montana town of 300. They built display cases and prepared for a new 12,000-square-foot addition that will feature fossils and casts of fossils found in southeast Montana. They planted trees, native plants and heirloom vegetables. They designed logos, a children's coloring book and the museum website.

"They came in. They took over. They did a wonderful thing and then they were gone. It was like a whirlwind," said Marilyn Schultz, assistant director of the Carter County Museum. "Some of the things they have done we could not have done -- ever."

Rogala said the collaboration was a huge success. She gave much of the credit to Nathan Carroll, one of the co-founders of SCOPE and an Ekalaka native who graduated from MSU with a degree in paleontology. He is now pursuing his master's degree at MSU while serving as curator of the Carter County Museum.

Sabre Moore from Wright, Wyo., one of the students who spent the summer in Ekalaka, said, "It was a wonderful opportunity. It was definitely one of the best things I have agreed to do."

The museum project allowed her to use her history major and three minors (museum studies, Native American studies and English literature studies) in a variety of ways, Moore said. She designed exhibits for the Native American collections, for example. She helped the museum reach Native American Graves Protection and Reparation Act (NAGPRA) accreditation, set up new displays and created a handbook for the museum collections.

Tammi Heneveld, a graphic design major from North Pole, Alaska, designed promotional materials and a new website for the museum.

"It was a really fulfilling and almost profound experience for me," Heneveld said. "It's really inspiring to know that I can use my degree to help an organization or cause that I really care about, and I have the opportunity to be something bigger than myself. It was also a lot of fun to work alongside a bunch of my friends."

Students who participate next summer will be able to be able to work at the Carter County Museum or other projects elsewhere, Rogala said. In addition to the projects listed on the SCOPE website, she is looking for other projects.

One available project already involves Katie Liebenstein of Portland, Ore., a pre-nursing student who graduated from Lewis and Clark College four years ago in history. She is working with MSU Extension Community Resources Specialist David Young to create a curriculum for inmates at the Gallatin Valley Detention Center on health literacy and the Affordable Care Act. Starting Jan. 1, she will go to the Detention Center to teach the curriculum and work alongside the inmates as they work through the financial and health questions involved in enrolling in the healthcare program.

“It is challenging work, but I look forward to working with the inmate population soon,” Liebenstein said.

She added that she wanted to become involved with SCOPE because she was interested in working on a local issue involving public health. If a project wasn’t already in the works, she figured there was always a need for more outreach and education regarding community health.

“SCOPE is a great organization because they have the means to connect students with authentic research and outreach projects in local communities and around Montana,” Liebenstein said. “I think getting to work on a project that is directly impacting the Bozeman community is really powerful and makes me feel more connected to this place and to my studies.”

Another new project would have students help a regional economic development group create a marketing plan, identification and materials. The group is the Beartooth RC & D Area, Inc., which works primarily in rural communities across Sweet Grass, Stillwater, Carbon, Yellowstone and Big Horn counties.

SCOPE began last year as a pilot program. Rogala said part of her job now is looking for resources both off and on campus to support the SCOPE students. Those who worked at the Carter County Museum volunteered their time, receiving free lodging at a nearby camp for hunters with physical challenges. They were plied with cookies and homemade casseroles. Some earned classroom credit for their work. Others carried the experience with them as they started their first job after graduation.

Rogala is working particularly closely with MSU’s Undergraduate Scholars Program to write grants that will support SCOPE students. She is also checking into internship and scholarship possibilities.

Colin Shaw, director of the Undergraduate Scholars Program, said he believes in SCOPE.

“Undergraduate research and engagement are two pillars of the MSU mission that we have been working to integrate for some time,” Shaw said. “SCOPE will connect the research and creative energy of our undergraduate students with real community needs.

“As a student-conceived grassroots organization, SCOPE is well positioned to build relationships with the community and find new ways for our students to help in solving real-world problems through research and creative projects,” Shaw said. “This is really a great way for our students to combine rigorous academic research with service to the broader community.”

Evelyn Boswell, (406) 994-5135 or evelynb@montana.edu

US CORE ASSESSMENT PLAN

University Seminar Mission Statement and Student Learning Outcomes:
Courses with the University Seminar (US) core designation are primarily intended for first-year students throughout all curricula to provide a platform for collegiate level discourse. Activities that hone critical thinking, written and oral communication skills are universally incorporated, but the themes represented in individual US core courses vary considerably to reflect the department or program from which the course originates. All US core courses are small in size and rely heavily on seminar-style teaching where course content is delivered by discussion and interaction rather than by lecture. This learning environment promotes vibrant interactions between first-year students, a faculty member, and in many courses, a more experienced student fellow. US core courses provide a venue where students can engage in rigorous academic discussions that promote critical thinking, learning, and understanding in a supportive and truly collegiate manner.

