The Oregon University System

Sustainable Renewal Program for Failing Assets

July 2004
Introduction

• Huge enterprise: 20 Million Gross Square Feet (gsf)
  – 50% of all *State-owned* facilities
  – $3 billion in current replacement value
  – 100,000 students affected each year

• Similar in scale to municipalities
  – Classrooms, offices, labs, libraries, Power plants, underground utility tunnels, road systems, museums
  – Operate 24/7/365
Why is Deferred Maintenance of Concern to OUS?

- Campus growth in 1960 to 1975 = 50% of space built in 15 years
- 30-45 yrs later, these buildings need simultaneous overhaul
- Subsystems in buildings are substantially past published standards for lifecycle
50% of all OUS Facilities were constructed between 1960 and 1975
Each Subsystem has Statistically Predictable Lifespan

- **Roofs** – 25 years
- **Exteriors** – 30 years
- **HVAC equipment & controls** – 25 years
- **HVAC distribution systems** – 50 years
- **Plumbing** – 30 years
- Life spans may vary by type, geography, and annual preventive maintenance
At End of Lifecycle, Subsystems Need to be Replaced

- **Deferred Maintenance (DM)** = Delays in the Replacement of Building Systems which are beyond their useful life, and cannot be restored through maintenance.
Education and General Only:
Deferred Maintenance by Subsystem

- Electrical-Equipment: 31%
- HVAC-Distribution: 10%
- HVAC-Equipment/Controls: 17%
- Built-in Equipment: 13%
- Plumbing: 15%
- Interior Finishes: 9%
- Roofing: 2%
- Building Exteriors: 8%
- Elevator/Conveying: 2%
- Fire Protection: 2%
Facility Condition Index

\[
\text{FCI} = \frac{\text{Cost of Deficiencies}}{\text{Current Replacement Value}}
\]

APP&A & NACUBO FCI Benchmarks

- Under 5% Good
- 5% -10% Fair
- Over 10% Poor

OUS FCI = 28%
## Deferred Maintenance Project Priorities

<table>
<thead>
<tr>
<th>Priority</th>
<th>FCI</th>
<th>Energy Score</th>
<th>Building Name</th>
<th>GSF</th>
<th>Built</th>
<th>CRV</th>
<th>A Renewal Cost</th>
<th>B SELP Funding</th>
<th>A-B Lottery Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.42</td>
<td>0.42</td>
<td>2005-07 Totals</td>
<td></td>
<td>1,106,858</td>
<td>$240,034.00</td>
<td>$100,395</td>
<td>$70,221</td>
<td>$30,174</td>
<td></td>
</tr>
</tbody>
</table>

