The University of Maine System
FY2017 ROPA+
March 2018
What We Do

Data, software and expertise for all phases of The Building Lifecycle

**GORDIAN® for Operations**
Optimize ongoing maintenance, repairs and operations.

**GORDIAN® for Planning**
Analyze and benchmark facilities against others in the industry.

**GORDIAN® for Construction**
Manage change orders and construction projects with proven systems and services.

**GORDIAN® for Design**
Create accurate estimates using industry-standard RSMMeans data.

**GORDIAN® for Procurement**
Use detailed data and workflow tools to competitively contract construction.

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Who Partners with Sightlines?

Robust membership includes colleges, universities, consortia and state systems

Sightlines has advised state systems in:

- Alaska
- California
- Florida
- Hawaii
- Maine
- Massachusetts
- Minnesota
- Mississippi
- Missouri
- Nebraska
- New Hampshire
- New Jersey
- Pennsylvania
- Texas
- Washington

- 5 Canadian provinces
- 43 States + DC
- 170 New members since 2013
- 90% Member retention rate
- 450 Colleges & Universities
- 360+ ROPA Members
Vocabulary for Facilities Measurement, Benchmarking & Analysis

**Annual Stewardship**
The annual investment needed to ensure buildings will properly perform and reach their useful life.

"Keep-Up Costs".

**Asset Reinvestment**
The accumulation of repair and modernization needs and the definition of resource capacity to correct them.

"Catch-Up Costs"

**Operational Effectiveness**
The effectiveness of the facilities operating budget, staffing, supervision, and energy management.

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

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**Asset Value Change**

**Operations Success**
Vocabulary for Facilities Measurement, Benchmarking & Analysis

**Annual Stewardship**
- Operating Budget
- Planned Maintenance
- Funded Depreciation
- “Keep-Up Costs”

**Asset Reinvestment**
- State Funding
- University Revenue
- Campus Capital
- Accounts
- Bonds, Grants, Gifts
- “Catch-Up Costs”

**Operational Effectiveness**
- Facilities Operating Budget
- Staffing and Supervision
- Energy Cost and Consumption

**Service**
- Work Order Process Analysis
- Campus Inspection
- Customer Satisfaction Survey

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Asset Value Change

Operations Success
## Peer System Comparisons

<table>
<thead>
<tr>
<th>State System Comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massachusetts State Universities</td>
</tr>
<tr>
<td>Mississippi Institutions of Higher Learning</td>
</tr>
<tr>
<td>Oregon University System</td>
</tr>
<tr>
<td>Pennsylvania State System of Higher Education</td>
</tr>
<tr>
<td>University of Alaska System</td>
</tr>
<tr>
<td>University of Missouri System</td>
</tr>
<tr>
<td>University of New Hampshire System</td>
</tr>
</tbody>
</table>

*For the FY17 analysis, the CT State System was removed from the peer group and replaced with the UNH System*

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**Comparative Considerations**

Size, technical complexity, region, geographic location, and setting are all factors included in the selection of peer institutions.
FY2017 Core Observations

- Removing buildings from the building inventory increases System density and improves net asset value.

- Total capital investments continue to not meet Sightlines’ Annual targets and increase overall backlog of need.

- Project selection addresses highest risk needs and helps maximize value of minimal investment levels.

- Opportunities exist to be more proactive through operating planned maintenance and stewardship.
Space Profile
Total GSF Over Time

System GSF decreased by 254K GSF since FY12

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Total GSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY12</td>
<td>9,224,929</td>
</tr>
<tr>
<td>FY13</td>
<td>9,200,000</td>
</tr>
<tr>
<td>FY14</td>
<td>9,180,000</td>
</tr>
<tr>
<td>FY15</td>
<td>9,160,000</td>
</tr>
<tr>
<td>FY16</td>
<td>8,971,124</td>
</tr>
<tr>
<td>FY17</td>
<td></td>
</tr>
</tbody>
</table>
Density Across the Maine System

Density reaches 326 users/100K GSF in FY17 with additional UMS staff and buildings offline.

**Density at Maine System Level**

- Public School Average
- Maine System Average

**Density: Measures number of users per 100,000 GSF**

- Users include all student, faculty, and staff FTEs
- Measures campus building usage on a daily basis
Density Across the System Varies

Large commuter population drives UMA density

Density: Measures number of users per 100,000 GSF

- Users include all student, faculty, and staff FTEs
- Measures campus building usage on a daily basis
Average Construction Age of Post-War Buildings: 52 years old

Funding sources should be allocated based on age and condition of the buildings.