Student Learning Outcomes:

Through completion of the US Core students will –

- Demonstrate critical thinking abilities
- Prepare and deliver an effective oral presentation
- Demonstrate analytical, critical, and creative thinking in written communication

Assessment Schedule:
Each year, the seminar directors will evaluate and assess one of the student learning outcomes (SLOs) in each of the US core offerings. All classes will assess the same SLO each year, starting with our first SLO: "Demonstrate critical thinking abilities." The remaining two outcomes will be assessed in the following years.

Semester	**Outcome to Be Assessed**
Spring 2013	Demonstrate critical thinking abilities (AGED 140, CLS 101 and CLS 201, COM 110, LS 101)
Fall 2013	Demonstrate critical thinking abilities (BGEN 194, COLS 101, EDU 101, UH 201 and 301, US 101 and 121)
Fall 2014	Prepare and deliver an effective oral presentation All courses
Fall 2015	Demonstrate analytical, creative and critical thinking in written communication All courses

Several courses that fulfill the US core requirement are not offered in the spring, and several other courses have a significantly lower spring enrollment. While we will begin the assessment this spring, we will assess the remaining seminars in Fall 2013. We will then move to a fall assessment schedule so all courses can be assessed in the fall semesters.

Sample Size and Selection of Student Work:
We will evaluate student work from 5-10% of the students enrolled in each US core offering. Directors will review the course syllabus and select appropriate assignments to sample for each SLO. Directors will randomly select students from multiple sections (when possible) and will collect the student work from instructors. Directors will alternate instructors whose students are selected, and directors will not rely upon or favor any instructors over others.

Assessment Process:
Each seminar will select their assessment team comprised of at least two individuals from their leadership team and current seminar faculty. In instances where the seminar director is the only faculty member teaching the course, outside evaluators will participate in that course's assessment. Otherwise, the use of outside evaluators will be at the discretion of the seminar directors.

Evaluators will score student work using the common rubrics created by the seminar directors. Whenever possible, evaluators will not score work from their own section. After the assessment is complete, the director of each seminar will create a summary document that details the assessment results for their courses. These results will be shared with the seminar directors group.

Post Assessment:
Seminar directors will meet to review and discuss the assessment results at the end of each assessment cycle (once a year). The seminar directors will invite the Associate Vice Provost to join this discussion and a full summary of the assessment results will be shared.

Threshold:
Each course must meet a minimum threshold. 60% of student work from each course should be at the level of "meets expectations."

If a course fails to meet the 60% threshold, the following steps will be taken:

1. Courses with a score below 60% will review both their course and the assessment process and will bring their questions and potential solutions to discuss with the seminar committee.
2. The course will be re-assessed in the following semester (or during the next offering).
3. If the course does not meet the threshold after a second assessment, the seminar directors will discuss the assessment results and determine next steps to improve the course in consultation with the Associate Vice Provost.

Assessment Report:
After the individual course assessments have been completed, a representative (rotated throughout the seminar directors group annually) will compile the individual assessment reports and create a summary report to share with the Associate Vice Provost. The report will include a narrative that details the assessment results, provides a summary of each course's scores, sample rubrics, and guidelines about necessary next steps if courses do not meet the threshold.

US Core Fall 2013 Assessment - Critical Thinking Learning Outcome

Attached to this summary are individual reports for the following US core courses, which have completed an assessment of the Critical Thinking Student Learning Outcome.

AGED 140US	Leadership Development for Agriculture
BGEN 194US	Seminar
CLS 101US	Knowledge and Community
CLS 201US	Knowledge and Community
COLS 101US	First-Year Seminar
COM 110US	Public Communication
EDU 101US	Teaching and Learning
LS 101US	Ways of Knowing
US 101US	First-Year Seminar
US 121US	Education, Social Issues and the Digital Age
HONR 201	Texts and Critics (to be completed in Fall 2014)
HONR 301	Texts and Critics (to be completed in Fall 2014)

Detailed reports for each course follow the assessment plan and the common rubric.

All courses that completed the assessment, with two exception, met the established threshold requirement of 60% 'Meets Expectations'. The courses that fell short, COLS 101US and US 121US, have listed next steps for addressing their concerns. Even those courses that met the threshold have identified opportunities where they can help their students strengthen particular elements of critical thinking. In addition to reviewing how we engage our students in critical thinking, many departments made recommendations for their own assessment process and others made recommendations for the Seminar Director's Committee to consider adopting across all sections. While these are listed on the individual reports a sample includes: sharing the common rubric with all course instructors; sharing and discussing samples of student work representative of each level of achievement; assigning common number values to each level of achievement; identifying and utilizing an assessment report template to streamline and simplify the final report.

Several courses (AGED 140; CLS 101 and 201; COM 110; and LS 101) piloted our initial assessment in Spring 2013. Through the work of these assessment teams, we recognized the challenges of applying a single rubric to our very different courses. The work of the initial assessment teams proved helpful in identifying necessary changes to the rubric. Such conversations have also been fruitful in helping committee members collaborate with and learn from colleagues in other departments.

While two courses HONR 201US and HONR 301US did not complete the fall assessment, this department will complete both the critical thinking assessment and the oral communication assessment during Fall 2014 under the leadership of Ann Ellsworth.

