

**CAPITAL RENEWAL CASE STUDY**

The University of Texas at Austin

Ana Thiemer

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Credit(s) earned on completion of this course will be reported to American Institute of Architects (AIA) Continuing Education Session (CES) for AIA members.

Certificates of Completion for both AIA members and non-AIA members are available upon request.

Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

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**Course Description**

Capital Renewal and Deferred Maintenance have long been a challenge for facilities professionals. The risk to the organization is greater than the organization may believe. It is imperative an organization understand the risks associated with Capital Renewal and Deferred Maintenance. This presentation focuses on solutions for facilities professionals and owners. Using case studies and real-life examples, the facilities professional will leave with the tools needed to communicate the risk, establish the needs, and communicate an action plan.



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Learning Objectives

- Understand Capital Renewal
- Understand how Capital Renewal applies to higher education
- Understand how you can apply Capital Renewal techniques to your campus today

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Agenda

- **Emphasize Risks**
- **Solutions**
  - Other Universities
  - UT Austin

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**Deferred Maintenance  
Deferred Capital Renewal**

**We know we have challenges**

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**What are your biggest challenges?**

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**Deferred Maintenance  
Deferred Capital Renewal**  
**What can we do about it?**

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**Radical  
Approaches**

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**Institutions with Diminutive DM**

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## University of Virginia

**Founded in 1819**

**12**  
SCHOOLS

**21.9k**  
STUDENTS

**12k**  
FACULTY AND STAFF

**125 buildings**  
**10M sq ft**

*Page 3 of handout*

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### Deferred Maintenance Backlog at the University of Virginia

Category	Value
Actual Backlog	\$166M
Backlog Needed to Achieve 5% FCI	(Not specified)

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## Middle of the Road Approach

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A ten-year strategy to improve its E&G facilities from "poor" condition to "good" condition by reducing the facility condition index (FCI) from 10.6% in 2004 to 5% by 2015.

**DOUBLED FUNDING IN 2008**

from an average of ~\$3M since 1982 to \$7M in 2008

Established annual maintenance funding to prevent further accumulation of DM by increasing the current

1.2% reinvestment rate to a 2% annual reinvestment rate.

**INCREASED FUNDING ANNUALLY**

from an average of 1.2% to 1.86% in 2014

also budget 2 percent of construction costs to maintain each new building brought online

# University of Virginia Middle of the Road Approach

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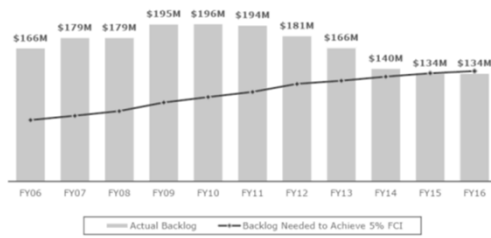
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Deferred Maintenance Backlog at the University of Virginia



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Source: University of Virginia, Charlottesville, VA, Facilities Forum Interview and analysis.

# Middle of the Road Approach

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2004	2015
\$166M DM	\$134M DM
10.6% CCI	5% CCI

# University of Virginia Middle of the Road Approach

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**By the numbers:**

2004		2015
\$166M DM	-\$32M	\$134M DM
\$1.7B CRV	\$1B	\$2.7B CRV
10.6% CCI		5% CCI

**University of Virginia  
Middle of the Road Approach**

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Deferred Maintenance Backlog at the University of Virginia

Fiscal Year	Actual Backlog (\$M)	Backlog Needed to Achieve 5% FCI (\$M)
FY06	\$166M	\$179M
FY07	\$179M	\$179M
FY08	\$179M	\$185M
FY09	\$195M	\$185M
FY10	\$196M	\$191M
FY11	\$194M	\$191M
FY12	\$181M	\$191M
FY13	\$166M	\$191M
FY14	\$140M	\$191M
FY15	\$134M	\$134M
FY16	\$134M	\$134M

**Middle of the Road Approach**

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**What accounts for their success?**

**What do we know?**

**What can we assume?**

**Middle of the Road Approach**

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How do you get your DM/DCR?

