Who is ISES?

- Premier provider of Facility Condition Analysis (FCA) services
- Incorporated since 1987, with nationwide experience
- Customer-focused with facilities engineering and management expertise
- Provider of FCA inspection services, special studies, and database management systems for Facility Condition Analysis projects
Work Scope & History

- ISES has been providing FCA services for UWG since 1998
- In March 2010, ISES was asked to evaluate 8 residence hall facilities
- These buildings were inspected the first week in April
- All reports were delivered to UWG by early May
What is the FCA?

- A visual, non-destructive inspection of facilities that provides a third party examination to determine long-range facility renewal needs

- Identifies and prioritizes needs for facilities renewal over a ten-year window

- The database provides for a short- and long-term planning and management tool for facilities condition against established metrics
Facility Condition Analysis

Unbiased examination of your facilities

- Interior Finishes
- Exterior Structure
- HVAC
- Plumbing
- Electrical
- Fire / Life Safety
- Accessibility
- Health
- Site
Project Classification Definitions

**Plant Adaption Projects**

- Renovations required to adapt partial area(s) of a building to the evolving needs of the end users or to changing standards. This work is additional and beyond the ongoing daily maintenance. It includes such work as compliance with applicable codes, alterations required by change in teaching or research methods, or adoption of newly developed technologies. It includes barrier removal projects as well.

**Renewal Projects**

- Renovations or replacements of building systems and/or equipment that have reached the end of their life cycles and/or repair projects too large or too costly to be immediately performed by ongoing daily maintenance. If work is performed when due, it is considered Capital Renewal, if not, it then becomes Deferred Maintenance.
Priority Class Definitions

Priority Class 1
*Currently Critical*

- Requires correction immediately

Priority Class 2
*Potentially Critical*

- Should be addressed in Year 1

Priority Class 3
*Recommended – Not Yet Critical*

- Should be addressed in Years 2-5

Priority Class 4
*Does not meet current codes / standards*

- Should be addressed in Years 6-10
Typical Situations Observed

Gunn Hall – Non-compliant stair rails

Gunn Hall – Original installation air handling unit
Typical Situations Observed

Boykin Hall – Two pipe fan coil unit

Boykin Hall – Antiquated restroom finishes
Typical Situations Observed

Bowden Hall – Original building switchgear

Bowden Hall – Cracked and deteriorated roof membrane
Typical Situations Observed

Strozier Hall – Original single pane windows

Watson Hall – Original boiler
# Projected Backlog Funding Needs By Project Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Renewal Projects</td>
<td>$6,312,046</td>
</tr>
<tr>
<td>Deferred Maintenance Projects</td>
<td>$27,552,646</td>
</tr>
<tr>
<td>Adaptation Projects</td>
<td>$7,194,091</td>
</tr>
<tr>
<td><strong>FCA TOTAL</strong></td>
<td><strong>$41,058,783</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Classification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility Replacement Cost (FRC)</td>
<td>$115,710,000</td>
</tr>
<tr>
<td>Facility Condition Needs Index (FCNI)</td>
<td>0.35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Classification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Square Feet (GSF)</td>
<td>348,947</td>
</tr>
<tr>
<td>Total FCA Cost / GSF</td>
<td>$117.66</td>
</tr>
</tbody>
</table>
# FCA Summary Results By Building

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Size (GSF)</th>
<th>Year Built *</th>
<th>Project Costs</th>
<th>FCNI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gunn Hall</td>
<td>37,906</td>
<td>1965</td>
<td>$4,046,192</td>
<td>0.32</td>
</tr>
<tr>
<td>Boykin Hall</td>
<td>37,889</td>
<td>1966</td>
<td>4,589,558</td>
<td>0.36</td>
</tr>
<tr>
<td>Downs Hall</td>
<td>56,663</td>
<td>1969</td>
<td>6,183,669</td>
<td>0.33</td>
</tr>
<tr>
<td>Bowden Hall</td>
<td>58,797</td>
<td>1971</td>
<td>7,924,786</td>
<td>0.40</td>
</tr>
<tr>
<td>Watson Hall</td>
<td>57,036</td>
<td>1970</td>
<td>6,452,216</td>
<td>0.34</td>
</tr>
<tr>
<td>Strozier Hall</td>
<td>22,726</td>
<td>1964</td>
<td>3,033,702</td>
<td>0.43</td>
</tr>
<tr>
<td>Strozier Annex</td>
<td>26,801</td>
<td>1972</td>
<td>3,812,041</td>
<td>0.43</td>
</tr>
<tr>
<td>Tyux Hall</td>
<td>51,119</td>
<td>1973</td>
<td>5,016,618</td>
<td>0.29</td>
</tr>
</tbody>
</table>