AGED 140US Assessment Report
Critical Thinking Learning Outcome
May 2013

Overview: AGED 140 is led by a single instructor, Dr. Carl Igo, who develops and delivers the AGED curriculum to approximately 80-90 students a year. In the first cycle of assessment, ten student essays were evaluated to gauge student performance on our primary learning outcome: critical thinking. The assessment was completed by Carl Igo of the College of Agriculture, and two other members of the Seminar Core committee: Emily Edwards, University Studies; and Ann Ellsworth, Education and University Honors.

To assure impartiality, Emily randomly chose ten numbers. Dr. Igo then matched those numbers to the alphabetical class rolls and identified the corresponding students. Two individuals reviewed and scored each essay and then the group gathered to discuss our results.

Of the ten student essays evaluated, only one essay rated "Below Expectations." Five student essays earned the "Meets Expectations" rating and four student essays earned an "Above Expectations" rating. With a benchmark requiring that 60 % of student work evaluated at the "Meets Expectations" level or higher, the AGED 140 assessment revealed that 90% were at or above the required benchmark.

Meets Expectations:	5	50%
Above Expectations:	4	40%
Below Expectations:	1	10%

The assessment team recognized some challenges using the rubric in the first assessment round and will provide feedback on suggestions for clarifying and simplifying the rubric and its terminology to the assessment committee.

Strengths revealed in the assessment reflected students abilities to articulate a clear thesis and to support the thesis relevant evidence. All students were able to identify a clear these and all but one defended the thesis with relevant evidence.

One area for improvement was identified – student's ability to recognize and address an objection or alternative perspective. Six of the students clearly identified and addressed an alternative perspective, whereas four students did not clearly identify at least one alternative perspective. It should be noted that within this area the evaluators struggled to agree and to apply the rubric's definition to the assignment, which may reflect issues with the rubric.

BGEN 194 Assessment Report for Critical Thinking
Terry Profota, Susan Dana, and Lisa Daniels
Submitted January 2014

Overview:
BGEN 194 is the Core Seminar class in the Jake Jabs College of Business and Entrepreneurship.
Terry Profota, Non-tenure Track Associate Teaching Professor, has developed the curriculum and coordinated this course for over eight years. In the fall of 2013 there were 18 sections of BGEN 194 with a total of 330 students. Twelve professors taught this course and were assisted by nine upper-class business students. All BGEN 194 sections use a common syllabus that coordinates readings, quizzes, and assignments.

Assessment Methods:
The assignment selected for use in this Core Critical Thinking Assessment was a 2-page mid-term writing assignment. Students were instructed to identify a current business issue that did not have a clear "right or wrong" answer. Students were to research various viewpoints on their selected issue, take a personal position on the issue, and defend their stance based on the facts gathered during their research.

The sampling size for this assessment was 33 papers. Two papers where randomly selected from each of the 18 BGEN 194 sections with three papers discarded. This allowed for a 10% sampling population.

Susan Dana, Associate Dean for Academic Affairs; Lisa Daniels, Director of the Bracken Business Communications Clinic; and Terry Profota made up the assessment team. The team met prior to reviewing papers and discussed the rubric in order to identify how each category would apply to the assignment and to normalize how the papers would be evaluated.

Each of the scoring categories was given a numerical rating, with an "above expectations" score of 3; "meeting expectations" score of 2; and "below expectations" score of 1. The papers were divided into thirds, and each paper was reviewed independently by two assessment team members. Papers with overall scores between 12-10 were classified as "above expectations"; overall scores between 9-7 were classified as "meeting expectations"; and overall scores below7were classified as "below expectations."

Of the 33 papers reviewed, raters agreed on 28 papers, or 84.8% of the ratings. The assessment team reviewed the five papers with variant ratings and after a second review, was able to agree on a common rating.

Results:

	% Meeting Expectations or Above	**Total # of papers Meeting Expectations or Above**	**% Below Expectations**	**Total # of papers Below Expectations**
Overall	76%	25	24%	8
Thesis or Claim	79%	26	21%	7
Support	73%	24	27%	9
Alternative Perspectives	85%	28	15%	5
Language	79%	26	21%	7

The Core benchmark required that 60% of student work meet an assessment level of "Meets Expectations" or above. The BGEN 194 assessment revealed that 76% were at or above this required benchmark. Stronger performance revealed an overall ability to clearly state a main idea or thesis, to discuss alternative perspectives, and to convey an argument with clear and appropriate language and terminology. The area needing the most improvement is the students' ability to clearly state a position and provide factual information from multiple sources and perspectives to support their claim. The "alternative perspectives" scores may be significantly higher than the other scores only because the assignment specifically *required* the students to explore at least two perspectives.