**Solution**

How do you get your CRV?

**How do you know what to spend on first? prioritize?**

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**Assessing Capital Renewal Needs**

“Rule of Thumb”

Age Based Predictive modeling

Condition Based

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**Developing an Effective Facilities Management Program**

Trust and Credibility

- Well defined planning process
- Transparency
- Technically sound data and analysis

Stewardship/Sustainability

- Maintaining a critical resource
- Make effective use of funding
- Managing risk

Communication Strategy

- Identify key stakeholders
- Develop appropriate communication & information

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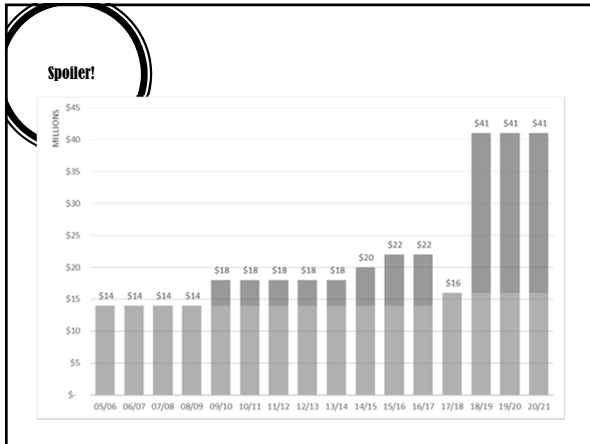
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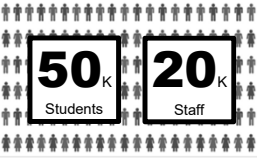
**The University of Texas at Austin**




FOUNDED  
**1883**

COLLEGES  
& SCHOOLS

**18**



**50**K  
Students



**20**K  
Staff

**Turtle Approach**

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### Replacement & Renewal (R&R) Program

- **Support university mission**, specifically research and academic programs
- Add useable **life** to a building
- **Replace and renew** operating systems such as mechanical, electrical, and roofing systems
- Maximize the allocation to support “fixes” rather than “patches”
- **Mitigate risk** to the university

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R&R for Projects between \$5,000 - \$10 million

R&R Only for E&G Facilities

R&R Only for Systems Necessary for Building Operation

R&R Renews or Adds Life to a System

R&R Renews Infrastructure

R&R Not for Regular Maintenance

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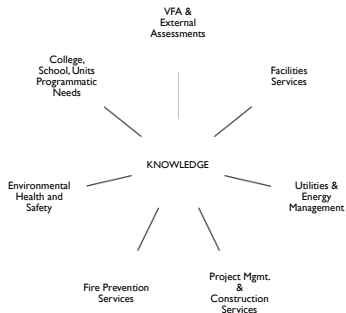
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## CURRENT CONDITIONS

