Trip Report
Federal Demonstration Partnership
Submitted by Faculty Representative L. Sutter
January 10-12, 2016

Presentations available at: http://sites.nationalacademies.org/PGA/fdp/PGA_170208

Executive Committee

Expanded Clearinghouse Proposal – A proposed pilot for an “Expanded Clearinghouse” was approved. This pilot builds on the Public Health Services Financial Conflict of Interest (FCOI) Institutional Clearinghouse that provides a central location for educational institutions and other entities to document they are in compliance with FCOI rules and regulations.

The new pilot will develop one single web based repository for all FDP entities (and potentially others) to enter, upload, maintain and update all entity related information about their organization. This centralized online repository of entity information can then be utilized to enable Pass-Through Entities to obtain and review all necessary sub-recipient entity information and conduct sub-recipient monitoring and risk assessment activities in a timely and streamlined fashion without requiring time and resources to send and collect various forms to obtain information. Initially, 40 institutions will be invited to participate and others may be added later. Each participant will complete and upload an Excel Template to the FDP web site. The template was crafted based on 133 different subaward information forms from many different institutions. The pilot is expected to last 18 months when things are running smooth with the original 40 participants, others may be added. The pilot will start February 1st. For information see: http://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_170289.pdf

Wildlife FAQs for IACUC - FDP will not be involved in publishing the FAQs. Concerns over attribution to the federal agency members could not be adequately addressed. The FAQs will be published in the journal of the Ornithology Society.

Agency Updates

The following is a summary of key information provided in the federal agency updates.

ONR
• ONR updated their No Funds Extension policy
• DoD R&D General T&Cs adopted for Grants beginning October 2015

AFOSR
• Coming Soon: University Nanosatellite Program - Research to promote and sustain university research and education focused on small satellites and related technologies

NIFA
• 2016 budget released – funding increased for most programs.
NIH

- FY 2016 budget amount is $32.3 billion, which represents a $2 billion increase over FY 2015. Support of R01 equivalent awards will continue at rates comparable to established investigators. See: http://grants.nih.gov/grants/new_investigators/index.htm
- FY2016 NIH Grants Policy Statement was issued on November 25, 2015 and is effective for all grants and cooperative agreements with budget periods beginning on or after 10/1/2015. See: http://grants.nih.gov/grants/policy/policy.htm#gps
- The RTC document was published in the Federal Register on October 2015. The public had a 60-day comment period, which ended December 14, 2015. Implementation targeted for mid FY16.
- Application Submission System & Interface for Submission Tracking (ASSIST) now an option for all NIH competing grant applications and some post-award administrative actions. See: http://grants.nih.gov/grants/guide/notice-files/NOT-OD-16-042.html
- NIH announces upcoming changes to Policies, Instructions and Forms for 2016 grant applications. Some new NIH policies require additional data collection and updates to our application forms. See: http://grants.nih.gov/grants/guide/notice-files/NOT-OD-16-004.html

NSF

  - AOR will now provide proposal certifications upon submission of the proposal, thus removing the ability for post-submission certification
  - 5 p.m. submitter’s local time is standard for all submissions, including proposals submitted in response to solicitations.
  - Language has been removed permitting solicitations to specify different type size, margin and spacing requirements.
  - Collaborator and Other Affiliation Information has been removed from Biographical Sketch and will now be submitted as a single copy document.
  - Use of “should” and “must” has been reviewed throughout, and revised, where appropriate.
  - Results from Prior NSF Support have been clarified:
    - Biographical Sketches and Current and Pending Support information may no longer be submitted as a single PDF (to permit automated compliance checking).
    - Internal funds allocated toward specific projects has been added as an example of Current and Pending Support.
    - Greater clarity has been provided regarding the type of information necessary for proposals that include use of vertebrate animals.
- NSF implementation of Dual Use Research of Concern has been incorporated.
- Due date for submission of the final project report and the Project Outcomes Report has been changed from 90 days to 120 days for consistency with financial reporting information.

  - Applies to awards made from proposals submitted after January 2016
  - First set of proposals awarded June - July 2016
  - Likely to see first publications requiring deposit in Fall 2016
  - The intent is to reduce burden on PIs by automatically ingesting publication information submitted through NSF-PAR into annual and final project reports


- Research Terms & Conditions Status
  - Federal Register Notice requested comments by December 14, 2015
  - Currently analyzing more than 100 comments from 12 institutions

**GUIRR**

- Last Conference: The Disruption Myth and Gaps in the Innovation Ecosystem
- Next Conference: Critical Infrastructure Security: The Role of Public-Private Partnerships
- See: [www.nas.edu/guirr](http://www.nas.edu/guirr)

**OMB**

- Status of the DATA Act
  - Federal Financial Accountability and Transparency Act
    - Established USASpending.gov in 2006
    - Publish data for contracts, grants, other financial assistance
  - Digital Accountability and Transparency Act (DATA Act) passed in 2014
    - Expands USA spending.gov to include agency expenditures
    - Requires consistent data standards
    - Requires recommendations to reduce recipient burden for contract and grant recipients
    - Enables the data to be used by multiple communities

- See:
  - [USASpending.gov](http://www.usaspending.gov)
  - [http://fedspendingtransparency.github.io/](http://fedspendingtransparency.github.io/)
Plenary

Topic: Optimizing the Nation's Investment in Academic Research
Speakers: J. R. Haywood, Michigan State University, D. W. Robinson, Oregon Health and Science University

Concerns have been raised repeatedly that federal laws, regulations, rules, policies, guidances, and reporting requirements, while essential to a well-functioning, responsible system of research, have led over time to an environment wherein a significant percentage of an investigator's time is spent complying with regulations, taking valuable time away from research, education, and scholarship. (Report Summary, “Optimizing the Nation's Investment in Academic Research: A New Regulatory Framework for the 21st Century”, 2015)

Congress called upon the National Academy of Sciences to examine the regulations and policies of federal agencies that support the research enterprise. The National Academy of Sciences formed an ad hoc “Committee on Federal Research Regulations and Reporting Requirements: A New Framework for the 21st Century” The committee issued Part 1 of its report. Part 2 will be issued this spring.

Recommendations from Part 1

- The regulatory regime (comprising laws, regulations, rules, policies, guidances, and requirements) governing federally funded academic research should be critically reexamined and recalibrated.

- To advance the government-academic research partnership, research institutions must demand the highest standards in institutional and individual behavior.

- Inspectors General responsibilities should be rebalanced so that appropriate consideration is given both to uncovering waste, fraud, and abuse and to advising on economy, efficiency, and effectiveness.

- The relationship between Inspectors General and research institutions should be based on a shared commitment to advancing the nation's interest through a dynamic and productive research enterprise.

- The committee recommends the creation of a new mechanism, the Research Policy Board, to include an active public-private forum and a designated official within government, to foster a more effective conception, development, and harmonization of research policies.


Faculty Lunch Meeting

Topic: Overview and Discussion of the NPRM and Its Implications
Speaker: Jerry Menikoff, Director, Office for Human Research Protections (OHRP)

The U.S. Department of Health and Human Services and fifteen other Federal Departments and Agencies have announced proposed revisions to the regulations for protection of human subjects in research. A Notice of Proposed Rulemaking (NPRM)
was published in the Federal Register on September 8, 2015. The NPRM sought comment on proposals to better protect human subjects involved in research, while facilitating valuable research and reducing burden, delay, and ambiguity for investigators. The comment period closed 1/6/2016. A second comment period will be provided when the proposed final rule is completed.

Major Changes

- Improve informed consent – content and organization – to facilitate understanding
- Almost always require informed consent for secondary use of biospecimens – regardless of identifiability
- Mandate single IRB review of multi-site research conducted at U.S. institutions
- Eliminate continuing review for certain minimal risk research
- Extend the scope of rules to cover clinical trials – regardless of the source of funding
- Require privacy safeguards
- Exclude certain activities from coverage
- Expand the categories of research that are exempt from the rules, better calibrating the level of review to the level of risk

For more information see:
http://www.hhs.gov/ohrp/humansubjects/regulations/nprmhome.html or see the presentation on the FDP web site (link provided at beginning of report) Overview and Discussion of the NPRM and Its Implications

Research Compliance Working Groups

IACUC

Impact Of DEA Oversight In The Research Environment

The Controlled Substances Act (CSA) specifies regulatory requirements that include the use of controlled substances (CS) in research protocols. The Drug Enforcement Administration (DEA) is charged with the enforcement of CSA regulations. A DEA registration is required when CS are used in research protocols. Research protocols often require CS to ensure the humane treatment of animals (e.g. animal sedation).

Increased burden for DEA and Universities

- Increased number of registrants (from a few to many)
- Increase in total amount of drugs on campus and in individual labs
- Increase in number of locations requiring state and DEA inspections
- Increase in overall costs and regulatory burden

For more information see presentations:
http://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_170273.pdf
http://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_170264.pdf
IRB

No report

Lab Safety

Laboratory safety has continued as a focus of a working group at FDP. The Association of Public and Land-Grant Universities (APLU) has an active task force working in this area. APLU is drafting a letter to University Presidents/Chancellors to be signed by leadership at APLU, AAU, and the Chancellor at UCLA asking for a commitment to safety. This includes an overall improvement in culture, identify and provide resources, develop safety recognition, and incorporate safety into tenure decisions. APLU has developed a “Laboratory Safety Toolbox” to guide implementation of actions to improve laboratory safety.

FDP is examining how they can leverage their diverse membership to support the APLU initiative. At this point it is still a matter of discussion. Points addressed include:

- Identification of safety issues in doctoral research proposals
- Include routine hazard analysis as part of the required education at the graduate level
- Support and develop best practices to report incidents including “near misses”.
- Require safety training starting at the Dean level all the way down to the student
- Encourage continuous improvement and develop a system of accountability (including peer-peer accountability) - empower students to voice safety questions and concerns to faculty supervisors
- Reduce the adversarial relationship between Department of EH&S (or safety committee) and faculty/staff

Possible FDP Actions

- Create a mechanism for FDP members to share specific issues/challenges within their institution and with other FDP members to facilitate the exchange of information amongst members
- Include additional safety assessment questions in the next rendition of the FDP faculty workload survey scheduled to be published in 2016.
- Develop a longer-term strategy to gather institutional information to explore how institutions resolve safety challenges
- Identify best practices (model programs and ideas); implement demonstrations of best/improved practices with 3-5 institutions; gather and analyze preliminary findings; and then expand the demonstration to additional institutions.
- Develop a faculty best practice guide/manual for enhancing safety within their respective space (e.g. laboratory, studio, space, etc.).
- Circulate the APLU letter and associated toolbox to FDP membership, including the associated President/Chancellor. With the circulation of the letter, ask FDP
affiliated institutions to develop a 2016 action plan that would be reportable back to FDP for review and knowledge sharing.

COI

No Report

**Faculty Working Groups**

**Research Pipeline**

No report

**Emerging Research Institutions**

No report

**Faculty FDP Representative Outreach and Support**

The working group is focused on further integrating faculty in the FDP process. Faculty have been involved in FDP formally since Phase III but only in the latter part of Phase V did the critical mass emerge to start seeking a more direct voice in the process. This continues in Phase VI. To accomplish this it is identified that:

- Faculty need to communicate back to their institutions what is happening at FDP – and what needs to be considered (two way street)
- The expectations of faculty participation must be clearly defined – currently is not
- Federal agencies need to change their reports from simply repeating what is on their web page to discussing “trends” or on-going discussions.
- Federal agencies need to provide information that is of interest to faculty – then faculty will increasingly attend (i.e., budget information)
- FDP has had successes that affect financial administration – we need successes in other areas that impact faculty directly

**Faculty Workload Survey**

A third faculty workload survey is planned for 2017 or 2018. Planning is underway. Input is being solicited for ways to drill down and get more specific information.

**Faculty Committee Business Meeting**

A discussion with representatives of the Research Administration Committee was conducted focusing on developing a standard data use agreement. There is a need for a standard form and standard terminology. A necessary step will be developing a glossary. Further development will be guidance documents for when data use plans are needed. Universities have a well-defined system for managing incoming money, how about data?
First step may be a summary of the problem and a cross-agency review of issues. A final product will be a data use agreement template.

**Plenary**

**Title:** The Consolidated Appropriations Act, 2016  
**Speaker:** Dr. Rush Holt, CEO American Association for the Advancement of Science (AAAS)

- **Major Points and Highlights**
  - $148.6 billion for R&D, +8.1%
  - $68.1 billion for nondefense R&D, +6.4%
  - More than 5% increases for basic and applied research
  - NIH: +$2 Billion
  - NASA: +7.1%
  - DOD Basic Research: Cuts avoided
  - DOE: Gains for basic and applied
  - NSF: Social science cuts avoided
  - USDA: +7.7% for AFRI
  - USGS, EPA: little gain
  - NOAA: Climate research flat; research vessel
  - Modest gains for manufacturing

Although budgets have increased, overall there is still a 10% deficit compared to pre-sequester. Federal spending is about half of what it was in the 60s as % GDP

**Thoughts on How to Affect Research Budgets**

- We do not communicate well with congress. We say we know the facts and they do not.
- When we state facts, and they are wrong, congress substitutes ideology. Example: vaccinations
- Cannot just simplify or clarify. Go two steps below that
- We need to communicate we know the answers to a useful degree as compared to we know the answers, absolutely.

- When we teach science, teach what we don't know, not what we know.
- We need a democratization of science. Science is a way of asking question so they can be answered empirically and verified.
- We don't think on the basis of evidence
- We should teach people to think on the basis of evidence
- We need to educate on the difference between what is data and what is a fact? The best we know now is based on data: Example climate change
The Tool Box for Implementing a Safety Culture

Provided below is a variety of selected resources useful for implementing a safety culture in colleges and universities. This document is an excerpt from the forthcoming report: *A Guide to Implementing a Safety Culture in Our Universities* by the Association of Public and Land-grant Universities (APLU) Task Force on Laboratory Safety.

The tools and resources below are not comprehensive, and the Task Force welcomes additions to the tool box, which may be submitted to https://www.surveymonkey.com/r/CNT9SM3.