CLS 101/201-US Preliminary Assessment Report for Critical Thinking
Sara Waller and Kayte Kaminski
With assistance from Instructors Holly Grether and Mary Biehl
Special thanks to the CLS Advisory Board
Aug. 1, 2013

Overview: In Summer 2013, we assessed "critical thinking" (as a learning outcome) in our CLS 101 & 201 courses using paper samples selected from the spring semester of 2013. CLS courses are taught with a common syllabus and readings, though some variation between assignments does occur, as the seminar allows for some discretion of the individual instructor. US learning goals are emphasized and discussed in weekly faculty development meetings throughout the academic year.

Our selected assignment for use in the CT assessment was the final paper, as the CLS Advisory Board felt that this assignment would reveal student's development as reflective, critical arguers over the entire semester (though we do agree that discussion is a very important component of critical reasoning, and this may become a component of our CT assessment in the future.)

Papers were randomly selected from every spring section of CLS 101 and 201. Katherine Kaminski, Mary Biehl, Holly Grether, and Sara Waller read papers using the CT rubric developed by the University Seminar Assessment Committee. There were 857 papers total, and our sample was 67 papers, or 7.82%.

Inter-rater reliability: 15 of the 67 papers were checked by two people for inter-rater reliability. Raters agreed on 45% of the ratings. In less than 20% of the ratings did the instructors differ by more than a single level. Since the CLS "met expectations" scores are well above the 60% mark, even if scores were adjusted down by one ranking point overall, we would still be over the 60% mark.

We need to work the most on working with students to help them respond to an objection presented against their own stated views (details below).

Student achievement: We translated the text categories into numerical scores for summary purposes: Excellent=4; Above expectations=3; Meets expectations=2; Below expectations=1. Table 1 summarizes the average student scores across the two raters.

	% Met Expectations or Above	Total # of papers that were below expectations
Terminology	88%	12
Thesis	76%	16
Evidence	87%	9
Objections	66%	23

We will discuss these findings with CLS instructors at the fall Orientation session on Aug 23, and brainstorm new ways to work with students to help them consider opposing points of view.

Notes on process: We need to establish clearer notions for each category assessed and strategize new methods for establishing inter-rater reliability. This preliminary assessment was done with readers reading *completely independently* and so of course different notions and expectations came into play as papers were rated. While encouraging trends were found (different raters often rated similarly, or only one point off from one another), hosting a session in which raters discuss expectations will hopefully substantially improve our agreement in ratings.

Gallatin College COLS 101
Critical Thinking Rubric Assessment
January 31, 2014

Contributors: Jeff Hostetler, Gallatin College faculty; Nicole Berg, Gallatin College adjunct instructor and Academic Advisor for Workforce Programs.

Methods: At the end of Fall 2013 semester, I added the number of students remaining in the five sections of COLS 101, and that number was 89. I then requested electronic copies of 10% of each instructor's sections, and created an e-folder where I compiled nine sample essays. In January, 2014, Nicole Berg and I met to assess the essays.

We assigned a 3 for Above Expectations, a 2 for Meets Expectations, and a 1 for below Expectations. Then we added our scores and averaged them for each essay. We began by norming our scoring. We were within .20 on the first essay, so we proceeded with assessing the 9 samples.
Once the scoring was complete, I averaged the two scores for each assessor, and placed them in an Excel spread sheet. I then averaged the four categories assessed on the rubric and added those figures to the spreadsheet.

Results: I am somewhat disappointed with the results of the assessment. Overall,

- our average was 1.92, which is considered approaching (.08) Meets Expectations (ME) (We consider a score of 2 as meeting the threshold for ME. There might be a different way to interpret these numbers; unfortunately, we are lacking in this expertise);
- four of the 9 essays, or 45%, were in or above the ME category;
- unfortunately, 45%, or four of the samples, scored in the Below Expectations (BE) category;
- samples were considered at ME or approaching ME in three of the four categories;
- the category Alternative Perspectives was our lowest score (1.67).

Average score	Thesis or claim	Support	Alternative Perspectives	Language
1.72	1.75	1.5	2	1.75
2.18	2.25	2	1.5	2
2.55	2.5	2.6	2	2.8
1.29	1.25	1.25	1.5	1.25
2.69	2.75	3	2	2.6
1.3	1.25	2	2	1.33
2.53	2.25	2.83	1.5	2.8
1.64	1.75	1.5	1.5	1.75
1.39	1	1.67	1	1.67
17.29	16.75	18.35	15	17.95
1.921111111	**1.861111111**	**2.038889**	**1.666666667**	**1.994444**

Evaluation: There is a lot of room for improvement. The primary category that either the assignment did not require, or the students were not able to grasp, was addressing Alternative Perspectives. In many of the samples, students were able to contrast source ideas, but they never really extended beyond their own perceptions. The committee will work on methods and language to address this for Fall 2014.

The other three categories were in or near ME; this is encouraging, but all three categories display a need for improvement. Again, these will be addressed with a series of instructor meetings preceding Fall 2014, so all instructors are incorporating discussions of these topics into their instruction with students.

This process was incredibly revealing to me. I realize that a more deliberate approach to incorporating these categories into class discussion and assignment development is necessary to meet the needs and learning outcomes of our students.