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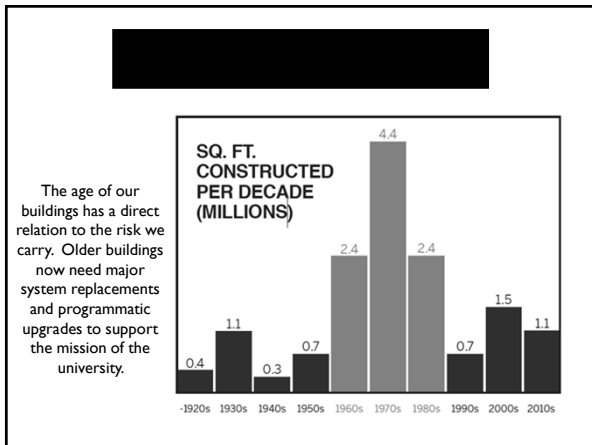
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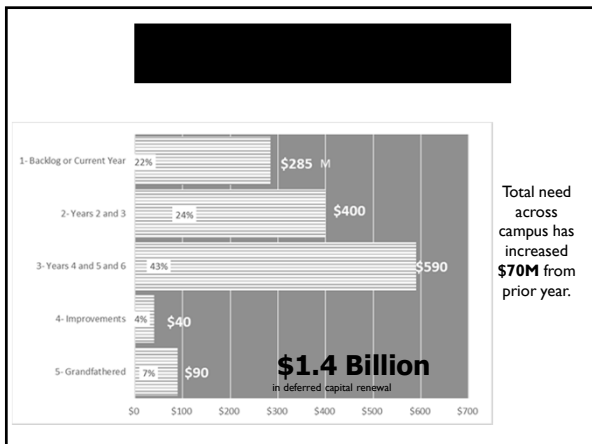
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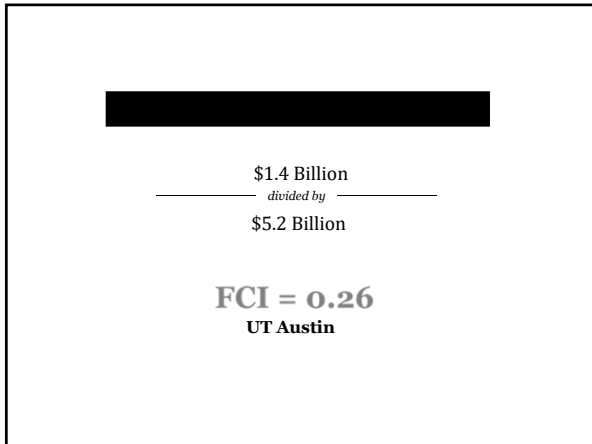
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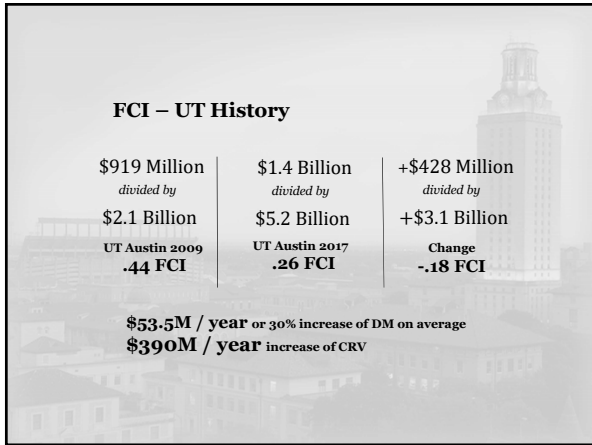
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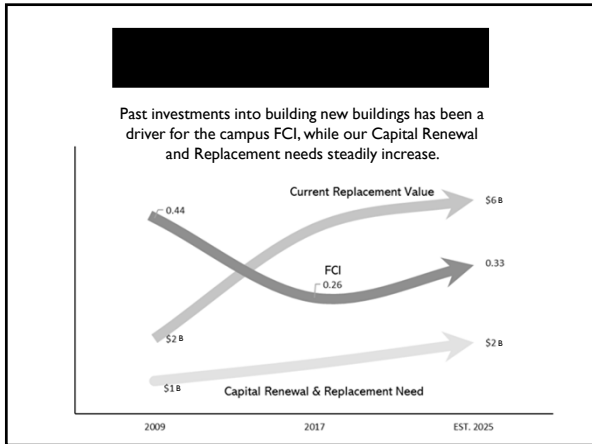
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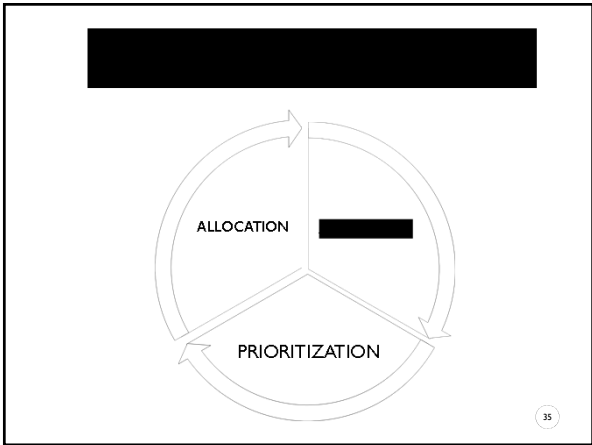
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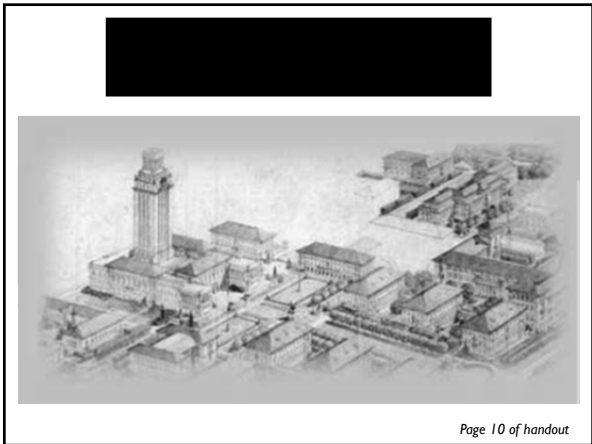
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[Redacted]

