Power of SUNY Meeting  
December 13, 2013  
Meeting minutes recorded by Kathleen Kielar

Handouts for this meeting are at the end of this document

AGENDA

- Registration
- Introduction
  - Host and SUNY Board of Trustee, Angelo Fatta
  - President, Buffalo State, Howard Cohen
  - Chancellor Nancy Zimpher
- Academic Excellence– Elise Newkirk, Coordinator of Community Relations, SUNY System Administration
  - AE Indicator 1: Experiential learning Opportunities and Placements
- Research and Innovation – Angela Wright, Director of Government Relations, SUNY Research Foundation; Alex Cartwright, Vice President for Research, University at Buffalo; Cathy Kaszluga, Vice President for Strategy and Planning, SUNY Research Foundation; Matthew Mroz, Assistant Director for Innovation and Partnerships, SUNY Research Foundation
  - R&I Indicator 1: Students engage in hands-on research
  - R&I Indicator 2: Strategic, large scale multidisciplinary grants in high priority research areas
  - R&I Indicator 3: New nationally-prominently funded faculty researcher hires in high priority areas
  - R&I Indicator 4: Private investment in SUNY-born technologies
  - R&I Indicator 5: SUNY-born technologies licensed
  - R&I Indicator 6: Licensed SUNY-born technologies commercially available

MEETING MINUTES

The meeting was called to order at 9:00 AM by Angelo Fatta.

Trustee Fatta welcomed the group and explained that this session was the 4th session in a series of meetings held the previous weeks where we have discussed a select number of indicators to refresh the Power of SUNY. These indicators will determine targets for SUNY to strive for. A series of working groups have transcribed these indicators aimed to get SUNY, the State of New York, and our local communities to better work together for economic impact. We have decided on three directions: 1) Academic Excellence, 2) Innovation & Research; & 3) Operational Efficiencies. Over the next couple of hours we will go over a few presentations and open up some dialogue on those presentations.

Howard Cohen, Interim-President of Buffalo State offered a few introductory remarks and welcomed us to the Buffalo State campus.
Chancellor Nancy Zimpher then spoke. We’re are trying to build upon our Strategic Directions, which are now 5 years old. We are trying to be real clear of what our targets are. We’ve been reporting the data about what we do, but only reporting descriptively. What we are trying to do now is determine where we are going? What targets are we trying to strive to? As the campuses debate the metrics, which metrics do you have the capacity to do? How do you see some of these other metrics meet with your campus goals? Today we are going over experiential learning, or applied learning. We’re all doing it, but we have to find a way to measure it and document it. The second topic being discussed will be research & innovation.

EXPERIENTIAL LEARNING DISCUSSION

Elise Newkirk presented the group an overview of the topic of Experiential Learning. Experiential learning is a learning by doing model. We are trying to come up with some type of planning, training, monitoring, questioning, and evaluating. Opportunities can be credit or non-credit bearing. We will need to establish partner organizations. Currently SUNY is already doing Co-op’s, internships, work study, and clinical placements. We are also doing service learning, community service, research, entrepreneurship, and field study.

Experiential learning has impact on the students’ learning and engagement in the educational institution thus having higher retention rates. It also enhances their resume and in the case of Co-Ops, it can help pay for college, as well as provide a job after college.

We have some great models to look at. For Experiential Education we can look at Carnegie Classification for Community Engagement. The University of Connecticut, California Berkeley who have made experiential learning part of their core curriculum. Co-ops are at Drexel, RIT, and undergraduate research at the University at Albany or Binghamton. We would like to get feedback about what you think experiential learning can play at your institutions and how we can better measure what is already going on.

Questions from the Floor

- How is this different than traditional internships?
  - Internships are included in this initiatives and include traditional internships and field study.
- How can utilize prior work experience for our students, particularly in our community colleges?
  - Prior learning assessments can give students credit for work that they have done.
- There are two poles for experiential learning 1) Self-defined and 2) an established set of criteria. To be rigorous it’s important to define standards. So doing a day of service would not cut it. However doing an internship that has defined criteria would cut it.
- The Chancellor asked the group is there was some designation on the transcript that or course catalog that had a service learning component to it. Buffalo State does.
- It was observed that experiential learning served two of the main missions of SUNY; to learn, to serve, and to research. Students are learning and at the same time we are serving our communities. What are we trying to accomplish? What are the strict goals
that are trying to make our students more knowledgeable and how do we know we’ve achieved them?

- One of the things to think about is the benefit of the students. It is items where the student is engaged in the learning and faculty/student interaction. It is the outcomes of the learning that is the menace of this. The service learning is separately documented. Documentation on these experiences is made in various formats.

- How are the expectations for experiential learning different than the traditional internships that we place on our partners and our students?

- Some internships are fully experiential and others are partly experiential.

- Experiential learning, co-ops, internships takes an enormous amount of faculty time. It is not a list of add-ons. It takes resources. We need to understand about travel. Moving the dial on this piece is very complicated as it involves credit, faculty willingness, and a whole lot of work in communities to make meaningful experiential opportunities available. Not all experiential education is of equal value. We want to make certain that the experience has value to the community, the student, and the other students at the college – we have a feedback look that can be self-sustaining. It’s a tough piece.

- It’s a curriculum design issue. Where does it fit within a degree program? There needs to be discussion on how does this fit within each program.

- Others in the room agreed that faculty investment in the program was not trivial. It’s very significant in time and needed resources.

- At Buffalo State, did the experience really contribute to me finding a job and my overall learning?

- At the community college, an internship is very traditional. If we are going to go forward, we need to revisit our relationships with our companies. The companies just want us to stay away. There is a caution in disrupting the relationships that current faculty and business have.

- We have to examine different ways of getting to the overall goals. This may be a work-study relationship in the university art galleries, etc.

- The question of how to measure it –the only one I can think off hand is the National Survey of Student Engagement, which has a few questions on experiential learning. We have to figure out a common method. It’s much better to have one that is nationally in scope so we can compare with our peers.

- Buffalo State has several service learning components in the communications department. When the student is an active partner in the development of the course, they find great value in the course. When we measure this they love being involved in service learning courses. The experience gave them a real taste in the communications industry.

- It’s up to the student to stand up for their own education by saying I’m here for an internship not to get a cup of coffee.

- Service Learning versus internship opportunities. Internships are a one on one experience that takes up an enormous amount of faculty time as they are working on developing the relationship with the business and the student. On the other hand, for service learning we can shape it for groups and it isn’t as intensive for the faculty
member. The internship can offer employment. Can service learning opportunities offer employment? I suspect not. It can build a resume, but not necessarily equate to a job in the end.

