CAPITAL RENEWAL DEFERRED MAINTENANCE TOTAL COST OF OWNERSHIP

Ana Thiemer

Director, The University of Texas at Austin

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Learning Objectives and Agenda

- Understand Capital Renewal and Deferred Maintenance
- Understand how you can apply Capital Renewal techniques to your campus today

Definitions
UVA FCI Example and Stories
UT Austin Example and Stories
How to get DATA
What do to with the DATA
Developing a Capital Renewal Program
UT Austin Real Time development of a Capital Investment Program

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Look at Risk
Challenges & Solutions

→ **Other Universities**

→ **UT Austin – Real Time**

→ **UT Austin – Forward Looking**

Real life CHALLENGES AND SOLUTIONS

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Definitions
(with some stories and examples)

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- New Building / Construction
- Maintenance
- Utilities
- Capital Renewal
- Demolition / Disposal

Asset Management

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Definitions

Deferred Maintenance

Maintenance or capital projects that have gone unfunded in previous budget cycles.

Capital Renewal

The planned replacement of building subsystems such as roofs, electrical systems, HVAC systems and plumbing systems that have reached the end of their useful life.

Total Cost of Ownership

A holistic approach to maximizing return on investment of managed physical assets that includes the summation of all known and estimated costs to include first, recurring, renewal / replacement and end-of-useful life costs revised at critical decision points to aid in life-cycle asset management decisions.

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Institutions with Diminutive DM

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University of Virginia

Founded in 1819

125 buildings
10M sq ft

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Current Replacement Value

The total expenditure in current dollars required to replace any facility at the institution, inclusive of construction costs, design costs, project management costs, and project administrative costs.

Facility Condition Index

A benchmark to compare the relative condition of a group of facilities. It is computed by dividing the planned maintenance needs by the current replacement value.

CR/DM Requirements

divided by

Current Replacement Value

Definitions

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Definitions

CR/DM Requirements

divided by

Current Replacement Value

University A has $100 million requirements for capital renewal. The current replacement value is $1 billion.

$$\frac{\$100\ \text{Million}}{1\$\ \text{Billion}} = .10\ \text{FCI}$$

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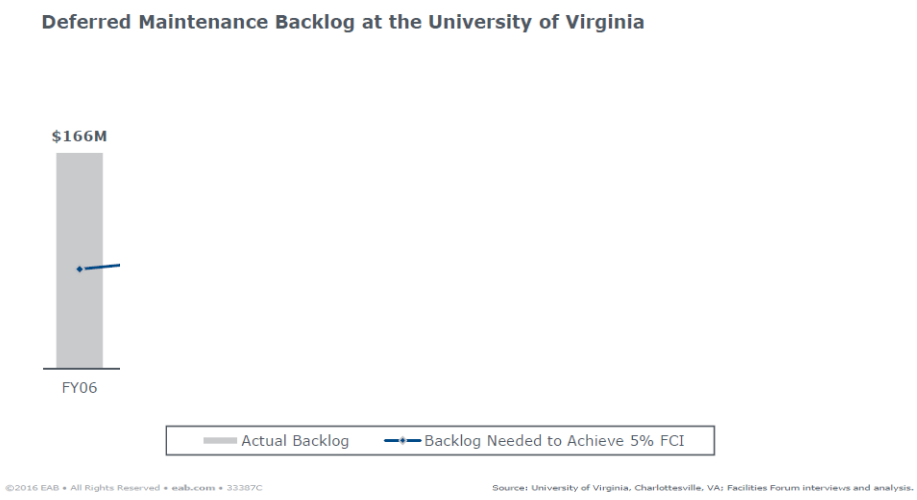

FCI Example

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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 FCI Example

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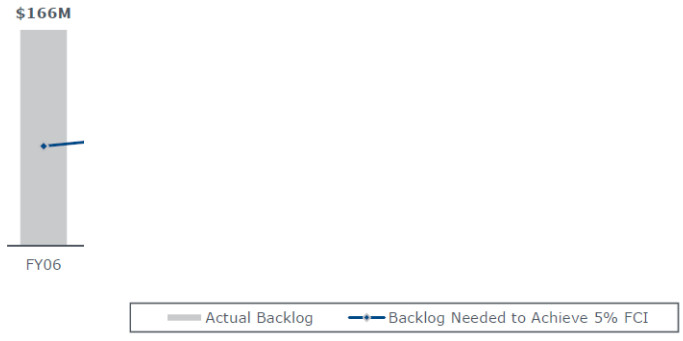
Deferred Maintenance Backlog at the University of Virginia