A – Recently Replaced or Renewed	CI .00 to .15
B – Moderate R&R Allocation	CI .16 to .40
C – Heavy R&R Allocation	CI .41 to .60
D – Capital Project	CI > .61

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[Redacted]

A – Allow to Age Gracefully	FCI .00 to .15
B – Bandage as Needed	FCI .16 to .40
C – Can Be Saved	FCI .41 to .60
D – Do a Capital Project (CIP)	FCI > .60 +

**Communication**

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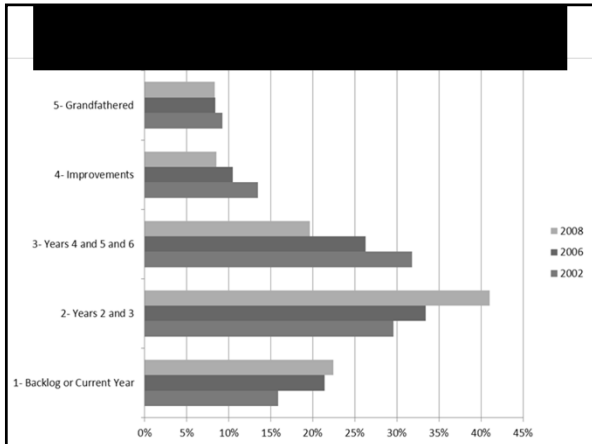
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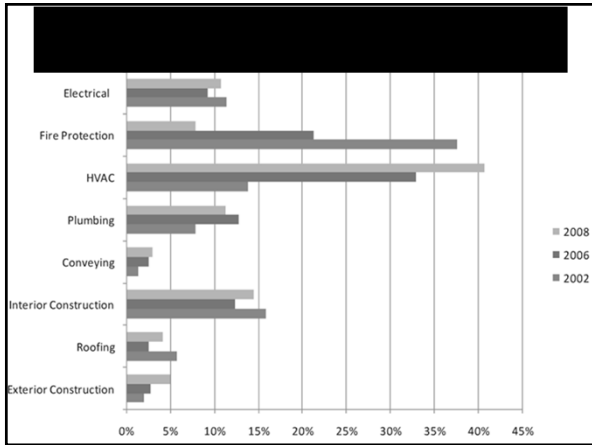
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**Minimizing Risk  
Combining Data  
for  
Communication**