### 2005-07

<table>
<thead>
<tr>
<th>Priority</th>
<th>FCI</th>
<th>Energy Score</th>
<th>Building Name</th>
<th>GSF</th>
<th>Built</th>
<th>CRV</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5</td>
<td>10.5</td>
<td>WOU PHYSICAL PLANT</td>
<td>30,108</td>
<td>1960</td>
<td>$4,968</td>
<td>1,552</td>
</tr>
<tr>
<td>2</td>
<td>0.4</td>
<td>10.9</td>
<td>UO HEATING &amp; POWER PLANT</td>
<td>23,265</td>
<td>1949</td>
<td>$34,898</td>
<td>13,049</td>
</tr>
<tr>
<td>3</td>
<td>0.4</td>
<td>10.4</td>
<td>EOU CENTRAL HEATING PLANT</td>
<td>4,662</td>
<td>1970</td>
<td>$6,993</td>
<td>3,044</td>
</tr>
<tr>
<td>4</td>
<td>0.3</td>
<td>10.3</td>
<td>OIT FACILITIES SERVICES</td>
<td>19,301</td>
<td>1964</td>
<td>$1,868</td>
<td>549</td>
</tr>
<tr>
<td>5</td>
<td>0.2</td>
<td>10.2</td>
<td>PSU HEATING PLANT</td>
<td>4,237</td>
<td>1965</td>
<td>$6,356</td>
<td>1,070</td>
</tr>
<tr>
<td>6</td>
<td>0.1</td>
<td>10.1</td>
<td>SOU CENTRAL HEATING PLANT</td>
<td>9,918</td>
<td>1958</td>
<td>$14,877</td>
<td>363</td>
</tr>
<tr>
<td>7</td>
<td>0.7</td>
<td>1.7</td>
<td>PSU SHATTUCK HALL</td>
<td>93,659</td>
<td>1911</td>
<td>$15,454</td>
<td>6,383</td>
</tr>
<tr>
<td>8</td>
<td>0.3</td>
<td>1.7</td>
<td>PSU MILLAR LIBRARY</td>
<td>194,783</td>
<td>1966</td>
<td>$32,139</td>
<td>9,969</td>
</tr>
<tr>
<td>9</td>
<td>0.8</td>
<td>1.3</td>
<td>PSU LINCOLN HALL</td>
<td>135,052</td>
<td>1949</td>
<td>$22,284</td>
<td>9,911</td>
</tr>
<tr>
<td>10</td>
<td>0.2</td>
<td>1.1</td>
<td>OSU WALDO HALL</td>
<td>73,704</td>
<td>1907</td>
<td>$12,161</td>
<td>2,810</td>
</tr>
<tr>
<td>11</td>
<td>0.2</td>
<td>1.1</td>
<td>OSU MILNE COMPUTER CENTER</td>
<td>23,502</td>
<td>1969</td>
<td>$6,416</td>
<td>1,095</td>
</tr>
<tr>
<td>12</td>
<td>0.2</td>
<td>1.1</td>
<td>OSU SIXTH AVENUE</td>
<td>16,540</td>
<td>1996</td>
<td>$2,729</td>
<td>483</td>
</tr>
<tr>
<td>13</td>
<td>0.6</td>
<td>1.1</td>
<td>OSU STRAUB MEMORIAL HALL</td>
<td>77,775</td>
<td>1929</td>
<td>$12,633</td>
<td>5,477</td>
</tr>
<tr>
<td>14</td>
<td>0.5</td>
<td>1.0</td>
<td>OIT CORNETT HALL</td>
<td>102,494</td>
<td>1966</td>
<td>$16,912</td>
<td>5,107</td>
</tr>
<tr>
<td>15</td>
<td>0.3</td>
<td>1.0</td>
<td>OSU KERR ADMINISTRATION</td>
<td>136,108</td>
<td>1971</td>
<td>$22,458</td>
<td>4,138</td>
</tr>
<tr>
<td>16</td>
<td>0.5</td>
<td>1.0</td>
<td>OSU DEARBORN HALL</td>
<td>64,455</td>
<td>1939</td>
<td>$10,635</td>
<td>3,296</td>
</tr>
<tr>
<td>17</td>
<td>0.5</td>
<td>1.0</td>
<td>OIT SNELL HALL</td>
<td>31,176</td>
<td>1915</td>
<td>$5,144</td>
<td>2,774</td>
</tr>
<tr>
<td>18</td>
<td>0.5</td>
<td>1.0</td>
<td>OIT CHAPMAN HALL</td>
<td>23,062</td>
<td>1939</td>
<td>$3,805</td>
<td>1,257</td>
</tr>
<tr>
<td>19</td>
<td>0.3</td>
<td>0.8</td>
<td>OIT SNELL HALL</td>
<td>15,370</td>
<td>1964</td>
<td>$2,536</td>
<td>532</td>
</tr>
</tbody>
</table>

7/19/2004
The Recommended Solution
State Energy Loan Program (SELP)
(Dollars in Millions)

Oregon Dept. of Energy General Obligation Bonds
$70
Debt Service Paid by:
Campus Energy Savings
OUS Operating Budget

Lottery Bonds
$30
Debt Service Paid by:
Lottery Revenue

Total
$100

• New Funding Strategy Result of Collaboration Between OUS, DAS, LFO, and Dept. of Energy
• Allows use of General Obligation Bonds without 1 for 1 match
• Seismic Retrofits to be funded under separate legislation