- **Pre-War**
  - Built pre-1951
  - Durable construction
  - Older but lasts longer

- **Post-War**
  - Built 1951 - 1975
  - Lower quality
  - Needs more repairs & renovation

- **Modern**
  - 1975 - 1990
  - Quick flash construction
  - Low quality components

- **Complex**
  - Built post-1991
  - Technically complex
  - Higher quality
  - More expensive to maintain or repair

---

**Sightlines Database - Construction Age**

**UM System Construction Age**

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12
Maine System Continues to Age

Campus Age Distribution Over Time

<table>
<thead>
<tr>
<th>Year</th>
<th>Under 10</th>
<th>10 to 25</th>
<th>25 to 50</th>
<th>Over 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>19%</td>
<td>20%</td>
<td>22%</td>
<td>21%</td>
</tr>
<tr>
<td>2007</td>
<td>11%</td>
<td>11%</td>
<td>13%</td>
<td>13%</td>
</tr>
<tr>
<td>2008</td>
<td>13%</td>
<td>13%</td>
<td>13%</td>
<td>13%</td>
</tr>
<tr>
<td>2009</td>
<td>13%</td>
<td>13%</td>
<td>13%</td>
<td>13%</td>
</tr>
<tr>
<td>2010</td>
<td>14%</td>
<td>14%</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>2011</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>2012</td>
<td>19%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>2013</td>
<td>12%</td>
<td>12%</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>2014</td>
<td>11%</td>
<td>11%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>2015</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>

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Space Over 50 is Growing

Consistent distribution of high risk space over the years

Campus Age Distribution Over Time

- Buildings Over 50: Life cycles of major building components are past due. Failures are possible. Core modernization cycles are missed. Highest risk
- Buildings 10 to 25: Short life-cycle needs; primarily space renewal. Medium Risk

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Space Over 50 is Growing

Consistent distribution of high risk space over the years

Campus Age Distribution Over Time

- **Maine System 2006**
  - Under 10: 19%
  - 10 to 25: 20%
  - 25 to 50: 43%
  - Over 50: 11%

- **Maine System 2011**
  - Under 10: 14%
  - 10 to 25: 20%
  - 25 to 50: 33%
  - Over 50: 33%

- **Maine System 2017**
  - Under 10: 10%
  - 10 to 25: 22%
  - 25 to 50: 24%
  - Over 50: 44%

**Buildings Over 50**
- Life cycles of major building components are past due.
- Failures are possible. Core modernization cycles are missed.
- Highest risk

**Buildings 25 to 50**
- Major envelope and mechanical life cycles come due.
- Functional obsolescence prevalent.
- Higher Risk

**Buildings 10 to 25**
- Short life-cycle needs; primarily space renewal.
- Medium Risk

**Buildings Under 10**
- Little work. “Honeymoon” period.
- Low Risk
High Risk Profile Consistent Across All Campuses

UMaine has the largest majority of space over 50 in the system

FY17 Renovation Age Across System

<table>
<thead>
<tr>
<th>Institution</th>
<th>Under 10</th>
<th>10 to 25</th>
<th>25 to 50</th>
<th>Over 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>UM</td>
<td>11%</td>
<td>13%</td>
<td>33%</td>
<td>57%</td>
</tr>
<tr>
<td>UMM</td>
<td>11%</td>
<td>15%</td>
<td>4%</td>
<td>35%</td>
</tr>
<tr>
<td>UMF</td>
<td>13%</td>
<td>6%</td>
<td>30%</td>
<td>50%</td>
</tr>
<tr>
<td>UMFK</td>
<td>13%</td>
<td>6%</td>
<td>36%</td>
<td>32%</td>
</tr>
<tr>
<td>UMPI</td>
<td>7%</td>
<td>7%</td>
<td>48%</td>
<td>28%</td>
</tr>
<tr>
<td>USM</td>
<td>7%</td>
<td>41%</td>
<td>24%</td>
<td>15%</td>
</tr>
<tr>
<td>UMA</td>
<td>25%</td>
<td>23%</td>
<td>37%</td>
<td>15%</td>
</tr>
</tbody>
</table>
Significant Growth in % of Buildings Over 50 Years Old

Maine System Percent of Space Over 50

- 2006: 27.3%
- 2007: 26.5%
- 2008: 27.2%
- 2009: 28.1%
- 2010: 31.3%
- 2011: 32.7%
- 2012: 33.9%
- 2013: 38.3%
- 2014: 37.3%
- 2015: 40.0%
- 2016: 40.8%
- 2017: 44.6%

Public School Average

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By 2022 54% of Space Will be Over 50 Years Old

Plan now for major life cycle replacements in these buildings

**Maine System Percent of Space Over 50**

*FY22 is calculated as campus is today, with no changes to the space profile*
Case Study – UMA Shift in Renovation Age

Renovations and demolitions at UMA offsets age

Campus Renovation Age by Category

<table>
<thead>
<tr>
<th>Year</th>
<th>Under 10</th>
<th>10 to 25</th>
<th>25 to 50</th>
<th>Over 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06</td>
<td>18%</td>
<td>25%</td>
<td>25%</td>
<td>16%</td>
</tr>
<tr>
<td>FY07</td>
<td>18%</td>
<td>25%</td>
<td>25%</td>
<td>34%</td>
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<tr>
<td>FY08</td>
<td>12%</td>
<td>25%</td>
<td>30%</td>
<td>33%</td>
</tr>
<tr>
<td>FY09</td>
<td>12%</td>
<td>25%</td>
<td>30%</td>
<td>33%</td>
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<tr>
<td>FY10</td>
<td>9%</td>
<td>35%</td>
<td>12%</td>
<td>33%</td>
</tr>
<tr>
<td>FY11</td>
<td>9%</td>
<td>31%</td>
<td>12%</td>
<td>25%</td>
</tr>
<tr>
<td>FY12</td>
<td>19%</td>
<td>25%</td>
<td>28%</td>
<td>27%</td>
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<tr>
<td>FY13</td>
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<tr>
<td>FY14</td>
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<td>27%</td>
<td>27%</td>
</tr>
<tr>
<td>FY17</td>
<td>23%</td>
<td>37%</td>
<td>15%</td>
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</tr>
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Case Study – UMA Shift in Renovation Age

