“Every institution has its unique set of irrational and difficult constraints, yet some make a leap while others facing the same environmental challenges do not.”

– Jim Collins in ‘Good-to-Great and the Social Sector’
State of the College
Undergraduate Enrollment

<table>
<thead>
<tr>
<th>Year</th>
<th>University Park</th>
<th>Commonwealth Campuses</th>
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<tbody>
<tr>
<td>Fall 2009</td>
<td>5937</td>
<td>2440</td>
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<td>Fall 2010</td>
<td>6227</td>
<td>2464</td>
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<td>Fall 2011</td>
<td>6466</td>
<td>2556</td>
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<tr>
<td>Fall 2012</td>
<td>6800</td>
<td>2587</td>
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<tr>
<td>Fall 2013</td>
<td>7220</td>
<td>2721</td>
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</table>
Graduate Enrollment

<table>
<thead>
<tr>
<th>Year</th>
<th>Masters</th>
<th>Doctorate</th>
</tr>
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<tbody>
<tr>
<td>FALL 2009</td>
<td>473</td>
<td>878</td>
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<tr>
<td>FALL 2010</td>
<td>433</td>
<td>893</td>
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<tr>
<td>FALL 2011</td>
<td>473</td>
<td>904</td>
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<tr>
<td>FALL 2012</td>
<td>438</td>
<td>917</td>
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<tr>
<td>FALL 2013</td>
<td>449</td>
<td>920</td>
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Baccalaureate Degrees Conferred

<table>
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<tr>
<th>Year</th>
<th>Degrees Confirmed</th>
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<tbody>
<tr>
<td>AY 2008-09</td>
<td>1216</td>
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<td>AY 2010-11</td>
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<td>AY 2011-12</td>
<td>1391</td>
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<td>AY 2012-13</td>
<td>1456</td>
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Graduate Degrees Conferred

<table>
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<tr>
<th>Academic Year</th>
<th>Masters</th>
<th>Doctorate</th>
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<tr>
<td>AY 2008-09</td>
<td>341</td>
<td>137</td>
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<td>AY 2009-10</td>
<td>322</td>
<td>141</td>
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<td>AY 2010-11</td>
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<tr>
<td>AY 2011-12</td>
<td>328</td>
<td>118</td>
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<td>AY 2012-13</td>
<td>317</td>
<td>146</td>
</tr>
<tr>
<td>College</td>
<td>% Change</td>
<td>Change</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------</td>
<td>--------</td>
</tr>
<tr>
<td>Agriculture</td>
<td>12%</td>
<td>201</td>
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<tr>
<td>Arts and Architecture</td>
<td>-17%</td>
<td>-243</td>
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<tr>
<td>Business</td>
<td>-6%</td>
<td>-368</td>
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<tr>
<td>Communications</td>
<td>-7%</td>
<td>-206</td>
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<tr>
<td>Division of Undergraduate</td>
<td>27%</td>
<td>691</td>
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<tr>
<td>Earth, Mineral Sciences</td>
<td>49%</td>
<td>640</td>
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<tr>
<td>Education</td>
<td>-22%</td>
<td>-414</td>
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<tr>
<td>Engineering</td>
<td>22%</td>
<td>1283</td>
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<tr>
<td>Health, Human Dev.</td>
<td>-1%</td>
<td>-43</td>
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<tr>
<td>Information Science, Tech.</td>
<td>-18%</td>
<td>-181</td>
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<tr>
<td>Liberal Arts</td>
<td>2%</td>
<td>111</td>
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<tr>
<td>Nursing</td>
<td>18%</td>
<td>75</td>
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<tr>
<td>Science</td>
<td>2%</td>
<td>71</td>
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<tr>
<td><strong>TOTAL UP Colleges</strong></td>
<td><strong>4%</strong></td>
<td><strong>1617</strong></td>
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</tbody>
</table>
UP Colleges – Research Expenditure

Percentage of UP Total

- CoEng
- Ag Sci
- CoS
- CoM
- EMS
- HHD
- LAC
- CoEd
- IST
- Other

- 08-09
- 09-10
- 10-11
- 11-12
- 12-13
Development – Annual Gifts

5-YEAR AVERAGE: $1,067,066
FY 2009: $1,146,677
FY 2010: $1,085,373
FY 2011: $1,076,053
FY 2012: $1,007,178
FY 2013: $1,020,048
Endowment Comparisons

Annual Average of 5 Years

- Engineering: $26,750,243
- Liberal Arts: $12,834,999
- Eberly Science: $9,472,507
- AG Sciences: $6,995,656
- Smeal Business: $9,299,819
- EMS: $11,579,311
Comparison of Academic Units