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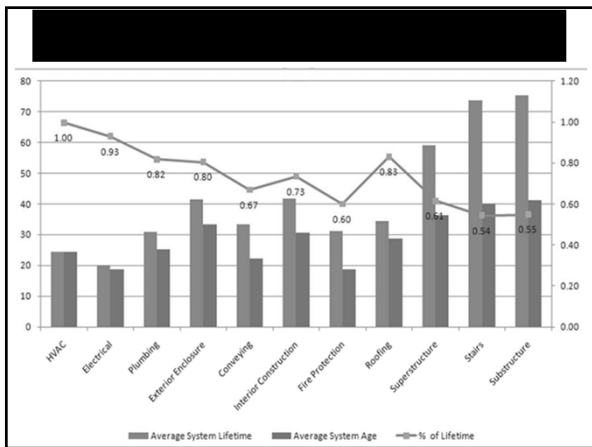
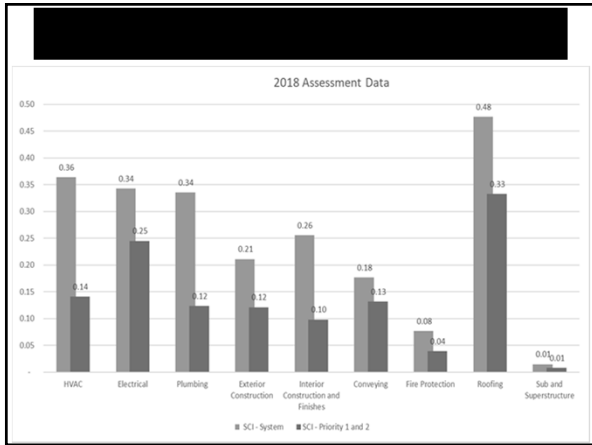
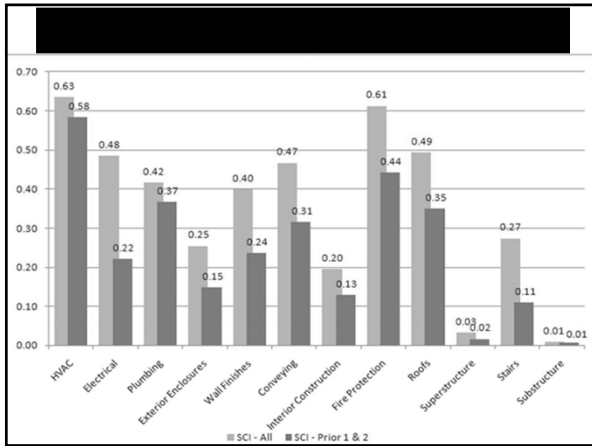
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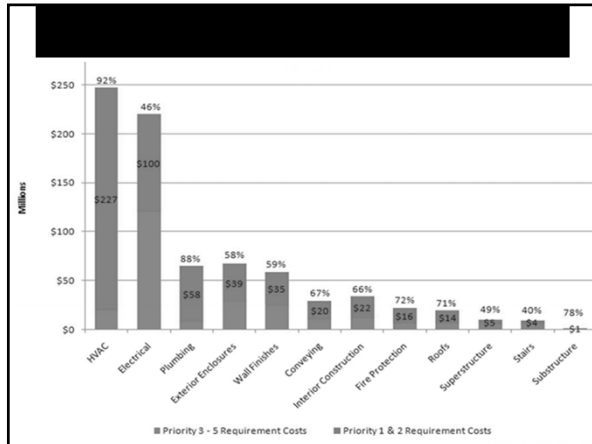
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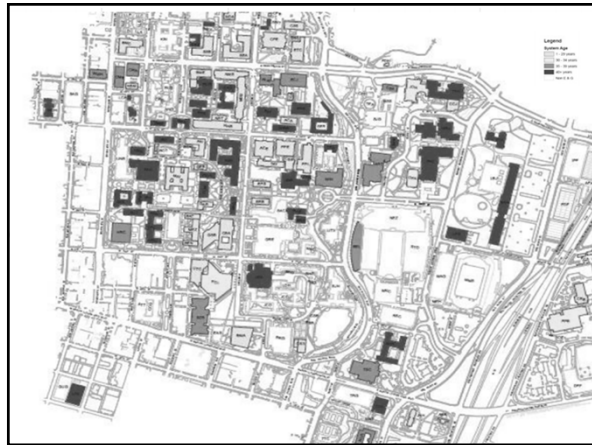
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**CONTINUING to Minimize Risk  
Combining Data  
for  
Communication**