EDU 101-US Critical Thinking Assessment Report Summary
Nigel Waterton
12 December 2013

EDU 101 profile:

- Eight sections, one of which is offered for dual credit at Bozeman High
- Six instructors
- Common syllabus
- Third year offered as a US Core course.

Papers: EDU 101 mid-term assessment for Critical Thinking Assessment piece

Paper Selection:
Random number generator selected two students from each section based on number in roster order for a total of 16 papers, which represent a random selection, within each section, of 13.3% of all EDU 101 students.

Assessor Selection:
Random number generator selected two instructors (Ann Ellsworth & Nigel Waterton) and one alternate.

Assessment Scale:
1-3. 1 = below expectations, 2 = meets, 3 = above. We rated each of the five categories and averaged the total raw score. In retrospect, I would like to establish a common scale across the Seminar Program and an agreed-upon numeric cutoff for each category. For example, if a paper's average is 2.6, would we consider that paper above expectation or as meets expectation? For our summary, I'll report the averages and let the Seminar Directors decide. It seems best to consider a paper rated with a *majority* of its categories as a 3 (above expectations) as above expectations. I have the same question for below expectations – Should the cut off be 1.9 and below? In this summary, I will consider anything scoring an average of 1.9 and below as below expectations.

Assessment Procedure:
After reading several essays *not* selected for assessment to calibrate our understanding of each assessment category, we read through half the sixteen selected papers and then exchanged papers for a second reading, so each paper was rated twice. We agreed that any papers with more than one point difference between readers would be sent to a third reader. For example, if one rater scores a category 1 and the other a 3, the third reader would rate the paper. In sixteen papers, we had no categories with more than a one-point variance. Both raters found the category, 'language' to be the most difficult to rank. We wondered if the Seminar Assessment Rubric wouldn't benefit from some expression of writing structure and mechanics category.

Paper #	Thesis	Support	Alternative Perspectives	Language	Critical Discussion	Average
1						1.8
2						2.2
3						2.0
4						2.1
5						2.5
6						1.9
7						2.9
8						2.3

9						2.9
10						2.0
11						1.8
12						2.1
13						2.3
14						2.4
15						2.6
16						2.2
Avg/Cat	2.19	2.47	2.03	2.06	2.34	

Of Note:
Of the sixteen papers assessed, three were below expectations, three were above and the remaining ten met expectations. Of the sample, 81% met or exceeded expectations and 19% did not meet expectation. *Alternative Perspectives* showed as the weakest category assessed, and *Support* showed as strongest.

Recommendations and Questions:

1. Within our own program, we ought to give students more opportunity to practice articulating multiple perspectives of the same topic, the goal being to understand the complexity of a given issue and to not settle for myopic thinking or false dichotomies.
2. Language also deserves further consideration and attention.
3. I recommend we continue our Seminar-wide discussion about this assessment process. I believe the discussion of common goals invigorates our instruction, as does this opportunity to reflect on student work and what that work represents.
4. I recommend further refinement of the assessment rubric items, particularly the numeric representation of each category and how we translate that score *back* to the evaluative language of *meets, exceeds,* or *does not meet expectations*.
5. I wonder what issues of writing quality we'd like to assess or even note, if any. It seems difficult to separate Critical Thinking prowess from writing skill in a written assessment. I'm not saying we can't weight one more heavily than the other, but they are intrinsically related, given the medium of expression.
6. Lastly, I'm fascinated by assessment. I wonder how it changes or influences our teaching. Does it do so in a good way? Might there be negative repercussions?

Respectfully submitted,
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EDU 101-US Coordinator
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LS 101US Assessment Report
Sue Monahan and Teresa Greenwood
May 16, 2013

Overview: At the end of Spring 2013, we assessed "critical thinking" (as a learning outcome) in our LS 101 courses. Unlike many other US courses, LS 101 sections are designed and taught independently by instructors. Instructors do, however, keep the US learning goals front and center in their course development and delivery. Because each LS 101US section has a distinctive focus and syllabus, we identified as best we could a "signature assignment" in each course that would be represent the students' achievement in critical thinking. We randomly selected papers from 10 LS 101US students to assess; we included papers from each of the five instructors. Sue Monahan (Acting Director of Liberal Studies) and Teresa Greenwood (Academic Advisor and Instructor in Liberal Studies) carried out the assessment using the rubric provided by the University Seminar Assessment Committee (see attached).

Inter-rater reliability: Two people rated each paper. Raters agreed on 57% of the ratings. In only 2% of the ratings did the instructors differ by more than a single level.

Student achievement: We translated the text categories into numerical scores for summary purposes: Excellent=4; Above expectations=3; Meets expectations=2; Below expectations=1. Table 1 summarizes the average student scores across the two raters.

