Comprehensive Facilities Intelligence Solutions

**FACILITIES BENCHMARKING & ANALYSIS**
Take control of your facilities and make the case for change without the guesswork

**FACILITIES ASSESSMENT & PLANNING**
Plan and execute capital investment plans that are inclusive, credible, flexible, affordable and sustainable

**SPACE UTILIZATION**
Ensure your space is working up to its full potential

**SUSTAINABILITY SOLUTIONS**
Measure and improve environmental stewardship
Vocabulary for Facilities 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.

Asset Value Change
Operations Success
# University of Alaska Fairbanks – Peer Institutions

## Traditional Peer Institutions

<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown University</td>
<td>Providence, RI</td>
</tr>
<tr>
<td>Clemson University</td>
<td>Clemson, SC</td>
</tr>
<tr>
<td>Iowa State University</td>
<td>Ames, IA</td>
</tr>
<tr>
<td>The University of Maine</td>
<td>Orono, ME</td>
</tr>
<tr>
<td>University of Alaska Anchorage</td>
<td>Anchorage, AK</td>
</tr>
<tr>
<td>University of Arkansas</td>
<td>Fayetteville, AR</td>
</tr>
<tr>
<td>University of Iowa</td>
<td>Iowa City, IA</td>
</tr>
<tr>
<td>University of Vermont</td>
<td>Burlington, VT</td>
</tr>
<tr>
<td>Virginia Commonwealth University</td>
<td>Richmond, VA</td>
</tr>
</tbody>
</table>

## Research Peer Institutions

<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clemson University</td>
<td>Clemson, SC</td>
</tr>
<tr>
<td>Mississippi State University</td>
<td>Starkville, MS</td>
</tr>
<tr>
<td>University of Southern Mississippi</td>
<td>Hattiesburg, MS</td>
</tr>
<tr>
<td>Kent State University</td>
<td>Kent, OH</td>
</tr>
<tr>
<td>University of North Texas</td>
<td>Denton, TX</td>
</tr>
<tr>
<td>University of Rhode Island</td>
<td>Kingston, RI</td>
</tr>
<tr>
<td>University of Massachusetts - Boston</td>
<td>Boston, MA</td>
</tr>
<tr>
<td>University of Memphis</td>
<td>Memphis, TN</td>
</tr>
</tbody>
</table>
Core Campus Observations

Space
- Several key characteristics of the space profile at UAF differ from traditional and research peer institutions and are indicative of a unique space profile:
  - Lower density, younger, less complex, smaller buildings

Capital
- Recurring resources of capital are comparable to peer institutions
- Over half of total investment goes to new space resulting in less investment into existing space relative to peer institutions and targets
- Funding shortfalls lead to annual deferral and growing asset reinvestment need

Operations
- UAF spends more on daily service and preventive maintenance than peer institutions
  - Resources are stretched by high building intensity
Space Profile
UAF’s Campus has Changed Significantly

UAF’s on-campus enrollment has significantly decreased, making campus less busy.

Change in Campus GSF & Enrollment (Indexed to 2006)

<table>
<thead>
<tr>
<th>Year</th>
<th>UAF GSF % Change</th>
<th>UAF Enrolled Student FTE % Change</th>
<th>Traditional Peer GSF % Change</th>
<th>Traditional Peer Enrolled Student FTE % Change</th>
<th>Research Peer GSF % Change</th>
<th>Research Peer Enrolled Student FTE % Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td></td>
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<tr>
<td>2010</td>
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<tr>
<td>2012</td>
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<td></td>
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<tr>
<td>2014</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

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UAF Has the Lowest Density Amongst Peers

Density factor measures the busyness of campus

Change in *Density at UAF

Change in *Density at UAF

Areas Impacted by Density Factor

*Density is calculated using On-Campus Student FTEs

Institutions arranged by Density Factor

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UAF’s Technical Complexity is Lower than Peers

Less complex spaces are typically less intensive to operate

Institutions arranged by Technical Complexity

Areas Impacted by Tech Rating

- Energy Consumption
- Maintenance Staffing
- Replacement Values
- Stewardship Targets
- Operational Demand
Building and Grounds Intensity

Institutions arranged by Building Intensity

Institutions arranged by Grounds Intensity

Traditional Peer Average
Research Peer Average
UAF Has A Younger Campus

UAF is younger through new construction and renovations

**Campus Age Comparison**

- **UAF** has offset campus age by 8 years through renovations
- **Traditional Peers** have offset campus age 7 years through renovations
- **Research Peers** have offset campus age 9 years through renovations
Balance PM and Reactive Maintenance:

Younger components still require PM. Aging components require reactive maintenance.