- Students come away from an internship with a portfolio of their work.
- We are trying to get our arms around the rhetoric out there. Many of SUNY institutions have some type of lab or clinical experience. We hire all sorts of work study students. It is an internship of some sort. We are already doing much of this. We just need to capture these experiences as a system.
- It was pointed out that we need to do a better job of getting the good word out to the community of all the things the students and institutions are doing for the community.
- It was noted that as a personal experience as an undergraduate student, co-ops and research internships can be a way of getting through school financially. There are opportunities to supplement a student’s income through experiential learning.
- We need a set of definition of what experiential learning is.
- Why isn’t this documented? This may be related to the reward structure. Service learning gets done because the faculty member has an interest in it. They don’t get rewarded for them in the tenure structure or release time structure. This is unlike research, etc. All the documentation, and everything related to the measurement—needs to get built into the reward structure for the faculty member. It’s a bitter fruit to eat. It’s in the record, but when they get denied tenure….it doesn’t mean anything.
- You can also mess with the faculty determination and tenure process. What you can do as administrators, we need to make the argument to state government that this something of value and we need additional support. It buys additional release time and support for students such as travel expenses. We can create a structure that will allow us to move the dial campus by campus. We do it for distant education. We need to do the same thing here.
- What kinds of rewards would faculty monitor labs?
- We have a model for that. It’s part of their instructional load.
- There would be a cost for that as well.
- If we have a catalog numbering system, much like the AAA marks hotels, we can let the student know what the class involves, service learning, internship, etc.
- What is it, how do we document it, and if we like it, how do we grow it? We also need to identify and obtain financial resources.
- We need partners that are open to hiring our graduates that have done internships.
- Start-Up NY should also help us.
- Trying to access an educational institution for an intern is like navigating a maze. It’s very difficult to get to the right person to get an intern.
- It’s important that we define what these component are and determine the criteria, particularly when looking at Seamless Transfer.
- We have been considering doing an applied learning experience in our online program waiver. Is it a lab in a box? What do we do about that?
• The outside partner has a lot of input. We rely on them to let us know and rely on our advisory boards to bridge the gap between what the colleges want and the partners want.
• At what point does industry determine our curriculum to fill jobs?
• The department of labor needs to let us know what is behind those statistics. The only thing I can get out of them is welding. Welding is so complicated that they can’t find anyone to do it. We are trying to be more scientific about where those numbers are. Our strategic enrollment initiative is about planning to close these gaps.
• What is the push or the pull?
• It’s both. We can’t ignore the economic needs of the state. There needs to be a marriage.
• If we are able to get additional funding from the state or SUNY campuses in region were to cooperate in an endeavor the full range of internships in the area…have someone to represent all of SUNY, but have someone work on behalf of all the institutions in the region that might be hopeful in the metro areas. It may also be hopeful to understand systemness at the local level to a greater degree.
• The sell to the state would be a return on investment. We are going through this exercise to make the deal to get more money.

RESEARCH & INNOVATION DISCUSSION
The group was introduced to the team that was to present on the Research & Innovation metrics.

First Indicator: Students Engage in Hands-on Research
The NSSE survey (National Survey of Student Engagement) is the only measure they could find to measure undergraduate research on campus. This is focused on the quality of the experience, not how many participate.

The group has offered to use the number of students on the RF payroll as a way of measurement, but realized that these students are not included at the community colleges, as well as students who may be engage in non-paid research experiences. They are proposing that along with the payroll tracking, they include communications with undergraduate research office and community colleges and adopt a definition of research experience. They also propose tracking specific programs such as NSF REU grants across SUNY to identify additional undergraduates participating in research. Currently, SUNY has 14 active REU grants.

Concerns included funding, faculty commitment and participation, and shared experiences.

Possible solutions include faculty support and funding for students, mentorship for students and faculty, and training for students.

Questions/Comments from the Floor
• No comments
Second Indicator: Strategic large-scale multidisciplinary grants in high priority research areas

To give an idea of what is being talked about Alex Cartwright gave some examples:

- $25 Million grant from the NSF to the University at Buffalo for Biology with X-ray Free Electron Lasers (BioXFEL)
- $17 Million grant Department of Energy Frontier Research Center
- $70 Million grant NNMI to build a next generation “Power Electronics Manufacturing Institute.

How do we compare nationally? One was led by MIT and the other was led by Harvard. We are in good company.

The group sees that SUNY could achieve 10 strategic large-scale multidisciplinary grants in high priority research areas. It takes about 3 years for a grant of this sort to come to fruition.

The challenges are to leverage the entire scale, scope, and diversity of the campuses in the SUNY system.

Solutions include how to hire research faculty, helping faculty collaborate, helping faculty to write and submit proposals, develop strategic relationships with industry, and develop international partnerships.

Questions/Comments from the Floor

- Should SUNY stay out of business’s way? There are roles that everyone has. We need to facilitate knowing who does what throughout SUNY.
- The Chancellor wished that the group recognized the Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant which was granted for $14.6 million to SUNY Community Colleges.

Third Indicator: The Number of Licensed Technologies Commercially Available

The current state at SUNY shows that for FY12, 4 new licensed SUNY technologies became available for consumer or commercial use.

Nationally, we have underperformed as compared to the national average. We believe this is because of the economic downturn. Our strengths in life sciences, does not match up with the industries willingness to minimize risk. Business is looking at electronics.

The group sees moving the dial at least 20%. It is difficult to influence. Industry partners commercialize SUNY-born technologies and the commercialization process can take many years and millions of dollars depending on the type of technologies.
Barriers include:
- SUNY’s technology transfer officers have a difficult time influencing this metric
- There is a lack of desire for the venture community to invest in the hard sciences is a major barrier to the commercialization of SUNY-born technologies
- Diminishing budgets of SUNY’s technology transfer offices
- The lack of funding for proof-of-concept funding and other funding programs to de-risk SUNY-born technologies.
- Lack of experienced entrepreneurs recruited to the management teams of start-up companies formed to commercialize SUNY-born technologies

Solutions:
- Provide funding to support programs that create an innovation ecosystem throughout the system
- Develop Strategic relationships with Industry
- Hire Business development professionals
- Get Faculty to write and submit proposals – focused on industry need/offset and commercializing technologies
- Work with state government to make the business environment friendlier to small/start-up companies

Questions/Comments from the Floor
- Start-Up NY brings the entrepreneurs on campus. Our faculty are not entrepreneurs. They are concerned about the advancement of knowledge. When you bring people from the outside that think differently, so this is has the potential for bringing entrepreneurs on campus. We need to expand this thought and get more entrepreneurs on campus.
- Let’s see what develops out of Start-Up NY and then go from there.
- We don’t have a good comparison. We have to invent our own way on this.
- Community Colleges are investing in different ventures such as biotechnology that deviates from farming. How do we get the community behind us?