	Average score	% of scores that were below expectations
Terminology: Definitions	2.7	5%
Terminology: Ambiguity	2.7	10%
Terminology: Others' definitions	2.55	10%
Thesis: Definition	2.35	7.5%
Thesis: Complexity	2.45	2.5%
Evidence: Relevant	2.9	0%
Evidence: Support main view	3	0%
Evidence: Citations and Sources	2.4	2.5%
Evidence: Fallacies	2.6	5%
Objections	2.4	40%

These findings suggest that we need to work more with students on imagining and identifying the perspectives and contributions of others (e.g., what their objections might be, what they might find ambiguous or unclear, how others might define terms or situations). We will communicate these findings with our instructors, and brainstorm particular strategies for addressing this weakness in our students' performance.

Notes on process: The assessment process was complicated by having very different sorts of assignments submitted for assessment. As the assessment process becomes more established, we would like to distribute the rubrics to our instructors *before* their syllabi are finalized so that they can build assignments into their courses that are responsive to the specific criteria being assessed. We look forward to seeing the rubrics for next year's goals-to-be-assessed soon! Beyond that we found this process to be very illuminating, helping us to see where we need to focus our improvement efforts.

Fall 2013 US 101US Critical Thinking Student Learning Outcome Assessment

Process: The Seminar Director and Assistant Director selected an essay assignment that was completed in mid November for the critical thinking learning outcome assessment. A copy of the assignment is attached to this summary. To hit the assessment target of 10% of course enrollment, directors randomly selected 72 students from 12 different sections. The US 101US enrollment for Fall 2013 was approximately 670 students.

Each essay was read by two evaluators and was scored using the common US Core CT rubric. Essays were read and scored individually. Evaluators then gathered to discuss differences in their evaluation and scoring. During the discussion, evaluators also confirmed their definitions of the criteria and clarified how we scored items when student work fell within two levels of achievement. (e.g., student used multiple relevant sources, but did not cite the sources properly).

Evaluators: The evaluation team consisted of the seminar leaders: Emily Edwards, Ryan Storment, and Margaret Konkel, and seven current seminar instructors: Jim Thull, Shari Curtis, Deborah Blanchard, Sara Browne, Amanda Bitz, Megan Swanson, and Steve Guettermann. All student work was pulled from instructors not on the evaluation team.

Scoring the Assessment: To facilitate the scoring of assignments, each level of achievement was given a numerical value: 1 = below expectations, 2 = meets expectations, and 3 = above expectations. Because two evaluators scored each assignment, we averaged the evaluator scores to assign one point value to each criterion.

When evaluator scores varied, the evaluators discussed the discrepancies. When evaluators reached consensus, the score was updated to reflect the outcome of the evaluators' discussion. If a student earned both a 2 and 3 for one area, the average score of 2.5 was recorded.

1 or 1.5 = Below Expectations
2 or 2.5 = Meets Expectations
3 = Exceeds Expectations

Summary of Scores: The following table represents the percentage of individual essays that fell within each level of achievement.

Criteria	Above Expectations	Meets Expectations	Below Expectations
Claim	11%	63.60%	25%
Support	34.70%	47.20%	18%
Alternative Perspective	20.80%	62.50%	16.50%
Language	27.70%	70.80%	1.3%

Recommendations and Considerations:

1. Meet with evaluators prior to conducting the assessment to discuss the assignment and the common rubric and to share examples of student work that reflects each level of achievement for each criterion.

2. Share all Core student learning outcome rubrics with instructors at the beginning of the semester. Discuss guiding definitions and achievement markers for all criteria by reviewing examples of student work.

3. In conjunction with the previous discussion, discuss approaches to help students achieve at a higher level by more fully incorporating required elements. For example, students might include support and alternative perspectives, but not many students fully incorporated these items into their assignment. While students would use outside support and acknowledge alternative perspectives, they often didn't discuss the relevance of these items. At times these elements would feel as though they were inserted into the argument, without being fully connected to the narrative.

4. The initial assignment selected for the assessment was an essay that asked students to define and connect their personal philosophy to the philosophies of other authors. Such personal reflection allowed students to make some subjective arguments. For future assessments, it is recommended that assignments that allow for less personal reflection be selected. The US seminar directors will consider evaluating an additional assignment in Spring 2014 alongside the Critical Thinking rubric to ensure that students are achieving this outcome as indicated in our initial assessment.

5. While the US 101US course offers common rubrics to both students and instructors for oral presentations, leading discussion, and writing essays, we had not previously shared a common rubric for critical thinking. Reviewing our course rubrics and aligning them with the common US Core rubrics should be considered.

Personal Philosophy Essay ~ 50 Points

What: 5-7-page essay

Why: Practice your ability to articulate and support your ideas through writing.

How: Define your personal philosophy through consideration of what influences and informs your ideas and then compare your personal philosophy to the philosophy and ideas promoted by others. Essay must include relevant textual support and an MLA Works Cited. Requirements are listed below.

In this essay, you will define your own philosophy. Identify what constitutes a life worth living. In addition to defining your own personal philosophy, you must discuss how Sandel's theories of justice and Socrates' view on 'the good life' mesh with your own personal philosophy. We do not assume that you will agree with all or any of these ideas, but we expect you to address where you see alignment or conflict with your own ideas. To support your ideas, please incorporate relevant textual support from both texts.