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

FCI Example

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

University of Virginia FCI 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 FCI Example

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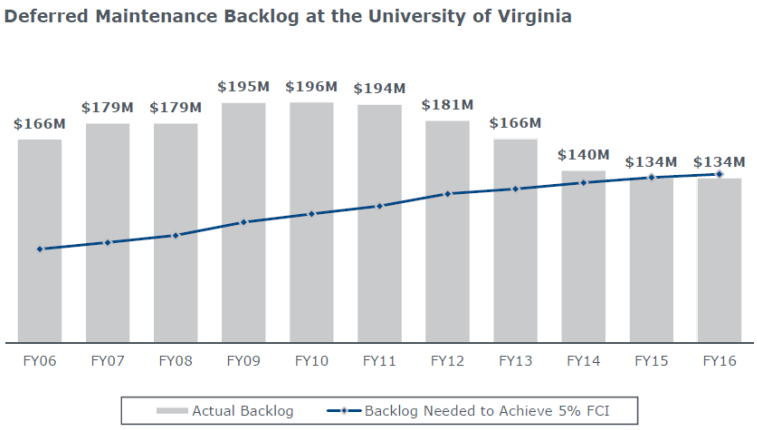

FCI Example

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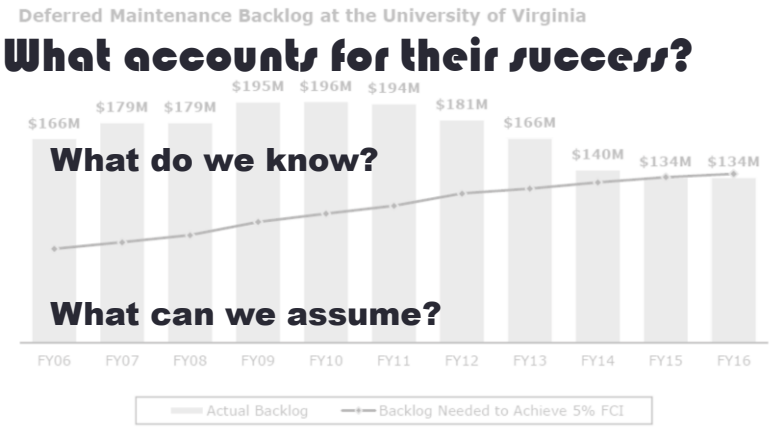

FCI Example

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UVA had deferred capital renewal and current replacement value numbers….HOW DO I GET THOSE?

Once I get numbers, how do I know what to spend my money on first?

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Developing an Effective Facilities Management Program

Developing an Effective Facilities Management Program

Definitions

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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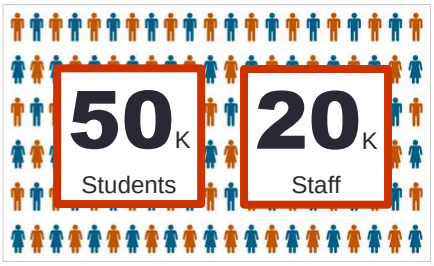
The University of Texas at Austin



Capital Renewal Program (Turtle Approach)

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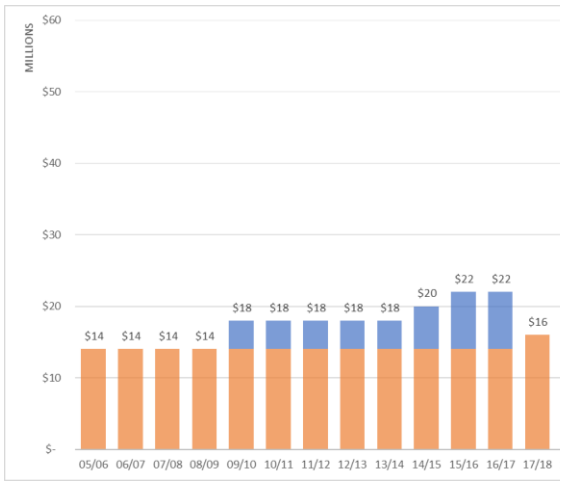
UT Austin Capital Renewal Funding