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<table>
<thead>
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<th>Category</th>
<th>FY06</th>
<th>FY07</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
<th>FY17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belfast Hall Reno</td>
<td>55%</td>
<td>36%</td>
<td>30%</td>
<td>30%</td>
<td>33%</td>
<td>33%</td>
<td>25%</td>
<td>31%</td>
<td>28%</td>
<td>29%</td>
<td>34%</td>
<td>34%</td>
</tr>
<tr>
<td>College Street Reno</td>
<td>12%</td>
<td>12%</td>
<td>12%</td>
<td>9%</td>
<td>9%</td>
<td>9%</td>
<td>35%</td>
<td>19%</td>
<td>21%</td>
<td>20%</td>
<td>21%</td>
<td>23%</td>
</tr>
<tr>
<td>Gannett Bldg Reno</td>
<td>18%</td>
<td>18%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td>36%</td>
<td>25%</td>
<td>21%</td>
<td>18%</td>
<td>18%</td>
<td>17%</td>
</tr>
<tr>
<td>Katahdin Hall Demo</td>
<td>12%</td>
<td>12%</td>
<td>12%</td>
<td>9%</td>
<td>9%</td>
<td>9%</td>
<td>35%</td>
<td>19%</td>
<td>21%</td>
<td>20%</td>
<td>21%</td>
<td>23%</td>
</tr>
<tr>
<td>Maint. Shop Demo</td>
<td>18%</td>
<td>18%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td>36%</td>
<td>25%</td>
<td>21%</td>
<td>18%</td>
<td>18%</td>
<td>17%</td>
</tr>
<tr>
<td>Mod IV Mailroom Demo</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Under 10  | 10 to 25 | 25 to 50 | Over 50

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Over 45 Year Old Analysis

Renovation Age
Over 45 Template Distributed to Every Institution

Sample taken from UMM

<table>
<thead>
<tr>
<th>Building Name</th>
<th>GSF</th>
<th>Program Use</th>
<th>Historical Registry Listing</th>
<th>Utilization Rate</th>
<th>Condition</th>
<th>Value to Program</th>
<th>Value to Institution's Mission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doward Hall-West Wing-A</td>
<td>21,139</td>
<td>Residence Hall</td>
<td>No</td>
<td>1: High</td>
<td>2: Fair Condition</td>
<td>1: Valuable</td>
<td>2: Aligns with Institution's Mission</td>
</tr>
<tr>
<td>Kilburn Commons</td>
<td>9,565</td>
<td>Student Life</td>
<td>No</td>
<td>1: High</td>
<td>1: Excellent Condition</td>
<td>1: Valuable</td>
<td>1: Supports Institution's Mission</td>
</tr>
<tr>
<td>O'Brien House</td>
<td>5,000</td>
<td>Admissions</td>
<td>No</td>
<td>2: Moderate</td>
<td>2: Fair Condition</td>
<td>1: Valuable</td>
<td>1: Supports Institution's Mission</td>
</tr>
<tr>
<td>Powers Hall</td>
<td>33,525</td>
<td>Academic</td>
<td>No</td>
<td>1: High</td>
<td>3: Poor Condition</td>
<td>1: Valuable</td>
<td>1: Supports Institution's Mission</td>
</tr>
<tr>
<td>Reynolds Health Center-Gym</td>
<td>33,741</td>
<td>Student Life</td>
<td>No</td>
<td>1: High</td>
<td>2: Fair Condition</td>
<td>1: Valuable</td>
<td>1: Supports Institution's Mission</td>
</tr>
<tr>
<td>Sennett Hall-South Wing C</td>
<td>12,612</td>
<td>Residence Hall</td>
<td>No</td>
<td>1: High</td>
<td>1: Valuable</td>
<td>1: Supports Institution's Mission</td>
<td></td>
</tr>
<tr>
<td>Sennett Hall-Center Wing-B</td>
<td>10,558</td>
<td>Residence House</td>
<td>No</td>
<td>1: High</td>
<td>2: Fair Condition</td>
<td>1: Valuable</td>
<td>2: Aligns with Institution's Mission</td>
</tr>
<tr>
<td>Sennett Hall-North Wing-A</td>
<td>12,558</td>
<td>Residence House</td>
<td>No</td>
<td>1: High</td>
<td>2: Fair Condition</td>
<td>1: Valuable</td>
<td>2: Aligns with Institution's Mission</td>
</tr>
</tbody>
</table>

The following slides will dig deeper into some of the buildings on this list.
Total Maine System Findings

Comparing condition with utilization across the system

Building vs. Utilization

High

Utilization Rate

Low

3,202,123 GSF

383,689 GSF

568,109 GSF

43,220 GSF

Condition of Buildings

Poor to Fair

Good to Excellent

A user is defined as an occupant of the space for an estimated 4 hours/day or more.