Dollars per Donor

<table>
<thead>
<tr>
<th>Academic Unit</th>
<th>Dollars per Donor</th>
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<tbody>
<tr>
<td>Engineering</td>
<td>$465,207</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>$328,527</td>
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<tr>
<td>Eberly Science</td>
<td>$311,223</td>
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<tr>
<td>AG Sciences</td>
<td>$179,150</td>
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<tr>
<td>Smeal Business</td>
<td>$312,821</td>
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<tr>
<td>EMS</td>
<td>$387,705</td>
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</tbody>
</table>

Average of 5 Years
Departmental Ranking

UNDERGRADUATE RANKINGS

- 2010: 13
- 2011: 10
- 2012: 10
- 2013: 12

GRADUATE RANKINGS

- 2010: 16
- 2011: 9
- 2012: 9
- 2013: 14

UNDERGRADUATE RANKINGS

- 2010: 20
- 2011: 16
- 2012: 12
- 2013: 14
- 2014: Not yet available

GRADUATE RANKINGS

- 2010: 25
- 2011: 25
- 2012: 25
- 2013: 25
- 2014: 26

GRADUATE RANKINGS

- 2010: 32
- 2011: 32
- 2012: 34
- 2013: 39
- 2014: 34

GRADUATE RANKINGS

- 2010: 13
- 2011: 14
- 2012: 17
- 2013: 14

GRADUATE RANKINGS

- 2010: 4
- 2011: 4
- 2012: 8
- 2013: 11
- 2014: 11
### College Metrics

<table>
<thead>
<tr>
<th>College of Engineering</th>
<th>UG Ranking</th>
<th>Grad Ranking</th>
<th>T/TT Faculty</th>
<th>UG Students</th>
<th>MS</th>
<th>UG/Fac.</th>
<th>MS/Fac.</th>
<th>PhD</th>
<th>PhD/fac.</th>
<th>Research $</th>
<th>$/faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIT</td>
<td>1</td>
<td>1</td>
<td>371</td>
<td>2706</td>
<td>1071</td>
<td>7</td>
<td>2.9</td>
<td>1740</td>
<td>4.7</td>
<td>$332,463,000</td>
<td>$896,127</td>
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<tr>
<td>Stanford</td>
<td>2</td>
<td>2</td>
<td>217</td>
<td>2914</td>
<td>1479</td>
<td>13</td>
<td>6.8</td>
<td>1770</td>
<td>8.2</td>
<td>$197,409,000</td>
<td>$909,719</td>
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<tr>
<td>Berkeley</td>
<td>3</td>
<td>3</td>
<td>225</td>
<td>3469</td>
<td>330</td>
<td>15</td>
<td>1.5</td>
<td>1466</td>
<td>6.5</td>
<td>$192,495,000</td>
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<td>CalTech</td>
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<td>4</td>
<td>92</td>
<td>489</td>
<td>22</td>
<td>5</td>
<td>0.2</td>
<td>565</td>
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<td>GT</td>
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<td>462</td>
<td>8597</td>
<td>1142</td>
<td>19</td>
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<td>1958</td>
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<td>UIUC</td>
<td>5</td>
<td>5</td>
<td>403</td>
<td>7558</td>
<td>1114</td>
<td>19</td>
<td>2.8</td>
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<td>$586,627</td>
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<td>UMich</td>
<td>7</td>
<td>9</td>
<td>366</td>
<td>5665</td>
<td>1360</td>
<td>15</td>
<td>3.7</td>
<td>1561</td>
<td>4.3</td>
<td>$196,024,000</td>
<td>$535,585</td>
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<td>CMU</td>
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<td>5</td>
<td>153</td>
<td>1722</td>
<td>1001</td>
<td>11</td>
<td>6.5</td>
<td>780</td>
<td>5.1</td>
<td>$204,380,028</td>
<td>$1,335,817</td>
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<tr>
<td>Cornell</td>
<td>8</td>
<td>13</td>
<td>242</td>
<td>3192</td>
<td>768</td>
<td>13</td>
<td>3.2</td>
<td>922</td>
<td>3.8</td>
<td>$132,414,000</td>
<td>$547,165</td>
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<td>UT Austin</td>
<td>10</td>
<td>11</td>
<td>274</td>
<td>5276</td>
<td>519</td>
<td>19</td>
<td>1.9</td>
<td>1295</td>
<td>4.7</td>
<td>$163,883,000</td>
<td>$598,113</td>
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<tr>
<td>Purdue</td>
<td>10</td>
<td>8</td>
<td>297</td>
<td>7497</td>
<td>790</td>
<td>25</td>
<td>2.7</td>
<td>1499</td>
<td>5.0</td>
<td>$222,250,000</td>
<td>$748,316</td>
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<tr>
<td><strong>Averages</strong></td>
<td>282</td>
<td>4462</td>
<td>872</td>
<td>16</td>
<td>3.1</td>
<td>1387</td>
<td>5.2</td>
<td></td>
<td></td>
<td>$196,554,790</td>
<td>$763,899</td>
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<tr>
<td><strong>Penn State</strong></td>
<td>16</td>
<td>25</td>
<td>335</td>
<td>8523</td>
<td>521</td>
<td>25</td>
<td>1.6</td>
<td>1091</td>
<td>3.3</td>
<td>$152,322,978</td>
<td>$454,695</td>
</tr>
</tbody>
</table>