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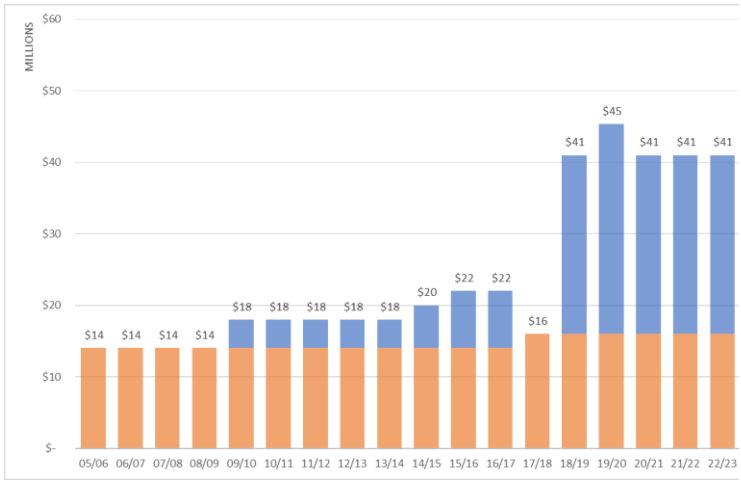
UT Austin Capital Renewal Funding



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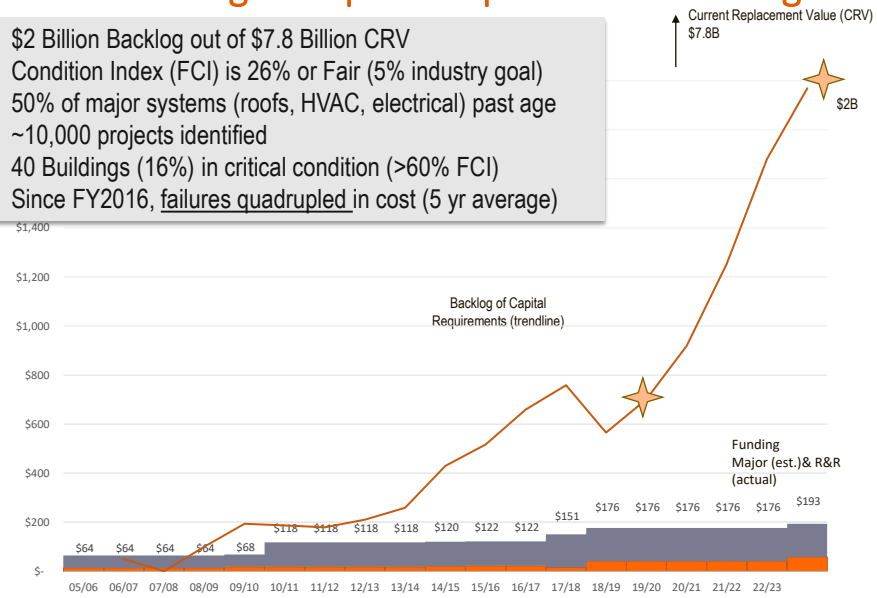
Impact of Funding to Capital Requirements Backlog

- $2 Billion Backlog out of $7.8 Billion CRV
- Condition Index (FCI) is 26% or Fair (5% industry goal)
- 50% of major systems (roofs, HVAC, electrical) past age
- ~10,000 projects identified
- 40 Buildings (16%) in critical condition (>60% FCI)
- Since FY2016, failures quadrupled in cost (5 yr average)



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FACILITY CONDITION INDEX (FCI)

$2.0 Billion

divided by

$7.8 Billion

FCI = 0.26

UT Austin

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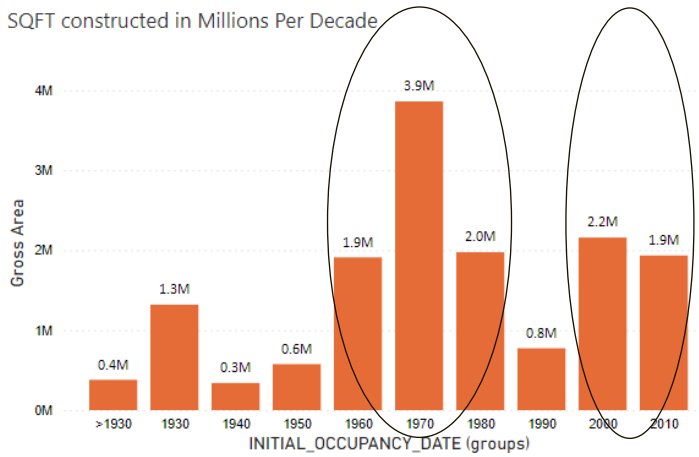
Facility Age and Future Growth