Space from 10-50 years old requires a balanced investment approach

Campus Renovation Age by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Under 10 - Low Risk</th>
<th>10 to 25 - Medium Risk</th>
<th>25 to 50 - Higher Risk</th>
<th>Over 50 - Highest Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>UAF</td>
<td>5%</td>
<td>18%</td>
<td>37%</td>
<td>23%</td>
</tr>
<tr>
<td>Traditional</td>
<td>18%</td>
<td>27%</td>
<td>36%</td>
<td>36%</td>
</tr>
<tr>
<td>Research</td>
<td>17%</td>
<td>21%</td>
<td>36%</td>
<td>26%</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Operational Demands:

- **React as Needed:** Issues in components past the end of their lifecycles will demand reactive maintenance.
- **Over 50:** Highest Risk: Life cycles of major components past due – end of building life cycle approaching.
- **25-50:** Higher Risk: Life Cycles coming due in core building components.
- **10-25:** Medium Risk: Lower cost space renewal updates needed.
- **Under 10:** Low Risk: "Honeymoon" period – little need for capital reinvestment.
- **Focus on PM:** Significant need for PM in young systems.

Capital Risk:
Understanding Campus Age

### Campus Age by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Main Campus</th>
<th>Main Campus</th>
<th>CRCD</th>
<th>CRCD</th>
<th>CTC</th>
<th>CTC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Age</td>
<td>15%</td>
<td>32%</td>
<td>62%</td>
<td>62%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Renovation Age</td>
<td>5%</td>
<td>5%</td>
<td>3%</td>
<td>3%</td>
<td>25%</td>
<td>6%</td>
</tr>
</tbody>
</table>

### % of GSF

<table>
<thead>
<tr>
<th>Campus Age by Category</th>
<th>Under 10 - Low Risk</th>
<th>10 to 25 - Medium Risk</th>
<th>25 to 50 - Higher Risk</th>
<th>Over 50 - Highest Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Campus Construction Age</td>
<td>15%</td>
<td>32%</td>
<td>62%</td>
<td>6%</td>
</tr>
<tr>
<td>Main Campus Renovation Age</td>
<td>5%</td>
<td>5%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>CRCD Construction Age</td>
<td>14%</td>
<td></td>
<td>62%</td>
<td></td>
</tr>
<tr>
<td>CRCD Renovation Age</td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CTC Construction Age</td>
<td>29%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CTC Renovation Age</td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### GSF

<table>
<thead>
<tr>
<th>Campus</th>
<th>GSF</th>
<th>Buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Campus</td>
<td>3,195,630</td>
<td>185</td>
</tr>
<tr>
<td>CRCD</td>
<td>156,372</td>
<td>32</td>
</tr>
<tr>
<td>CTC</td>
<td>111,171</td>
<td>3</td>
</tr>
</tbody>
</table>

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Renovations Impact Age Across All Campuses

Much of CTC has been recently renovated

Campus Age by Category

- Construction Age
- Renovation Age

- Main Campus
- CRCD
- CTC
- UAF (Aggregate)
- Traditional Peers
- Research Peers
Future Forecast Determined by Life Cycle Models

Different construction eras will have competing life cycle needs in the future

<table>
<thead>
<tr>
<th>System</th>
<th>Life Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumbing</td>
<td>35 years</td>
</tr>
<tr>
<td>Exteriors</td>
<td>30 years</td>
</tr>
<tr>
<td>HVAC</td>
<td>30 years</td>
</tr>
<tr>
<td>Roofing</td>
<td>25 years</td>
</tr>
<tr>
<td>Electrical</td>
<td>25 years</td>
</tr>
</tbody>
</table>

Wave 1 Needs

Wave 2 Needs

System Life Cycle
- Plumbing: 35 years
- Exteriors: 30 years
- HVAC: 30 years
- Roofing: 25 years
- Electrical: 25 years

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Capital Profile
## Sightlines Package Breakouts

Projects are classified by the category of need they are meeting on campus.

### Existing Space

<table>
<thead>
<tr>
<th>Building Envelope</th>
<th>Building Systems</th>
<th>Space Renewal</th>
<th>Safety/Code</th>
<th>Infrastructure</th>
<th>Non-Facilities</th>
<th>New Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior Doors</td>
<td>Mechanical Systems</td>
<td>Interior Finishes</td>
<td>ADA Work</td>
<td>Utilities</td>
<td>Design Fees</td>
<td>Added GSF</td>
</tr>
<tr>
<td>Windows</td>
<td>HVAC Projects</td>
<td>Replacement of Light Fixtures</td>
<td>Fire/Sprinkler Systems</td>
<td>Underground Piping Work</td>
<td>Feasibility Studies</td>
<td></td>
</tr>
<tr>
<td>Pointing</td>
<td>Electrical Systems</td>
<td>Furniture Replacement</td>
<td>Security Measures</td>
<td>Softscapes and Hardscapes</td>
<td>IT work</td>
<td></td>
</tr>
<tr>
<td>Roofs</td>
<td>Plumbing Systems</td>
<td></td>
<td>Asbestos Removal</td>
<td>Outdoor Lighting and Signage</td>
<td>Offsite Work</td>
<td></td>
</tr>
<tr>
<td>Gutters</td>
<td>Elevators</td>
<td></td>
<td></td>
<td>Athletic Field Work</td>
<td>Lab Equipment</td>
<td></td>
</tr>
</tbody>
</table>

