A Vocabulary for Measurement

The Return on Physical Assets – ROPA℠

The annual investment needed to ensure buildings will properly perform and reach their useful life “Keep-Up Costs”

The accumulated backlog of repair/modernization needs and the definition of resource capacity to correct them “Catch-Up Costs”

The effectiveness of the facilities operating budget, staffing, supervision, and energy management

The measure of service process, the maintenance quality of space and systems, and the customers opinion of service delivery

Asset Value Change

Operations Success
Key Points

**Space Profile**
- Space is young. Major life cycles have not yet come due.

**Capital**
- Stewardship funding is very limited. Capital investments are dependent on one-time and unpredictable funding.

**Energy**
- Energy consumption has decreased significantly. Lower consumption and a cleaner grid have had a big impact on greenhouse gas emissions.

**Operations**
- Operating costs are at peer levels. Staff are covering more space but have higher levels of supervision.
### ROPA Peer Institutions

<table>
<thead>
<tr>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcorn State University</td>
</tr>
<tr>
<td>California University of PA</td>
</tr>
<tr>
<td>Clarion University of PA</td>
</tr>
<tr>
<td>Delta State University</td>
</tr>
<tr>
<td>East Stroudsburg University of PA</td>
</tr>
<tr>
<td>Fitchburg State University</td>
</tr>
<tr>
<td>Framingham State University</td>
</tr>
<tr>
<td>Mississippi University for Women</td>
</tr>
<tr>
<td>Mississippi Valley State</td>
</tr>
<tr>
<td>Plymouth State University</td>
</tr>
</tbody>
</table>

Comparative Considerations:

Size, technical complexity, and public/private are all factors included in the selection of peer institutions.
Campus Characteristics

Tech Rating
*Housing is less complex, main campus more complex than peers*

Building Intensity
*Larger buildings than peers*

Renovation Age
*Youngest of peer group*
Campus Characteristics

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Tech Rating

*Housing is less complex, main campus more complex than peers*

Building Intensity

*Larger buildings than peers*

Renovation Age

*Youngest of peer group*
80% of Campus is Less than 20 Years Old

Analyzing Campus Space & Life Cycle Needs

- AASU Age Distribution
- Annual Life Cycle Cash Flow
- Amortization of Life Cycle Expenses
### Capital Investment Targets

**Capital Spending Targets**

<table>
<thead>
<tr>
<th>$ in Millions</th>
<th>Main Campus</th>
<th>Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3% Replacement Value</td>
<td>$8.6</td>
<td>$3.8</td>
</tr>
<tr>
<td>Equilibrium Need</td>
<td>$5.5</td>
<td>$2.1</td>
</tr>
<tr>
<td>Target Need</td>
<td>$2.7</td>
<td>$1.1</td>
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</tbody>
</table>

**Legend:**
- Envelope/Mechanical
- Space/Programming
### Spending vs. Targets

#### Historical Investment vs. Yearly Need

<table>
<thead>
<tr>
<th>Year</th>
<th>Main Campus</th>
<th>Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>$4.0M</td>
<td>$0.5M</td>
</tr>
<tr>
<td>2009</td>
<td>$4.5M</td>
<td>$0.5M</td>
</tr>
<tr>
<td>2010</td>
<td>$5.0M</td>
<td>$0.5M</td>
</tr>
<tr>
<td>2011</td>
<td>$5.5M</td>
<td>$0.5M</td>
</tr>
<tr>
<td>2012</td>
<td>$6.0M</td>
<td>$0.5M</td>
</tr>
<tr>
<td>2013</td>
<td>$6.5M</td>
<td>$0.5M</td>
</tr>
</tbody>
</table>

#### Key Details:
- **Asset Reinvestment**: Blue bars.
- **Annual Stewardship**: Blue lines.
- **Target Need**: Blue line.
- **Life Cycle Need**: Green line.

**Legend:**
- **$ in Millions**
- **$ in Millions**

**Note:** The diagram illustrates the historical investment vs. yearly need for both the Main Campus and Housing from 2008 to 2013.
Project Spending is Below Peers

To reach peers, AASU would need an additional $2.5M

Peer Ave: $4.74/GSF
AASU Ave: $2.94/GSF
Backlog has Increased 23% since FY08

Backlog vs. Peers

- 5% increase
- 23% increase

<table>
<thead>
<tr>
<th>Year</th>
<th>Peers</th>
<th>AASU</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
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<tr>
<td>2011</td>
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<tr>
<td>2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Acting as an Older Campus

Average Backlog/GSF by Renovation Age

Where AASU would be based on age

AASU

Peers

Average Backlog/GSF

Expon. (Average Backlog/GSF)
FY08-13 Balance of Spending

AASU Main Campus
- Envelope: 43%
- Systems: 34%
- Space: 12%
- Safety/Code: 11%

AASU Housing
- Envelope: 57%
- Systems: 28%
- Space: 8%
- Safety/Code: 7%

Peers
- Envelope: 41%
- Systems: 36%
- Space: 17%
- Safety/Code: 6%

Life Cycles
(Data taken from IFP Life Cycle Estimates)