* - Average Year Built is 1969
## Summary of FCA Findings

<table>
<thead>
<tr>
<th>System Code</th>
<th>Priority 1</th>
<th>Priority 2</th>
<th>Priority 3</th>
<th>Priority 4</th>
<th>SUBTOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>64,065</td>
<td>137,594</td>
<td>2,444,869</td>
<td>58,385</td>
<td>$2,704,912</td>
</tr>
<tr>
<td>Electrical</td>
<td>0</td>
<td>663,755</td>
<td>4,318,041</td>
<td>146,993</td>
<td>$5,128,789</td>
</tr>
<tr>
<td>Exterior</td>
<td>0</td>
<td>0</td>
<td>1,161,924</td>
<td>1,262,920</td>
<td>$2,424,844</td>
</tr>
<tr>
<td>Fire / Life Safety</td>
<td>12,695</td>
<td>3,248,177</td>
<td>633,261</td>
<td>424,869</td>
<td>$4,319,002</td>
</tr>
<tr>
<td>Health</td>
<td>0</td>
<td>0</td>
<td>590,057</td>
<td>0</td>
<td>$590,057</td>
</tr>
<tr>
<td>HVAC</td>
<td>0</td>
<td>4,702</td>
<td>8,144,905</td>
<td>482,165</td>
<td>$8,631,772</td>
</tr>
<tr>
<td>Interior Finishes / Systems</td>
<td>0</td>
<td>0</td>
<td>12,085,373</td>
<td>0</td>
<td>$12,085,373</td>
</tr>
<tr>
<td>Plumbing</td>
<td>0</td>
<td>730,017</td>
<td>3,832,477</td>
<td>103,537</td>
<td>$4,666,031</td>
</tr>
<tr>
<td>Site</td>
<td>0</td>
<td>0</td>
<td>29,666</td>
<td>0</td>
<td>$29,666</td>
</tr>
<tr>
<td>Vertical Transportation</td>
<td>0</td>
<td>0</td>
<td>264,103</td>
<td>214,234</td>
<td>$478,337</td>
</tr>
<tr>
<td>TOTALS</td>
<td>$76,761</td>
<td>$4,784,245</td>
<td>$33,504,676</td>
<td>$2,693,102</td>
<td>$41,058,783</td>
</tr>
</tbody>
</table>
General Notes on Project Estimates

► Estimated project costs do not include “soft costs”, except for design fees

► “Soft costs” include items which are normally associated with the total renovation of a building, but do not apply when individual repair / upgrade projects are estimated

► These items include occupant equipment outfitting, furniture, telecommunications, move-out / move-in, swing space rental, etc.

► If a building is vacated, gutted, and totally renovated, the soft costs can typically add 20% - 30% to total project costs
Project Costs by Priority Class

- Priority 1: 0.2%
- Priority 2: 11.7%
- Priority 3: 81.6%
- Priority 4: 6.6%
Analysis of Priority Class Mix

- Priority Class 1 (Critical) and 2 (Potentially Critical) projects account for 12% of the total backlog.
- Priority Class 3 (Recommended - Not Yet Critical) account for 82% of the backlog. This large segment of the ten year need falling within this priority is a reflection of the average age of the buildings which are due for major renovation.
- Priority Class 4 projects are 6.6% of the backlog.
Project Costs by System Code

- HVAC: 21.0%
- Interior Finishes: 29.4%
- Plumbing: 11.4%
- Electrical: 12.5%
- Accessibility: 6.6%
- Vertical Transportation: 1.2%
- Site: 0.1%
- Fire/Life Safety: 10.5%
- Exterior: 5.9%
- Health: 1.44%
Analysis of System Costs

- 45% of the backlog relates to Mechanical / Electrical / Plumbing (MEP) systems, which is slightly below the average

- 35% of the backlog relates to Interior Finishes / Systems and Exterior Structure – a figure slightly above the ISES corporate average of 28-30%

- The 10.5% Fire / Life Safety backlog is slightly above the average (8%) experienced by ISES across the nation
Project Costs by Project Class

Capital Renewal: 15.4%

Deferred Maintenance: 67.1%

Plant Adaption: 17.5%
The large percentage associated with Deferred Maintenance (67%) is indicative of buildings that are overdue for renovation.