1. High: Greater than 20 users on a daily basis
2. Medium: 10-20 users on a daily basis
3. Low: Fewer than 10 users on a daily basis
Candidates for Potential Renovation

Comparing condition with utilization across the system

- High Utilization Rate: 3,202,123 GSF
- Low Utilization Rate: 568,109 GSF
- Poor to Fair Condition of Buildings: 383,689 GSF
- Good to Excellent Condition of Buildings: 43,220 GSF

A user is defined as an occupant of the space for an estimated 4 hours/day or more.
1. High: Greater than 20 users on a daily basis
2. Medium: 10-20 users on a daily basis
3. Low: Fewer than 10 users on a daily basis
Potential Candidates for Removal
Comparing condition with utilization across the system

Building vs. Utilization

- High
  - 3,202,123 GSF
  - 383,689 GSF
- Low
  - 568,109 GSF
  - 43,220 GSF

Condition of Buildings
- Poor to Fair
- Good to Excellent

A user is defined as an occupant of the space for an estimated 4 hours/day or more.
1. High: Greater than 20 users on a daily basis
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3. Low: Fewer than 10 users on a daily basis
Low Utilization and Poor Condition Space

Removing historical buildings and storage structures from the equation

<table>
<thead>
<tr>
<th>Buildings Over 45 with Poor Condition/Low Utilization</th>
<th>Sum of GSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>The University of Maine</td>
<td>283,919</td>
</tr>
<tr>
<td>University of Maine at Augusta</td>
<td>17,851</td>
</tr>
<tr>
<td>University of Maine at Farmington</td>
<td>60,965</td>
</tr>
<tr>
<td>University of Maine at Fort Kent</td>
<td>19,328</td>
</tr>
<tr>
<td>University of Maine at Machias</td>
<td>5,000</td>
</tr>
<tr>
<td>University of Maine at Presque Isle</td>
<td>793</td>
</tr>
<tr>
<td>University of Southern Maine</td>
<td>180,253</td>
</tr>
<tr>
<td>Total</td>
<td>568,109</td>
</tr>
</tbody>
</table>

Less Historic Buildings

<table>
<thead>
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<th>Buildings Over 45 with Poor Condition/Low Utilization</th>
<th>Sum of GSF</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>University of Maine at Machias</td>
<td>5,000</td>
</tr>
<tr>
<td>University of Maine at Presque Isle</td>
<td>793</td>
</tr>
<tr>
<td>University of Southern Maine</td>
<td>169,725</td>
</tr>
<tr>
<td>Total</td>
<td>376,763</td>
</tr>
</tbody>
</table>
Low Utilization and Poor Condition Space

Removing historical buildings and storage structures from the equation

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<tr>
<td>University of Maine at Presque Isle</td>
<td>793</td>
</tr>
<tr>
<td>University of Southern Maine</td>
<td>169,725</td>
</tr>
<tr>
<td>Total</td>
<td>376,763</td>
</tr>
</tbody>
</table>

Less Storage

<table>
<thead>
<tr>
<th>Buildings Over 45 with Poor Condition/Low Utilization</th>
<th>Sum of GSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>The University of Maine</td>
<td>85,195</td>
</tr>
<tr>
<td>University of Maine at Augusta</td>
<td>15,576</td>
</tr>
<tr>
<td>University of Maine at Farmington</td>
<td>60,465</td>
</tr>
<tr>
<td>University of Maine at Fort Kent</td>
<td>15,964</td>
</tr>
<tr>
<td>University of Maine at Machias</td>
<td>5,000</td>
</tr>
<tr>
<td>University of Maine at Presque Isle</td>
<td>409</td>
</tr>
<tr>
<td>University of Southern Maine</td>
<td>169,537</td>
</tr>
<tr>
<td>Total</td>
<td>352,146</td>
</tr>
</tbody>
</table>
Operations Success
UMS Spending Consistent from FY16 to FY17

Utility expenditures decreased from FY17

Maine System Facilities Operating Actuals

- Daily Service
- Planned Maintenance
- Utilities

sightlines
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Peers Increase Stewardship Through Planned Maintenance

UMS invests less in Planned Maintenance as % of Budget, but increased PM more since FY06
Maintenance Operations

Staff covered fewer GSF/FTE, heavier supervision than peers

Maintenance Staffing

Maintenance Supervision

Public School Average
Custodial Operations

UMS has more custodial staff than peers and public school average

Custodial Staffing

Custodial Supervision

Public School Average

sightlines
a Gordian company
Grounds Operations

Grounds staff responsible for more acres than peers and public school average

Grounds Staffing

Grounds Supervision

Public School Average
Customer Satisfaction Survey

Survey Score Index

<table>
<thead>
<tr>
<th></th>
<th>UM</th>
<th>UMM</th>
<th>UMF</th>
<th>UMK</th>
<th>UMPI</th>
<th>USM</th>
<th>UMA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>69%</td>
<td>77%</td>
<td>76%</td>
<td>69%</td>
<td>69%</td>
<td>67%</td>
<td></td>
</tr>
</tbody>
</table>