- E&G Ave. Renovation Age
- Housing Ave. Renovation Age

[Graph showing life cycles for envelope, systems, and space across different categories]
Full Campus
Electrical monitoring systems,
Natural Gas Master Meter Regulation
FY13

Projects that Impact Consumption:
$7.3M on Building Systems between FY08 and FY13.
FY13: $3.0M
Energy Consumption Decreased 24% since FY10

Energy Consumption

- Electric Consumption
- Fossil Consumption

BTU/GRF

2010
2011
2012
2013

2010
2011
2012
2013
Energy Consumption vs. Peers

Energy Consumption

BTU/GSF

Peer Ave: 91,145 BTU/GSF

AASU Housing  C  D  E  F  G  AASU Summary  I  J  K  AASU Main  M
Energy Consumption vs. Peers

Energy Adjusted for Heating & Cooling Degree Days

Peer Ave: 100,205 BTU/GSF
Energy Consumption

Energy Peers: Alcorn State University, Delta State University, Jackson State University, Mississippi University for Women, Mississippi Valley State University, New Mexico State University, Northern Arizona University
Emissions have Lowered even as Space has Increased

Longitudinal Gross Emissions

2008 2009 2010 2011 2012 2013

Carbon Emissions by Type

- Scope 1
- Scope 2
- Scope 3
- GSF

- Fossil Consumption 12%
- Scope 2 T&D 6%
- Student Commuting 14%
- Study Abroad 4%
- Fac/Staff Commuting 3%
- Purchased Electric 59%
- Financed Travel 1%
- Fleet 1%
Gross Emissions against Peers

Go Green Peers: American University, Clemson University, Loyola University Maryland, The Catholic University of America, Rider University, George Mason University, The Richard Stockton College of New Jersey
Carbon Intensity by Grid Region

17% Decrease in Grid’s Carbon Intensity
Fossil & Electric Unit Costs

<table>
<thead>
<tr>
<th>Year</th>
<th>Fossil Unit Cost</th>
<th>Electric Unit Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>$0</td>
<td>$25</td>
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<tr>
<td>2009</td>
<td>$10</td>
<td>$20</td>
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<td>2010</td>
<td>$10</td>
<td>$15</td>
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<tr>
<td>2011</td>
<td>$0</td>
<td>$15</td>
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<tr>
<td>2012</td>
<td>$10</td>
<td>$20</td>
</tr>
<tr>
<td>2013</td>
<td>$10</td>
<td>$25</td>
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</tbody>
</table>

Energy Peers: Alcorn State University, Delta State University, Jackson State University, Mississippi University for Women, Mississippi Valley State University, New Mexico State University, Northern Arizona University
Total Campus Operating Budget

<table>
<thead>
<tr>
<th>Year</th>
<th>Daily Service</th>
<th>Planned Maintenance</th>
<th>Utilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>$2.97</td>
<td>50%</td>
<td>49%</td>
</tr>
<tr>
<td>2009</td>
<td>$2.41</td>
<td></td>
<td></td>
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<tr>
<td>2010</td>
<td>$2.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>$2.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>$2.87</td>
<td></td>
<td>34%</td>
</tr>
<tr>
<td>2013</td>
<td>$3.24</td>
<td>64%</td>
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</tbody>
</table>
Regionally Adjusted for Cost of Living

Operating Costs Regionally Adjusted

Peer ave: $5.13
Coverage has Increased since FY08

### Maintenance Coverage

<table>
<thead>
<tr>
<th>Year</th>
<th>GSF/FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>80,000</td>
</tr>
<tr>
<td>2009</td>
<td>90,000</td>
</tr>
<tr>
<td>2010</td>
<td>100,000</td>
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<tr>
<td>2011</td>
<td>110,000</td>
</tr>
<tr>
<td>2012</td>
<td>120,000</td>
</tr>
<tr>
<td>2013</td>
<td>130,000</td>
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</tbody>
</table>

### Custodial Coverage

<table>
<thead>
<tr>
<th>Year</th>
<th>GSF/FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>40,000</td>
</tr>
<tr>
<td>2009</td>
<td>45,000</td>
</tr>
<tr>
<td>2010</td>
<td>50,000</td>
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<tr>
<td>2011</td>
<td>55,000</td>
</tr>
<tr>
<td>2012</td>
<td>60,000</td>
</tr>
<tr>
<td>2013</td>
<td>65,000</td>
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</table>

### Grounds Coverage

<table>
<thead>
<tr>
<th>Year</th>
<th>Acres/FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>3.9</td>
</tr>
<tr>
<td>2009</td>
<td>4.0</td>
</tr>
<tr>
<td>2010</td>
<td>3.9</td>
</tr>
<tr>
<td>2011</td>
<td>4.0</td>
</tr>
<tr>
<td>2012</td>
<td>4.2</td>
</tr>
<tr>
<td>2013</td>
<td>4.1</td>
</tr>
</tbody>
</table>