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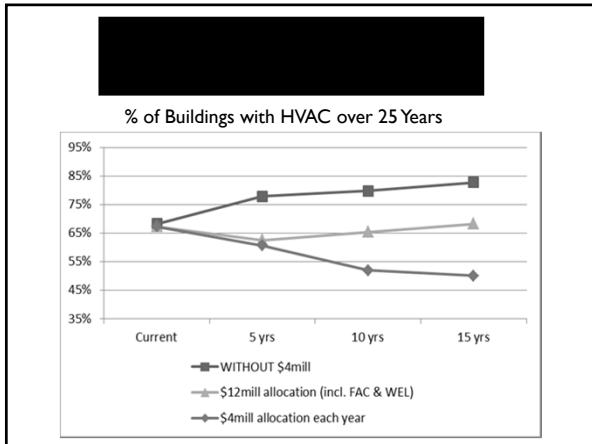
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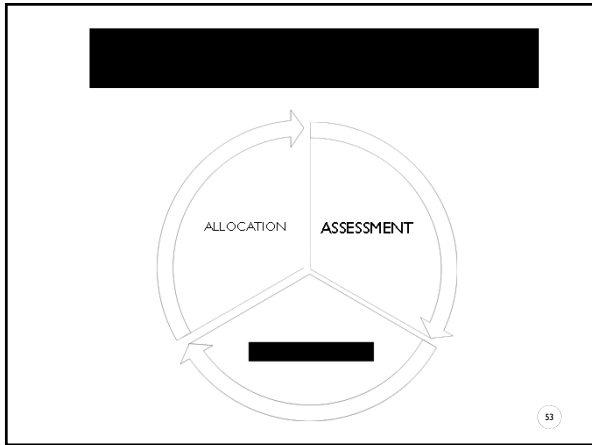
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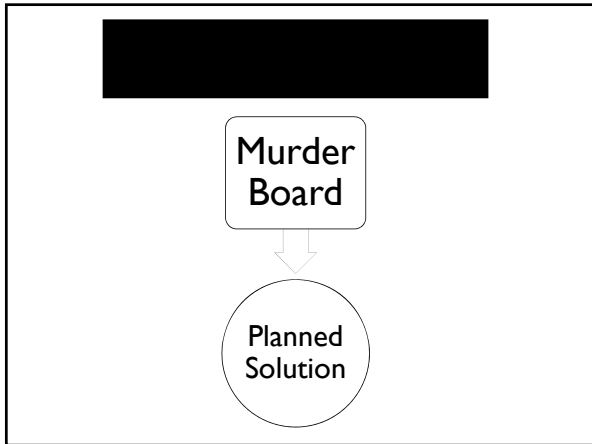
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<b>REPLACEMENT &amp; RENEWAL (R&amp;R) PRIORITIZATION PROGRAM</b>	Identify critical areas
	Support university's strategy
	Consistent, repeatable, and defensible decisions
	Rank relative to each other
	Allow ranking within and between project selection
	Encourage bottom-up initiation
	Incorporate wisdom of others
Easy to communicate	

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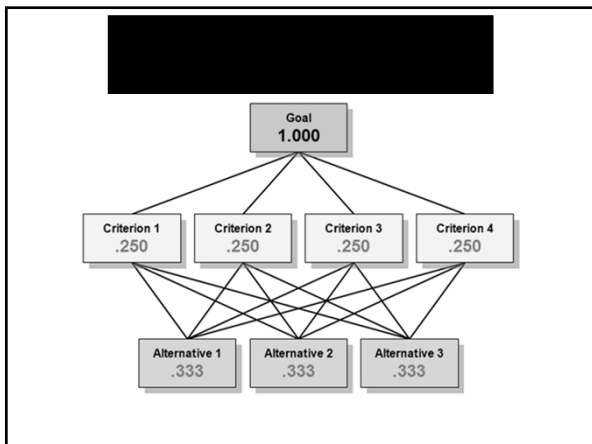
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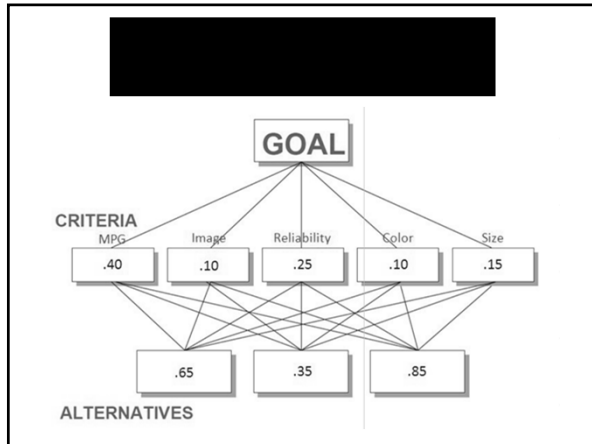
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Area	Criteria	New
Impact on Health, Safety & Environment	Impact on People	30
	Impact on Environment	8
Mission (Risk) Impact	Intellectual Property Damage	8
	Property Damage	5
	Time Disruption	6
	Area Impact	10
System Impact	Public Image	5
	ROI	20
	Probability of Failure	8
Total		100.00