Fourth Indicator: New Nationally-Prominent Funded Faculty Researcher Hires in High Priority Areas

Current state of SUNY – we have invested $30 million dollars since 2006 for the recruitment and retention of over 100 SUNY faculty members through the Empire Innovation Program (EIP). When we look at the ROI on these positions we see that 39 of these positions have produced $0.00 in Research funding. 3 of hires have produced =>$4 million.

In addition to EIP, there are individual campus efforts to recruit top-flight faculty who can bring research funding with them.

At this time there is no data on how SUNY compares in recruiting funded faculty.
The group sees 100 incremental new nationally prominent funded faculty researcher hires in high priority areas.

As a challenge, they have only recently been working to leverage the entire scale, scope and diversity of the campuses in the SUNY system --- through SUNY REACH and the Networks of Excellence – to build our research and innovation capacity. Strategic hires as defined by system-wide priorities may be a good supplement to campus-level strategic hires.

Possible Solutions:

- Restructure the EIP program from providing on-going salary support to start-up packages will better set the conditions for success and increased ROI. Success breeds success.
- Utilizing the governors programs.

Questions/Comments from the Floor

- It seems important to look at why 80% of the hires did not produce. Alex said that we really need to determine some metric. Some professors were hired under EIP label, but these researchers did not have the track record.
- Data is pegged to all externally funded grants…not just federal grants
- We need to invest more in the technologies that support regions and faculty.
- The entrepreneur residents program is very successful.
- Can you talk about more how to encourage collaboration? You almost have to trick people into collaborating. Get faculty to workshops through certain topics. Having roundtable discussions. We need to have more of these events and start celebrating when people are working together.

CLOSING

Nancy Zimpher said we have the capacity to do more and we’re learning more about our capacity. Beginning with the Governors state of the state address, we’ll keep the conversation going with the State of SUNY address. This conversation will continue. We recognize that this is on the fast tract. She thanked us on behalf of the administration for coming to this session and for offering our input.

Trustee Fatta said that comments offered would be integrated into the other conversations that occurred throughout the state. He asked us to take a moment and think about what we are doing in SUNY. We are part of a system that is focused on education. SUNY has 480,000 students, 65 campuses, $10 billion budget, 2.5 million alumni, and 90,000 faculty and staff. SUNY is a big deal. The more education society has, the more we can solve society’s problems.
Strategic Planning – *Power of SUNY* Refresh Input

The Chancellor and Board of Trustees have asked for our help in determining ambitions for a refresh of The Power of SUNY. To accomplish this task we need your expertise in reviewing and discussing a set of possible performance indicators as they relate to three particular focus areas: academic excellence, innovation and research, and operational performance and efficiencies. The result of these reports will be used to frame discussions at four leadership meetings. That makes this a serious and challenging intellectual assignment. You should be prepared to discuss your findings at the leadership meetings and specific materials will be due in advance of that date. A final wrap up report including observations from the discussion will be due one week after the meeting. All materials can be sent to strategicplanning@suny.edu.

Each meeting will discuss a select number of indicators, with the intent of thoughtful in depth discussion of all indicators by the conclusion of the last meeting.

**Meeting Dates:**

**December 2, 12:00pm-2:00pm – SUNY Global Center, New York City, Host – H. Carl McCall**
- Performance indicators:
  - Academic Excellence: Strategic Enrollment, Graduation Rates, Retention Rates, STEM Degrees Conferred
  - Innovation and Research: Sponsored Program Expenditures, Industry-Sponsored Research, SUNY-born knowledge-based enterprises, student based start-ups

**December 9, 11:00am-1:00pm – HVCC, Capital Region, Host – Peter Knuepfer**
- Performance indicators:
  - Operational Efficiencies: Philanthropic investment attracted, Cost of instruction and relative balance of expense categories, Savings from reduction in energy use, Savings from shared services, Savings re-invested in the academic enterprise
  - Academic Excellence: Campuses involved in Cradle to Career (C2C) sites, Ratio of percent of C2C indicators trending in the correct direction

**December 11, 11:00am-1:00pm – SUNY Global Center, New York City, Host – Joseph Belluck**
- Performance indicators:
  - Academic Excellence: Enrollment overall (inc. NYS HS graduates, out of state and digital), Time to degree, Full time employment and/or re-enrollment in continued study within six months of graduation
  - Operational Efficiencies: Market share of NYS HS graduates, Out of state enrollment, Diversity of students, faculty and staff
December 13, 9:00am - 11:00am – Buffalo State, Buffalo, Host – Angelo Fatta

- Performance indicators:
  - Academic Excellence: Experiential learning opportunities and placements (including research)
  - Innovation and Research: Hiring funded research faculty, large, multi-disciplinary research centers, licenses executed/licensed technologies commercially available
Full Listing of Performance Indicators to be Discussed:

<table>
<thead>
<tr>
<th>Academic Excellence</th>
<th>Meeting Date</th>
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<tbody>
<tr>
<td>Graduation rates</td>
<td>12/02/2013</td>
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<td>Retention rates</td>
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<td>Strategic enrollment</td>
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<td>Capture share of the transfer population</td>
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<tr>
<td>Time to degree</td>
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<td>Full time employment and/or re-enrollment in continued study within six months of graduation</td>
<td>12/11/2013</td>
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<tr>
<td>Experiential learning opportunities and placements</td>
<td>12/13/2013</td>
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<td>STEM degrees conferred</td>
<td>12/02/2013</td>
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<td>Campuses involved in Cradle to Career (C2C) sites</td>
<td>12/09/2013</td>
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<tr>
<td>Ratio or percent of indicators trending in the right direction within the Cradle to Career (C2C) defined sites.</td>
<td>12/09/2013</td>
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<td>Digital enabled enrollment</td>
<td>12/11/2013</td>
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<th>Innovation and Research</th>
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<tr>
<td>External investment in SUNY's research – Sponsored Program Expenditures</td>
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<td>Industry-sponsored research</td>
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<td>SUNY-born knowledge-based enterprises (start-ups)</td>
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<td>Student based start-ups</td>
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<td>Strategic, large scale multidisciplinary grants in high priority research areas</td>
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<td>New nationally-prominently funded faculty researcher hires in high priority areas</td>
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<td>Private investment in SUNY-born technologies</td>
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<td>SUNY-born technologies licensed</td>
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<td>Licensed SUNY-born technologies commercially available</td>
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<td>Students engaged in hands-on research</td>
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<th>Operational Performance and Efficiencies</th>
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<td>Market share of NYS HS graduates</td>
<td>12/11/2013</td>
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<td>Philanthropic investment attracted</td>
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<td>Out of state enrollment</td>
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<td>Diversity of students, faculty and staff</td>
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<td>Cost of instruction and relative balance of expense categories</td>
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<td>Student debt / default rates</td>
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<td>Savings from reduction in energy use</td>
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<td>Savings from shared services – IT consolidation, back office and admin functions</td>
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<td>Savings re-invested in the academic enterprise</td>
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For each performance indicator discuss the following points:

I. **Current State at SUNY** - for this indicator what is SUNY’s current state, what has influenced the current state and what influences are controllable, manageable or out of SUNY’s control?

II. **National Comparison** - What national or state-wide comparators, influences, standards, expectations should be understood when evaluating SUNY’s performance? For this indicator how is SUNY performing compared nationally?

III. **Opinions on how good SUNY could be** – what is SUNY capable of achieving and how would you define success for this indicator?

IV. **Trouble spots / barriers / challenges in achieving success** - Do you have any concerns, cautions, warnings, etc, in achieving success?

V. **Possible solutions** - Please be specific in possible solutions to remove barriers and achieve success.
Experiential Learning

Connect Theory to Practice

Advocate
role model
helper
teacher
guidance
SUNY Experiential Learning

SUNY Works
- Co-op placements
- Internships
- Work study
- Clinical placements

SUNY Serves
- Service Learning
- Community Service

SUNY Discovers
- Research
- Entrepreneurship
- Field Study
SUNY Works

Why Experiential Learning

[Images of students, graduates, a map of New York, and a university building]
Every SUNY Student will have the opportunity to engage in Experiential Education
SUNY Focus Area: Innovation and Research
Performance Indicator: Number of Licenses and Options Executed

Current State at SUNY - for this indicator what is SUNY's current state, what has influenced the current state and what influences are controllable, manageable or out of SUNY's control?

During FY12, 55 licenses and option agreements were executed with companies to commercialize SUNY-born technologies. Of the total number of license and option agreements executed during FY12 22% were with start-up companies, 42% were with small companies, and 36% were with large companies.

The five-year growth rate for this metric is -1.8%.

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<tr>
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<th>FY 07-08</th>
<th>FY 08-09</th>
<th>FY 09-10</th>
<th>FY 10-11</th>
<th>FY 11-12</th>
<th>Five-Year Growth</th>
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<tr>
<td>Number of Licenses and Option Executed</td>
<td>56</td>
<td>49</td>
<td>50</td>
<td>37</td>
<td>55</td>
<td>-1.8%</td>
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Table 1. Number of Licenses and Options Executed
Source: Association of University Technology Managers (AUTM)
National Comparison - What national or state-wide comparators, influences, standards, expectations should be understood when evaluating SUNY's performance? For this indicator how is SUNY performing compared nationally?

<table>
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<th>Average Number of Agreements Executed</th>
<th>Median Number of Agreements Executed</th>
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Charts 1 and 2 show the average and median number of license and option agreement signed for SUNY-born technologies. This data is based on information provided by over 150 institutions to the Association of University Technology managers for the Annual Licensing Activity Survey.

SUNY’s performance is above the national average and median for the last five years, but it is not at the performance level that it could be.

<table>
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<th>Number of Agreements Executed in 2012</th>
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<td>University of California</td>
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<td>Duke University</td>
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<td>University of Michigan</td>
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<td>University of Illinois - Urbana</td>
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<td>Columbia University</td>
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<td>University of Wisconsin - Madison/WARF</td>
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<td>Research Foundation for SUNY</td>
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Chart 3. Number of Licenses and Options Executed in 2012
Source: Association of University Technology Managers (AUTM)
Utilizing the list of institutions identified as SUNY's peer for sponsored programs expenditures Chart 3 shows that SUNY is competitive among its peer institutions.

Opinions on how good SUNY could be – what is SUNY capable of achieving and how would you define success for this indicator?

SUNY Report Card Target 5-year goal: 92 licenses and options executed

This is a difficult metric for SUNY's technology transfer offices to influence. Industry partners commercialize SUNY-born technologies and the commercialization process can take many years and millions of dollars depending on the type of technologies (e.g., life science versus IT). This is arguably a throughput problem of the technology transfer and commercialization lifecycle that can be influenced by the solutions outlined below.

Trouble spots / barriers / challenges in achieving success - Do you have any concerns, cautions, warnings, etc, in achieving success?

- The lack of desire for the venture community to invest in the hard sciences is a major barrier to the commercialization of SUNY-born technologies.
- Diminishing and stagnant budgets of SUNY's technology transfer offices.
- The lack of funding for proof-of-concept funding and other funding programs to de-risk SUNY-born technologies.
- Lack of experienced entrepreneurs recruited to the management teams of start-up companies formed to commercialize SUNY-born technologies.
Possible solutions - Please be specific in possible solutions to remove barriers and achieve success.

1) Provide funding to support programs that create an innovation ecosystem throughout the system
   - SUNY Technology Accelerator Fund (TAF) – provide funds to support proof-of-concept projects that accelerate and propel research discoveries into the market
   - SUNY Pre-seed Fund – provide seed funding to SUNY start-ups
   - SUNY Venture Fund – fund to provide mid-life funding sources to start-ups
   - SUNY Small Business Innovation Research Program (SBIR) Matching Grants – provide matching funds to SUNY companies that obtain a federal SBIR award
   - SUNY Patent Pool Program – Provide SUNY’s innovation hubs with funding mechanism that recovers campus investments in intellectual property protection when SUNY licenses to New York-based startups
   - SUNY Entrepreneurs-in-Residence Program – bring experienced entrepreneurs to coach SUNY entrepreneurs
   - SUNY Facilities Access Program – seed an equity-based facilities access program will allow SUNY to open its doors and meet the research and development needs of New York-based startups
   - SUNY Insure – provide discounted insurance (e.g., liability, director and officer) to SUNY start-ups
   - SUNY Innovation Showcase – connect SUNY start-ups to the venture community
   - SUNY Incubator Voucher Program – provide incentives for companies to locate in SUNY’s incubators
   - Student Entrepreneurship Program – assist students in forming start-up companies

2) Develop strategic relationships with industry
   - START-UP NY
   - Centers of Excellence (CoE)
   - Centers for Advanced Technology (CAT)
   - Strategic Partnerships for Industrial Resurgence (SPIR)

3) Hire business development professionals
   - NYSUNY2020

4) Get faculty to write and submit proposals – focused on industry need/focus and commercializing technologies
   - Grant writing workshops
   - Federal relations – garnering intelligence, helping appoint faculty to agency committees
   - Networks of Excellence
   - Research Collaboration Fund

5) Work with state government to make the business environment friendlier to small/start-up companies
   - START-UP NY
   - Other tax-breaks, credits
   - State-wide venture fund (NYS $50 million dollar venture fund)
   - Innovation New York Network
Current State at SUNY - for this indicator what is SUNY’s current state, what has influenced the current state and what influences are controllable, manageable or out of SUNY’s control?