### Non-Facilities

- Design Fees
- Feasibility Studies
- IT work
- Offsite Work
- Lab Equipment

### New Space

- Added GSF
Greatest Focus is Toward Campus Infrastructure

UAF has invested significantly toward construction of its new power plant.
Defining an Annual Investment Target

Annual Funding Target: $44.3M

FY18 Annual Investment Target

- 3% Replacement Value: $81.6
- Life Cycle Need: $40.7
- Annual Investment Target: $20.4

Replacement Value: $2.7B

Life Cycle Need represents the total dollars needed to replace components & systems as they come due without accounting for modernization.

Life Cycle needs are discounted to account for intentional deferral, functional obsolescence and extended life cycles based on effective maintenance programs.
Translating Funding Terminology

**Alaska Terminology**
- Utilities & Grounds & Custodial
- Maintenance & Repair – M&R & Preventive Maintenance
- Repair & Renew - R&R

**Sightlines Terminology**
- Operations & Maintenance
- Projects
  - Recurring Project Dollars
  - One-Time Project Dollars
  - Asset Reinvestment

**Fund 1**
- Fund 2-9

**Fund 1**
- Utilities & Grounds & Custodial
- Maintenance & Repair – M&R & Preventive Maintenance
- Repair & Renew - R&R

**Fund 2-9**
- Operations & Maintenance
- Projects
  - Recurring Project Dollars
  - One-Time Project Dollars
  - Asset Reinvestment
Chasing A Moving Target

Increases to target needs are primarily driven by new space and inflation

Total Capital Investment vs. Funding Target

- Decreasing Backlog & Risk
- Maintaining Backlog & Risk
- Increasing Backlog & Risk

Fund 1 Projects: Annual Stewardship
Funds 2-9 Projects: Asset Reinvestment
UAF Investment Reaches Half of Target Historically

Peers see greater investment into existing space from one-time sources of funding

Total Capital Investment as a Percent of Funding Target

- **UAF**
- **Traditional Peers**
- **Research Peers**

Target

Capital Spending % of Total Target

- 0%
- 20%
- 40%
- 60%
- 80%
- 100%
- 120%
- 140%

- 52%
- 100%
- 67%

AS UAF
PM UAF
AR UAF
AS Traditional Peers
AR Traditional Peers
AS Research Peers
AR Research Peers
Average
Deferral Leads to the Accumulation of Deferred Maintenance

Risk grows as facilities age without needs being addressed

Total Asset Reinvestment Need $/GSF (Regionally Adjusted)

- **UAF**
- **Traditional Peers**
- **Research Peers**
Addressing Future Need Strategically

Understanding timeframe and type helps to prioritize needs

**Current Need**
- What on campus is currently broken, operating at a significantly higher cost, or requires significantly more time to maintain?

**Lifecycle Need**
- What building needs will come due in the next 10 years?
  - Building Exteriors
  - Electrical
  - HVAC
  - Interiors
  - Plumbing
  - Roofing

**Remaining Need**
- Infrastructure & modernization
  - Sightlines estimate

**Total 10 Year Need**
- $443
- $200
- $287

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Historical Investment Levels Are Insufficient To Meet Current Need

If current need is addressed through six years of intensive work, on-going beyond that will nearly be sufficient.
Operations Success
Facilities Operating Actuals (Regionally Adjusted)

- **UAF**: $6.84
- **Traditional Peers**: $6.17
- **Research Peers**: $6.34

*People and Expenses are reduced proportionally by Preventive Maintenance*
Budget Cuts Limit Purchasing Power In Recent Years

FY18 shortfall equates to $2.7M less buying power than in FY06

*People and Expenses are reduced proportionally by Preventive Maintenance
UAF Allocates More Resources to PM than Peers

Increases in PM program yield savings down the road by protecting assets
Maintenance Staffing Coverage

Maintenance Staffing

Maintenance Coverage

GSF in Millions

GSF/FTE

FTEs
### Maintenance Metrics

#### Maintenance Staffing

![Bar Chart](chart1.png)

- **Buildings/FTE**: Values range from 0.0 to 5.0 for buildings per FTE.
- **UAF**: Higher staffing ratio compared to peers.

#### Maintenance Supervision

![Bar Chart](chart2.png)

- **FTE/Supervisor**: Values range from 0 to 18.
- **Traditional Peers**: Average of 3.36.