**Percent Comparison**
- 60% 161% 49% 79% 63% 77% 60%

**Target Change**
- 40% -61% 51% 21% 37% 23% 40%

*Note that to compare similar numbers, PSU Engineering includes engineering degrees in other colleges and Commonwealth campuses - 2012*
Observations and Implications

- Undergraduate Program Size
- Graduate Program
- Technical Fields
- Faculty Size
- Research Expenditure
- Intellectual Footprint

Quo vadimus?
Academic Management Through Strategic Planning and Implementation
“We must strive to be sure that research universities fulfill their promise as a learning environment that is remarkably well suited to the coming era – one in which undergraduates, graduate students, and faculty alike share in the discipline, joy and continual renewal of original research and scholarship.”

– Chuck Vest, late president of the National Academy of Engineering, past president of MIT, from ‘Pursuing the Endless Frontier’
THE USUAL

• Most of academe have no multiyear budget planning
• Strategy documents are not turned into plans
• Funds are historically and reactively allocated
• No relationship between goals and expenditure

BENEFIT OF OPERATIONAL MODEL

• Support academic strategy through investment
• Increase transparency and accountability
• Plan for investment and contingencies
Penn State Engineering Operational Model

Academic Plan
- Community Strategy
  - Surveys, Retreats
- Strategic Goals
  - IPACs, Retreats
- Implementation
  - Timeline, Resources, Metrics

Budget Model
- Functional Budget
  - Effort, Target
- Portfolio Budgets
  - Requests, Audit
- Five-Year Budget
  - Assumptions
Coupled Academe and Finance

Academic Plan
- Undergraduate
- Graduate
- Research
- Tech Transfer
- Research Admin
- Global Outreach
- Tech Service
- Advancement
- Community
- Governance

Financial Model
- Undergraduate
- Graduate
- Research
- Tech Transfer
- Research Admin
- Global Outreach
- Tech Service
- Advancement
- Community
- Governance

Alignment with Core Operations
- Revision
- Global Drivers
- Implement Drivers
- Portfolio Budget Allocations
- Negotiation Realignment

Targeted Funding
- Functional Budget
- Conventional Budget
- Budget Projection
- Realignment
Metrics

INPUTS
The resources (human, space, infrastructure, finance) and management (policies, oversight) required to operate the academic unit

e.g., students, professors, staff, funds, guidelines

OUTCOMES
The results that fulfill the mission and objectives, and contribute to stakeholders and society

e.g., graduates, scholarship (i.e., publications, inventions), ranking, recognitions

IMPACTS
Positive change over time (10+ years) resulting from the outcomes above

e.g., healthier population, abundant water, safer optimized societal system of systems
Current Strategy Development Process

- Existing 11 strategy documents
- Strategy Snapshots
- High Level College Strategy
- Priority Goals – College, Departments
- Implementation Plan
  - Goals
  - Responsibilities
  - Resources
  - Time lines and Metrics
- Implementation-steered budget
- Finalize, share, implement, continuously review, and refine
Short-term Stimuli and Enablers
“The core business of the university is learning, and the most fundamental aspect of that learning is the education of undergraduates.”

– Frank Rhodes, President Emeritus, Cornell University, in ‘The Creation of the Future’
## Enrichment and Invigoration

### Projects

<table>
<thead>
<tr>
<th>Opportunities for efficiencies</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Enabling mechanisms for initiatives</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Accountable business culture</th>
</tr>
</thead>
</table>

Streamlined, efficient organization capable of implementing academic initiatives

### Functional Budget
- Space Utilization
- College Teams
- Professional Masters
- Responsive Action
- Community Retreats
- International Alumni

### Spendable Resources
- Leadership Committees
- Online Degrees
- Communications Plan
- M+N Global Outreach
- Baseline Corporate

### Dean's Office
- External Reviews
- College/Unit Strategies
- Social Calendar
- International Internships
- Corporate Partners
- Alumni Engagement

### Assessment Metrics
- Media Presence
- Staff Development

### Deans Office

---

PennState College of Engineering
Enrichment and Invigoration

Initiatives

Strengthening the Undergraduate Program

Expanding the Graduate Program

Broader UG experience; Larger and higher-quality Grad program
Enrichment and Invigoration