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### Institution-Wide Dynamics and Resources

**Recommendation #1 – The President/Chancellor renews commitment to improve the safety culture for all academic research, scholarship, and teaching.**

1) To help presidents and chancellors effectively communicate the importance of safety, the Task Force has provided a timeline of recent notable university safety accidents and reactions:

a) 2009 UCLA-Researcher (Sheharbano (Sheri) Sangji) Dies After Lab Fire- [C&EN](https://www.cenonline.org)

b) 2010 Texas Tech – University Lab Accident (Preston Brown) Under Investigation- [C&EN](https://www.cenonline.org)

c) 2010 University of Florida – Student (Courtney Mason) has wrist severed in an equine farm accident - [Gainesville Sun](https://www.gainesvillesun.com)

d) 2011 Yale University – Yale student (Michele Dufault) killed as hair gets caught in lathe- [NY Times](https://www.nytimes.com)

e) 2011 Chemical Safety Board- CSB Releases Investigation into 2010 Texas Tech Laboratory Accident- [CSB TTU Case Study](https://www.csb.gov)

f) 2011 UCLA- Charges brought in UCLA researcher’s death- [C&EN](https://www.cenonline.org)

g) 2012 American Chemical Society Report – Publishes guidance and recommendations to help strengthen safety culture - [ACS Report](https://www.acs.org)

h) 2013 ACS Hazard Analysis Tools- At the request of the CSB the ACS develops and releases Identifying and Evaluating Hazards in Research Laboratories- [ACS Hazard Analysis Tool](https://www.acs.org)

i) 2013 University Of California Reaches Agreement In Connection With Charges In Lab Researcher’s Death — The Los Angeles County District Attorney’s Office dropped felony charges against the University of California Regents as part of an agreement
involving labor code violations relating to the 2008 death of a chemistry staff research assistant. In the UC agreement, the Regents, the governing body of the University of California system, accepted responsibility for the laboratory conditions that led to researcher Sheharbano (Sheri) Sangji's death. - C&EN

j) 2013 UCLA Professor Harran criminal case – A Los Angeles County judge approved an agreement that could end a criminal case against University of California, Los Angeles, chemistry professor Patrick G. Harran. Harran was charged with four felony violations of the state labor code. The deal mandates that Harran complete multiple forms of community service and pay a $10,000 fine. The charges were not dismissed. Instead, the case against Harran is effectively on hold while he completes the terms of the five-year agreement - C&EN

k) 2014 Stanford Report – Safety on Campus - Stanford Advancing the Culture of Safety


m) 2015 UCLA Legal Fees – The Harran case is approaching $4.5 Million - LA Times.

n) 2015 APLU/AAU Joint Task Force on Laboratory Safety - Implementation of Safety Recommendations on Campus - C&EN and Under Pressure, Universities Take a Renewed Shot at Improving Lab Safety - The Chronicle of Higher Education

o) USA Today - May 28, 2015 - Transparency is an important cornerstone in maintaining public trust in biological research, says the National Institutes of Health, which has issued guidance to laboratories that receive federal funding. While many research organizations answered USA TODAY's questions and provided basic records about their biosafety committees' work, dozens of others were not so forthcoming - USA Today

p) USA Today article on June 29, 2015 Senators, health experts demand action to address biolab accidents - USA Today

q) Sangji Family's presentation at ACS meeting asking that federal funding be dependent on a safe culture in the PI's lab. Articles in Science and Chemistryworld and CHEMJOBBER.
Recommendation #2 – The President/Chancellor designates a campus-lead and leadership team to begin the process. Consider appropriate committees to help implement a culture of safety, including a safety committee of faculty, Environmental Health and Safety (EH&S) officers, and other representatives that can provide formative feedback to researchers, educators, and staff.

1) The Stanford University Committee on Health and Safety (UCHS) is a faculty-led committee established in 1988 to advise the president on the safety policies and practices of the campus. In 2013, Stanford convened a task force in 2013 under the UCHS and the Office of the Vice Provost and Dean of Research to review and evaluate the laboratory safety culture at Stanford. The Report of the Task Force for Advancing the Culture of Laboratory at Stanford University is comprehensive with their findings, recommendations, and extensive appendices that include interviews with research personnel. It is available at Stanford University.

2) The University of Minnesota Safety Program includes faculty, graduate students, postdocs, and EH&S staff. The safety committee provides formative feedback on safety to labs. A short description was provided in the NRC’s Safe Science report available at National Academies Press. Additional descriptions of the program available at Science AAAS and Journal of Chemical Education.

Recommendation #3 – The campus-lead and leadership team conduct campus dialogues with stakeholders to develop a shared vision of safety that aligns with the institutional mission and to develop an action plan.

1) To help inform the campus-leadership team of best practices in advancing a culture of safety, the Task Force has compiled a list of resources:
   c) DOE Integrated Safety Management Guide (DOE 450.4-1c). Available at DOE Resources.
d) Dupont USA Managing Operational Risk to Enhance Business Performance. Available at Dupont


h) Occupational Safety & Health Administration – Creating a Safety Culture. Available at OSHA Creating a Safety Culture


k) Stanford University (2014). Report of the Task Force for Advancing the Culture of Laboratory at Stanford University. Available at Stanford Advancing the Culture of Safety

l) U.S. Chemical Safety and Hazard Investigation Board (2010). Texas Tech University Laboratory Explosion. Available at CSB TTU Case Study

2) Campus community discussions in departments, colleges, and the university are critical for strengthening a culture of safety. Consider hosting listening sessions that focus on creating a safe learning/work environment. Consider these guiding principles to help frame the discussion:

a) Scholarly excellence and responsible conduct of research includes safety as a critical component. We do better science when we do safe science.

b) Each institution should commit to a campus environment that ensures the health and safety of their entire community (faculty, students, staff, and visitors) and empowers the community to be responsible for the safety of others.

i) Safety is everyone’s responsibility:
ii) A safe campus environment for workers is a right of employment. Available at OSHA Employer Responsibilities

iii) A safe campus learning environment is a right of education.

iv) Our university, like our "Family" needs us to ensure a safe environment.

c) Safety training and safety education is a critical component of research and education. It is important for instilling a culture of safety in the next generation of researchers and future faculty, and it is important for our student's career development and employability.

d) An improved safety culture is necessary to implement true risk reduction.

Recommendation #4 – The campus-lead and leadership team develop effective safety policies, procedures, and management system, and identifies the resources necessary for implementation. They establish a recognition and reward system and integrate these into tenure and promotion, hiring, and annual performance reviews.

1) Consider these policies for recognizing and rewarding effective safety practices:
   a. Make safety, conducting hazard analysis, completion of safety training, etc. a part of all faculty annual reviews.
   b. Require the inclusion of the candidate’s safety record as a part of a supervisor's performance appraisal comments and letters supporting tenure or promotion.

2) Consider this recommendation on centralized funding from the Report of the Task Force for Advancing the Culture of Laboratory at Stanford University:
   Recommendation #6 Need for centralized funding support for comprehensive, campus-wide safety related mandates. Funding for safety equipment and requirements within the laboratory remain a continuing struggle for many laboratories. Everything is monetized, but laboratory operations need some core resources focused on safety support. For example, there is a need for core central funding for personal protective equipment (PPE), safety equipment and safety requirements applicable to all laboratories.

3) Resource guides for laboratory safety
   a. ACS has a page with Safety in the Classroom ACS links. Available at ACS.
c. Aldrich Technical Bulletins


e. Chemical Laboratory Information Profiles (CLIPs) describes the hazards of a chemical to assist teachers and students in determining precautions for laboratory work. Clips can also be used to guide student discussions and create assignments.

f. Department of Health and Human Services has a site that links to many references. Many of the references are below too. Available at DHS.

g. Dow Lab Safety Academy provides many resources for enhancing safety practices.


k. NFPA 45: Standard on Fire Protection for Laboratories Using Chemicals. Some institutions will need to follow other building codes such as the Uniform Building Code, but NFPA 45 is one of the documents that is referenced in the OSHA Lab Standard. Free Access at the NFPA website.


m. OSHA Lab Safety Guidance.

n. Safety in Academic Chemistry Laboratories: Volume 1, Accident Prevention for College and University Students. American Chemical society. Available also as a Spanish version and Arabic version.

o. Safety in Academic Chemistry Laboratories: Volume 2 (teacher’s edition)

p. Safety for Introductory Chemistry Students Brochure.

Recommendation #5 -- The institution develops a risk assessment process for laboratory safety that is integral to all activities conducted in laboratory or field operations. There are appropriate resources to assist the faculty with risk assessment.

1) Actively engage campus Risk Management and Boards of Trustees/Regents to support campus safety initiatives to mitigate and manage risk due to research and academic safety issues. Available at Risk Management

   a) Ensure that research and academic safety is incorporated into all unit risk analyses and are reflected in the university’s heat map of risk.

   b) Upon identification of the risks associated with research and academic safety, risk management plans should call for regular review and changes in policies and procedures to reflect the associated risk.

Recommendation #6 – The campus-lead and leadership team clearly articulate the roles and responsibilities of all stakeholders.

1) Recommendations from the National Academies on roles and responsibilities of different stakeholders.


2) The *Report of the Task Force for Advancing the Culture of Laboratory at Stanford University* provides guidance on suggested roles and responsibilities. Available at Stanford University.

3) Presidential Leadership among other leaders must be engaged to create a true change in safety culture on campus. OSHA's Safety & Health Management System eTool provides guidance to management leadership. Available at OSHA Management Leadership.

4) University examples of roles and responsibilities.

   a) University of Texas. Available at Responsibilities and Procedures

   b) University of California, Berkeley. Available at Responsibilities

   c) North Carolina State University. Available at Environmental Health and Safety Policies and Programs

   d) University of Utah. Available at Policy 3-300: Environmental Health and Safety Policy

**Recommendation #7 – The institution establishes a unified administrative reporting model that connects responsibility for developing and implementing academic safety policies under one administrative pillar in the institution, and that includes faculty, EH&S officers, and administrative leaders.**

1) Following the laboratory explosion at Texas Tech University, the university modified its reporting structure so that EH&S reports to the vice president for research. Their pre and post organizational charts are included in the CSB case study on Texas Tech University.

2) From *Safe Science: Promoting a Culture of Safety in Academic Chemical Research* (NRC, 2014):

   *Vice presidents for research and deans of schools and colleges should, in addition to deploying funds in ways that support safety, ensure that the lines of research undertaken by the institution are ones it has the capacity to perform safely. They can make certain that everyone involved in the research enterprise knows their role and responsibilities in supporting safety. They can develop reporting structures that support safety culture; an example would be for senior environmental health and safety (EHS) officials to report through the senior research management programs, typically at the vice president level or higher—a structure that may better integrate safety management into overall research management.*
Recommendation #8 – The campus-lead, leadership team, and faculty embed safety communication in laboratories, classes, departments and in the wider campus.

1) Video tools/examples to raise awareness of the importance of safety
   a) One of the Best Safety Speeches Ever By Alcoa CEO. Available at EHS Safety News America
   b) Chemical Safety Board video Experimenting with Danger. Available at YouTube
   c) Laboratory Safety Memorial Wall – list of deaths due to laboratory accidents. Available at The Laboratory Safety Institute
   d) UMN Video on training Graduate Students. Available at YouTube
   e) Dow Lab Safety Academy. Available at Dow
   f) University of California San Diego- A Day in the Lab UCSD. Available at YouTube
   g) Lab Techniques & Safety: Crash Course Chemistry #21. Available at YouTube
   h) Kate’s Story – A Safety Video. Available at YouTube

2) Daily safety communication resources
   a) Create campus specific safety videos to use at public meetings
   b) Open every formal meeting on campus with a safety message.
   c) WCF Safety Meeting Resources. Available at WCF
   d) United States Department of Labor Safety and Health Topics. Available at OSHA Safety and Health Topics
   e) Centers for Disease Control and Prevention, Workplace Safety & Health Topics. Available at CDC
   f) University of California Riverside Fast Facts. Available at University of California, Riverside

3) Examples of marketing campaigns for safety
   a) North Carolina State University won CSHEMA’s institutional marketing campaign Award of Excellence for its “WolfAlert Emergency Communication Campaign”. Available at WolfAlert
   b) University of Nevada Reno's "Focus on Safety" campaign earned the ‘Marketing Campaign Award of Distinction’ at the CSHEMA national conference. Available at Focus on Safety
Recommendation #9 – The campus-lead, leadership team, and faculty work to create a trusting and safe culture. They encourage open dialogue and celebrate reporting and learning from near misses.

1) The Report of the Task Force for Advancing the Culture of Laboratory at Stanford University provides interview findings from ethnographic studies of their research personnel as well as findings from their culture of safety climate survey. These might provide context on the values, attitudes, and behaviors of research personnel that could help facilitate more open dialog. Available at Stanford University.

2) References for the importance of trusting environments:

Recommendation #10 – The institution empowers undergraduate students, graduate students, post docs, and staff to voice safety questions and concerns to their faculty supervisors, offices of EH&S, and/or safety committee.

1) Example of empowering students to be involved in laboratory safety discussed at Science AAAS. A more in depth analysis of how the University of Minnesota empowered students can be found at McGarry, K. A., Hurley, K. R., Volp, K. A., Hill, I. M., Merritt, B. A., Peterson, K. L., ... & Tolman, W. B. (2013). Student Involvement in Improving the Culture of Safety in Academic Laboratories. Journal of Chemical Education, 90(11), 1414-1417. Available at Journal of Chemical Education.

2) Dupont’s Safety Training Observation Program (STOP) provides a path to workplace safety by making safe behavior and workplace conditions part of the work culture. Available at Dupont.

3) OSHA provides guidance on how employees can be involved in safety. Available at OSHA Employee Involvement.
Recommendation #11 – The institution works to strengthen collegial and collaborative relationships between faculty and the staff in the offices of EH&S.

Incorporate into the campus dialog an expectation of partnership and support between EH&S and faculty. Keep regular and open meetings between faculty and EH&S.

Recommendation #12 – The institution works to enhance effective working relationships with first responders.
Data, Hazard Identification, and Analysis

Recommendation #13 – The institution implements routine hazard analyses, including them as integral components of undergraduate and graduate education; thesis, dissertation, and funding proposals; and experimental design for all experiments.

1) OSHA’s Safety & Health Management Systems eTool – Worksite Analysis. Available at OSHA Worksite Analysis
2) OSHA’s Safety & Health Management Systems eTool – Hazard Control. Available at OSHA Hazard Control
3) General Standard Operating Procedures (SOP) guidelines and examples
   a) Center for Laboratory Safety Document Management. Available at UC Center for Laboratory Safety
   b) USU SOP Guidelines. Available at Office of Research and Graduate Studies USU
   c) USU SOP FAQs. Available at Office of Research and Graduate Studies USU
   d) USU Liquid Nitrogen handling guidelines. Available at Office of Research and Graduate Studies USU
4) Hazard assessment tools
   b) UCLA’s Laboratory Hazard Assessment Tool – The LHAT facilitates identification of hazards and identifies the Personal Protective Equipment (PPE) to be used during the specified work activities. Available at UCLA EH&S
   c) NIOSH Pocket Guide to Chemical Hazards. Available at CDC
5) For hazards in the field, the International Society for Agricultural Safety and Health (ISASH) has many resources.
Recommendation #14 – The institution implements a process to report incidents and near misses so that the campus community can learn from these incidents.