UMF and UMA did not complete the FY16 survey
Opportunities for Improvement in Feedback and Scheduling

USM scores highest in general satisfaction

Overall Customer Feedback

General satisfaction
Feedback
Work meets expectations
Schedule and service levels
Knowledge/Understanding in process

Average Value of Responses

UMF and UMA did not complete the FY16 survey
Customer Satisfaction Survey Comments

The problem is many times we don’t know that the work order is done. Most of the time the email that says the order is complete, comes a good while after the order was completed. This can be a problem when there is no way for us to check the status online. – Fort Kent

Additional Ground Staff is needed badly, The limited staff FTE does a great job for what they have to work with. -UMPI

“No idea how to submit work orders. Emails requests are rarely completed and almost never acknowledged.” – UMM

Many broken or mismatched floor tiles, peeling paint on walls and ceilings, water damage - it’s a very old building. There has been a cockroach issue in the 2nd floor bathrooms, but I think that may be under control now. The janitor does a nice job keeping the building clean though. -UM

It is cold in winter, and my air conditioner didn’t work at all last summer. Our area needs renovation in keeping with the rest of the building. -UMPI

The building is kept clean. However the paint on sills, doors and many walls is in desperate need of attention. The rest rooms are very old. The only other sink in an old and not very clean janitors closet. The building is not handicap accessible. - UM
Consistent Consumption Despite Degree Day Increase

*Degree days noted are based on the Orono, Maine location

**Fossil fuels contain all heating fuel sources, including alternative fuel sources (e.g., biomass, wood chips, etc.)
Consistent Consumption Despite Degree Day Increase

*Degree days noted are based on the Orono, Maine location
**Fossil fuels contain all heating fuel sources, including alternative fuel sources (i.e. biomass, wood chips, etc.)
Consistent Consumption When Heating Degree Days Factored In

Fossil Consumption – Normalized for Degree Days

**Degree days noted are based on the Orono, Maine location**

**Fossil fuels contain all heating fuel sources, including alternative fuel sources (i.e. biomass, wood chips, etc.)**
UMaine System Fuel Mix Emitting Less Carbon

Fossil Fuel Mix

<table>
<thead>
<tr>
<th>Year</th>
<th>High Intensity Fossil Fuels</th>
<th>Low Intensity Fossil Fuels</th>
<th>Biomass</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06</td>
<td>80%</td>
<td>20%</td>
<td>0%</td>
</tr>
<tr>
<td>FY07</td>
<td>80%</td>
<td>20%</td>
<td>0%</td>
</tr>
<tr>
<td>FY08</td>
<td>60%</td>
<td>40%</td>
<td>0%</td>
</tr>
<tr>
<td>FY09</td>
<td>60%</td>
<td>40%</td>
<td>0%</td>
</tr>
<tr>
<td>FY10</td>
<td>60%</td>
<td>40%</td>
<td>0%</td>
</tr>
<tr>
<td>FY11</td>
<td>60%</td>
<td>40%</td>
<td>0%</td>
</tr>
<tr>
<td>FY12</td>
<td>60%</td>
<td>40%</td>
<td>0%</td>
</tr>
<tr>
<td>FY13</td>
<td>60%</td>
<td>40%</td>
<td>0%</td>
</tr>
<tr>
<td>FY14</td>
<td>60%</td>
<td>40%</td>
<td>0%</td>
</tr>
<tr>
<td>FY15</td>
<td>60%</td>
<td>40%</td>
<td>0%</td>
</tr>
<tr>
<td>FY16</td>
<td>60%</td>
<td>40%</td>
<td>0%</td>
</tr>
<tr>
<td>FY17</td>
<td>60%</td>
<td>40%</td>
<td>0%</td>
</tr>
</tbody>
</table>

*High intensity fuels include oil #2 and oil #6
**Low intensity fuels include natural gas and propane
Total Gross Emissions Over Time

Maine System Total Gross Emissions
(FY2006-FY2017)

MTCDE = Metric Tons of Carbon Dioxide Equivalent
Asset Value Change
Total Investment Lower in FY2017

Examples of Non-Facilities work include: Study/Design fees, IT work, and demolition costs. These are necessary capital costs for Facilities Operations but do not add value/enhance existing buildings.
Investments Focus on Existing Space

**Significant Projects in FY17:**
- UM – Animal Plant & Insect Lab
- UMA – Lewiston Hall Renovation
- USM – Softball Field Improvements

**New Space Projects in FY17:**
- UM – AEW Wing, Stewart New Media/Art Complex
- UMF – Central Energy Plant

Examples of Non-Facilities work include: Study/Design fees, IT work, and demolition costs. These are necessary capital costs for Facilities Operations but do not add value/enhance existing buildings.
Gap In Investment Widens

An additional $22M needed to hit peer levels in FY17

Total Project Spending into Existing Space

- $1.38 increase in FY06
- $3.64 increase in FY10
- $2.47 increase in FY17

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Project Selection Comparable To Peers