Distinguished Teaching Fellowships

- Ten fellowships for senior Ph.D. students
- Teach one regular course under professional supervision
- Engage with award-winning educators

Better prepared, more competitive Ph.D. graduates
Enrichment and Invigoration

**Frontier Faculty Lines**

- Six interdisciplinary hires on frontier topics
- At the intersection of societal challenges, faculty interests, and existing/short term research infrastructure
- To create further synergies between departments, centers, institutes, Penn State colleges, and other universities

Uniquely branded UG and Grad programs; Better S/F Ratio
Enrichment and Invigoration

**Innovation Grants**

- Twenty one-year research grants
- Interdisciplinary topics meshing with Penn State priorities
- Research gems nearing completion

Increased competitiveness of Penn State engineering faculty
Enrichment and Invigoration

**Excellence Graduate Fellowships**

- Twenty-five full 3-year offers
- Targeted at top incoming graduate NSF fellowship-caliber
- Accompanying specific academic and social programs

Enhanced Ph.D. program quality
Enrichment and Invigoration

**One-year Course-based Masters**

- Ten grants for complete proposals
- Non-thesis residential M.S. degrees
- August-to-August format
- Enlarged M.S. program; Feeder into Ph.D. program; Revenue generation
Enrichment and Invigoration

Research Experience for Undergraduates

- Fifty+ eight-week embedded opportunities
- Attendance in research methods seminars
- Participation in professional conferences

Broader UG experience; Feeder to Grad program
Enrichment and Invigoration

Instructional and Research Equipment Grants

- Fifteen grants for instruction and research
- Innovative content on both education and investigation
- State-of-the-art instruction; Top research infrastructure
Human Resources

**Job Description Updates**
- Review and complete Job Review Worksheets
- Track JRW completion and updates
- Work with Department Heads to assess job needs
- Create final inventory for compensation review
- Communicate final outcome to staff

**Compensation Analysis**
- Develop timeline with Compensation Analyst
- Compile data to conduct salary analysis of all positions
- Develop plan for communication to staff upon completion
Staff Career Development
• Collect input from Department Heads
• Communicate support for training to supervisors
• Make training part of review process
• Communicate available resources
• Develop annual tracking mechanism

Staff Awards
• Review current programs
• Conduct staff survey to determine what is of value
• Develop new programs based on feedback
CoE e-Newsletter - Overview

First E-Newsletter sent March 13-14, 2014

• Branding on World-Class Engineering
• Sent monthly
• Five highlighted accomplishments
• Monthly features

Mailing List (55,000) Includes

• Alumni
• Deans and department heads of ABET-accredited engineering programs
• Corporate contacts
• Industry CEOs
• PSU senior administration
• College of Engineering faculty and staff
CoE e-Newsletter - Design

- Clean format using white space, engaging photos, and attractive colors in order to maximize readability and engagement.
- Familiar magazine Engineering Penn State header for brand recognition.
- Powerful College of Engineering branding and references – through color, graphics, and content.
- Clear calls to action.
CoE e-Newsletter - Statistics

Open rates by audience segment
- Faculty 67%
- Staff 67%
- Penn State administration 64%
- Deans 36%
- Department Heads 35%
- Alumni 23%
- CEOs 22%
- Corporate contacts 14%

Top five links
- NSF CAREER Awards 1,093 clicks
- Drone Attacks 229 clicks
- Graduate Students Win $10,000 177 clicks
- A Grand Experiment 116 clicks
- Patent Issued 107 clicks
First widely distributed announcement of College-wide award winners

- Sending to over 1,000 deans of ABET-accredited engineering programs
- Most clicked-on story in March e-newsletter
- Repetition will reinforce this important and news-worthy message
- Beginning of a series of messages that will call attention to the excellent faculty, programs and research across the College
Ongoing Communications Projects

- Redesign all College websites
- Redesign Penn State Engineering magazine
- Create e-newsletters for departments
- Commission promotional videos
- Expand College mementos and souvenirs
- Expand persistent social media presence
- Expand and reconfigure Communications team
Closure
“Being a university president is no way for an adult to make a living.”

– Bartlett Giamatti, late president of Yale, from ‘The University and the Public Interest’
Objectives

- Expansion of Faculty Size
- Enlargement of Graduate Programs
- Renovation of Laboratories
- Enhancement of Faculty, Students, Staff Diversity
- Approaching, Breaching Academic Frontiers
  EXCELLENCE IN EVERYTHING!
Exceptional College of Engineering with tremendous strength across the board

Opportunities for further excellence and a steep upward trajectory

Development of a business model for the College is underway

Short term enrichments and invigoration measures showing early promise

Short term enrichments and invigoration measures showing early promise. The present is very good, the future is GREAT.