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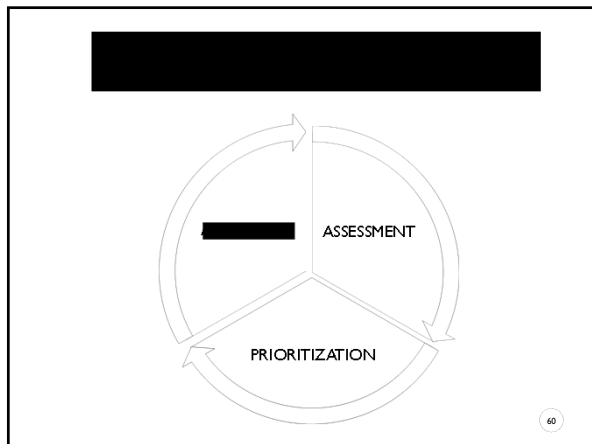
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- **Lowering Risk**
- **Maximizing Funding**
- **Aligning with University Mission**

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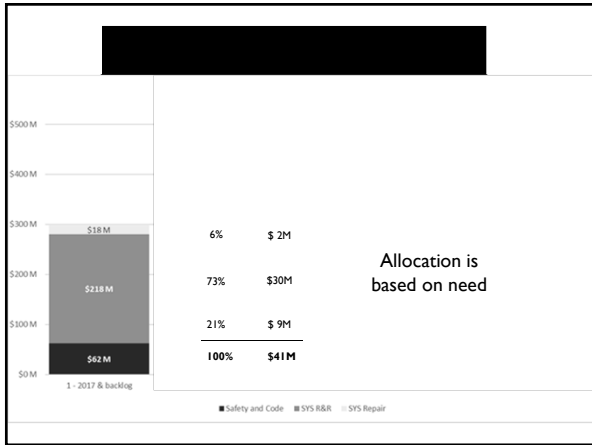
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**Proposal: Capital Renewal Plan**



The Project Management and Construction Services (PMCS) department is seeking to **establish a funding level for the Replacement & Renewal (R&R) Program** that will:

- Minimize the risk of system failures in the university's buildings, and
- Stabilize the university's Facilities Condition Index (FCI), a benchmark of the relative condition of our facilities.

**RISK OF SYSTEM FAILURES**

**SQ. FT. CONSTRUCTED PER DECADE (MILLIONS)**

4.4

The risk of system failures is increasing as the large number of campus buildings constructed in the 1960s through 1980s reach or exceed the expected lifespan of their major systems.

As the figure at left illustrates, the average age of

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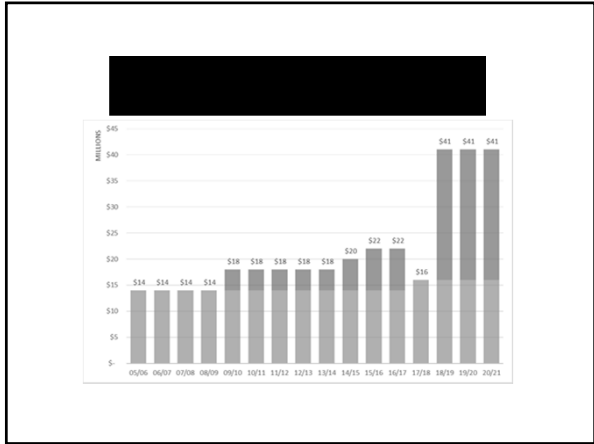
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SUSTAINING