1) Examples of whistle blowing, accident reporting, and near miss reporting forms
   a) Texas Tech Near Miss System "SCANS". Available at Texas Tech University
   b) University of Wisconsin- Safety Yellow Cards. Available at University of Wisconsin
   c) The Laboratory Safety Institute (2015). The Lab Safety Memorial Wall. Available at The Laboratory Safety Institute

2) Examples of lessons learned websites at universities
   a) UC Center for Laboratory Safety. Available at UC Center for Laboratory Safety
   b) Texas Tech Lessons Learned. Available at Texas Tech University
   c) University of California Berkeley. Available at EH&S University of California, Berkeley
   d) University of California, Irvine. Available at University of California, Irvine EH&S

3) Resources to help guide the development of a near miss reporting system
   a) OSHA's Safety & Health Management Systems eTool. Available at OSHA Safety and Health Topics
   c) Strauch, B. (2015). Can we examine safety culture in accident investigations, or should we? Safety Science, 77, 102-111. Available at Science Direct
   d) U.S. Chemical Safety and Hazard Investigation Board (2010). Texas Tech University: Laboratory Explosion. Available at CSB TTU Case Study
   e) Do we recognize near misses. Available at Science Direct
Training and Learning

Recommendation #15 – The institution provides laboratory safety training for students, faculty, EH&S staff, and department heads.

1) OSHA’s Safety & Health Management Systems eTool provides guidance on Safety and Health Training. [OSHA Safety and Health Training]

2) Determining training needs
   a) Utah State University Training Matrix Survey is a survey which allows employees a different method to determine training needs. Survey is here: [Office of Research and Graduate Studies USU] and Training Matrix is here: [Office of Research and Graduate Studies USU]
   b) UCLA Lab Training Matrix outlines the minimum medical and training requirements for personnel (PIs, lab supervisors, graduate and undergraduate students and staff) working in a research setting. Available at [UCLA EH&S]

3) Online laboratory safety training resources
   a) Dow Lab Safety Training Modules. Available at [Dow]
   b) Cornell University Lab Safety Videos. Available at [YouTube]
   c) Lab Safety Videos List. Available at [Lab Safety Videos]
   d) Northwestern University Office of Research Safety Training. Available at [Vimeo]

4) Other safety training resources
   a) The Safety Training Consortium is a higher education membership organization founded by research universities, for the purpose of developing safety training for the research community. [Excellence in Safety Education]. Available at [Safety Training Consortium]
   b) Cornell University Lab Safety Certificate Program. Available at [Cornell University]

5) Approaches to emergency training
   a) Mock emergencies include: after hours, fake spills, fake blood, confusion, etc. to help students understand how crazy it can all get in an emergency. John Nauman, Director of Northern Arizona University Undergraduate Laboratory Program in Chemistry and Biochemistry
   b) Approaches to Emergency Training by Dawn Mason – Available at [Google drive]
   c) Some institutions have access restriction in which there is no laboratory access until training has been completed.
Recommendation #16 – The institution ensures undergraduate and graduate science & engineering curricula include an emphasis on safe practices.

1) Resources of interest
   b) Key Lessons for Preventing Incidents from Flammable Chemicals in Educational Demonstrations. Available at [CSB]
   c) Council on Research (CUR) listserv. A resource for undergraduate education directors – [CUR Listserv]
   d) CUR Quarterly for 2007 focuses on risk management related to undergraduates participating in research:\footnote{1}
      i) How to get Started Using Chemicals and Radionuclides in an Undergraduate Research Laboratory. Available at [CUR]
      ii) Risk Management: Training Undergraduates in Research Ethics in Social and Behavioral Sciences. Available at [CUR]
      iii) Risk Management in International Undergraduate Field Classes: A Costa Rican Case Study. Available at [CUR]
      iv) The OUR-IRB Project: A Necessary Tool for Risk Management and Ethics Education. Available at [CUR]

\footnote{1}{These references are made available freely by the Council on Undergraduate Research. For more information about the Council on Undergraduate Research, including additional articles pertaining to undergraduate research program operation, please see: [http://www.cur.org](http://www.cur.org).}
Continuous Improvement

Recommendation #17 – The institution conducts self-assessment and benchmarking using measures that can provide feedback on whether they are moving to a safer culture.

1) Internal self-assessment can be done at the institutional level or at the sub-unit level (e.g. departments, colleges, institutes).
   a) Emory University Lab Safety Score Cards. Available at ABSA Conference
   b) USU Laboratory Audit Form. Available at Office of Research and Graduate Studies USU

2) External assessment
   a) The Campus Safety Health and Environmental Management (CSHEMA) Environmental Safety Tracking, Assessment, and Rating System (ESTARS) program is a comprehensive and extensive campus-wide guided self-assessment. Typically this is a yearlong process. Available at CSHEMA ESTARS.
   b) Peer assessment of culture and practices is another avenue for external assessment. Peers can be selected based on their academic and research profiles and maturation of their safety culture. This practice is common to the academy, especially around graduate program review. As an example, see The University of Texas System.
   c) Professional consulting organizations often provide services to industry and national laboratories.

3) Assessment resources
   c) Occupational Safety & Health Administration. Creating a Safety Culture. Available at OSHA Creating a Safety Culture
   e) Stanford University (2014). A Report of the Task Force for Advancing the Culture of Laboratory at Stanford University. Available at Stanford
f) Strauch, B. (2015). Can we examine safety culture in accident investigations, or should we? Safety Science, 77, 102-111. Available at Science Direct

Recommendation #18 – The institution develops a continuous improvement system that provides feedback, reassessment, and on-going training and learning opportunities.

1) Self-assessment using CSHEMA’s ESTARS program can be done on an on-going basis for continuous improvement and reassessment. Available at CSHEMA ESTARS.

2) The Report of the Task Force for Advancing the Culture of Laboratory at Stanford University provides the interview guide that was used for the ethnographic studies of Stanford’s research personnel. The report also includes the culture of safety climate survey questions. These might be useful as assessment tools for other campuses. Available at Stanford University.

Recommendation #19 – The institution develops a system of accountability including peer to peer accountability.

1) OSHA’s Safety & Health Management Systems eTool – Safety and Health Program Audits and Reviews. Available at OSHA Safety and Health Program Audits and Reviews

2) UCLA’s Laboratory Safety Compliance Procedure and Implementation Plan is a 3-tiered approach to dealing with PI’s with repeat non-compliance findings on EH&S inspections. This procedure was developed by a faculty led Chemical and Physical Safety Committee.

Recommendation #20 – The institution promotes academic and industrial/government partnerships that allow academic researchers to learn from strong and well-developed safety cultures in industrial and government laboratories.
Reports/References of Interest


3. Dupont USA. Managing Operational Risk to Enhance Business Performance. Available at Dupont


6. The Laboratory Safety Institute (2015). The Lab Safety Memorial Wall. Available at The Laboratory Safety Institute


FDP 2012 Faculty Workload Survey Research Report Supplement

Institution Results for:

Michigan Technological University (Institution L07)

Prepared by Sandra Schneider, Sandra Stershic, Andrea Ranieri, and Alaina Talboy

With assistance from
Elizabeth Fuller, Colleen O’Leary, Curtis Puryear, Steven Schultz, and Keegan Shepherd

University of South Florida
July, 2015
# Table of Contents

Table of Contents .................................................................................................................. 2
Executive Summary .................................................................................................................. 3
Overview ................................................................................................................................ 4
Time Lost from Federally-Funded Research .......................................................................... 6
  Average Research Time Lost ............................................................................................... 6
  Breakout of Research Time Lost .......................................................................................... 8
  Estimated Time Savings with Additional Assistance .......................................................... 8
Researcher Characteristics and Workload Distribution ........................................................ 9
  General Demographics ....................................................................................................... 9
  Average Workload Breakdown ............................................................................................. 9
  Respondent Funding Characteristics .................................................................................. 10
Prevalence and Intensity for Specific Administrative Burdens ........................................... 11
  Project Finances .................................................................................................................. 12
  Project Personnel ............................................................................................................... 14
  Effort Reporting .................................................................................................................. 15
Perceptions of Climate for Research ..................................................................................... 16
Comment Analysis .................................................................................................................. 18
  Frustrations with Administrative Responsibilities ............................................................ 18
  Most and Least Helpful Institutional Aspects ..................................................................... 19
  Suggestions for Administrative Improvements .................................................................. 20
References .............................................................................................................................. 21

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Executive Summary

This report provides an institution-specific summary of results from the Federal Demonstration Partnership (FDP) 2012 Faculty Workload Survey investigating the views of principal investigators (PIs) on federally-funded grants and contracts active during academic year (AY) 2011. This institution is coded as Institution L07, and results for this institution are compared throughout with averages from other institutions that were judged to be relatively similar (Category L: High Research (HR) University with less than $80 Million Annual R&D).

Time Lost from Federally-funded Research. The 37 PIs who responded from Institution L07 reported an average of 50% of their research time associated with federally-funded projects was taken up by administrative and related requirements. This was similar to the average for Category L institutions. Variability in responses for Institution L07 was higher than average suggesting disagreement among respondents about the impact of administrative requirements. The breakout by pre-award and post-award responsibilities showed that Institution L07 respondents spent less time than expected on proposal preparation and pre-award responsibilities and more time than expected on post-award responsibilities and report preparation.

Researcher Characteristics and Workload Distribution. Most respondents at Institution L07 had 9-month appointments and were tenured or tenure earning. Approximately two-thirds were in the Physical Sciences and Mathematics or Engineering and Computer Sciences. The typical appointment averaged 33% research, 32% instruction, and 16% service, which involved less research and more instruction than Category L averages. Institution L07 respondents reported that an average of 72% of research time was funded by federal sources, and about 30% reported over $200,000 in annual direct costs. NSF was the most common source of federal funding.

Prevalence and Intensity for Specific Administrative Burdens. For Institution L07, it was possible to provide a review of results for three of the most commonly reported administrative responsibilities associated with federally-funded research: Project Finances, Project Personnel, and Effort Reporting. In general, results suggested that perceived burden associated with finances were somewhat lower for Institution L07 than would be expected based on the average for Category L. Finance drilldowns suggest that dealing with purchases was less burdensome in particular. Results for personnel and effort reporting were also less than Category L averages.

Perceptions of Climate for Research. Respondents at Institution L07 were more likely than Category L averages to agree that research activity is an institution priority but not that it is treated as more important than teaching. Perceptions of the impact of research administrative workload were mixed, though a sizable subset voiced concerns for graduate students and the poor prognosis for grant submissions. A majority of Institution L07 respondents were generally positive regarding the value of research-related administrative requirements.

Comment Analysis. Comment analysis for Institution L07 was limited given the total of only 41 comments. Nevertheless, a summary was provided of comments concerning research-related frustrations, the most and least helpful institutional aspects of research administrative workload, and suggestions for administrative improvements. Though generalizability is limited by the small number of respondents, these may provide insights into potential areas for streamlining efforts.
Overview

This report provides an institution-specific summary of results from the Federal Demonstration Partnership (FDP) 2012 Faculty Workload Survey investigating the views of principal investigators (PIs) on federally-funded grants and contracts active during academic year (AY) 2011. On average, investigators in the survey reported that 42% of research time on federally-funded projects was needed to complete administrative requirements associated with the projects. Proposal and report preparation, project finances, project personnel, and effort reporting, as well as IRB/Human Subjects and IACUC/Animal Subjects compliance were especially time-consuming responsibilities. Details of the findings of the report can be found on the FDP website at [http://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_087667.pdf](http://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_087667.pdf).

In what follows, summary data are provided from survey respondents at this institution, coded as **Institution L07**, in comparison to other institutions that were judged to be relatively similar (Category L: High Research (HR) University with less than $80 Million Annual R&D). The legend in Figure 1 below lists the 13 categories of institutions that were developed for this purpose, based on the 2010 Carnegie Classification of Institutions of Higher Education ([http://carnegieclassifications.iu.edu/](http://carnegieclassifications.iu.edu/)) and the National Science Foundation’s (NSF) report of expenditures for Higher Education Research and Development: Fiscal Year 2011 (see Table 13, [http://www.nsf.gov/statistics/nsf13325/content.cfm?pub_id=4240&id=2](http://www.nsf.gov/statistics/nsf13325/content.cfm?pub_id=4240&id=2)).

![Figure 1](image)

**Figure 1.** Average percentage of active research time lost for federally-funded PIs from 13 institution categories. VHR=Very High Research and HR=High Research institutions according to the 2010 Carnegie Classifications; Med=Med School; dollar amounts listed correspond to institution expenditures (in millions) reported by NSF for Higher Education Research and Development: Fiscal Year 2011. Institutions within each category were comprised of the 94 FDP member institutions with at least 20 respondents in the FDP 2012 Faculty Workload Survey. The red line bisecting the graph represents the combined overall average of 42% research time lost.
Figure 1 above shows the variation in the (institution-based) average amount of active research time lost to administrative workload across the 13 institution types represented by the 94 FDP institutions that had more than 20 respondents to the 2012 FDP Faculty Workload Survey. These differences may be important to keep in mind when interpreting the results that will be presented for your own institution. In general, research time lost tends to be lower for private universities and for universities with a high rate of annual research expenditures.

Researchers in **Category L** institutions reported an average of **48%** of their time on federally-funded projects was taken away from research by administrative responsibilities, which is the highest of any category and substantially higher than the overall survey average of 42%. At least some of this difference, however, may be accounted for by differences in research assignment. Across the entire survey, research assignments averaged about 50% of respondents’ time, whereas for Category L institutions, research assignments averaged only 41% of respondents’ time. Having less time dedicated to research may make it difficult to avoid allocating a larger percentage of that time to research administrative requirements.