This document provides examples of large-scale multidisciplinary grants from the federal government. Within three programs (National Science Foundation Science and Technology Centers [STC], the Department of Energy’s Energy Frontier Research Centers (EFRC), and the National Network for Manufacturing Initiatives [NNMI]), SUNY has been competitive. An STC award was recently announced at UB, SUB and Binghamton won a $17M EFRC in 2009, and a consortium led by CNSE is one of three finalists for NNMI funds.

**National Science Foundation Science and Technology Center**
The Science and Technology Centers (STC): Integrative Partnerships program supports innovative, potentially transformative, complex research and education projects that require large-scale, long-term awards. STCs conduct world-class research through partnerships among academic institutions, national laboratories, industrial organizations, and/or other public/private entities, and via international collaborations, as appropriate.

STCs are funded on a periodic basis – every four years. SUNY has one STC, recently funded as part of the “Class of 2013.” It is a $25 million award:

**Biology with X-Ray Free Electron Lasers**
**Lead Institution:** University at Buffalo
**Partner Institutions:** Arizona State University, CFEL Science, Cornell University, The Hauptman-Woodward Institute, Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, Rice University, Stanford University, University of California – Davis, University of California - San Francisco, University of Wisconsin - Milwaukee

**Department of Energy Energy Frontier Research Center**
The Northeastern Center for Chemical Energy Storage (NECCES) is a $17 million effort effort being led by Stony Brook University, and includes as partners Rutgers University, MIT, Binghamton University, Lawrence Berkeley National Laboratory, Argonne National Laboratory, Brookhaven National Laboratory, the University of Michigan, and the University of California at San Diego. The Center supports basic research in the design of the next generation of lithium-ion batteries (LIBs), which requires both the development of new chemistries and the fundamental understanding of the physical and chemical processes that occur in these complex systems. The Department of Energy has announced the recompensation for its entire set of EFRC’s.

**NNMI**
The consortium led by CNSE is competing for a $70 million award to build a next generation ‘Power Electronics Manufacturing Institute.’ The consortium includes the Massachusetts Institute of Technology and such companies as General Electric, IBM, Ford, BNL, Raytheon, Global Foundries, and Lockheed Martin, and research institutions including Rensselaer Polytechnic Institute.
National Comparison - What national or state-wide comparators, influences, standards, expectations should be understood when evaluating SUNY's performance? For this indicator how is SUNY performing compared nationally?

National Science Foundation Science and Technology Centers

Class of 2013 — In addition to Center led by University at Buffalo:

- A Center for Brains, Minds, and Machines: the Science and Technology of Intelligence
  Lead Institution: Massachusetts Institute of Technology
- Center for Integrated Quantum Materials
  Lead Institution: Harvard University

Class of 2010:

- BEACON: An NSF Center for the Study of Evolution in Action
  Lead Institution: Michigan State University
- Center for Dark Energy Biosphere Investigations
  Lead Institution: University of Southern California
- Center for Energy Efficient Electronics Science
  Lead Institution: University of California Berkeley
- Emergent Behaviors of Integrated Cellular Systems
  Lead Institution: Massachusetts Institute of Technology
- Center for Science of Information
  Lead Institution: Purdue University

Class of 2005/06

- Center for Coastal Margin Observation & Prediction
  Lead Institution: Oregon Health and Science University
- Center for Layered Polymeric Systems
  Lead Institution: Case Western Reserve University
- Center for Microbial Oceanography
  Lead Institution: University of Hawaii
- Center for Multi-Scale Modeling of Atmospheric Processes
  Lead Institution: Colorado State University
- Center for Remote Sensing of Ice Sheets
  Lead Institution: University of Kansas
- Team for Research in Ubiquitous Secure Technology
  Lead Institution: University of California at Berkeley

Other large-scale programs include:

National Science Foundation Engineering Research Centers (ERC) -- Partnerships in Transformational Research, Education and Technology: Anticipated Funding Amount: $13,000,000 to support the first year for up to four newly funded centers, depending on availability of funds in FY14. Existing large ERCs with the amounts funded to-date are:

<table>
<thead>
<tr>
<th>Title</th>
<th>State</th>
<th>University</th>
<th>Awarded</th>
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<tbody>
<tr>
<td></td>
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<td></td>
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<tr>
<td>Engineering Research Centers</td>
<td>Universities</td>
<td>Amount To Date</td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>An Engineering Research Center for Biomimetic Microelectronic Systems</td>
<td>University of Southern California</td>
<td>$37,097,475</td>
<td></td>
</tr>
<tr>
<td>An Engineering Research Center for Subsurface Sensing and Imaging Systems - CenSSIS Center for Collaborative Adaptive Sensing of the Atmosphere (CASA)</td>
<td>Northeastern University, University of Massachusetts Amherst, Colorado State University</td>
<td>$36,543,881</td>
<td></td>
</tr>
<tr>
<td>Engineering Research Center for Extreme Ultraviolet Science and Technology</td>
<td>University of Michigan, Ann Arbor</td>
<td>$36,024,767</td>
<td></td>
</tr>
<tr>
<td>An Engineering Research Center In Wireless Integrated Microsystems</td>
<td>Johns Hopkins University</td>
<td>$35,132,176</td>
<td></td>
</tr>
<tr>
<td>ERC: Engineering Research Center for Computer-Integrated Surgical Systems and Technology Synthetic Biology Engineering Research Center (SyNBERC)</td>
<td>University of California-Berkeley</td>
<td>$33,910,879</td>
<td></td>
</tr>
<tr>
<td>Engineering Research Center for Reconfigurable Machining Systems</td>
<td>University of Michigan, Ann Arbor</td>
<td>$33,070,116</td>
<td></td>
</tr>
<tr>
<td>Engineering Research Center for Integrated Media Systems Center</td>
<td>University of Southern California</td>
<td>$32,653,397</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>$32,480,244</td>
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<tr>
<td></td>
<td></td>
<td>$32,177,234</td>
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</tbody>
</table>