Items to address in your essay:

- What's necessary to lead a life worth living? Describe this as your code or philosophy.
- What role, if any, does education play in your personal philosophy?
- What responsibilities do you have to others and how is this reflected in your philosophy?
- When you consider how you view the world and make judgments on whether something is right or wrong, do you ascribe to any of Sandel's theories more than others? Why?
- Are there times when your theories of justice contradict other personal beliefs?
- What shortcomings do you see in Sandel's and Socrates' ideas?
- Avoid clichés and bumper sticker philosophies.

Requirements:

- 5-7 pages, typed, stapled, and MLA formatted
- Original, well-supported claim
- Clear introduction, body of support, and strong conclusion
- Incorporation of relevant support from both the Sandel and Plato pieces
- Revised, polished essay, submitted through DropBox in D2L
- MLA Works Cited

Fall 2013 US 121US Critical Thinking Student Learning Outcome Assessment

US 121US is an online first-year seminar that serves upper division students. This course is offered twice annually. In Fall 2013, 16 students were enrolled in one section of US 121US.

Process: The US 121 instructor, Shari Curtis, selected an essay that was completed in mid-November for the assessment. A copy of the assignment is attached to this summary. Former seminar director, Emily Edwards, randomly selected 6 students from the class roster for the assessment. Each essay was read and scored individually utilizing the common CT rubric. Evaluators then discussed differences in their evaluation and scoring.

Evaluators: Current seminar directors, Meg Konkel and Deborah Blanchard

Scoring the Assessment: Each level of achievement was given a numerical value. If a student earned two different scores, an average score was recorded.

1 or 1.5 = Below Expectations
2 or 2.5 = Meets Expectations
3 = Exceeds Expectations

Summary of Scores: The following table represents the percentage of individual essays that fell within each level of achievement. Two areas fell short of the suggested 60% meets threshold.

Criteria	Above Expectations	Meets Expectations	Below Expectations
Claim	0%	50% (3/6)	50% (3/6)
Support	0%	33% (2/6)	66% (4/6)
Alternative Perspective	0%	66% (4/6)	33% (2/6)
Language	16% (1/6)	66% (4/6)	16.6% (1/6)

Recommendations and Considerations:

1. Clarification on creating claims through handouts/resource links prior to the first writing assignment.

2. Build in a workshop that addresses creating claims and citing sources properly. The area of "improper citation" brought the scores down. Most students had some kind of support, but didn't necessarily use it effectively. Have students do a peer review of their essays in groups via email or in D2L. This could, theoretically, be an online group assignment too.

3. Require students to utilize the Writing Center's online appointments to specifically work on claim and support. Ask students to reflect on what that process is so then we can evaluate if they understand and meet the expectations.

***Philosopher-Kings*~50 pts**

Requirement check list:

- ☐ Expansion of ideas in the readings about ethical society and apply them to our digital age
- ☐ 5-7 pages + works cited page
- ☐ MLA Formatted
- ☐ Relevant, cited textual support
- ☐ Thorough revision
- ☐ Careful proofreading resulting in little to no errors

Understandings:

- ☐ Demonstrated ability to combine diverse sources of material into a coherent argument
- ☐ Formulate an inquiry and pose an answer (claim) to that inquiry

Performance tasks:

- ☐ Write an academic paper with formal language
- ☐ Clearly articulate strong claim or thesis
- ☐ Relevant support from text

Much of the reading in this unit surrounds ideals of ethics—how do we as individuals and as a society define ethics, how do we teach them, and how do we negotiate ethics in times of rapid change. Over the last several weeks we have had readings from ethics professors, ancient Greeks, modern educators and humanists. Sandel gives us a framework through which to understand ideas of ethics (freedom, welfare, virtue). However, we are still using texts from ancient Greece, like Plato, to explore our ideas of fair play and social contracts. We also heard from Robinson who has advocated a revolution to our education system. In our current climate, the digital age is swiftly challenging ideal of ethics—particularly privacy, social discourse, and public/private behavior.

Items to consider in your essay:

The topic for this assignment is intentionally broad and the material varied. There are many avenues to approach this subject. Ethics, education, and society are the apex of significant cultural transformation. Quite a lot to get through in 5-7 pages. Focus on something small that you consider significant. It is not so much what you think, but how you think. I hope that this assignment will make you more cognizant of your thinking practices, while you work to understand how others might argue and support a different point of view. In this course you will be asked to analyze information, question assumptions, and identify what is influencing and potentially limiting your thinking. Success will not depend on the content of your conclusions, but your demonstration of the thought process put into those conclusions.