Throughout the remainder of this report, data will be presented for institutions within Category L, with values for this institution, **Institution L07**, highlighted. Additional comparisons can be made by referring back to combined results reported in the original *FDP 2012 Faculty Workload Survey Research Report*. 
Average Research Time Lost

Figure 2 below presents the average percent of time taken away from research by administrative requirements associated with federally-funded projects for institutions within Category L. Your institution number was assigned as a function of your institution’s standing in this category with respect to average percent of time taken away from research as reported by the 37 PIs at your institution who responded to the survey. The highlighted bar in the graph represents your institution, Institution L07. On average, PIs at your institution reported that 50% of their time for federally-funded research was spent on administrative requirements rather than on active research. This value is generally comparable to the average for Category L institutions, but is nevertheless of concern as PIs may be spending an average of half of their time completing requirements rather than focusing on active research.

![Figure 2](image-url)

*Figure 2. Average proportion of active research time lost by PIs at institutions in Category L. The red line bisecting the graph indicates the average percent of time taken away from active research for institutions within this category.*

Institution average estimates for research time lost vary substantially within this category, ranging between 44% and 51%. However, it should be noted that the reliability of each estimate also varies based on the number of respondents from the institution and the variation in their responses. The standard error of the mean was used to estimate the potential for statistical error.
in the institution estimates of average research time lost based on these two factors. The error estimates for Category L Institutions range between ±2.3% and ±4.4%. For Institution L07, the error estimate is ±4.3%, which is relatively high but not altogether surprising given the small number of respondents from this institution. Thus, the best estimate of average research time lost for respondents at Institution L07 based on the data from the survey is 50.1%, though the true value could reasonably fall between 45.8% and 54.3%.

Moreover, there was an unexpectedly high level of variation in responses within Institution L07 (SD = 26.2% versus the average SD = 21.8% for other surveyed institutions), suggesting that respondents at this institution disagreed with one another more than expected about the extent to which time was take away from research by requirements associated with federally-funded projects. The more there is disagreement, the less well any single-value estimate can capture respondents’ views as there may not be consensus. Although this will not be discussed in the remainder of the report, it is important to keep in mind throughout that all of the estimates provided here are likely to be subject to similar constraints on estimation accuracy and representativeness.

For the detailed analyses that follow, with the exception of comment summaries, data are not reported for values based on fewer than 20 respondents (i.e., the values have been replaced by a period), as these values are potentially unreliable and unrepresentative. Values that are underlined have been determined to be meaningfully different from the category averages, as they represent differences with a large effect size using a criterion of Cohen’s $d = .8$ (see Cohen, 1992). This criterion was used in place of significance testing as it is less sensitive to variations in sample size. Comparisons of institution category averages to the overall averages reported in the FDP 2012 Faculty Workload Survey will be provided in a separate report.
**Breakout of Research Time Lost**

The breakout of research time lost for Category L institutions is displayed in Table 1 below. The rightmost columns include the four overarching reasons for research time lost. As in the overall survey findings, proposal preparation and post-award administration were the most time consuming responsibilities for all Category L institutions, followed by post-award report preparation and then pre-award administration. Although the general patterns for Institution L07 were similar to Category L averages, respondents at this institution tended to report substantially more workload than expected for Category L in the areas of post-award administration and report preparation, and slightly less workload than expected for proposal preparation and pre-award administration.

**Table 1. Average Proportion of Active Research Time Lost and Proportion of That Time Devoted to Various Administrative Responsibilities for Category L**

<table>
<thead>
<tr>
<th>Institution</th>
<th>% Research Time Lost</th>
<th>% Proposal Preparation</th>
<th>% Pre-Award Administration</th>
<th>% Post-Award Administration</th>
<th>% Post-Award Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>L01</td>
<td>44</td>
<td>17</td>
<td>5</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>L02</td>
<td>44</td>
<td>15</td>
<td>7</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>L03</td>
<td>47</td>
<td>18</td>
<td>6</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>L04</td>
<td>49</td>
<td>16</td>
<td>4</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>L05</td>
<td>49</td>
<td>17</td>
<td>6</td>
<td>17</td>
<td>9</td>
</tr>
<tr>
<td>L06</td>
<td>50</td>
<td>16</td>
<td>6</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>L07</td>
<td>50</td>
<td>15</td>
<td>4</td>
<td>20</td>
<td>11</td>
</tr>
<tr>
<td>L08</td>
<td>51</td>
<td>17</td>
<td>6</td>
<td>19</td>
<td>10</td>
</tr>
</tbody>
</table>

**Estimated Time Savings with Additional Assistance**

On average, respondents at Category L institutions estimated that 37% of the time that they spend on these administrative activities related to their federally-funded research could be potentially re-assigned to administrative personnel—freeing up an estimated average of approximately 6.6 hours per week. Respondents at Institution L07 reported that they expected to recover a substantially lower percentage of their administrative time on federal projects (28%) with additional administrative assistance, estimating that an average of roughly 4.5 hours per week could be otherwise devoted to active research if given additional assistance with administrative activities, which is substantially lower than the Category L reported average.
Researcher Characteristics and Workload Distribution

General Demographics

The average length of appointment for respondents in Category L was just under 10 months, with about three-fourths of all respondents having 9-month appointments and just over 20% with 12-month appointments. Roughly 90% of respondents in Category L were either tenured or on tenure track. Approximately 25% of respondents were in the Physical Sciences and Mathematics, 21% were in Engineering and Computer Sciences, and 21% were in the Biological and Biomedical Sciences.

At Institution L07, the average length of appointment was about 9.7 months, with about 70% of respondents on 9-month appointments. The vast majority of respondents reported being tenured or on tenure track. Approximately two-thirds of respondents were in the Physical Sciences and Mathematics or Engineering and Computer Sciences.

Average Workload Breakdown

Table 2 below shows the breakdown of workload assignments for institutions in Category L and at Institution L07. In both cases, the largest time allotments went to research followed by general instruction, though the distribution for PIs at Institution L07 was almost evenly divided between research and instruction. The smaller amount of time available for research may make it difficult to avoid allocating a larger percentage to research administrative requirements. An additional 16-18% of respondents’ workload consisted of service, with roughly half of that for service directly related to research. Most of the remainder was devoted to general administrative responsibilities, with slightly higher values for Institution L07 than Category L overall.

Table 2. Average Workload Breakdown for Category L and Institution L07

<table>
<thead>
<tr>
<th>Work Time Activities</th>
<th>Average % Work Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Category L</td>
</tr>
<tr>
<td>Research (including mentoring student researchers)</td>
<td>41%</td>
</tr>
<tr>
<td>General Instruction</td>
<td>28%</td>
</tr>
<tr>
<td>Service Directly Related to Research</td>
<td>9%</td>
</tr>
<tr>
<td>Service Not Directly Related to Research</td>
<td>9%</td>
</tr>
<tr>
<td>Administrative Responsibilities</td>
<td>11%</td>
</tr>
<tr>
<td>Clinical Responsibilities</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
</tr>
</tbody>
</table>
Respondent Funding Characteristics

Table 3 below provides a summary of information regarding funding characteristics of respondents from Category L and from Institution L07. Overall, the patterns of funding are similar. For both groups, roughly 70% of the average respondent’s research time was funded by federal sources. The average number of federal projects for which respondents were serving as PI or Co-PI during the response period was approximately two. Almost 40% of Category L respondents reported receiving an excess of $200,000 in direct costs during the reporting period. This was somewhat higher than the reported 29% at Institution L07.

Roughly half of the typical respondent’s portfolio consisted of basic research, with just over a fourth described as applied or translational research. About half of Category L respondents reported receiving funds from NSF and 21% from the National Institutes of Health (NIH). Proportions for Institution L07 were markedly different in this regard, with almost three fourths receiving NSF funding and very few receiving funding from NIH. For both Category L and Institution L07, just over half of respondents reported funding from a federal source other than NSF or NIH.

Table 3. Respondent Funding Characteristics for Institution Category L and Institution L07

<table>
<thead>
<tr>
<th>Funding Characteristic</th>
<th>Category L</th>
<th>Institution L07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average % Research Time Funded by Federal Sources</td>
<td>67%</td>
<td>72%</td>
</tr>
<tr>
<td>Average % Research Time Funded by Non-Federal Sources</td>
<td>12%</td>
<td>9%</td>
</tr>
<tr>
<td>Average % Research Time Not Funded or Funded Internally</td>
<td>20%</td>
<td>19%</td>
</tr>
<tr>
<td>Average Number of Federal Grants/Contracts Serving as PI/Co-PI</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td>% with Annual Total Direct Costs for Federal Projects &gt; $200,000</td>
<td>38%</td>
<td>29%</td>
</tr>
<tr>
<td>Average % Federal Projects Focused on Basic Research</td>
<td>51%</td>
<td>46%</td>
</tr>
<tr>
<td>Average % Federal Projects Focused on Applied/Translational Research</td>
<td>27%</td>
<td>29%</td>
</tr>
<tr>
<td>Average % Federal Projects Focused on Curriculum, Service, Training, Other</td>
<td>22%</td>
<td>25%</td>
</tr>
<tr>
<td>% with Funding from the National Institutes of Health (NIH)</td>
<td>21%</td>
<td>5%</td>
</tr>
<tr>
<td>% with Funding from the National Science Foundation (NSF)</td>
<td>51%</td>
<td>74%</td>
</tr>
<tr>
<td>% with Funding from Agencies Other than NIH or NSF</td>
<td>57%</td>
<td>53%</td>
</tr>
</tbody>
</table>

Note: The percent of projects funded by different federal agencies can sum to greater than 100% as researchers may have funding from more than one federal agency; Reports of number of grants/contracts that were more than 3 standard deviations above the mean (i.e., greater than 14) were omitted from the analysis.
Prevalence and Intensity for Specific Administrative Burdens

The 2012 Faculty Workload Survey included an evaluation of 23 administrative requirements associated with federally-funded research. These are listed in Table 4 below, along with a summary of the responses for Category L. This table and the other tables in this section include columns for (1) **% with Burden**: the **prevalence** of the administrative requirement measured by the percent of respondents who reported that they had workload associated with the requirement; (2) **Average Burden Rating**: the average reported time taken away from research by the requirement with 1=Not at all; 2=A little bit, 3=Some, 4=Quite a bit, and 5=Very Much; and (3) **% with Substantial Burden**: the **intensity** of the requirement measured as the percent of those experiencing the requirement who reported that the requirement involved between 3=some and 5=very much time taken away from research.

Table 4. Summary of Prevalence and Intensity of Research-Related Administrative Responsibilities for Category L

<table>
<thead>
<tr>
<th>Administrative Responsibility</th>
<th>% with Burden</th>
<th>Average Burden Rating</th>
<th>% with Substantial Burden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finances</td>
<td>89%</td>
<td>3.0</td>
<td>69%</td>
</tr>
<tr>
<td>Personnel</td>
<td>80%</td>
<td>3.0</td>
<td>70%</td>
</tr>
<tr>
<td>Effort Reporting</td>
<td>83%</td>
<td>2.6</td>
<td>53%</td>
</tr>
<tr>
<td>IRB/Human Subjects</td>
<td>34%</td>
<td>3.1</td>
<td>67%</td>
</tr>
<tr>
<td>Clinical Trials</td>
<td>2%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>HIPAA</td>
<td>14%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>IACUC/Animal Subjects</td>
<td>15%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Biosafety</td>
<td>18%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>General Laboratory Safety/Security</td>
<td>49%</td>
<td>2.7</td>
<td>45%</td>
</tr>
<tr>
<td>Chemical Safety</td>
<td>30%</td>
<td>2.4</td>
<td>32%</td>
</tr>
<tr>
<td>Recombinant DNA</td>
<td>8%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Radiation Safety</td>
<td>15%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Controlled Substances/Narcotics</td>
<td>7%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Subcontracts</td>
<td>38%</td>
<td>2.9</td>
<td>60%</td>
</tr>
<tr>
<td>Intellectual Property</td>
<td>26%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>ARRA</td>
<td>20%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Data Sharing</td>
<td>50%</td>
<td>2.4</td>
<td>39%</td>
</tr>
<tr>
<td>COI: Conflict of Interest</td>
<td>60%</td>
<td>1.9</td>
<td>19%</td>
</tr>
<tr>
<td>RCR: Respons. Conduct Research</td>
<td>49%</td>
<td>2.3</td>
<td>36%</td>
</tr>
<tr>
<td>Cross-Agency Differences</td>
<td>19%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Export Controls</td>
<td>9%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Select Agents</td>
<td>5%</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>PCII: Protected Crit. Infrastructure</td>
<td>2%</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>
Table 4 above groups the 23 administrative requirements into subsections that are likely to be shared by different subsets of researchers. The first subsection includes the three responsibilities that tended to be shared by most researchers and also tended to be associated with substantial burden: project finances, project personnel, and effort reporting. These will be discussed in detail for your institution below.

The other subsections include administrative responsibilities of research associated with human subjects, animal subjects and safety, contracts, general compliance, and national security. Periods in the table indicate that there were insufficient data to report due to too few institutions in the category with at least 20 respondents who experienced that administrative responsibility. Because your institution had relatively few respondents, it is not possible to provide any summary information for your institution for these responsibilities. The data provided in Table 4 for Category L may provide a general sense of the level of burden that the various responsibilities are likely to entail.

Project Finances

Table 5 presents the prevalence and intensity data for project finances for each of the Category L institutions along with the overall category averages. Almost all respondents in Category L reported having to deal with project finances involving the preparation and management of grant/contract expenditures. On average, respondents reported that this constituted a moderate burden, with almost 70% providing a rating that suggested the burden was substantial.

| Table 5. Average Prevalence and Intensity for Finance Burdens for Category L Institutions |
|---|---|---|---|
| **Institution** | **% with Burden** | **Average Burden Rating** | **% with Substantial Burden** |
| **L Inst.** | 89% | 3.0 | 69% |
| L01 | 78% | 2.8 | 68% |
| L02 | 98% | 3.4 | 92% |
| L03 | 85% | 3.1 | 79% |
| L04 | 90% | 2.9 | 59% |
| L05 | 88% | 3.0 | 70% |
| L06 | 86% | 3.1 | 68% |
| **L07** | **95%** | **2.9** | **61%** |
| L08 | 90% | 3.0 | 66% |

For Institution L07, 95% of researchers reported finance burden, with 61% of those researchers experiencing substantial burden. This is significantly lower than the category average of 69%. Similarly, the average burden rating of 2.9 out of 5 is slightly lower than the category average of
3.0. Thus, respondents at this institution are less likely on average to report experiencing substantial burden from project finances than respondents at other institutions within Category L.

Respondents who reported having substantial burden for project finances were also asked to rate a series of drilldown items to provide more detailed information about the aspects of project finances that were considered most burdensome. Response averages are presented in Table 6 for Category L and Institution L07.