**National Institutes of Health Clinical Translational Science Awards**

60 academic medical institutions across the country; in New York:

- **Columbia University**: Irving Institute for Clinical and Translational Research
- **The Rockefeller University**: Rockefeller University Center for Clinical and Translational Science
- **University of Rochester School of Medicine and Dentistry**: University of Rochester Clinical and Translational Sciences Institute
- **Weill Cornell Medical College** (partnering with Hunter College): CTSA at Weill Cornell Medical College
- **Albert Einstein College of Medicine** (partnering with Montefiore Medical Center): Albert Einstein-Montefiore Institute for Clinical and Translational Research
- **Mount Sinai School of Medicine**: Mount Sinai Institutes for Clinical and Translational Sciences
- **New York University School of Medicine** (partnering with New York City Health and Hospitals Corporation (HHC)): NYU-HHC Clinical and Translational Science Institute

**National Institutes of Health Program/Project Grants**

- **P Series**: Support for integrated, multi-project research projects involving a number of independent investigators who share knowledge and common resources
- **U54**: Specialized Center
- **U10**: Cooperative Clinical Research

**Department of Energy**

- **Energy Frontier Research Centers (EFRC)**. Award sizes range from $2M/year to $4M/year for up to five years.
  - Lawrence Berkeley National Laboratory, Berkeley CA, Center for Nanoscale Control of Geologic CO2, $20,000,000
  - Stanford University, Stanford CA, Center on Nanostructuring for Efficient Energy Conversion, $20,000,000
  - National Renewable Energy Laboratory, Golden CO, Center for Inverse Design, $20,000,000
  - Brookhaven National Laboratory, Upton NY, Center for Emergent Superconductivity,
$22,500,000
- SUNY Stony Brook and SUNY Binghamton, Northeastern Center for Chemical Energy Storage (NECCES), $17,000,000

- **Energy Innovation Hubs.** Hubs are integrated research centers that combine basic and applied research with engineering to accelerate scientific discovery that addresses critical energy issues. Five hubs have been awarded over the last few years. The annual award is $20M to $25M per year for five years. Current hubs are:
  - The Nuclear Energy Innovation Hub: Oak Ridge, Tennessee
  - The Critical Materials Hub: Ames Laboratory, Ames, Iowa
  - The Energy Efficient Buildings Hub: Penn State
  - Joint Center for Artificial Photosynthesis Hub: California Institute of Technology (Caltech)
  - Consortium for Advanced Simulation of LWRs: Electric Power Research Institute

- **National Network for Manufacturing Innovation (NNMI)** – President has requested $1B to be matched by private and other non-Federal resources to create a network of 15 institutes of Manufacturing Innovation (IMI).

**Department of Commerce**

- **Regional Innovation Program** - competitive grants to regional entities to support innovation and entrepreneurship, including investments in science parks, regional innovation clusters, and the i6 Challenge program. $25,000,000 for grants and loan guarantees as authorized under the America COMPETES Reauthorization Act of 2010.

- **National Institute for Standards and Technology** - Awards for construction of new scientific research facilities. In 2010, NIST announced 12 projects, including:
  - $15 million to the University of Pittsburgh (Pittsburgh, Pa.) for new laboratories for nanoscience and experimental physics
  - $15 million to Nova Southeastern University Inc. (Fort Lauderdale-Davis, Fla.) for a Center of Excellence for Coral Reef Ecosystem Science research facility
  - $12.4 million to the University of Maine (Orono, Me.) for an Advanced Nanocomposites in Renewable Energy Laboratory
  - $12.3 million to the University of Kansas Center for Research (Lawrence, Kan.) for the new Measurement, Materials and Sustainable Environment Center (M2SEC)

**Opinions on how good SUNY could be – what is SUNY capable of achieving and how would you define success for this indicator?**

**2020 Vision Target:** 10 strategic large-scale multidisciplinary grants in high priority research areas

**Trouble spots / barriers / challenges in achieving success - Do you have any concerns, cautions, warnings, etc, in achieving success?**

We have only recently been working to leverage the entire scale, scope and diversity of the campuses in the SUNY system – through SUNY REACH and the Networks of Excellence – to build our research and innovation capacity
Possible solutions - Please be specific in possible solutions to remove barriers and achieve success.

1) Hire research faculty
2) Help faculty collaborate
3) Help faculty to write and submit proposals
4) Develop strategic relationships with industry
5) Develop international partnerships
Current State at SUNY - for this indicator what is SUNY’s current state, what has influenced the current state and what influences are controllable, manageable or out of SUNY’s control?

Through the Empire Innovation Program (EIP), since 2006 SUNY has invested $30 million across SUNY campuses for the recruitment and retention of over 100 SUNY faculty members.

EIP provides targeted funding to strengthen SUNY’s competitive position in attracting the best and brightest to New York State through:

- Support of campus efforts to attract individuals with an established track record of distinguished scholarly achievement, including a demonstrated ability to garner substantial competitive research funding in content areas/disciplines that align with campus goals, economic development needs of the state, and business and community partnerships;
- Support of campus efforts to retain outstanding research faculty who are crucial to the institution’s research agenda and have demonstrated the ability to garner substantial competitive research funding.

A recent press release from Downstate provides an example: "The State University of New York’s Empire Innovation Program has awarded SUNY Downstate Medical Center a $1 million grant to recruit and retain faculty researchers in support of the Department of Ophthalmology’s research on restoring eyesight and preventing vision impairment. SUNY Downstate will match an additional $1 million to the project, which is a key part of the campus’s ongoing efforts to create a world-class vision center in Brooklyn."

The following tables provide data on the ROI from the Empire Innovation Program. While overall, the $30 million investment has yielded a 2:1 return of $60 million in research awards, the results vary by faculty member and by campus.
In addition to EIP, there are individual campus efforts to recruit top-flight faculty who can bring research funding with them. Also, NYSUNY2020 is a program that provides the opportunity for campuses to recruit and hire faculty in strategic disciplines. We are currently gathering data on NYSUNY2020 hires.

National Comparison - What national or state-wide comparators, influences, standards, expectations should be understood when evaluating SUNY's performance? For this indicator how is SUNY performing compared nationally?