Maine System FY06-17
- Building Envelope: 32%
- Building Systems: 29%
- Space Renewal: 9%
- Safety/Code: 19%
- Infrastructure: 11%

Peer Systems FY06-17
- Building Envelope: 28%
- Building Systems: 30%
- Space Renewal: 20%
- Safety/Code: 8%
- Infrastructure: 13%
Investment Shifts Towards Greater ROI Projects

57% of investment went toward MEP projects from 2012-2017

2006-2011 Historical Project Investment

- Envelope/Mechanical: 51%
- Space/Programming: 49%

2012-2017 Historical Project Investment

- Envelope/Mechanical: 43%
- Space/Programming: 57%

sightlines
Does not include infrastructure investments.
Defining an Annual Investment Target

Annual Funding Target: $35.9M

FY17 Annual Investment Target

- 3% Replacement Value
  - $72.7M

- Life Cycle Need
  - $27.3M
  - $30.8M

- Annual Investment Target
  - $20.5M
  - $15.4M

Replacement Value: $2.4B

Functional obsolescence drives investment prior to life cycles & discounts the annual investment target.

Envelope/Mechanical

Space/Program

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Deferral to Backlog of Need Increases in FY2017

Gap between funding in target results in backlog growth

Historical Capital Investment in Existing Space vs Funding Target

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

sightlines
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NAV Decreases Over Time

NAV dictates large-scale capital infusions or renovations are inevitable

**FY17 Net Asset Value**

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Asset Value (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>64.0%</td>
</tr>
<tr>
<td>2007</td>
<td>64.0%</td>
</tr>
<tr>
<td>2008</td>
<td>64.0%</td>
</tr>
<tr>
<td>2009</td>
<td>64.0%</td>
</tr>
<tr>
<td>2010</td>
<td>64.0%</td>
</tr>
<tr>
<td>2011</td>
<td>64.0%</td>
</tr>
<tr>
<td>2012</td>
<td>64.0%</td>
</tr>
<tr>
<td>2013</td>
<td>64.0%</td>
</tr>
<tr>
<td>2014</td>
<td>64.0%</td>
</tr>
<tr>
<td>2015</td>
<td>64.0%</td>
</tr>
<tr>
<td>2016</td>
<td>57.8%</td>
</tr>
<tr>
<td>2017</td>
<td>54.7%</td>
</tr>
</tbody>
</table>

**Investment Strategy**

- **“Keep Up” Stage**: Primarily new or recently renovated buildings with sporadic building repair & life cycle needs
- **Balanced Profile Stage**: Buildings are beginning to show their age and may require more significant investment and renovation on a case-by-case basis
- **“Catch Up” Stage**: Buildings require more significant repairs; major building components are in jeopardy of complete failure; large-scale capital infusions or renovations are inevitable
- **Transitional/Gut Renovation/Demo Stage**: Major buildings components are in jeopardy of failure. Reliability issues are widespread throughout the building.

**Net Asset Value** = \[rac{\text{Replacement Value} - \text{Backlog}}{\text{Replacement Value}}\]
FY17 NAV By Campus

Investment Strategy

“Keep Up” Stage: Primarily new or recently renovated buildings with sporadic building repair & life cycle needs

Balanced Profile Stage: Buildings are beginning to show their age and may require more significant investment and renovation on a case-by-case basis

“Catch Up” Stage: Buildings require more significant repairs; major building components are in jeopardy of complete failure; large-scale capital infusions or renovations are inevitable

Transitional/Gut Renovation/Demo Stage: Major buildings components are in jeopardy of failure. Reliability issues are widespread throughout the building.

Net Asset Value = \frac{\text{Replacement Value} - \text{Backlog}}{\text{Replacement Value}}
Case Study – Demolition of Kimball Hall at UMM

Net Asset Value

Investment Strategy

“Keep Up” Stage: Primarily new or recently renovated buildings with sporadic building repair & life cycle needs

Balanced Profile Stage: Buildings are beginning to show their age and may require more significant investment and renovation on a case-by-case basis

“Catch Up” Stage: Buildings require more significant repairs; major building components are in jeopardy of complete failure; large-scale capital infusions or renovations are inevitable

Transitional/Gut Renovation/Demo Stage: Major buildings components are in jeopardy of failure. Reliability issues are widespread throughout the building.