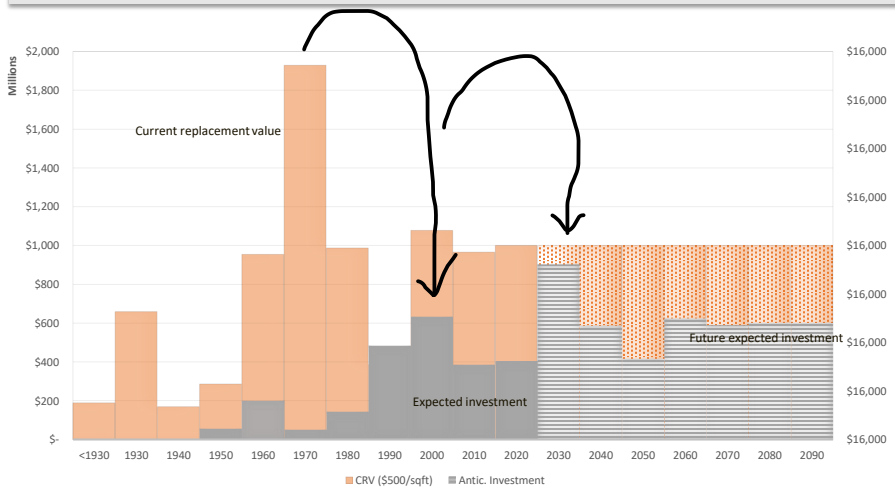


1970s ERA
PAST DUE
8M sqft
(51%)

2000s ERA
NOW DUE
4M sqft
(26%)

Facility Age and Funding Impact by Decade

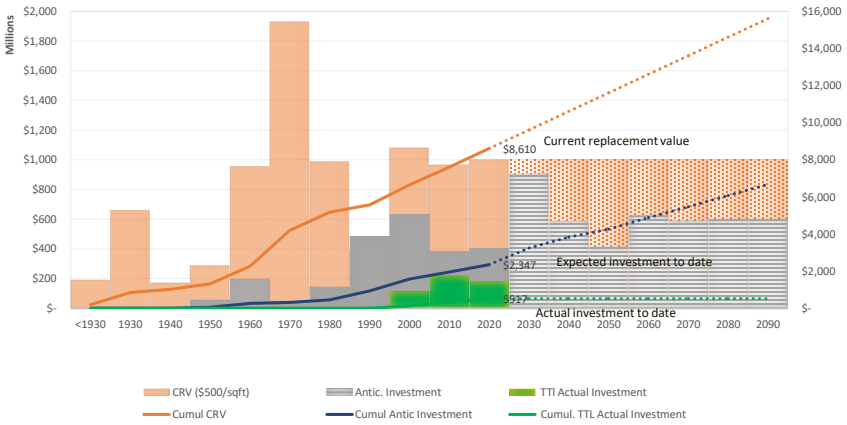
UT Austin's built environment generates future investments (total cost of ownership).
Expected investment assumes 2% investment every 30 yrs or 60% of CRV (standard is 3% annually)



Facility Age and Funding Impact by Decade

UT Austin has invested 24% of the expected investment for capital renewal

- Assuming 2% investment every 30 yrs or 60% of CRV (standard is 3% annually),
- $2B expected investment to date (2024, shown in decade 2020 below)
- ~$500M actual investment



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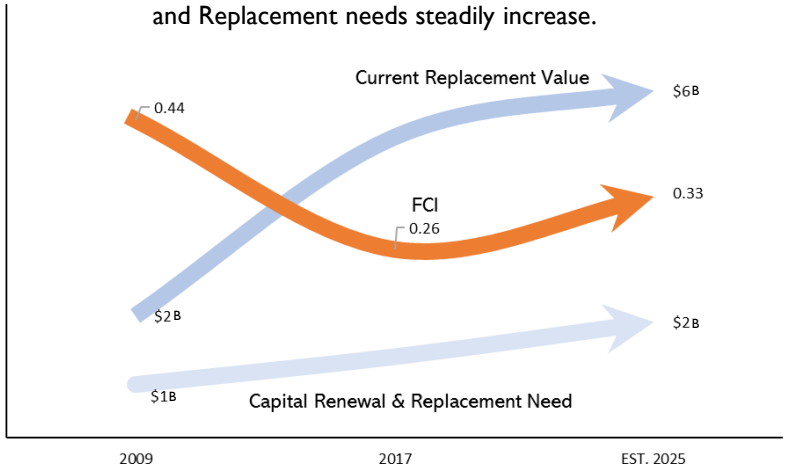
MITIGATING RISK
PAST, PRESENT AND FUTURE

Past investments into building new buildings has been a driver for the campus FCI, while our Capital Renewal and Replacement needs steadily increase.



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How do I get the data?

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WAL★MART®

ALWAYS LOW PRICES.

Always.

How can DATA help?