Currently do not have data on how SUNY compares in recruiting funded faculty. It is difficult to find a source for this data.
Opinions on how good SUNY could be – what is SUNY capable of achieving and how would you define success for this indicator?

2020 Vision Target: 100 incremental new nationally-prominent funded faculty researcher hires in high priority areas

Trouble spots / barriers / challenges in achieving success - Do you have any concerns, cautions, warnings, etc, in achieving success?

We have only recently been working to leverage the entire scale, scope and diversity of the campuses in the SUNY system – through SUNY REACH and the Networks of Excellence – to build our research and innovation capacity. Strategic hires as defined by system-wide priorities may be a good supplement to campus-level strategic hires.

Possible solutions - Please be specific in possible solutions to remove barriers and achieve success.

Governor’s Professorships. We have written up a request to be included in the SUNY budget request:

Academic Research and Innovation Will Stimulate Growth
SUNY’s research and innovation efforts are among the most important drivers for New York’s economy in the 21st Century. Based on this simple fact, and on the current availability of top-flight researchers nationally, we propose an Academic Research and Innovation budget of $4M as part of the U-wide budget line. Specifically, $3M of the fund will be used to directly recruit top talent to SUNY and New York through a prestigious competitive “Governor’s Professorship” program explicitly tied to the existing SUNY Network of Excellence (NoE) efforts. These dollars will be used, together with cost-sharing resources from relevant SUNY campuses, to support start-up costs for top academic researchers with existing research portfolios and the clear potential to play leading and catalytic roles in the SUNY NoE program, while creating a substantial return on investment over time through the generation of external funding. These researchers would be recruited from out of state. Additionally, $1M will be used to complement and energize existing components of Governor Cuomo’s Innovation agenda for New York by creating competitively-selected SUNY campus-based innovation labs and centers for commercialization activities and by expanding the NoE program to include innovative arts and humanities programs with the potential for significant economic development and commercialization and the ability to contribute to the region’s creative, cultural and civic assets. These funds will be allocated based on anticipated significant return on investment in terms of increased research funding, exciting hands-on opportunities for student learning, and the creation of intellectual property and public-private partnerships that will stimulate economic growth, especially in upstate New York.

In addition, the restructuring of the EIP program from providing on-going salary support to start-up packages will better set the conditions for success and increased ROI.
Current State at SUNY - for this indicator what is SUNY’s current state, what has influenced the current state and what influences are controllable, manageable or out of SUNY’s control?

The SUNY Report Card includes the number of students participating in sponsored programs. This data includes students who are paid to work on sponsored programs administered by the Research Foundation (RF) and thus on its payroll.

<table>
<thead>
<tr>
<th>SUNY Report Card</th>
<th>2011-2012</th>
<th>2012-2013</th>
<th>Target 2016-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Students</td>
<td>3,632</td>
<td>3,604</td>
<td></td>
</tr>
<tr>
<td>Undergraduate Students</td>
<td>1,636</td>
<td>1,607</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5,268</td>
<td>5,211</td>
<td>6,466</td>
</tr>
</tbody>
</table>

The RF is examining at how the system can increase the number of opportunities available to undergraduate students for research in the STEM fields. The SUNY STEM Undergraduate Research Steering Committee consists of faculty and staff from across the system who support experiential learning and have an interest in creating a system-wide program to increase the number of research opportunities for undergraduate students in the STEM field. The committee has examined factors which could affect student research opportunities. The availability for funds to support student stipends, equipment and supplies, housing, and faculty stipends will affect the number of research experiences available to students. The committee has also focused on mentorship training for faculty and graduate students and building collaboration platforms as means to not only increase the number of experience, but also the quality of the research experiences. The committee is writing a white paper to summarize its recommendations and compare them to best practices. It is scanning for funding opportunities and may submit a proposal to the NSF for funding. While the recommendations focus on the STEM disciplines, implementing them will also improve the availability for opportunities in many other disciplines.

National Comparison - What national or state-wide comparators, influences, standards, expectations should be understood when evaluating SUNY’s performance? For this indicator how is SUNY performing compared nationally?

Universities across the country are currently struggling to define and quantify undergraduate student engagement in research. The Council on Undergraduate Research titled its Spring 2012 issue of CUR Quarterly “The Challenge of the Count.” There is a lack of consistency when it comes to defining research participation, and there is even more discrepancy over what to count as a research experience. Federal funding agencies collect data on student research participation; however they are using different tools and collecting different data points.

Some institutions use the National Survey of Student Engagement’s (NSSE) The College Report as a measure of undergraduate research on campus. Students self report on whether or not they have engaged in a research project under the direction of a faculty member or if they plan to. Seventeen
SUNY campuses participated in the 2013 NSSE.

<table>
<thead>
<tr>
<th>Carnegie Classifications</th>
<th>Percentage of Seniors Participating in Research with Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Universities (very high research activity)</td>
<td>28%</td>
</tr>
<tr>
<td>Research Universities (high research activity)</td>
<td>24%</td>
</tr>
<tr>
<td>Doctoral/Research Universities</td>
<td>15%</td>
</tr>
<tr>
<td>Master's Colleges and Universities (larger programs)</td>
<td>19%</td>
</tr>
<tr>
<td>Master's Colleges and Universities (medium programs)</td>
<td>23%</td>
</tr>
<tr>
<td>Master's Colleges and Universities (smaller programs)</td>
<td>28%</td>
</tr>
<tr>
<td>Baccalaureate Colleges-Arts &amp; Sciences</td>
<td>44%</td>
</tr>
<tr>
<td>Baccalaureate Colleges-Divers Fields</td>
<td>24%</td>
</tr>
</tbody>
</table>
Opinions on how good SUNY could be — what is SUNY capable of achieving and how would you define success for this indicator?

Undergraduate Data

The process by which data is used to indicate the number of students engaged in hands-on research could be adjusted to give us a more accurate view of the indicator. Using the number of students on the RF payroll does not include students at community colleges and students who may be engaged in a non-paid research experiences. By adjusting the data we collect and the process, to include communication with undergraduate research offices and community colleges and adopting a definition of "research experience," we will then be able to better measure success. Also, we propose tracking specific programs, such as NSF REU (Research Experience for Undergraduates) grants across SUNY to identify additional undergraduates participating in research. Currently, SUNY has 14 active REU grants.

In 2013, the RF allocated $300,000 to the state-operated campuses for the purpose of enhancing research opportunities in STEM for undergraduate students. Preliminary data indicates that the program supported 85 students participating in research.