University Seminar Core ~ Fall 2013 ~ Critical Thinking Assessment Rubric

	Above Expectations	**Meets Expectations**	**Below Expectations**
Thesis or Claim – Student's main point, claim, or central idea of the argument	__ Thesis is well-defined __ Thesis is complex	__ Thesis is defendable __ Thesis is discernable	__ Thesis is a factual claim __ No thesis, or thesis is weak
Support – Reasons and evidence used to illustrate and strengthen thesis or claim and ideas shared	__ Support is highly relevant __ Support comes from multiple sources __ Support is properly cited	__ Support is relevant __ Support is appropriately cited	__ No support or support is irrelevant or fallacious __ Support is improperly cited
Alternative Perspectives – Addresses multiple perspectives	__ Addresses more than one relevant alternative perspective	__ Addresses a relevant alternative perspective	__ Does not address any alternative perspectives
Language – Student clearly conveys argument with clear, appropriate language and correct terminology	__ Defines important terms or ideas __ Recognizes alternate definitions and terms __ Articulates an understanding of complex definitions or terms	__ Defines important terms or ideas __ Use of terms is correct	__ Does not define important terms or ideas __ Use of terms is incorrect
Critical Discussion - Contributions to discourse ** When evaluating in-class discussions or presentations*	__ Questions own ideas __ Furthers discussion by asking questions of classmates __ Synthesizes ideas shared by others	__ Supports ideas with relevant examples and evidence __ Contributions demonstrate analysis and interpretation	__ Does not engage in discussion __ Contributions are unfocused or unrelated to discussion
Critical Listening – Demonstrates active listening and conveys openness to multiple ideas and perspectives ** When evaluating in-class discussions or presentations*	__ Incorporates ideas discussed by others __ Provides relevant concrete examples that reflect ideas discussed by others __ Body language indicates that student is attentive and engaged	__ Restates main ideas __ Incorporates ideas of classmates __ Body language indicates student is attentive and engaged	__ Cannot restate or summarize ideas discussed __ Interrupts others __ Body language does not indicate student is paying attention (sleeping, texting)

Montana State University
Critical Thinking Rubric for Core University Seminars
Initial Rubric Used by AGED 194; LS 101; COM 110; CLS 101 & 201

Critical Reasoning is:	Excellent	Above Expectations	Meets Expectations	Below Expectations
Terminology – *Word choice is clear, accurate, and appropriate*	___Defines all important terms ___ Notes and treats any ambiguity ___Questions many definitions of others	___Defines most important terms __Notes some ambiguities ___Recognizes several definitions of others	__Defines main important terms __Notes at least one ambiguity __Recognizes some definitions of others	___Does not define important terms ___Does not note ambiguity in terms ___Does not recognize alternate definitions
Thesis - *The student's main point, claim, or central idea of the argument*	__Thesis is well defined __Thesis is complex	__Thesis is clear __Thesis reflects some depth and complexity	__Thesis is defendable __Thesis is discernable	__Thesis is a factual or indefensible claim __No thesis or thesis is weak, poorly structured.
Reasons/Evidence - *Support used to illustrate and strengthen the thesis and ideas shared*	__Reasons/evidence given are highly relevant __Reasons/evidence logically support main view __Reasons/evidence taken from multiple sources appropriate to the assignment __Reasons/evidence are properly cited __Recognition and discussion of fallacies	__Reasons/evidence are irrelevant __Reasons/evidence support the main view __Reasons/evidence are presented from relevant sources appropriate to assignment __Reasons/evidence are properly cited __Recognition of fallacies/avoidance of their use	__Reasons/evidence are relevant __Some reasons/evidence support the main view __Reasons/evidence are appropriately cited __ __Minimal use of fallacious reasoning	__ No reasons/evidence given __Irrelevant reasons/evidence given __Reasons/evidence are not cited or are improperly cited __Reasons/evidence are fallacious
Response to Objections – *Recognizing and addressing alternative points of view*	__ Recognizes and responds to more than one complex objection or differing perspective	__Recognizes and responds to one complex objection or perspective	__ Recognizes and responds to one simple objection	__ Does not recognize or respond to any objections

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When evaluating discussions - presentations Critical Listening – *Ability to demonstrate that student is listening to discussion and is open to multiple ideas and perspectives*	__ Can explain the point illustrated by an example __Provides clear examples of an abstract claim __Synthesizes information shared by multiple participants in a discussion	__ Listens actively and incorporates previously discussed ideas __ Sometimes incorporates ideas discussed by others	__Can restate main ideas discussed in class discussion __ Body language and nonverbals indicate student is attentive and listening	__ Does not demonstrate engaged or active listening __ Cannot restate ideas shared in class discussion in either written or oral response __ Interrupts others
When evaluating discussions - presentations Critical Discussion – Contributions *to discourse with faulty and peers*	__Actively questions own ideas as discussion evolves __ Furthers class discussion by asking questions of classmates __ Calmly defends a point of view with reasons __Takes criticism as intellectual respect	__Engages others by asking questions __ Actively questions positions held by others __ Calmly defends a point of view with reasons	__ Contributions to class discussion demonstrate analysis, and interpretation __Calmly defends own ideas when ideas are questioned	__ Does not engage in discussion __ Contributions are unfocused, or unrelated to discussion