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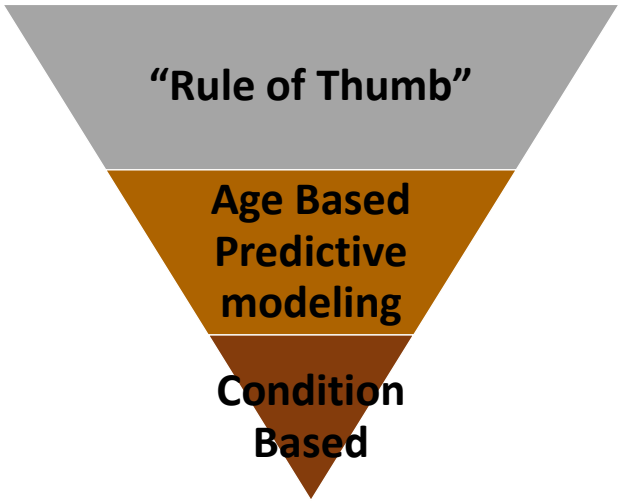
Assessing Capital Renewal Needs



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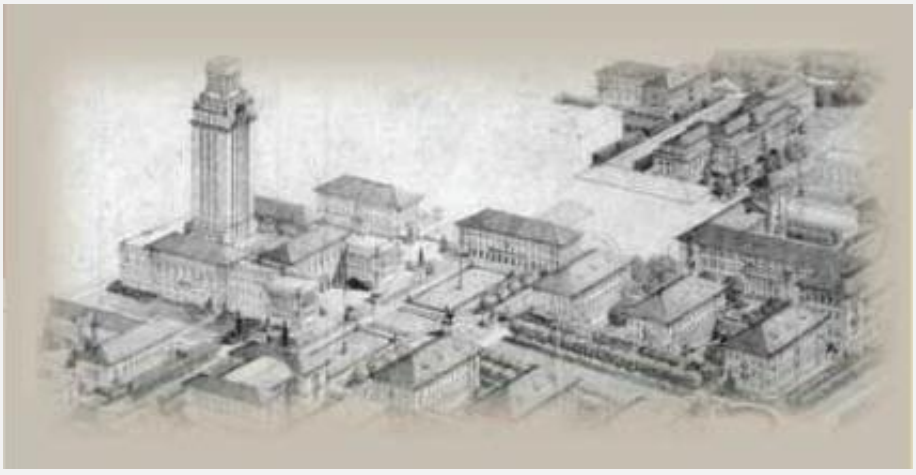
FACILITY CONDITION ASSESSMENTS



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What do I do with the data?

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CURRENT CONDITIONS

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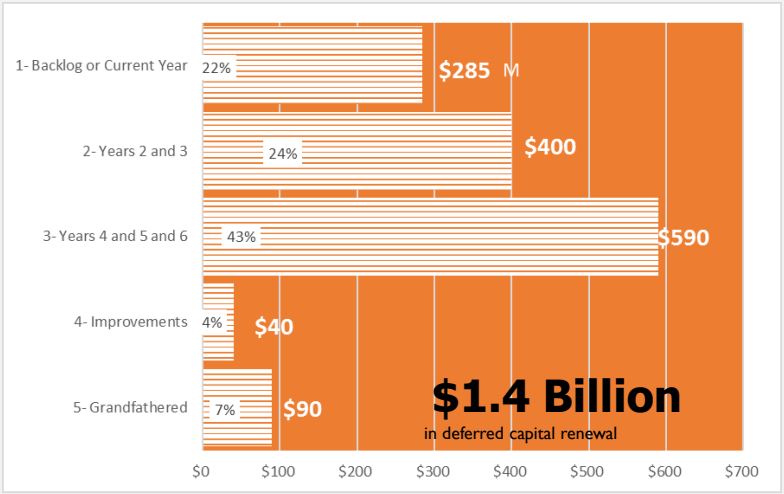
RISK TO UNIVERSITY SYSTEMS



Total need across campus has increased **$70M** from prior year.

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REINVESTMENT CATEGORIES

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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REINVESTMENT CATEGORIES