Net Asset Value = Replacement Value – Backlog
Replacement Value
ROPA+ Prediction
ROPAP Prediction Overview

Regionalized costs based on comprehensive database of building systems

**6 Subsystems**

- Roof
- Envelope
- HVAC Systems
- Electrical
- Plumbing
- Interiors

**96% of Building Costs**
Aligning Capital Funding Sources With Need

- Modernization and Infrastructure Needs
- Estimated using a combination of the Sightlines’ database and BPS analyses.
- Combination of Funds
- Life Cycle Needs coming due between 2017-2026
- “Keep-Up” Funds
  - Deferred Maintenance
  - The subsystem has already failed
  - The subsystem is functioning with substantial degradation of efficiency or performing at increased cost
- “Catch-Up” Funds

Legend:
- Modernization and Infrastructure
- Renewal Need
- Current Need

Dollars in Millions

Prediction

$1,200
$1,000
$800
$600
$400
$200
$0

Asset Reinvestment Need

$525
$349
$227
Core Systems Needs Decrease, Modernization Needs Increase

Current and Renewal Need is 53% of total need, down from 57% in FY2016

FY2017 Prediction Need
- Current Need: 48%
- Renewal Need: 32%
- Modernization and Infrastructure: 20%

FY2016 Prediction Need
- Current Need: 43%
- Renewal Need: 39%
- Modernization and Infrastructure: 18%
FY17 Total Current Need by System

**Prediction**
- $525
- $349
- $227

**Distribution of Current Need by System**
- Modernization and Infrastructure: 31%
- Electrical: 25%
- Plumbing: 17%
- Interiors: 13%
- HVAC: 11%
- Building Exteriors: 13%
- Small Building Renovation: 1%
- Roofing: 1%
- Renewal Need: 2%
- Current Need: 13%
60% of Historical InvestmentFocused Towards Durable Projects

Stronger investment in mechanical work needed in future years

2006-2017 Historical Project Investment

- Envelope: 45%
- Mechanical: 40%
- Interiors: 15%

Distribution of Maine System Need* by System

- Envelope: 57%
- Mechanical: 18%
- Interiors: 25%

$234M Invested

$586M of Need

*Need includes backlog and renewal projects, not modernization or infrastructure work
Strategic Roadmap to Achieve UMS Goals

Updated August 2017
Assumptions

- The values used are for removing buildings with a NAV of 60% or lower.
- The average backlog of these buildings is $139/GSF.

<table>
<thead>
<tr>
<th>GSF Removed</th>
<th>Backlog Eliminated</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,000 GSF</td>
<td>$13.9M</td>
</tr>
<tr>
<td>200,000 GSF</td>
<td>$27.9M</td>
</tr>
<tr>
<td>300,000 GSF</td>
<td>$41.8M</td>
</tr>
<tr>
<td>400,000 GSF</td>
<td>$55.8M</td>
</tr>
</tbody>
</table>

- Student enrollment, faculty and staff counts remain stable with FY2016 data.
- The GSF reductions are net and assume the University will not increase space or will remove enough space to achieve net reductions of the amount as shown.
Removing GSF from the UMaine System Inventory

**UMS – Net Asset Value**

- 2017: 54.7%
- Removing 100K GSF: 54.8%
- Removing 200K GSF: 54.8%
- Removing 300K GSF: 54.9%
- Removing 400K GSF: 55.0%

**Net Asset Value = \frac{Replacement Value – Backlog}{Replacement Value}**

**UMS – Density**

- 2017: 327
- Removing 100K GSF: 331
- Removing 200K GSF: 335
- Removing 300K GSF: 339
- Removing 400K GSF: 344
Concluding Comments

✓ Strategically Keep Up and Catch Up
  • Explore individual building needs over time and strategically identify sequencing for major renovations.
  • Buildings with needs coming due gradually over time should be “kept up,” or stewarded. Buildings with large spikes of need should be “caught up,” with non-critical life cycle projects intentionally deferred and then addressed with a major renovation.
  • A large capital infusion will be needed to address all the needs coming due in the next 10 years.

✓ Construct Building Portfolios
  • Create Building Portfolios to segregate those buildings that will be demolished or renovated to provide a clearer view of the stewardship needs for remaining inventory.

✓ Understand Operating Performance
  • Given the new IWMS, develop system wide reports to track and monitor operating resources.
  • Understand customer expectations through consistent customer satisfaction surveys.
  • Work to align expectations to the available operating resources.
Questions and Comments
Appendix: UMS Key Performance Indicators
# Using Sightlines Data to Monitor UMS KPIs