7/19/2004
Stable Energy Cost to Universities

- Utility Rates
- Energy Cost
- Energy Consumption

Energy/Renewal Projects Completed

7/19/2004
Energy Cooperative; Strategic Approach to Guide Priorities

• Energy Use in Colleges and Universities

63% more Energy Consumption than a 1990 Building

[Bar chart showing energy consumption by year of construction: 1959 or Before, 1960-1989, 1990 or After, with Fuel Consumption indicated.]
Time Line for Facility Renewal Program

• 1/21/04: Present to Admin Council
• 2/04: Present to Campus Presidents
• 3/04: Solicit Champion(s)
7/04: OUS Board Approval
9/04: Solicit Governor’s Support
1/05-6/05: Legislative Presentations & Approval
Energy Cooperative;
Strategic Approach to Guide Priorities

• Energy Data
  • Evaluate energy cost and consumption to guide investments and validate performance

• Procurement
  • Use cash savings to finance energy saving projects. Also configure end use systems to take advantage of current and future rate structures
Energy Cooperative; Strategic Approach to Guide Priorities

- Energy Generation
  - Process of converting purchased energy into steam, chilled water, and electricity. Need to understand and coordinate each institution's true needs and loads.

- Energy Distribution
  - Large amounts of energy can be lost in the distribution/transmission from generation point to end use. Replace failing equipment and lines.

- Energy End Use
  - Reduce waste by replacing worn-out and inefficient equipment.
Energy Cooperative; Strategic Approach to Guide Priorities

• Procurement – Savings of 10% or More  
  • Consolidate rate classes  
  • Group Purchase of Wholesale Power  
  • Negotiate Reduced Transmission and Delivery Contracts
Energy Cooperative; Strategic Approach to Guide Priorities

- Energy End Use – Savings of 30% or More
  - Control Systems
  - Efficient Lighting
  - Improved HVAC Equipment
  - Daylighting
Energy Cooperative;
Strategic Approach to Guide Priorities

• Energy Use in Colleges and Universities

![Energy Use in Colleges and Universities Pie Chart]

- Space Heating: 32%
- Water Heating: 22%
- Lighting: 17%
- Space Cooling: 5%
- Other: 24%

2003 US DOE
Capital Renewal Backlog: Strategy

• Obtain Governor’s Support
• Include Program in 2005-07 Capital Budget
• Initiate an Energy “Co-op”
### 10 Year Funding Solutions for Renewal Needs ($ in Millions)

<table>
<thead>
<tr>
<th>Source</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Obligation Bonds</td>
<td>$500</td>
<td></td>
<td>$78</td>
</tr>
<tr>
<td>State Energy Loan (SELP)</td>
<td></td>
<td></td>
<td>$321</td>
</tr>
<tr>
<td>Private/Public Ptr.</td>
<td></td>
<td>$150</td>
<td></td>
</tr>
<tr>
<td>Lottery Bonds</td>
<td></td>
<td>$150</td>
<td>$155</td>
</tr>
<tr>
<td>General Fund</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gifts &amp; Grants</td>
<td></td>
<td>$125</td>
<td></td>
</tr>
<tr>
<td>XI-G Bonds</td>
<td></td>
<td></td>
<td>$275</td>
</tr>
<tr>
<td><strong>Total over 5 Biennia</strong></td>
<td><strong>$500</strong></td>
<td><strong>$700</strong></td>
<td><strong>$554</strong></td>
</tr>
</tbody>
</table>
10 Year Capital Renewal Funding Model
Plan A: Legislative Concept
(Dollars in Millions)

General Obligation Bonds
$500

• Required Constitutional Amendment to use GO Bonds without 1 for 1 match
• Entire Debt Service paid by General Fund Dollars allocated to the Operating Budget
• Legislative Concept not supported in 2001 Session
10 Year Capital Renewal Funding Model
Plan B: Public/Private Partnership
(Dollars in Millions)

Donors, Foundations, Employee Contributions

Energy Credits $100

Lottery Bonds $150

Grants $25

Private/Public Partner $150

Financial Institutions

XI-G Bonds $275

$550

EOU, PSU, WOU, OSU, UO, SOU, OIT

Markets Pass-thru Credits

Operating Leases

Matching

Matching

"Energy Cooperative"