The percentage of need associated with Plant Adaption Projects is just over 17%, in line with the norm of 20%.
 FACILITY CONDITION NEEDS INDEX (FCNI)

- Industry standard developed in 1987 by APPA, SCUP, and NACUBO for higher education
- Calculated by comparing total facility deficiencies to total facility replacement cost
- Used to compare one building to another, one group to another, or even across entire campuses
- Different standards of condition apply based on whether a single building or a group of buildings are being compared
- In all cases, the higher the index, the more diminished the facility condition
**Analysis of the FCNI**

The FCNI is an industry standard used to compare assets, individually or grouped, to others in terms of relative condition.

- FCNI = Total Deficiencies / Facility Replacement Cost

A lower FCNI indicates a facility that is in better condition than a facility with a higher FCNI.

- For this group of residence halls, the combined FCNI is:

<table>
<thead>
<tr>
<th>Total Deficiencies</th>
<th>$41,058,783</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility Replacement Cost</td>
<td>$115,710,000</td>
</tr>
</tbody>
</table>

  $\frac{41,058,783}{115,710,000} = 0.35$
The FCNI changes as conditions change, including normal degradation, renovations, and repairs, and as new buildings are added and buildings demolished.

When looking at individual buildings, the following scale can be used to interpret condition: 

- Excellent Condition: Typically New Construction
- Good Condition: Facility Maintained Within Life Cycle
- Fair Condition: Normal Renovation
- Below Average Condition: Major Renovation Required
- Poor Condition: Gut / Total Renovation Indicated
- Complete Facility Replacement Indicated (Unless Historic)
## FCNI Analysis - Continued

<table>
<thead>
<tr>
<th>FCNI Range</th>
<th>Description</th>
<th>Buildings in this Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01-0.10</td>
<td>Excellent Condition, typically new construction</td>
<td>None</td>
</tr>
<tr>
<td>0.11-0.20</td>
<td>Good Condition, renovations occur on schedule</td>
<td>None</td>
</tr>
<tr>
<td>0.21-0.30</td>
<td>Fair Condition, in need of normal renovation</td>
<td>Tyus Hall</td>
</tr>
<tr>
<td>0.31-0.50</td>
<td>Below Average Condition, major renovation required</td>
<td>Gunn, Boykin, Downs, Bowden, Watson, Strozier Halls and Strozier Annex</td>
</tr>
<tr>
<td>0.51-0.60</td>
<td>Poor Condition, gut / renovation is indicated</td>
<td>None</td>
</tr>
<tr>
<td>0.60 and above</td>
<td>Complete facility replacement indicated*</td>
<td>None</td>
</tr>
</tbody>
</table>

*Note: Replacement recommendation does not apply to historic structures*
FCA Summary

- Overall condition of observed facilities is better than ISES typically finds on university campuses

- The majority of the backlog issues can be characterized as required by aging systems reaching the end of their useful service life, rather than systems that have been neglected and are in poor condition – these are primarily HVAC issues, which is typical of buildings of this size and age

- The vast majority of the backlog issues will need to be taken care of within the next three to five years or conditions on campus will begin to rapidly deteriorate
With the starting backlog for the University of Notre Dame, FCNI modeling techniques developed by NACUBO, APPA, and SCUP have been applied. If 2% of plant value were reinvested annually into facilities renewal ($2.3 million annually), the existing status quo (in terms of FCNI) can be maintained. Maintenance of the status quo for the this group of housing facilities is not an acceptable goal. We recommend the University increase funding for the next ten years to a level of at least 2.5% (approximately $2.9 million per year. This level of funding will only move these eight buildings into the average condition category.
This model assumes 3% annual inflation and 1% annual growth rate in size of campus.
The FCA paints the picture for long-term capital needs

The data can serve as project planning guides, as buildings are selected for renovation

FCNI comparisons can be utilized to help determine which buildings should be replaced in lieu of renovation

The total identified backlog, along with the FCNI projection capabilities built into the database, can be used to predict what levels of funding are necessary for future years

To keep the FCA data valid, reinspection should be performed every three to five years
Optimizing Your Investment in Facility Operations