<table>
<thead>
<tr>
<th>KPI</th>
<th>Current UMS Measure</th>
<th>Interim Goal</th>
<th>Peer/Industry Standard</th>
<th>Long-term System Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Density: Number of users</td>
<td>297</td>
<td>332</td>
<td>460</td>
<td>415</td>
</tr>
<tr>
<td>2. NAV: Net Asset Value</td>
<td>59%</td>
<td>63.5%</td>
<td>75%</td>
<td>70%</td>
</tr>
<tr>
<td>3. Capital Expenditures on Existing Space: %CRF</td>
<td>1.88-2.34%</td>
<td>Peer/Industry standard: &lt;1.5%</td>
<td>Periodic reporting recommended</td>
<td></td>
</tr>
<tr>
<td>4. Annual Facilities Operating Expenses; Maintenance, Custodial, Grounds, &amp; Paid Utilities % GIR</td>
<td>9.67%</td>
<td>At this time, there are no commonly accepted standards in this area. UMS will continue to track, report, &amp; internally benchmark their progress.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Energy Cost; per GSF</td>
<td>Current UMS measure: $1.72</td>
<td>Peer/Industry standard: $1.98</td>
<td>Periodic reporting recommended</td>
<td></td>
</tr>
<tr>
<td>7. Annual Facilities Operating Expenses; Maintenance, Custodial, Grounds, &amp; Paid Utilities per GSF</td>
<td>2.89 - 3.60%</td>
<td>Peer/Industry standard: TBD</td>
<td>Periodic reporting recommended</td>
<td></td>
</tr>
<tr>
<td>8. Annual Facilities Operating Expenses; Maintenance, Custodial, Grounds, &amp; Paid Utilities per GSF</td>
<td>$6.70</td>
<td>$6.13</td>
<td>Establishment of specific goals to be revisited in FY17</td>
<td></td>
</tr>
<tr>
<td>9. Preventive Maintenance/Demand Maintenance; % Annual Expenditures</td>
<td>Current UMS measure: 3%</td>
<td>Establishment of specific goals to be revisited in FY17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Coverage: FTE (Maintenance, Custodial, Grounds); per GSF</td>
<td>Continue to monitor GSF/FTE ratios. Serve to meet or exceed APPA/Sightlines benchmarks, e.g.: Custodial target zone: 29.213 - 37.000 GSF/FTE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Energy Cost; per Million BTUs</td>
<td>$17.73</td>
<td>Peer/Industry standard: $19.00</td>
<td>Periodic reporting recommended</td>
<td></td>
</tr>
<tr>
<td>12. Energy BTUs; per GSF</td>
<td>Current UMS measure: 97,015</td>
<td>Peer/Industry standard: 121,131</td>
<td>Continue to meet/exceed peer/industry standards, strive to improve existing UMS performance, &amp; establish specific goal for FY16.</td>
<td></td>
</tr>
</tbody>
</table>
Density Factor

Density: Measures number of users per 100,000 GSF
Net Asset Value
Capital Spending - % CRV

Existing space investment only

Existing Space Spending - % CRV

% CRV

FY06 FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15 FY16 FY17

0.0% 0.5% 1.0% 1.5% 2.0% 2.5%
Facilities Operating Actuals as % of GIR

Maine System Facilities Operating Actuals - %GIR

% CRV

FY15 | FY16 | FY17 | FY18 | FY19 | FY20

*This information will be tracked moving forward.
Energy Cost per GSF

- FY06
- FY07
- FY08
- FY09
- FY10
- FY11
- FY12
- FY13
- FY14
- FY15
- FY16
- FY17
Facilities Operating Actuals as % of CRV

Maine System Facilities Operating Actuals - %CRV

<table>
<thead>
<tr>
<th>Year</th>
<th>% CRV</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06</td>
<td>2.5%</td>
</tr>
<tr>
<td>FY07</td>
<td>3.0%</td>
</tr>
<tr>
<td>FY08</td>
<td>3.5%</td>
</tr>
<tr>
<td>FY09</td>
<td>3.1%</td>
</tr>
<tr>
<td>FY10</td>
<td>3.3%</td>
</tr>
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<td>2.9%</td>
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<td>FY13</td>
<td>2.7%</td>
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<td>FY14</td>
<td>2.7%</td>
</tr>
<tr>
<td>FY15</td>
<td>2.6%</td>
</tr>
<tr>
<td>FY16</td>
<td>2.6%</td>
</tr>
<tr>
<td>FY17</td>
<td>2.5%</td>
</tr>
</tbody>
</table>
Facilities Operating Budget Actuals

Maine System Facilities Operating Actuals - $/GSF

FY06 FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15 FY16 FY17

- Daily Service
- Planned Maintenance
- Utilities
Planned Maintenance

Planned Maintenance - % of Budget

<table>
<thead>
<tr>
<th>Year</th>
<th>% of Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY06</td>
<td>2%</td>
</tr>
<tr>
<td>FY07</td>
<td>1%</td>
</tr>
<tr>
<td>FY08</td>
<td>2%</td>
</tr>
<tr>
<td>FY09</td>
<td>1%</td>
</tr>
<tr>
<td>FY10</td>
<td>1%</td>
</tr>
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<td>FY11</td>
<td>2%</td>
</tr>
<tr>
<td>FY12</td>
<td>4%</td>
</tr>
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</tr>
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</tr>
<tr>
<td>FY15</td>
<td>4%</td>
</tr>
<tr>
<td>FY16</td>
<td>3%</td>
</tr>
<tr>
<td>FY17</td>
<td>3%</td>
</tr>
</tbody>
</table>
Custodial Staffing
Grounds Staffing

![Grounds Staffing Chart]

FY06 | FY07 | FY08 | FY09 | FY10 | FY11 | FY12 | FY13 | FY14 | FY15 | FY16 | FY17
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----
25   | 20  | 25  | 25  | 25  | 30  | 35  | 30  | 30  | 30  | 30  | 30  

Acre/FTE

sightlines
a GORDIAN company
Energy Cost per MMBTU
Energy Consumption

Fossil consumption stays at FY16 levels; electric also remains consistent

*Fossil Fuels contain all heating fuel sources, including alternative sources (i.e. biomass, wood chips, etc.)
Emissions Summary

MTCDE/1,000 GSF

MTCDE/Student FTE

MTCDE = Metric Tons of Carbon Dioxide Equivalent