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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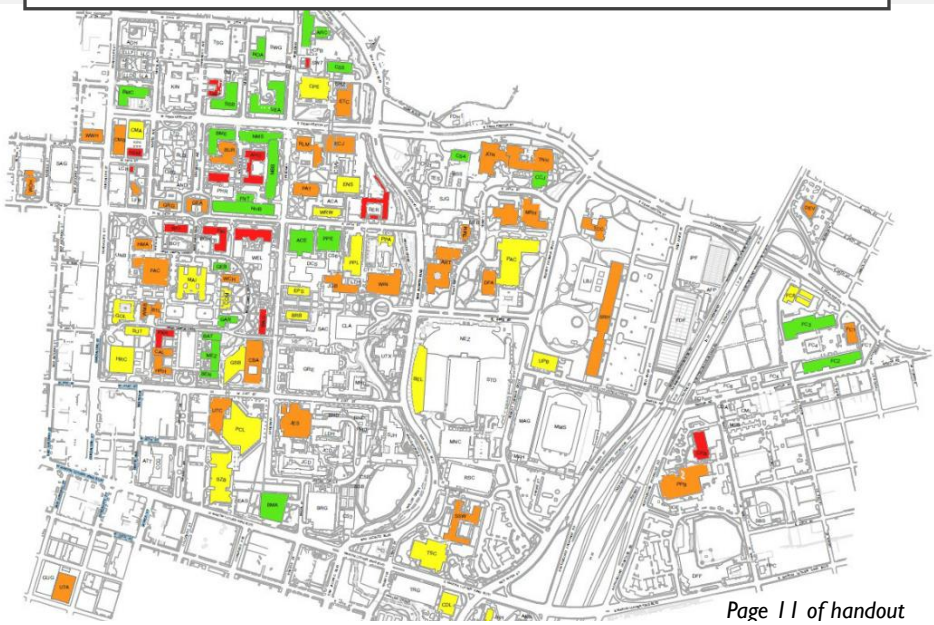
BUILDING CATEGORIES



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Minimizing Risk
Combining Data for Communication

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DATA TO DECISIONS 2009

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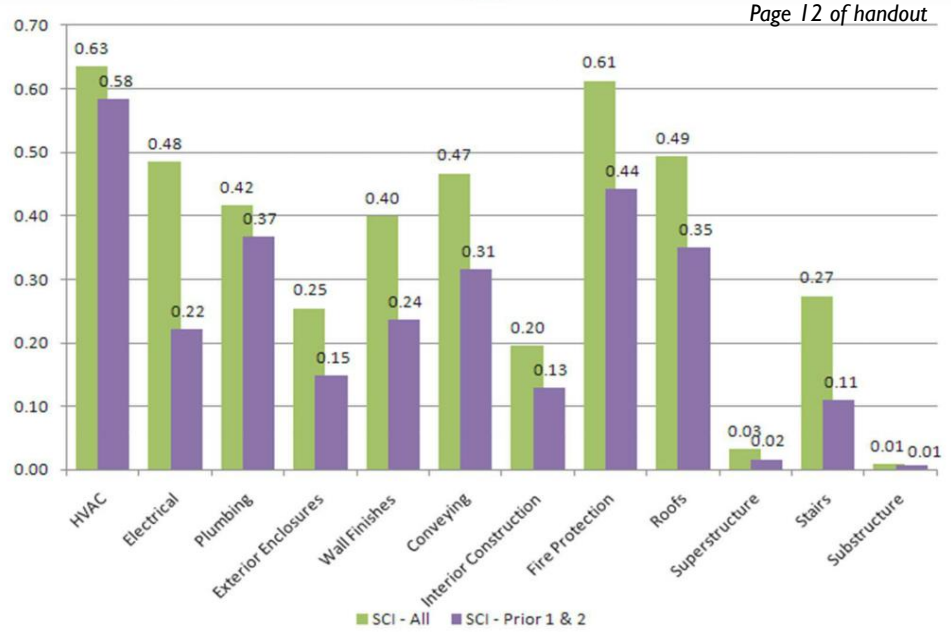

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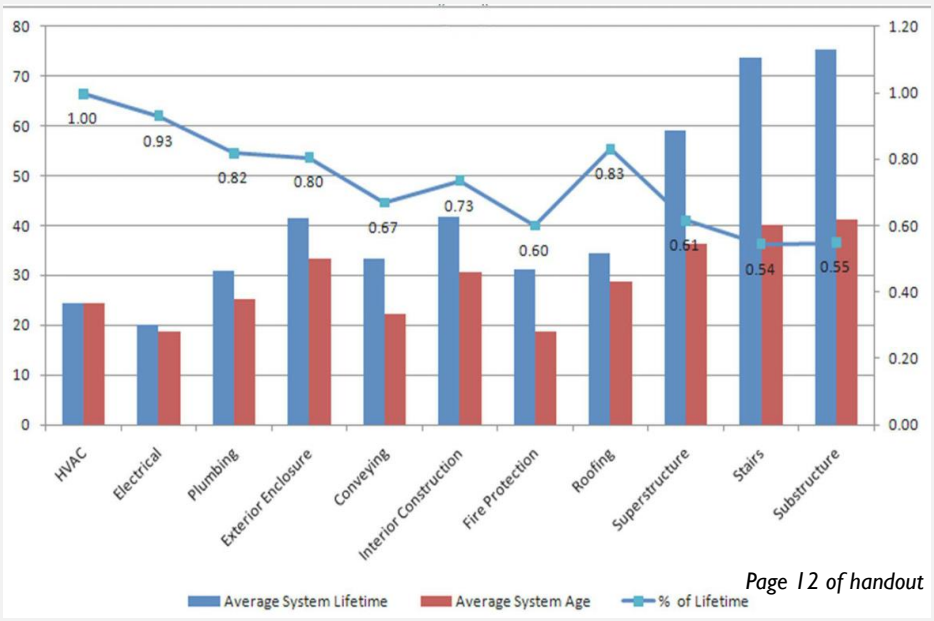
DATA TO DECISIONS