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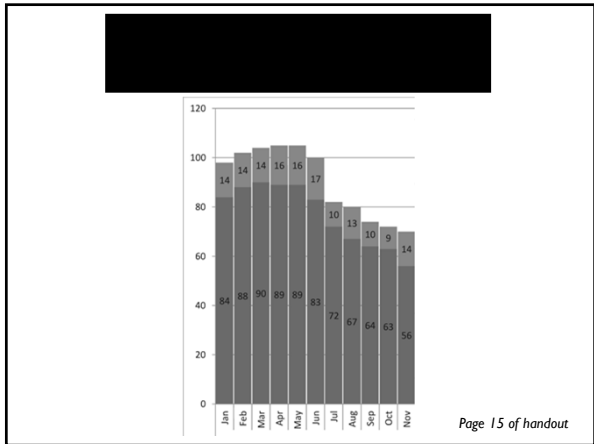
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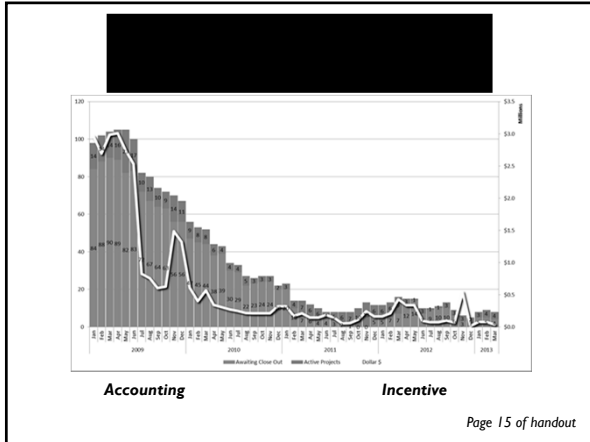
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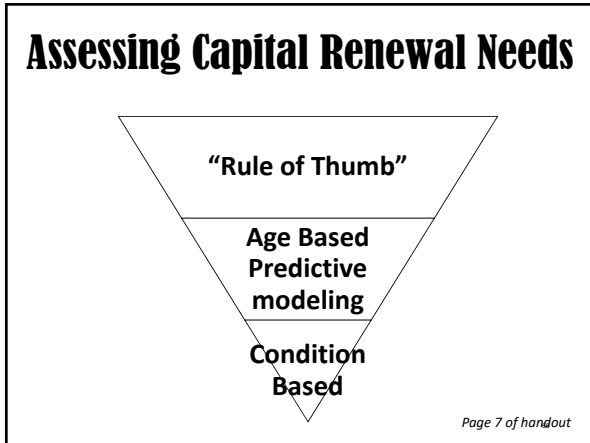
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### Developing an Effective Facilities Management Program

**Trust and Credibility**

- Well defined planning process
- Transparency
- Technically sound data and analysis

**Stewardship/Sustainability**

- Maintaining a critical resource
- Make effective use of funding
- Managing risk

**Communication Strategy**

- Identify key stakeholders
- Develop appropriate communication & information

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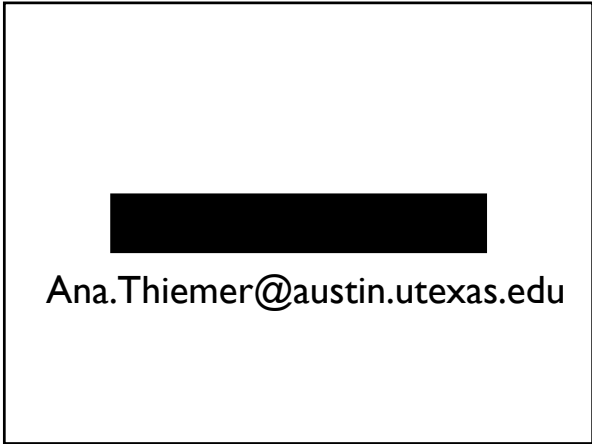
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