**Table 6. Average Ratings and Percent with Substantial Burden for Finance Drilldowns for Category L and Institution L07**

<table>
<thead>
<tr>
<th>Finance Drilldown Items</th>
<th>Average Time Taken Rating</th>
<th>% with Substantial Burden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing budget-to-actual expenses</td>
<td>3.24</td>
<td>80%</td>
</tr>
<tr>
<td>Dealing with equipment and supplies purchases</td>
<td>3.13</td>
<td>74%</td>
</tr>
<tr>
<td>Determining and justifying which tasks and related costs are allowable as direct charges</td>
<td>2.46</td>
<td>46%</td>
</tr>
<tr>
<td>Meeting other federal cost accounting standards (incl. budget transfers and spending authority oversight)</td>
<td>2.45</td>
<td>41%</td>
</tr>
<tr>
<td>Completing training regarding budgets/expenditures on federal projects</td>
<td>1.88</td>
<td>24%</td>
</tr>
<tr>
<td>Requesting, meeting, and tracking federally-mandated cost-share requirements</td>
<td>1.84</td>
<td>25%</td>
</tr>
</tbody>
</table>

Note: Rating scale for Time Taken Away from Active Research: 1=Not at all, 2=A little bit, 3=Some, 4=Quite a bit, 5=Very Much; % with Substantial Burden: Percent who rated the item between 3=Some and 5=Very Much; Categ.= Institution Category.

Managing budget-to-actual expenses and dealing with equipment and supplies purchases tended to be the most burdensome aspects of project finances for investigators in Category L. This was also true for Institution L07. However, significantly fewer respondents at this institution rated dealing with equipment and supplies purchases as a substantial burden than would be expected based on the category average, and the average rating of burden for Institution L07 was significantly lower than average for Category L investigators. Nevertheless, despite being low for the category, the proportion who reported this as a substantial burden was still well above 50%, as was managing budget-to-actual expenses.

Of the less intense burdens, Institution L07 tends to perform similarly to other Category L institutions with respect to determining and justifying direct charges, meeting other federal cost accounting standards, completing training regarding budgets and expenditures, and dealing with federally-mandated cost-share requirements. In all cases, average burden ratings and percentages of investigators with substantial burden were similar to what would be expected based on the Category L averages. Roughly 20% to almost half reported that these responsibilities required a substantial time commitment.
**Project Personnel**

Table 7 presents the prevalence and intensity data for project personnel for each of the Category L institutions along with the overall category averages. Responsibilities associated with hiring, managing and evaluating project personnel were reported by over three-fourths of respondents in Category L. On average, respondents reported that this constituted a moderate burden, with 70% providing a rating that suggested the burden was substantial.

<table>
<thead>
<tr>
<th>Institution</th>
<th>% with Burden</th>
<th>Average Burden Rating</th>
<th>% with Substantial Burden</th>
</tr>
</thead>
<tbody>
<tr>
<td>L Insts.</td>
<td>80%</td>
<td>3.0</td>
<td>70%</td>
</tr>
<tr>
<td>L01</td>
<td>81%</td>
<td>2.8</td>
<td>59%</td>
</tr>
<tr>
<td>L02</td>
<td>85%</td>
<td>3.0</td>
<td>76%</td>
</tr>
<tr>
<td>L03</td>
<td>94%</td>
<td>3.2</td>
<td>81%</td>
</tr>
<tr>
<td>L04</td>
<td>78%</td>
<td>3.0</td>
<td>66%</td>
</tr>
<tr>
<td>L05</td>
<td>78%</td>
<td>3.0</td>
<td>72%</td>
</tr>
<tr>
<td>L06</td>
<td>79%</td>
<td>3.3</td>
<td>82%</td>
</tr>
<tr>
<td>L07</td>
<td>68%</td>
<td>2.7</td>
<td>58%</td>
</tr>
<tr>
<td>L08</td>
<td>76%</td>
<td>3.1</td>
<td>70%</td>
</tr>
</tbody>
</table>

Almost 70% of respondents from Institution L07 reported dealing with project personnel, with 58% of those researchers experiencing substantial burden. This is significantly lower than the category average of 70%. This institution’s average burden rating is 2.7 out of 5, which is also significantly lower than the category average of 3.0. Thus, respondents at this institution are less likely to report experiencing substantial burden from project personnel than respondents at other institutions within Category L.

Due to insufficient data for Institution L07, it was not possible to include an evaluation of drilldown items associated with project personnel. Overall results for these drilldown items can be reviewed in the *FDP 2012 Faculty Workload Survey Research Report*. 
Effort Reporting

Table 8 presents the prevalence and intensity data for effort reporting for each of the Category L institutions along with the overall Category L averages. Responsibilities associated with federal time and effort reporting, including training, were reported by over three-fourths of respondents in Category L. On average, respondents reported that this constituted a moderate to moderately low burden, with approximately half providing a rating that suggested the burden was substantial.

Table 8. Average Prevalence and Intensity for Effort Reporting Burdens for Category L Institutions

<table>
<thead>
<tr>
<th>Institution</th>
<th>% with Burden</th>
<th>Average Burden Rating</th>
<th>% with Substantial Burden</th>
</tr>
</thead>
<tbody>
<tr>
<td>L Instr.</td>
<td>83%</td>
<td>2.6</td>
<td>53%</td>
</tr>
<tr>
<td>L01</td>
<td>83%</td>
<td>2.7</td>
<td>63%</td>
</tr>
<tr>
<td>L02</td>
<td>90%</td>
<td>2.9</td>
<td>64%</td>
</tr>
<tr>
<td>L03</td>
<td>73%</td>
<td>2.6</td>
<td>50%</td>
</tr>
<tr>
<td>L04</td>
<td>85%</td>
<td>2.6</td>
<td>51%</td>
</tr>
<tr>
<td>L05</td>
<td>88%</td>
<td>2.5</td>
<td>44%</td>
</tr>
<tr>
<td>L06</td>
<td>86%</td>
<td>2.6</td>
<td>51%</td>
</tr>
<tr>
<td>L07</td>
<td>82%</td>
<td>2.4</td>
<td>39%</td>
</tr>
<tr>
<td>L08</td>
<td>76%</td>
<td>2.7</td>
<td>59%</td>
</tr>
</tbody>
</table>

For Institution L07, 82% of researchers reported effort reporting responsibilities, with 39% of those researchers experiencing substantial burden. This is significantly lower than the category average of 53%. This institution’s average burden rating is 2.4 out of 5, which is also significantly lower than the category average of 2.6. Thus, respondents at this institution are less likely to report experiencing substantial burden from effort reporting than respondents at other institutions within Category L.

Due to insufficient data for Institution L07, it was not possible to include an evaluation of drilldown items associated with effort reporting. Overall results for these drilldown items can be reviewed in the FDP 2012 Faculty Workload Survey Research Report.
Perceptions of Climate for Research

At the end of the *FDP 2012 Faculty Workload Survey*, PIs responded to a series of 13 items designed to find out about their opinions of the general climate for research. Below in Table 9 are the average responses provided for Category L as well as Institution L07, along with the percent who agreed with each statement. An overview of the general results for the research climate items can be found in the *FDP 2012 Faculty Workload Survey Research Report*. Here, the focus is primarily on items that differ between Category L and Institution L07.

Table 9. Average Ratings and Percent Agreement on Research Climate Opinion Items for Category L and Institution L07

<table>
<thead>
<tr>
<th>Research Climate Opinion Items</th>
<th>Category L and Institution L07:</th>
<th>Average</th>
<th>%Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>Categ.</td>
<td>Institution</td>
<td>Categ.</td>
</tr>
<tr>
<td>Sponsored research activity is a primary factor in my institution’s promotion and tenure policies.</td>
<td>4.05</td>
<td>4.30</td>
<td>78%</td>
</tr>
<tr>
<td>In my department/program, research is considered more important than teaching.</td>
<td>3.63</td>
<td>3.41</td>
<td>61%</td>
</tr>
<tr>
<td>In my department/program, I have the option of buying out of teaching assignments.</td>
<td>3.44</td>
<td>3.70</td>
<td>61%</td>
</tr>
<tr>
<td>Administrative workload associated with federally-funded research grants has increased in the last 5 or 6 years.</td>
<td>3.72</td>
<td>3.68</td>
<td>58%</td>
</tr>
<tr>
<td>The administrative workload associated with federally-funded research is exhausting.</td>
<td>3.14</td>
<td>3.08</td>
<td>38%</td>
</tr>
<tr>
<td>Research administrative workload is discouraging my graduate students from pursuing academic research careers.</td>
<td>2.88</td>
<td>2.81</td>
<td>23%</td>
</tr>
<tr>
<td>Because of research administrative workload, I am generally less willing to submit federal grant proposals than in the past.</td>
<td>2.60</td>
<td>2.51</td>
<td>24%</td>
</tr>
<tr>
<td>If I had to do over again, I would still choose an academic research career.</td>
<td>4.09</td>
<td>3.95</td>
<td>78%</td>
</tr>
<tr>
<td>If funding rates at federal agencies were higher, then the associated administrative workload would seem reasonable.</td>
<td>3.09</td>
<td>3.54</td>
<td>62%</td>
</tr>
<tr>
<td>The federally-mandated requirements for research serve as a roadblock to research productivity.</td>
<td>3.26</td>
<td>3.11</td>
<td>41%</td>
</tr>
<tr>
<td>The federally-mandated requirements for research accomplish their intended goals.</td>
<td>3.10</td>
<td>2.92</td>
<td>29%</td>
</tr>
<tr>
<td>The time spent meeting federal requirements for research provides benefit worth the cost.</td>
<td>2.86</td>
<td>2.68</td>
<td>24%</td>
</tr>
<tr>
<td>When I have questions about federal regulations related to research, obtaining answers is straightforward.</td>
<td>2.57</td>
<td>2.84</td>
<td>19%</td>
</tr>
</tbody>
</table>

Note: Rating Scale: 1=Strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree; %Agree: Percent who rated the item as 4=agree or 5=strongly agree; Categ.= Institution Category.
The first three items in Table 9 are concerned with the institution’s priority on research. The vast majority of respondents to the survey, including those within Category L and Institution L07, agreed that sponsored research activity is a primary factor in their institution’s promotion and tenure policies. Those at Institution L07 were slightly more likely to agree with that statement than expected based on the category average. In contrast, those at Institution L07 were less likely than average to report that research is considered more important than teaching in their department or program. Although the majority agreed that they have the option of buying out of teaching assignments, their responses were not significantly different from Category L averages.

The next five items in Table 9 ask PIs to comment on the extent to which research administrative workload has influenced the research climate. Just over half of respondents in Category L and Institution L07 felt that administrative workload associated with federally funded research grants had increased in the last five or six years. The proportion of researchers at Institution L07 who reported that research administrative workload seemed exhausting was similar to the category average of 38%. Just under 25% of both groups also reported that they were generally less willing to submit federal grant proposals than in the past due to research administrative requirements. Nevertheless, roughly three fourths of both groups agreed that they would still choose an academic research career if they had to do it over again, though the average rating was just slightly lower for respondents at Institution L07.

The final group of five items in Table 9 referred to general attitudes toward federal requirements related to research. In general, the ratings of Institution L07 respondents were similar to those in other Category L institutions. Almost two thirds reported that administrative workload would seem more reasonable if funding rates at federal agencies were higher. About 40% agreed that federally-mandated requirements for research serve as a roadblock to research productivity. Roughly 25% reported believing that the federally mandated requirements for research accomplished their intended goals and provided benefit worth the cost, with values for Institution L07 that were closer to 20%. Finally, less than a quarter of researchers at Institution L07 and within Category L institutions reported that answers to questions about federal regulations related to research are typically straightforward.
Comment Analysis

Qualitative analysis was used to explore the content of responses to three open-ended items provided at the end of the FDP survey. These items addressed concerns about aspects of federally-funded research that were deemed most problematic or frustrating, areas for which the institution was judged to be most or least helpful, and a general comment section for any additional remarks. The comments may be useful for corroborating and expanding on the items addressed in the quantitative portion of the survey.

A systematic process was used to code all comments as described in the *FDP 2012 Faculty Workload Survey Research Report*. However, for Institution L07, the results of this process could not be applied at that level as there were an insufficient number of comments. Instead, the total of 41 comments from respondents at this institution have been summarized within the three topic areas below.

Because there were relatively few comments for this institution, each item listed within the tables below was typically based on input from only one to four respondents. Especially because of the limited number of comments for this institution, it is important to keep in mind that these comments may or may not be representative of most federally-funded researchers at this institution.

**Frustrations with Administrative Responsibilities**

This section includes content analysis of responses to the open-ended item: *Please comment on the administrative responsibilities of federally funded research that are most frustrating or problematic in your view.* The goal of this analysis was to determine both the number and types of frustrations volunteered by respondents at this institution. Table 10 includes a summary of the comments listed roughly in order of how many times they were mentioned.

<table>
<thead>
<tr>
<th>Table 10. Summary of Comments for Institution L07 about Administrative Responsibility Frustrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Complicated website interfaces for submission and reporting</td>
</tr>
<tr>
<td>• Effort reporting</td>
</tr>
<tr>
<td>• Unnecessarily burdensome and time-consuming IRB process</td>
</tr>
<tr>
<td>• Mismatch between university and agency budget formats; difficult budget modifications</td>
</tr>
<tr>
<td>• Too many details to keep track of, each with different contact staff</td>
</tr>
<tr>
<td>• Unnecessary redundancy; unnecessary extra forms for proposal submission</td>
</tr>
<tr>
<td>• Frustrating paperwork-intensive training activities</td>
</tr>
<tr>
<td>• Emphasis on procedure and paperwork rather than research</td>
</tr>
<tr>
<td>• Graduate student researchers relegated to technical roles rather than higher order thinking</td>
</tr>
<tr>
<td>• Equipment use fees for supporting laboratory equipment</td>
</tr>
</tbody>
</table>
Most and Least Helpful Institutional Aspects

This section includes content analysis of responses to the open-ended item: Please comment on the administrative responsibilities of federally-funded research that your institution has been most and/or least helpful in alleviating. Analysis of these comments may assist institutions in identifying potential areas of focus to facilitate researchers on federally-funded projects.

For this institution, 38% of responses mentioned one of this institution’s most helpful aspects and 23% mentioned one of this institution’s least helpful aspects in alleviating administrative responsibilities of federally-funded research. Given that there were relatively few comments overall, comparing these percentages may not be especially meaningful in this case. A summary of items identified as most and least helpful is presented in Table 11.