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DATA TO DECISIONS

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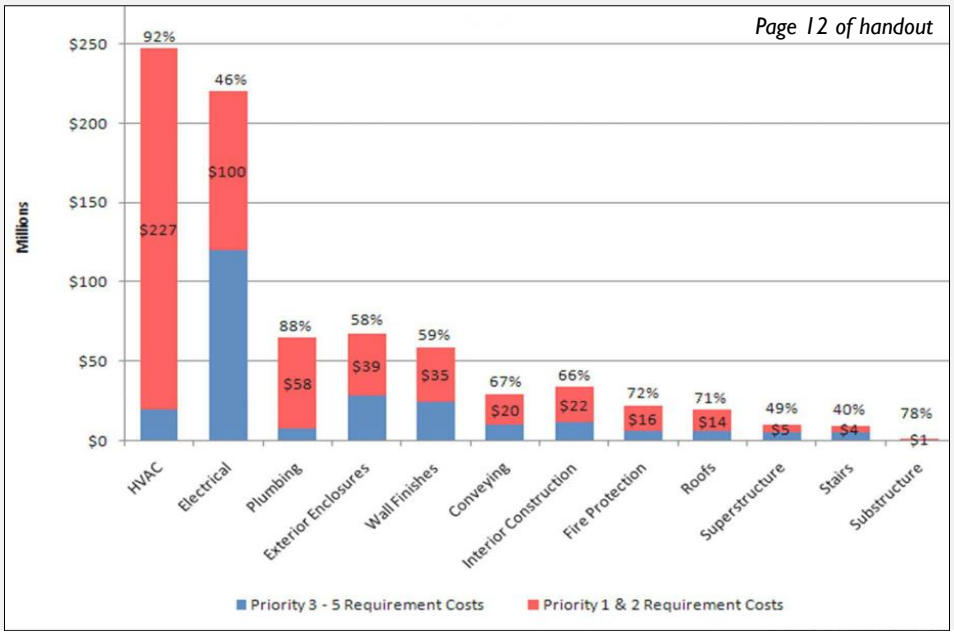

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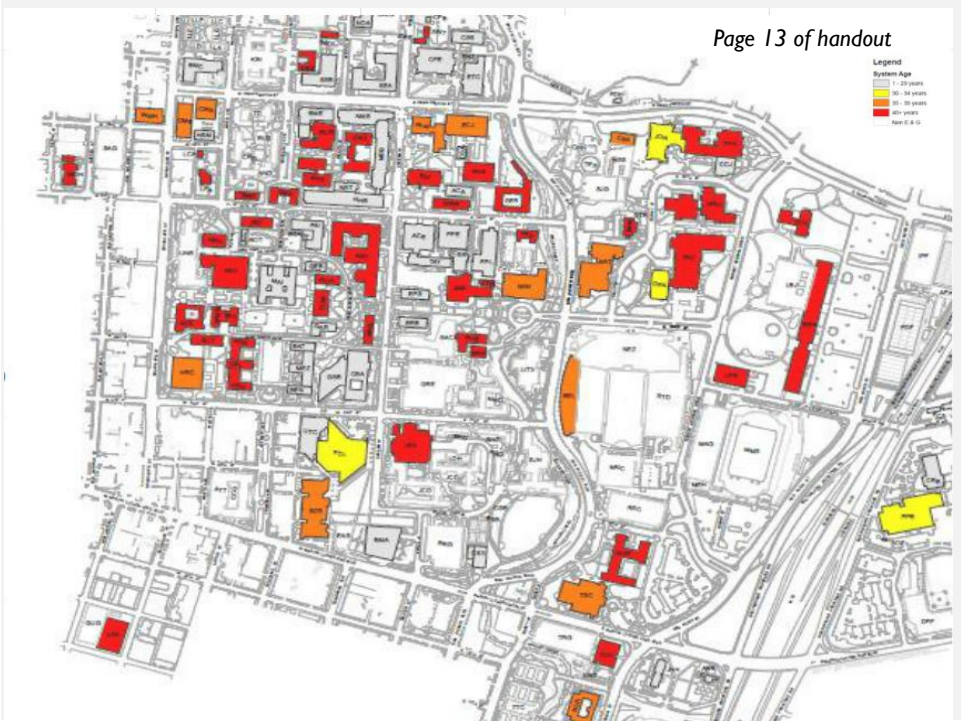