### Comparison with Peers

- **AASU**
  - General Repair: 4.0
  - Custodial Coverage: 4.0
  - Grounds: 3.9

- **Peers**
  - General Repair: 3.9
  - Custodial Coverage: 4.1
  - Grounds: 3.9
# Staffing Metrics

<table>
<thead>
<tr>
<th>Maintenance</th>
<th>AASU</th>
<th>Peer Avg.</th>
<th>Database Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing (GSF/FTE):</td>
<td>91,642</td>
<td>86,083</td>
<td>95,700</td>
</tr>
<tr>
<td>Supervision (FTE/Super):</td>
<td>10</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>General Repair (1-5):</td>
<td>4.0</td>
<td>3.9</td>
<td>3.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Custodial</th>
<th>AASU</th>
<th>Peer Avg.</th>
<th>Database Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing (GSF/FTE):</td>
<td>46,352</td>
<td>37,530</td>
<td>38,633</td>
</tr>
<tr>
<td>Supervision (FTE/Super):</td>
<td>5</td>
<td>21</td>
<td>19</td>
</tr>
<tr>
<td>Cleanliness (1-5):</td>
<td>4.0</td>
<td>4.1</td>
<td>4.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grounds</th>
<th>AASU</th>
<th>Peer Avg.</th>
<th>Database Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing (Acres/FTE):</td>
<td>29.6</td>
<td>18.4</td>
<td>23</td>
</tr>
<tr>
<td>Supervision (FTE/Super):</td>
<td>6</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>Grounds (1-5):</td>
<td>4.0</td>
<td>3.9</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Covering more space than peers but less than database

Covering more space with more supervision

Covering more space than peers and database
FY2012 Survey & Work Orders
Survey Respondent Demographics

“My position most closely matches…”

- Dean/VP: 34%
- Acad Dept Head: 10%
- Faculty: 47%
- Manager: 6%
- Admin Support: 3%

Most Frequent means of requesting services

- Phone: <1%
- Web: 20%
- Email: 9%
- Campus Mail: <1%
- In Person: 40%
- Other: 30%

Number of years at AASU:

- 0-5: 18
- 6-10: 24
- 11-15: 31
- 16-20: 47
- 20+: 0
“My general satisfaction with the requested mechanical, requested structural, routine custodial, and routine grounds services...”
Service Request Process

- Plant Operations staff are available to take work requests: 3.98
- Response (emergency v. routine) is appropriate: 3.88
- I am made aware of schedules and changes: 3.10
- Plant Operations staff is courteous/professional: 4.26
Service Process Index against Peers

Customer Satisfaction Index

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Institutions Ordered By: Density Factor

*Three schools excluded for lack of data
Concluding Comments
Increase Energy Tracking

**Total Campus Fossil MMBTU**

**Total Campus Electric kWh**
Improve Work Order Tracking

Average Total Cost of Daily Service Work Order on a Sample Campus

- Under 10 Years: $250
- 10-25 Years: $300
- 25-50 Years: $350
- Over 50 Years: $400

Average $/GSF Cost of Daily Service Work Orders on a Sample Campus

- Under 10K GSF: 0.12
- 10-50K GSF: 0.08
- 50-100K GSF: 0.04
- 100K+ GSF: 0.00
Focus on Customer Communication

The overall performance of Plant Operations:
- far exceeds expectations: 10, 6%
- exceeds expectations: 21, 12%
- meets expectations: 67, 40%
- is below expectations: 53, 31%
- is far below expectations: 19, 11%

Requested mechanical services:
- Schedule is adhered to or I am made aware of changes: 3.06
- The work schedule is generally acceptable: 3.48
- I am asked for or receive feedback: 2.46
- Work is performed courteously/professionally: 4.03
- Service meets my expectations: 3.69

“Communication is the biggest problem with maintenance”
“Still waiting on a request to be completed that I put in almost a year ago”
Maximize Return on Investment

Historical Investment vs. Yearly Need

<table>
<thead>
<tr>
<th>Main Campus</th>
<th>Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10</td>
<td>$9</td>
</tr>
<tr>
<td>$9</td>
<td>$8</td>
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<tr>
<td>$8</td>
<td>$7</td>
</tr>
<tr>
<td>$7</td>
<td>$6</td>
</tr>
<tr>
<td>$6</td>
<td>$5</td>
</tr>
<tr>
<td>$5</td>
<td>$4</td>
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<tr>
<td>$4</td>
<td>$3</td>
</tr>
<tr>
<td>$3</td>
<td>$2</td>
</tr>
<tr>
<td>$2</td>
<td>$1</td>
</tr>
<tr>
<td>$1</td>
<td>$0</td>
</tr>
</tbody>
</table>

$ in Millions

2008 2009 2010 2011 2012 2013

- Asset Reinvestment
- Annual Stewardship
- Target Need
- Life Cycle Need