Table 11. Summary of Comments for Institution L07 about Most and Least Helpful Aspects Concerning Administrative Workload Related to Federally-Funded Research

<table>
<thead>
<tr>
<th>Most Helpful Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Budget help; prompt answers to budget questions</td>
</tr>
<tr>
<td>• Pretty good on research services</td>
</tr>
<tr>
<td>• Staff assistance with safety training and chemical inventory control</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Least Helpful Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Research accounting</td>
</tr>
<tr>
<td>• Over-interpretation of IRB requirements</td>
</tr>
<tr>
<td>• Equipment use fees for supporting laboratory equipment</td>
</tr>
</tbody>
</table>
Suggestions for Administrative Improvements

This section includes a list of suggestions provided by researchers concerning specific areas that this institution could improve to help alleviate burdens associated with administrative responsibilities of federally-funded research. These suggestions were drawn from the comments provided by researchers in the two open-ended items discussed in the previous two sections as well as the open-ended General Comments. These comments, summarized in Table 12, may offer insight into areas that could become a focus of streamlining efforts.

Table 12. Summary of Respondent Suggestions for Institution L07

- Change the focus from bureaucracy to advancing knowledge and training students
- Share best practices with other universities
- Provide more access to administrative help
- Address salary compression

The content analysis of comments provided at the end of the 2012 Faculty Workload Survey corroborated and elaborated the ratings provided by researchers regarding administrative responsibilities of federally-funded research. Hopefully, these institution-specific comments can be similarly helpful with respect to this institution. Because there were relatively few comments for this institution, each item listed within the above tables represented the opinions of only one to four respondents. Therefore, it is important to remember that the comments summarized here may or may not be representative of the views of the majority of federally-funded researchers at this institution.
References


Promoting a Culture of Safety in Laboratory Science

Alice Young, Texas Tech University
Robert Nobles, University of Tennessee

September 3, 2015
Who does safety in our labs & studios?

UCLA chemistry professor avoids prison time in fatal lab fire case

Texas Tech 2010

Yale 2011

VA 2012
Can we move forward by

• Framing conversations about lab practices and safety culture as responsible conduct of research?

• Including risk/hazard analysis as explicit component of student work?

• Including safety leadership as component of evaluations for
  • Faculty?
  • Students?
  • Chairs, Deans, Presidents?

[Links]
http://www.labsafetyinstitute.org/MemorialWall.html
http://www.csb.gov/texas-tech-university-chemistry-lab-explosion/
“Yale student dies in chemistry lab accident”
CBS News, Apr 2011

“A Higher Bar for Pathogens, But Adherence Is an Issue”
New York Times, May 2010

“A Pfizer Whistle-Blower Is Awarded $1.4 Million”
New York Times, Apr 2010

“U. of C. researcher dies after exposure to plague bacteria”
Chicago Tribune, Sept 2009

“HIGH-CONTAINMENT LABORATORIES: National Strategy for Oversight Is Needed”
GAO Congressional Testimony Report, Sept 2009

“Microbiology labs linked to nationwide salmonella outbreak”
MSNBC, April 2011

“Danger in School Labs: Accidents Haunt Experimental Science”
Scientific American, Aug 2010

“UW employee infected in lab where unauthorized experiments happened”
Associated Press, May 2010

“Safety Rules Can’t Keep Up With Biotech Industry”
New York Times, May 2010

“Six accidents at Los Alamos National Laboratory since July have revived safety questions about operations”
Associated Press, Feb 2010

“Texas A&M to pay $1 million fine to end ban on biodefense research”
Dallas Morning Star, Feb 2009
Inside America's secretive biolabs

INVESTIGATION REVEALS HUNDREDS OF ACCIDENTS, SAFETY VIOLATIONS AND NEAR MISSES PUT PEOPLE AT RISK

Allison Young and Nick Penzenstadler, USA TODAY

Limitations of self-policing

SOME RESEARCHERS IGNORE BIOSAFETY RULES

Universities, feds fight to keep lab failings secret

Alison Young and Nick Penzenstadler, USA TODAY  4:31 p.m. EDT May 28, 2015

Transparency is an important cornerstone in maintaining public trust in biological research, says the National Institutes of Health, which has issued guidance to laboratories that receive federal funding. While many research organizations answered USA TODAY's questions and provided basic records about their biosafety committees' work, dozens of others were not so forthcoming.

Some ignored information requests or attempted to charge hundreds of dollars in fees for records they are required to make public as a condition of their federal research funding. Others sought to conceal information about the pathogens they experiment with, lab mistakes or disciplinary actions taken by federal regulators. One lab even lobbied its state legislature for a bill to exempt its research records, citing USA TODAY's request for its biosafety records.

Several labs claimed that bioterrorism laws prohibited them from releasing any information about their work with pathogens designated as select agents — the regulatory term for viruses, bacteria and toxins that have the potential to be used as bioterror weapons. And many persisted in these claims even after reporters pointed out the labs' own press releases, websites and research papers touting their work with these same pathogens.

Regulators from the Federal Select Agent Program told USA TODAY there are no rules or laws restricting labs from discussing the type of select agent work they do or the names of the pathogens involved. The only prohibitions involve specific information about security measures — such as locations of keys or security codes.

*With the exception of specific security information (such as IT system passwords, key locations and lock combinations). The select agent regulations place no restrictions on

Laboratory Safety Culture Survey 2012

A collaboration by the UC Center for Laboratory Safety, BioRAFT and Nature Publishing Group

Overview of initial findings
September 2012
Laura Harper and Fiona Watt, Nature Publishing Group

View full report
2375 Respondents

Avg. Lab group size: 11
Avg. years in research: 13
Avg. years in current lab: 6

<table>
<thead>
<tr>
<th>Seniority level</th>
<th>Number</th>
<th>Avg Hours in lab per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior</td>
<td>1091</td>
<td>40</td>
</tr>
<tr>
<td>Senior</td>
<td>643</td>
<td>22</td>
</tr>
</tbody>
</table>

United States, 62%
United Kingdom, 15%
Other EU, 6%
China, 4%
Japan, 2%
Other, 10%
Importance placed on safety by...

- Lab safety/compliance staff:
  - Very important: 66%
  - Quite important: 6%
  - Not very important: 21%
  - Not important at all: 6%

- You personally:
  - Very important: 53%
  - Quite important: 42%
  - Not very important: 9%
  - Not important at all: 4%

- Your institution's leadership:
  - Very important: 48%
  - Quite important: 28%
  - Not very important: 13%
  - Not important at all: 3%

- Your supervisor or PI:
  - Very important: 40%
  - Quite important: 41%
  - Not very important: 3%
  - Not important at all: 6%

- Your colleagues:
  - Very important: 51%
  - Quite important: 17%
  - Not very important: 3%
  - Not important at all: 6%
"Appropriate safety measures in my lab have been taken to protect employees from injury"
Where *exactly* do the laws say we have to do this...?

... but I already took the safety training course...

Show me the data that this will make us safer!
Overviews of challenges

Links:
- [http://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/academic-safety-culture-report-final-v2.pdf](http://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/academic-safety-culture-report-final-v2.pdf)
Key actors

**Principal Investigators and Department Chairs**

**Laboratory Researchers**

**University Senior Leaders**

**Deans and Vice Presidents for Research**

**Environmental Health and Safety Staff**

---

SAFE SCIENCE

**Actions for Principal Investigators and Department Chairs**

Interest in promoting safety in academic research laboratories has grown in recent years, following high-profile incidents in which researchers were injured or killed. Many colleges and universities want to go beyond complying with regulations to fostering a safety culture by affirming a constant, institution-wide commitment to safety and integrating safety as an essential element in the daily work of researchers.

A report from the National Research Council, Safe Science: Promoting a Culture of Safety in Academic Chemical Research, identifies steps that everyone involved in research and other activities using chemicals—from researchers to principal investigators to university leadership—should take to create and promote this approach to safety.

As principal investigators, you have enormous influence over the culture in the laboratories, which you lead. In many ways, you set the tone for the standard of safety that will be implemented. The principal investigator and the entire institution are responsible for promoting safety and providing the resources and training needed to work safely. Day-to-day actions and practices that lead to safe laboratories demand that you, as PI, encourage participation, commitment, and leadership among your research team (or group), whose safety is at stake.

**ELEMENTS OF A STRONG LABORATORY SAFETY CULTURE**

An ideal laboratory safety culture ensures that anyone who enters a laboratory, from inexperienced students to senior investigators, understands that they are entering an environment that requires special precautions. They are aware of the hazards posed by the materials they handle and that they are prepared to take immediate and appropriate measures to protect themselves and their co-workers, especially in the case of unexpected events. At a minimum, laboratory safety includes:

- awareness of the physical and chemical properties and health hazards of laboratory reagents and equipment being used, gained by conducting hazard analysis,
- availability and use of proper apparatus and infrastructure needed to carry out the procedure safely,
- knowledge of and ability to execute any additional special practices necessary to reduce risks,
- use of proper personal protective equipment,
Components of positive safety culture: When I enter a lab, I understand

- ... I’m entering environment that requires special precautions,
- ... the hazards posed by materials & processes used,
- ... and how to take immediate and appropriate measures to protect myself & my co-workers, especially in the case of unexpected events.

- At a minimum, laboratory safety includes:
  - genuine awareness of the properties & hazards of reagents, equipment, & processes being used
  - availability & use of apparatus, PPE, & infrastructure needed to work safely
  - knowledge of & ability to execute any practices necessary to reduce risk
Do our expectations and practices support …

- hazard analyses as regular, expected part of academic work?
- ‘safe’ spaces to raise safety concerns?
- hands-on skills and robust use of EH&S consultation?
- talking about safety in standard academic venues (lab meetings, seminars, papers, talks, grant proposals, P&T)?
- use of scarce financial resources to support infrastructure and resources needed for safety and regulatory compliance?
- safety leadership as a core element of academic success?
APLU - National 360

- UCLA, TTU, Yale accidents
- NIH Guideline
- OSTP, NIH, other federal agencies forming biosafety task force

- Corporate hiring practices
- Governing Boards and Enterprise Risk Management

May 5th, 2015

May 7th, 2015

June 29th, 2015
APLU Lab Safety Task Force

- Since 2013, APLU Council on Research (CoR) has sought to proactively address the lab accident epidemic on campuses.
- Sense that academic leaders must be proactive change agents
- Concerns about risk management, federal agency action, faculty workload burden
- Formal Task Force established in 2014, involving APLU, AAU, COGR, ACS
APLU Task Force Charter

Key points:

• To highlight common safety risks within academic laboratories.
• To assess and benchmark innovative mechanisms to prevent and manage laboratory safety incidents.
• To confer with laboratory safety experts from governmental or non-governmental organizations focused on enhancing domestic laboratory safety standards.
• To assess regulatory and other national initiatives to enhance the culture of laboratory safety.
• Make recommendation as action items.
Task Force Members

- Taylor Eighmy (Chair), University of Tennessee, Knoxville
- Mark McLellan (Co-chair), Utah State University
- Gene Block (Honorary Chair), UCLA
- Kimberly Espy, University of Arizona
- Mridul Gautam, University of Nevada, Reno
- Kimberly Jeskie, Oak Ridge National Laboratory
- Dawn Mason, Eastman Chemical Company
- Jan Novakofski, University of Illinois at Urbana-Champaign
Task Force Members (continued)

- Patty Olinger, Emory University
- Joanne Polzien, Michigan Technological University
- Lesley Rigg, University of Calgary
- Tim Slone, University of North Carolina at Greensboro
- Ara Tahmassian, Harvard University
- Erik Talley, Cornell University
- William Tolman, University of Minnesota Twin Cities
- Nancy Wayne, University of California Los Angeles
- Alice Young, Texas Tech University
Task Force Staff

• Steve Bilbao, Utah State University
• Robert Nobles, University of Tennessee, Knoxville
• Kacy Redd, APLU

Thanks to Taylor Eighmy, Mark McLellan, Kacy Redd, Howard Gobstein, and Ara Tahmassian for the APLU slides.
Listening Sessions
During 2015, the Task Force met, often online, with a range of stakeholders to hear their perspectives. So far:

- May 6: NRC, ACS, CSHEMA, AAHRP
- June 8: AAALAC
- June 15: COGR, FASEB, FDP, AAU
- June 18: NIH
- June 31: CoR
- August 3: URIMA
- August 14: NACUA
- August 14: NACUBO
- August 17: ACS
- September (date TBD): CUR and NPDA
- November (date TBD): CASS (deans)
- TBD: NACUA
Advocating for a proactive call to all universities to embrace **a renewed commitment to improve the safety culture** for all academic research, scholarship, and teaching.
Draft Approach: Suggested Core Institutional Values

• Safety is a component of scholarly excellence and responsible conduct of research.

• Our campus environments must ensure the health and safety of our entire community.

• Improved focus on safety is critical to our students’ careers.

• We are determined to create a culture to ensure risk reduction.

• As safety cultures are developed, one size does not fit all. We need diverse and flexible approaches and methods that involve the entire campus community.
Draft Approach: Primary Recommendation

• APLU and AAU should call upon all academic institutions to renew their commitment to improve the safety culture for all academic research, scholarship, and teaching.

• Letter from APLU and AAU leadership to all universities with a copy of the Task Force report

• Tool Box that institutions can use to strengthen their culture and practices
Draft Approach: Letter to Presidents RE

• What we value.

• National reports and recent incidents and accidents (e.g., UCLA, Yale, TTU, Biosafety and federal labs, NIH plan)

• Asking all academic institutions
  • to use APLU Tool Box as they chart a direction.
  • to look beyond the research lab and embrace a commitment to improve safety in labs, studios, teaching classrooms, and field sites.

• Importance of Presidents acting to publicize their commitment and expectations within their institutions.

• APLU plans to recognize exemplary programs and to sponsor an annual safety culture award.
Draft Approach: A Safety Tool Box

• Path and rate of change around cultural adoption is unique to each institution. One size does not fit all.
• Each institutions can best select the tools that best work for them.
• Tools in the Tool Box are expected to evolve.
• The most useful Tools will likely focus on cultural change rather than compliance.
• Accreditation is not a component of the Tool Box.
Draft Approach: Tool Sets to support ...

- Institution-wide dynamics and resources
- Data, hazard identification, & hazard analysis
- Training, learning, & application
- Continuous improvement
- Access to key resources

- Tools drawn from
  - Peer academic institutions
  - Industrial partners
  - National labs

Proposed Remaining Schedule

• Continue obtaining input from stakeholders (Summer & early Fall)
• Finalize report (November)
• Draft letter (November)
• Present Tool Box to CoR (November)
• Formal letter from CoR to APLU, AAU, Chancellor Block (December?)
• Letter and report from APLU, AAU, Chancellor Block to APLU and AAU institutions (January 2016?)
Q&A

• What do you think will work to improve the safety culture in academia?