#### Maintenance Materials

![Bar Chart](chart3.png)

- **$/GSF**: Values range from $0.05 to $0.35 per GSF.
- **UAF**: Lower material cost compared to peers.

#### General Repair Inspection

![Bar Chart](chart4.png)

- **UAF**: Average of 3.36.
- **Traditional Peers**: Average of 3.81.

Legend:
- **Green**: Traditional Peer Average
- **Red**: Research Peer Average
Custodial Staffing Coverage

Custodial Staffing

Custodial Coverage

Custodial GSF in Millions

Custodial Staffing

Custodial Coverage

GSF/FTE

FTEs

GSF

FTE
Custodial Metrics

Custodial Staffing

- Buildings/FTE:
  - UAF: 0.92
  - A: 0.92
  - B: 0.92
  - C: 0.92
  - D: 0.92
  - E: 0.92
  - F: 0.92
  - G: 0.92
  - H: 0.92
  - I: 0.92

Custodial Supervision

- FTE/Super:
  - UAF: 15.4
  - A: 15.4
  - B: 15.4
  - C: 15.4
  - D: 15.4
  - E: 16.1
  - F: 16.1
  - G: 16.1
  - H: 16.1
  - I: 16.1

Custodial Materials

- $/GSF:
  - UAF: $0.09
  - A: $0.10
  - B: $0.10
  - C: $0.10
  - D: $0.10
  - E: $0.10
  - F: $0.10
  - G: $0.10
  - H: $0.10
  - I: $0.10

Cleanliness Inspection

- Traditional Peers:
  - UAF: 3.98
  - Traditional Peers: 3.98

- Research Peers:
  - UAF: 3.57
  - Research Peers: 3.57

- Research Peer Average: 4.02
Grounds Staffing Coverage

Grounds Staffing

![Graph showing Grounds Staffing coverage over the years from 2006 to 2018.](image1)

Grounds Coverage

![Bar chart showing Grounds Coverage from 2006 to 2018.](image2)
Grounds Metrics

**Grounds Staffing**

![Grounds Staffing Chart]

**Grounds Supervision**

![Grounds Supervision Chart]

**Grounds Materials**

![Grounds Materials Chart]

**Grounds Inspection**

![Grounds Inspection Chart]
Conclusion
• New space and renovations have reduced the overall age of campus. Programmatic demands result in unique and challenging space to operate.

• With an age profile demanding investment balanced between stewardship and reinvestment, growth in recurring capital is critical to protecting newer spaces and limited deferral. Deferral should be strategic and limited to older spaces on the radar for future reinvestment.
  • Spending on new space is not addressing accumulating needs in older spaces.

• Operational PM spend is a strong and growing program which should continue to be developed moving forward. PM is a powerful tool to reduce future reactive costs and extend system life cycles, which reduces future capital demand.

• Trades staff are challenged by smaller research intensive spaces with unique demands and will continue to be strained as new space is added and asset reinvestment need grows.
Questions & Discussion
Appendix
Maintenance Staffing Coverage

**Maintenance Staffing**

- Maintained Buildings
- Maintenance FTE

**Maintained Buildings/FTE**

- 2006: 4.8
- 2007: 4.4
- 2008: 3.9
- 2009: 4.0
- 2010: 3.7
- 2011: 3.8
- 2012: 3.9
- 2013: 4.5
- 2014: 4.3
- 2015: 5.0
- 2016: 4.4
- 2017: 4.3
- 2018: 4.3
**Maintenance Metrics**

### Maintenance Staffing

- GSF/TTE
- $108,035$
- $88,091$

### Maintenance Supervision

- FTE/Super:
  - UAF: 13
  - Traditional Peers: 10

### Maintenance Materials

- $$/GSF$
- $0.21$

### General Repair Inspection

- UAF: 3.36
- Traditional Peers: 3.81
- Research Peers: 3.57

- Traditional Peer Average
- Research Peer Average
Custodial Metrics

Custodial Staffing

- GSF/FTE
- UAF: 38744.53
- A: 38,449.76
- B: 0
- C: 10,000
- D: 20,000
- E: 30,000
- F: 40,000
- G: 50,000
- H: 60,000
- I: 0

Custodial Supervision

- FTE/Super
- UAF: 15.4
- A: 16.1
- B: 0
- C: 5
- D: 10
- E: 15
- F: 20
- G: 25
- H: 30
- I: 35

Custodial Materials

- $/GSF
- UAF: $0.09
- A: $0.10
- B: 0
- C: 5
- D: 10
- E: 15
- F: 20
- G: 25
- H: 30
- I: 35

Cleanliness Inspection

- UAF: 4.02
- Traditional Peers: 3.98
- Research Peers: 3.57

- Traditional Peer Average
- Research Peer Average