With the SUNY STEM Undergraduate Research Committee’s work, the RF’s plans to seek external funding to create a system-wide undergraduate research program, and adjusting the process for collecting data on undergraduate research, SUNY is very capable of achieving success.

Graduate Data

Since the majority of graduate students conducting research are employed with the RF, the current practice of collecting data from the RF’s payroll provides us with an indication of graduate student participation. We propose also identifying and adding graduate student fellowships from the RF Oracle system.

Trouble spots / barriers / challenges in achieving success - Do you have any concerns, cautions, warnings, etc, in achieving success?

Student participation in research, especially at the graduate level, is tied to research volume. Any action steps to improve research volume will then help to increase research opportunities for students.

Funding to support initiatives that connect students to research opportunities across the system, provides mentorship training to faculty, and to implement other best practices is a challenge.
Possible solutions - Please be specific in possible solutions to remove barriers and achieve success.

- Identify, enumerate, and categorize funded and unfunded positions for undergraduate mentored research experiences in available on each campus to prepare to create an integrated, maintainable, electronic system through which students from all campuses can apply to participate in mentored research experiences that are available throughout the SUNY system and beyond (a "SUNY Research Passport" system).

- Faculty support and rewards, including a comprehensive electronic resource and professional development plan to provide faculty and staff with the knowledge, evidence, tools, work plans, and planning materials for creating an environment that is more supportive of undergraduate research, including formal awards acknowledging commitment to undergraduate research, a decreased teaching load in exchange to supporting students, favorable consideration for mentorship during tenure review, or monetary incentives.

- Funding to directly support student participation in mentored research and other recommended activities (such as research supplies and stipends).

- Provide training and mentorship to undergraduate and graduate students to increase the number of applications for externally funded fellowships submitted by SUNY students.
SUNY’S ECONOMIC IMPACT METRICS

Project Background:

The challenge of identifying metrics that provide insight into university contributions to economic growth at the regional and national level continues to rise on the national agenda. The Association of Public and Land-grant Universities (APLU) contribution to this national effort focuses on identifying measures that capture the broad sweep of contributions to regional economies made by public universities. Building on the results of an NSF-funded workshop, the APLU’s Commission on Innovation, Competitiveness and Economic Prosperity (CICEP) developed a pilot study to identify and investigate the efficacy of potential new metrics in the broad categories of: relationships with industry, developing the regional and national workforce, and knowledge incubation and acceleration programs. The indicators being investigated range from unfunded agreements between universities and industry (e.g., material transfer agreement, research agreements) to student engagement in economic activities to the impacts of technical assistance provided by universities to various actors in the region’s economy. The RF and SUNY participated on the APLU’s CICEP new metrics pilot project.

Project Purpose:

In addition to SUNY and the RF, 30 other public universities across the country participated on the pilot project to develop new metrics to measure the economic impacts of the university. SUNY and the RF’s participation on the APLU’s pilot project serves three purposes:

- Provide SUNY and the RF with a set of new metrics to use in conjunction with existing university metrics sets and APLU tools to tell a multi-faceted story of regional economic impact,
- Assist SUNY and the RF in developing communication tools to highlight these activities to their regional stakeholders,
- Support SUNY’s and the RF’s long-term efforts to establish and implement mechanisms for data collection and reporting, toward telling a more comprehensive story of its economic contributions.

Project Status:

The RF spent 18 months working with the APLU and the 30 other institutions to identify the top twenty economic impact metrics from an initial list of 56. The metrics identification process included the following: (1) identifying possible data points and definitions (2) collecting and analyzing data (3) holding regional stakeholder sessions to rank each data point and (4) attending the APLU’s national stakeholder session to discuss the top ranking data points with national agencies. Data and feedback from the regional and national stakeholder sessions was used to identify 20 Priority 1 Economic Impact Metrics that are provided below. In the coming years, the APLU will focus on implementing tools and resources (i.e., new metrics user manual, databases, etc.) to help institutions capture and report their impacts using the new set of metrics.

SUNY RF
The Research Foundation for The State University of New York
Top 20 Metrics:

A. Relationships with Industry
   Sponsored Research by Industry
   1. Number of grants, contracts and sub-agreements (including federal-pass-through dollars) from private sector entities (including consortia, trade associations, etc.)
   2. Dollar value of sponsored research expenditures by private sector entities (including consortia, trade associations, etc.)
   3. Number of sponsored research projects by industry sector (include source/explanation of industry sectors used by institution)
   4. Dollar value of sponsored research expenditures by industry sector
   5. Number of unique private sector entities funding research grants and contracts (including consortia, trade associations, etc.)

   Human Clinical Trials
   6. Number of trials conducted during reporting period by phase (capture all possible data, including non-FDA approval protocols; differentiate by phases and/or FDA approval (or not) to greatest extent possible.
   7. Number of subjects participating in clinical trials (active trial participants, only)
   8. Dollar value of sponsored research expenditures for/on clinical trials
   9. Number of protocols approved during time period
   10. Number of trials initiated during time period

Service to External Clients
11. Number of organizations served
12. Number of companies provided on-site technical services

B. Developing the Regional and National Workforce
   Student Employment on Funded Projects
   13. Number of students paid through externally funded grants or contracts

   Student Entrepreneurship
   14. Number of entrepreneurship courses/programs (credit and non-credit)
   15. Number entrepreneurship courses/programs requiring a capstone project (e.g., business plan, elevator pitch)
   16. Number of student start-ups associated with courses, programs, competitions, clubs, or other university-affiliated organizations.

Alumni In the Workforce
17. Average wages of alumni living in-state

C. Knowledge Incubation and Acceleration Programs
   Incubation and Acceleration Program Success
   18. Number of incubator/accelerator and startup company full time equivalent employees.

   Ability to Attract External Investment
   19. Dollar amount of (equity) capital raised by clients and graduates from investors - angel investors, institutional, venture capitalists, individuals (including friends and family)
   20. Dollar amount of funding received from federal, state or foundation sources, state or local matching programs or other non-private sources.
Recommendation:

Innovation and technology transfer at SUNY does not only result from the licensing of SUNY-born technologies. An impactful innovation metric should take a more holistic examination, which is the premise behind the Association for Public Land-grant Universities (APLU) new metrics study. Based on our participation on the APLU's new metrics project we propose innovation at SUNY be measured using a new algorithm:

\[
\text{# of commercial licenses + # of industry sponsored research agreements + # of nonacademic materials transfer agreements + # clinical trials} \]

= \text{SUNY I-factor}

This new measure is called the SUNY I-factor, which is an overall score of commercially relevant innovation and incorporates the APLU new metrics framework.