• Suggestions for Tool Box?

• Are you supportive of separating the safety culture push from compliance requirements?

• What are your thoughts about a lab safety accreditation equivalent to AAALAC or AAHRP?
Thank you!

Questions?

Sept. 3, 2015
alice.young@ttu.edu
Additional details about APLU Draft Approach

• [to answer questions]
Draft Approach: Tools to Initiate Cultural Change

We are drawing heavily upon NAS and ACS recommendations. Possibilities include “start-up” tools to support:

- Campus dialogues among stakeholders
- Collegial relationships between faculty and EH&S
- Empowering Graduate & Undergraduate students
- Clarification and transparency of roles of all stakeholders
- A learning culture (celebrating learning from near misses), rather than a punitive culture
- Recognition and reward systems
- Incorporating language about safety expectations in hiring documents, annual performance reviews
- Academic and industrial/government partnerships
- Training for Students, Faculty, Department Heads, Deans
Draft Approach: Tools to Help Maintain Culture

• Tools to Help Win Hearts and Minds
• Training and acting Tools
• Operational Tools
• Assessment Tools
• Personal Accountability Tools
Draft Approach: Tools for Assessment

A. Internal self-assessment of culture and practices for programs. Tools might be used at the institutional level or at the sub-unit level (e.g., departments, colleges, institutes).

B. External peer assessment of culture and practices, again at various levels. Tools might guide peer selection and review based on academic and research profiles and maturation of safety culture. Similar tools are common to the academy, especially around graduate program review.

C. External assessment from professional consulting organizations (e.g., paid review). Such tools are offered by organizations that work closely with industry and national laboratories.

D. CSHEMA model -- comprehensive and extensive campus-wide guided self-assessment. This tool requires a more extensive process than a, b, or c). Typically this is a year long process.
Draft Approach: Roles and Responsibilities

- President/Chancellor
- Provost
- Senior Research Officer
- Designated Lead for Safety
- Department Heads
- Faculty
- Students
- Job descriptions / hiring / personnel reviews / promotion
Draft Approach: Resources (examples)

- NRC report
- ACS reports
- CSB reports
- Lab Safety Institute web site
- UC System approach
- Stanford approach
- CSHEMA
- NIH/Federal Task Forces
• Making sure we align our draft approach with relevant recommendations from NRC, ACS, others
• Looking at U.S. CSB recommendations regarding TTU
• Exploring OSHA “Culture of Safety” recommendations
12 January 2016

Dr. Dave Reed, Vice President for Research
Michigan Technological University

Executive Summary
The MTU Core Facilities represent a focus and investment in the experimental research infrastructure required and available at Michigan Technological University as resources addressing the broader research audience, and represent shared laboratory resources enabling scientific discovery. As a new framework within which to operate, the resources and function of these laboratories has been evaluated to determine how the laboratories can learn from each other, can adopt best known practices to maximize the effectiveness of their operations, and can serve as model facilities representing the most highly regarded facilities within the institution. The first year annual review was conducted and demonstrated the uniqueness of each laboratory with respect to each other. The overall evaluation demonstrated inconsistencies in how operational staff was supported and in how use fees were applied. Recommendations include a more defined framework for reporting, consistent expectations for staff support and use reporting, and the management of the safety, finances, and operation of the Core Facilities as models of success for Michigan Technological University.

Evaluation Conditions
The managers for each Core Facility laboratory submitted their respective annual report and inspection report to the Office of the Vice President for Research in October 2015. Because this year represents the first annual review of the Core Facilities, the report structure was left flexible so each facility could address its scope appropriately. Operating budget status and the inclusion of the safety inspection reports were required, but other aspects of the reporting were flexible. To draw out conclusions from these disparate documents, an evaluation of the status of the respective equipment, operating budget, staffing and other resources, and operational conditions (response to the safety reporting) was considered for each laboratory.

Core Facilities Laboratories (listed alphabetically)
Advanced Power Systems Research Center (APSRC)
Advanced Chemical and Morphological Analysis Laboratory (ACMAL)
Geospatial Research Facility
Marine Research Assets Facility
Microanalytical Facility (MAF)
Microfabrication Facility (MFF)

Overall Evaluation
Rather than provide individual evaluations for each facility in this first year of feedback, an overall evaluation of the framework and of the laboratories was conducted. The needs and constraints for the unique laboratories are disparate, but there are four common challenges that all of the laboratories face. They are as follows:

A) There exists no well-defined funding model to support staff.
The laboratories all have some level of staff support, but the mechanisms for staff support are extraordinarily divergent, from externally sponsored research funded (soft money) positions, departmental staff positions, fractional support of positions through use fees, and through the mechanism of IRAD support through Centers and
Institutes. This also represents challenges and disadvantages to some laboratories in the variety. Laboratories primarily relying on fractional use fee support for staff salaries (typically 15-40% of salary plus fringes) were consistently more greatly challenged with break-even cost management due to the higher burden on use fee costs representing salary coverage. These laboratories were also less likely to be captive to a Center or Institute for primary support and engagement of research effort and more likely to be treated as a toolbox supporting research programs (lack of user “ownership” of the laboratory). Conversely, laboratories relying on soft money positions or positions captive to a Center or Institute had greater burden on program engagement utilizing the facilities (high user “ownership”) but a greater risk of losing expertise through staffing changes as funding shifted with program support coverage. These variations in support structure may simply reflect the nature of the laboratory represented, but the differences represent existential risks for key laboratory capabilities for the research endeavor at Michigan Tech.

\[B) \text{The framework for use fees is inconsistent across laboratories.}\]

Linked with comments regarding staff support under A above, the framework expectation for use fees to represent true laboratory operating costs are inconsistently applied across laboratories. Sometimes this is done to remain competitively priced as a service, but the lack of consistency and/or lack of fractional staff support representing maintenance and general operation/training for the facility means that use fee costs do not represent the true operating costs for the facility. Staff salaries represent the single largest component for use fees in most cases.

In addition, many laboratory reports assumed Core Facility funding would cover the cost of repairs, or would call out specific VPR funding expectations for replacement of capabilities. Use fee structure is defined to represent the two-year rolling average for operating costs for a piece of equipment. Maintenance and repairs should be represented in the estimate for use fees based on the procedure defined. The inconsistency in definition of use fees across the laboratories must be resolved and a consistent standard defined and expected in application. However, a mechanism to account for appropriate cost recovery for less frequent maintenance costs, such as major service visits, or major component replacement/repair, needs to be accounted for appropriately. Currently, no framework exists to account for the 3-10 year management costs for instrumentation, or for major instrument replacement.

\[C) \text{Laboratories embedded within Centers or Institutes have a distinct advantage financially.}\]

With staff costs consistently covered separately and by direct program support or IRAD support, the single largest cost for operation of the experimental facility is isolated from the costs “associated” with the laboratory itself. This does not recognize the challenge in program support necessary to consistently cover staff salaries through sponsored research, but as a laboratory, the single largest expense category is eliminated.

Secondly, embedded laboratories have equipment costs linked directly to IRAD accounts, reducing or eliminating the cost of ownership for the laboratory in its reporting. Maintenance, repairs, and replacements have more closely linked opportunity under this framework.

Finally, because the scope of the capabilities and the management are closely linked to sponsored research, the laboratories do not need to service the scope of a broader audience with many and varied required capabilities within the facility. The captive laboratory services the scope of the Center or Institute, and while there may be variety within that framework, it represents a more compact scope of work than the non-captive laboratories.

\[D) \text{The level of staffing support is barely sufficient across the board.}\]

In almost all cases, staffing of the Core Facilities laboratories is marginally sufficient for safety, for user training, for maintenance, for management, and for development of the facility long term. Some laboratories are at greater risk due to single individual staffing to cover all aspects of facility use. Turnover of staff in these facilities represents an existential threat to long term operation, and a significant loss of institutional memory related to the represented capabilities.
Recommendations
Because of the common challenges represented in the evaluative comments above, I have four recommendations to address the development of a sustainable Core Facilities model for the future success at Michigan Tech. They are:

1) There must be consistent expectations for the use fee structure. Some defined fraction of staff support related to the management, repair, training, and other activities associated with each instrument’s use in the Core Facilities laboratories must be represented in the use fee for that facility. The management costs of a facility should accurately represent the “cost of ownership” for each capability based on the annualized use against the annual cost of ownership for each facility.

Additionally, maintenance cycle costs beyond a two year timeframe should be embedded in this structure. For example, major system overhauls may be required based on the number of hours of use for the particular instrument. If that represents a 5 year cycle, the expected cost divided over 5 years should be represented in the use fee appropriately and not left for special funding through Core Facilities funding proposals. Core Facilities funding should represent the development and expansion of capabilities within these laboratories, not represent unfunded maintenance costs.

The use fee structure and policy should allow for the ebb and flow of funding cycles within the disciplines supported by the Core Facilities laboratory. For facilities strongly driven by use fee support, this can represent a loss of up to 50% of the facility income on a year-by-year basis as sponsored research funding waxes and wanes. The “profit and loss” for use fee indexes should be represented and managed over a longer period than a 2 year use fee approval cycle. Appropriate recognition of both the short term and longer-term (3-5 year) cycles in income versus expense reporting should be represented in the recalculation analysis for use fees.

2) There should be consistent expectations for staff support funding. Related to the first point under 1 above, time allocated toward support, maintenance, and operation and instruction within the Core Facility should be represented within the cost of operation for the facility, not separately. Some special arrangements that have been made with some Core Facilities are becoming institutionalized and represent inconsistent management of these expenses and do not reflect the cost of operating the facility properly. Because of the wide variation in this, the reporting of expenses and setting of use rates are inaccurate.

3) Reporting and documentation for the Core Facilities must be more consistent and transparent. Again, because of the wide variation in types of facilities, initial reporting requirements were broadly defined, with no required elements or structure. The process of this review has identified several details that should be represented in the annual reporting for each Core Facility to recognize the financial, physical, operational, and developmental management for each facility. The following details are recommended to be included in future reporting:

- **The type and volume of use of the facility must be reported.** This may vary by facility, but whether the number of samples per system, the number of hours of system usage, or the number of procedures per unit of time, some metric of the volume of use compared to the available usage possible should be represented for each major capabilities within each facility each year.

- **The income for the operation of the facility must be reported.** This again may vary in the specifics, but the total income for the facility from use fees, grants and contracts, and from other sources should be communicated at an appropriate level of detail, and the total number of sponsored projects and total number of facility users should be reported for the facility each year. This may include the number of faculty engaged in research utilizing the facility, and the number of student and industrial users at various levels. A graph documenting the ongoing operating income year on year should be presented with at least a five-year window.

- **The expense for the operation of the facility must be reported.** In particular, a running estimate of the total annual operational costs to cover all aspects of operation (maintenance, staff support, consumables, and

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We prepare students to create the future.

Michigan Technological University is an equal opportunity institution/equal opportunity employer.
routine operational costs) should be reported and details should be provided for unique or less frequent operating expenses associated with longer-term maintenance or repair costs. Again, a graph documenting the ongoing operating expense year on year should be presented with at least a five-year window.

- **The future plans for the development of the facility must be reported** with expected time windows and intended methods to support the cost of development, whether through external equipment grants or through internal mechanisms for infrastructure development. Specific projects should be discussed with the benefits communicated regarding the plans. Plans within a five-year window would be appropriate to consider.

- **The challenges or risks to the facility must be reported.** Many challenges threaten the long-term success of the Core Facilities, and they should be communicated. Some challenges are existential. Outlook on the financial health, staff management, aging infrastructure, and major capital expense needs should be communicated. Where possible, documentation of paths to be explored to resolve these challenges should also be communicated.

4) **The mission focus for the Core Facilities has been skewed** in the short term by the necessary but heavy focus on addressing challenges arising from safety inspections. For some of the Core Facilities, the necessary but heavy response to the safety inspections has had both a good and a bad impact. The Core Facilities should be representative of how experimental laboratories at Michigan Technological University should operate properly, and proper safety management is a necessary part of this demonstration. However, this short-term impact brings into relief that the Core Facilities should also have financial and operational inspections also, where the results of those inspections also brings about improvements in how the laboratories operate as models for the campus. Each aspect (safety, financial, operational) also requires an appropriate level of support from the institution to bring about the types of change necessary.
## Proposed FY2017-20 F&A Rates

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Sponsored Awards
Fiscal Year 2016
1st Quarter
Thru September 30, 2015
TOTAL: $13,512,798

Pre-Proposals Submitted (excluded from Proposals Submitted figures below)
FY2015: 5
FY2016: 13

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**Gifts represent non-contractual funding from corporations, foundations, associations and societies in support of academic programs, scholarships/fellowships, student design & enterprise, research, youth programs and special programs.
### Fiscal Year 2016

#### 1st Quarter

**Thru September 30, 2015**

**TOTAL: $13,512,798**

---

**Pre-Proposals Submitted**
(excluded from Proposals Submitted figures below)

- FY2015: 5
- FY2016: 13

---

**Percentages of Tenured & Tenure Track Faculty**
(as either PI or Co-PI)

- Submitting Proposals since 07/01/2015: 34.7%
- On Active Projects as of 09/30/2015: 55.0%

---

#### SPO & IIE Metrics

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<td>21,533</td>
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<td>637,343</td>
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<tr>
<td>Crowd-Funding</td>
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<td>710</td>
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<td>-</td>
<td>65</td>
<td>-</td>
<td>472</td>
<td>-</td>
<td>6,378</td>
</tr>
<tr>
<td>Industry</td>
<td>-</td>
<td>893,530</td>
<td>-</td>
<td>-</td>
<td>18,000</td>
<td>-</td>
<td>543,068</td>
<td>-</td>
<td>1,454,598</td>
<td></td>
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<tr>
<td>Other</td>
<td>-</td>
<td>3,225</td>
<td>76,800</td>
<td>-</td>
<td>8,425</td>
<td>21,500</td>
<td>-</td>
<td>79,202</td>
<td>-</td>
<td>189,152</td>
</tr>
<tr>
<td>State of MI</td>
<td>-</td>
<td>459,673</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>459,673</td>
<td>-</td>
<td>1,475,485</td>
</tr>
<tr>
<td>Total $ by Division</td>
<td>394,279</td>
<td>5,047,825</td>
<td>4,066,396</td>
<td>1,078,592</td>
<td>1,137,095</td>
<td>92,085</td>
<td>40,000</td>
<td>1,656,526</td>
<td>-</td>
<td>13,512,798</td>
</tr>
<tr>
<td>Fiscal Comparison</td>
<td>239,435</td>
<td>10,145,114</td>
<td>4,443,024</td>
<td>2,861,593</td>
<td>1,948,697</td>
<td>37,655</td>
<td>-</td>
<td>1,594,294</td>
<td>-</td>
<td>21,269,758</td>
</tr>
<tr>
<td>Percent Change</td>
<td>64.7%</td>
<td>-50.2%</td>
<td>-8.5%</td>
<td>-62.3%</td>
<td>-41.6%</td>
<td>144.5%</td>
<td>-</td>
<td>3.9%</td>
<td>-</td>
<td>-36.3%</td>
</tr>
<tr>
<td>Disclosures Received</td>
<td>-</td>
<td>71.6%</td>
<td>8.9%</td>
<td>-</td>
<td>20.0%</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>4</td>
</tr>
<tr>
<td>Non-disclosure Agreement</td>
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<td>18</td>
<td>-</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>32</td>
</tr>
<tr>
<td>Patents Filed or Issued</td>
<td>-</td>
<td>50.0%</td>
<td>-</td>
<td>50.0%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
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<td>License Agreements</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Gross Royalties</td>
<td>27.3%</td>
<td>-</td>
<td>18.2%</td>
<td>45.4%</td>
<td>-</td>
<td>-</td>
<td>9.1%</td>
<td>-</td>
<td>-</td>
<td>95,481</td>
</tr>
</tbody>
</table>

1. Combined Metrics from both the Sponsored Programs Office (SPO) and Innovation & Industry Engagement (IIE)
2. Percentages reflect the proportional contribution from each Division (calculated by dividing the sum of the fractional contributions of all inventors for each unit by the total number of inventors)
3. Institute for Leadership & Innovation is reported under Pavlis Honors College as of fiscal year 2015
Michigan Technological University  
Total Research Expenditures by College/School/Division  
Fiscal Year 2016 & 2015  
As of September 30, 2015 and September 30, 2014

<table>
<thead>
<tr>
<th>College/School/Division</th>
<th>FY2016</th>
<th>FY2015</th>
<th>Variance</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration*</td>
<td>2,285,243</td>
<td>2,072,283</td>
<td>212,960</td>
<td>10.3%</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>4,679,646</td>
<td>5,127,863</td>
<td>(448,217)</td>
<td>-8.7%</td>
</tr>
<tr>
<td>College of Science &amp; Arts</td>
<td>2,762,858</td>
<td>2,611,090</td>
<td>151,768</td>
<td>5.8%</td>
</tr>
<tr>
<td>Pavlis Honors College</td>
<td>49,352</td>
<td>41,897</td>
<td>7,455</td>
<td>17.8%</td>
</tr>
<tr>
<td>Keweenaw Research Center (KRC)</td>
<td>1,392,772</td>
<td>1,171,255</td>
<td>221,517</td>
<td>18.9%</td>
</tr>
<tr>
<td>Michigan Tech Research Institute (MTRI)</td>
<td>1,956,154</td>
<td>1,992,180</td>
<td>(36,026)</td>
<td>-1.8%</td>
</tr>
<tr>
<td>School of Business &amp; Economics</td>
<td>173,151</td>
<td>183,348</td>
<td>(10,197)</td>
<td>-5.6%</td>
</tr>
<tr>
<td>School of Forest Resources &amp; Environmental Science</td>
<td>956,705</td>
<td>1,116,000</td>
<td>(159,295)</td>
<td>-14.3%</td>
</tr>
<tr>
<td>School of Technology</td>
<td>132,988</td>
<td>95,095</td>
<td>37,893</td>
<td>39.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14,388,869</strong></td>
<td><strong>14,411,011</strong></td>
<td><strong>(22,142)</strong></td>
<td><strong>-0.2%</strong></td>
</tr>
</tbody>
</table>

*Includes the Vice Presidents, Provost, CIO, Exec Director Financial Services & Operations and others who report to a VP, Provost or the President. Except for the research institutes that report to the VPR.
Pre-Proposals Submitted
(excluded from Proposals Submitted figures below)

FYTD 2015: 13
FYTD 2016: 28

Sponsored Awards
Fiscal Year 2016
2nd Quarter
Ended December 31, 2015
TOTAL: $28,893,623

Pre-Proposals Submitted
(excluded from Proposals Submitted figures below)

FYTD 2015: 13
FYTD 2016: 28

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Proposals Submitted</th>
<th>Awards Received</th>
<th>Awards Received ($)</th>
<th>Variance</th>
<th>Variance %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FY '16 as of 12/31</td>
<td>FY '15 as of 12/31</td>
<td>FY '16 as of 12/31</td>
<td>FY '15 as of 12/31</td>
<td>FY '16 as of 12/31</td>
</tr>
<tr>
<td>NASA</td>
<td>40</td>
<td>45</td>
<td>8</td>
<td>17</td>
<td>597,282</td>
</tr>
<tr>
<td>National Science Foundation</td>
<td>115</td>
<td>125</td>
<td>37</td>
<td>47</td>
<td>4,939,588</td>
</tr>
<tr>
<td>US Department of Agriculture</td>
<td>29</td>
<td>34</td>
<td>12</td>
<td>38</td>
<td>1,047,827</td>
</tr>
<tr>
<td>US Department of Defense</td>
<td>38</td>
<td>32</td>
<td>26</td>
<td>25</td>
<td>3,853,204</td>
</tr>
<tr>
<td>US Department of Education</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>92,155</td>
</tr>
<tr>
<td>US Department of Energy</td>
<td>16</td>
<td>18</td>
<td>12</td>
<td>8</td>
<td>1,290,949</td>
</tr>
<tr>
<td>US Department of HHS</td>
<td>11</td>
<td>17</td>
<td>5</td>
<td>8</td>
<td>1,108,831</td>
</tr>
<tr>
<td>US Department of Transportation</td>
<td>8</td>
<td>17</td>
<td>9</td>
<td>16</td>
<td>778,220</td>
</tr>
<tr>
<td>Other Federal Agencies*</td>
<td>29</td>
<td>19</td>
<td>15</td>
<td>13</td>
<td>752,393</td>
</tr>
<tr>
<td><strong>Federal Agency Total</strong></td>
<td>288</td>
<td>307</td>
<td>125</td>
<td>171</td>
<td>14,460,449</td>
</tr>
<tr>
<td>State of Michigan</td>
<td>24</td>
<td>28</td>
<td>13</td>
<td>22</td>
<td>1,892,820</td>
</tr>
<tr>
<td>Industrial</td>
<td>100</td>
<td>116</td>
<td>106</td>
<td>99</td>
<td>4,557,476</td>
</tr>
<tr>
<td>Foreign</td>
<td>11</td>
<td>17</td>
<td>8</td>
<td>5</td>
<td>517,087</td>
</tr>
<tr>
<td>All Other Sponsors</td>
<td>31</td>
<td>33</td>
<td>17</td>
<td>18</td>
<td>1,425,758</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>454</td>
<td>501</td>
<td>289</td>
<td>315</td>
<td>22,853,390</td>
</tr>
<tr>
<td>Gifts**</td>
<td>-</td>
<td>-</td>
<td>180</td>
<td>180</td>
<td>6,033,755</td>
</tr>
<tr>
<td>Crowd Funding</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>12</td>
<td>6,478</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>454</td>
<td>501</td>
<td>457</td>
<td>507</td>
<td>$28,893,623</td>
</tr>
</tbody>
</table>


**Gifts represent non-contractual funding from corporations, foundations, associations and societies in support of academic programs, scholarships/fellowships, student design & enterprise, research, youth programs and special programs.
Michigan Technological University  
Total Research Expenditures by College/School/Division  
Fiscal Year 2016 & 2015  
As of December 31, 2015 and December 31, 2014

<table>
<thead>
<tr>
<th>College/School/Division</th>
<th>FY2016</th>
<th>FY2015</th>
<th>Variance</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration*</td>
<td>2,198,980</td>
<td>1,923,860</td>
<td>275,120</td>
<td>14.3%</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>12,758,079</td>
<td>12,418,386</td>
<td>339,693</td>
<td>2.7%</td>
</tr>
<tr>
<td>College of Science &amp; Arts</td>
<td>7,621,723</td>
<td>6,987,218</td>
<td>634,505</td>
<td>9.1%</td>
</tr>
<tr>
<td>Pavlis Honors College</td>
<td>113,267</td>
<td>144,933</td>
<td>(31,666)</td>
<td>-21.8%</td>
</tr>
<tr>
<td>Keweenaw Research Center (KRC)</td>
<td>3,100,967</td>
<td>2,725,446</td>
<td>375,521</td>
<td>13.8%</td>
</tr>
<tr>
<td>Michigan Tech Research Institute (MTRI)</td>
<td>4,394,103</td>
<td>4,807,238</td>
<td>(413,135)</td>
<td>-8.6%</td>
</tr>
<tr>
<td>School of Business &amp; Economics</td>
<td>787,057</td>
<td>786,357</td>
<td>700</td>
<td>0.1%</td>
</tr>
<tr>
<td>School of Forest Resources &amp; Environmental Science</td>
<td>2,347,146</td>
<td>2,638,009</td>
<td>(290,863)</td>
<td>-11.0%</td>
</tr>
<tr>
<td>School of Technology</td>
<td>280,835</td>
<td>224,155</td>
<td>56,680</td>
<td>25.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>33,602,157</strong></td>
<td><strong>32,655,602</strong></td>
<td><strong>946,555</strong></td>
<td><strong>2.9%</strong></td>
</tr>
</tbody>
</table>

*Includes the Vice Presidents, Provost, CIO, Exec Director Financial Services & Operations and others who report to a VP, Provost or the President. Except for the research institutes that report to the VPR.
<table>
<thead>
<tr>
<th>Department and Title</th>
<th>FY16 Total</th>
<th>FY15 Total</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>20120 - Pavlis Honors College</td>
<td>116,060.78</td>
<td>147,775.17</td>
<td>-31,714.39</td>
</tr>
<tr>
<td>29110 - Information Technology</td>
<td>109,422.13</td>
<td>45,097.06</td>
<td>64,325.07</td>
</tr>
<tr>
<td>21002 - School of Business</td>
<td>787,056.62</td>
<td>786,357.23</td>
<td>699.39</td>
</tr>
<tr>
<td>22007 - Dean of Engineering</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>22070 - Engineering Fundamentals</td>
<td>40,093.47</td>
<td>4,756.31</td>
<td>35,337.16</td>
</tr>
<tr>
<td>22200 - Chemical Engineering</td>
<td>776,827.66</td>
<td>914,961.07</td>
<td>(138,133.41)</td>
</tr>
<tr>
<td>22400 - Civil &amp; Environmental Engineering</td>
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<td>2,189,026.39</td>
<td>541,026.51</td>
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<tr>
<td>22500 - Electrical and Computer Engineering</td>
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<td>1,886,098.08</td>
<td>114,621.44</td>
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<tr>
<td>22550 - Geological &amp; Mining Eng &amp; Sciences</td>
<td>1,088,649.84</td>
<td>1,414,923.14</td>
<td>(326,273.30)</td>
</tr>
<tr>
<td>22600 - Mechanical Engrg-Engrg Mechanics</td>
<td>3,606,977.15</td>
<td>3,554,370.36</td>
<td>52,606.79</td>
</tr>
<tr>
<td>22700 - Materials Science and Engineering</td>
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<td>1,578,529.89</td>
<td>14,936.97</td>
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<tr>
<td>28900 - Biomedical Engineering</td>
<td>920,391.98</td>
<td>935,056.18</td>
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</tr>
<tr>
<td></td>
<td>12,758,079.38</td>
<td>12,477,721.42</td>
<td>280,357.96</td>
</tr>
<tr>
<td>23004 - Sch Forest Resources &amp; Environ Sci</td>
<td>2,347,145.78</td>
<td>2,638,008.56</td>
<td>(290,862.78)</td>
</tr>
<tr>
<td>28105 - Isle Royale Institute (IRI)</td>
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<td>22300 - Chemistry</td>
<td>670,890.01</td>
<td>670,571.85</td>
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<td>24011 - Dean of Science &amp; Arts</td>
<td>24,503.49</td>
<td>9,400.00</td>
<td>15,103.49</td>
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<tr>
<td>24100 - Biological Sciences</td>
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<td>804,503.81</td>
<td>434,595.08</td>
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<td>24200 - Geology</td>
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<td>435,987.73</td>
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<tr>
<td>24219 - Visual &amp; Performing Arts</td>
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<td>101,393.74</td>
<td>70,820.60</td>
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<tr>
<td>24300 - Mathematical Sciences</td>
<td>965,407.90</td>
<td>807,843.49</td>
<td>157,564.51</td>
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<tr>
<td>24400 - Computer Sciences</td>
<td>901,696.91</td>
<td>574,701.28</td>
<td>326,995.63</td>
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<tr>
<td>24500 - Kinesiology &amp; Integrative Physiology</td>
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<td>342,095.07</td>
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<tr>
<td>24800 - Social Sciences</td>
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<tr>
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<td>508,784.86</td>
<td>(13,761.68)</td>
</tr>
<tr>
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<td>7,621,723.25</td>
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<td>634,505.79</td>
</tr>
<tr>
<td>25002 - School of Technology</td>
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<td>224,155.06</td>
<td>56,680.17</td>
</tr>
<tr>
<td>28009 - Graduate School</td>
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<td>(16,328.21)</td>
</tr>
<tr>
<td>28015 - Graduate Student Support</td>
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<tr>
<td></td>
<td>86,243.22</td>
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<td>(13,991.66)</td>
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<tr>
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<td>0.01</td>
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<td>(0.18)</td>
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<td>20055 - University Wide Commitments</td>
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<tr>
<td>40130 - Redistribution Control Accounts</td>
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<tr>
<td>41200 - AE Seaman Mineral Museum</td>
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<td>-</td>
<td>-</td>
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<tr>
<td>28510 - Michigan Tech Rarch Institute(MTRI)</td>
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</tr>
<tr>
<td>28600 - Keweenaw Research Center</td>
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</tr>
<tr>
<td>10027 - President</td>
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<td>6,687.99</td>
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<td>42001 - Vice Pres for Research</td>
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<td>28,914.47</td>
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<tr>
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<td>33,602,157.02</td>
<td>32,655,601.62</td>
<td>946,555.40</td>
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