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Packaging the data into a PROGRAM to create SOLUTIONS

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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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CONTINUING to Minimize Risk

Combining Data for Communication

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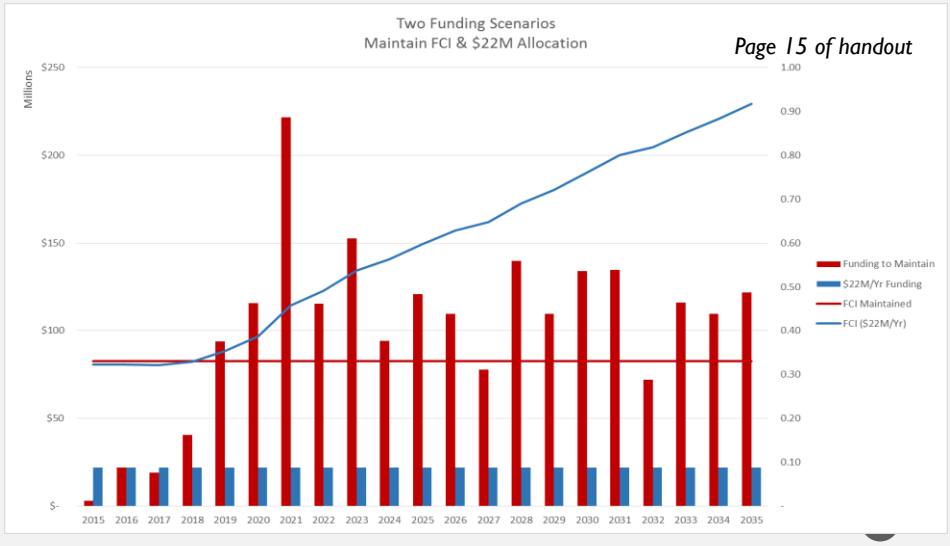
MITIGATING RISK



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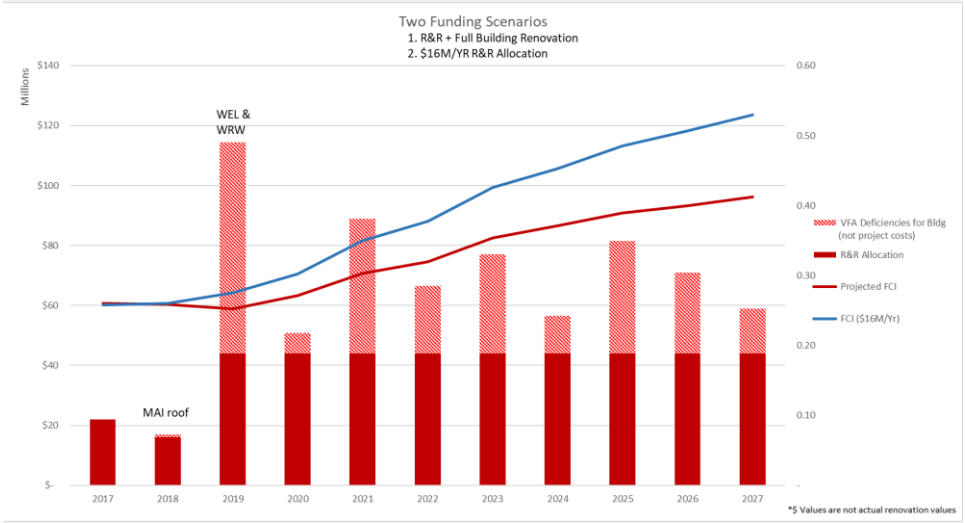
CREATING SOLUTIONS



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GOAL: STABILIZE FCI / MINIMIZE RISK

Strategy: $44M / annually over next 3 yrs

Addresses 10% of capital renewal backlog totaling $1.4B

Replacement & Renewal (R&R) Recommended Allocations			
16/17	**17/18**	**18/19**	**19/20**
7% of Backlog **$22M**	15% of DCR Backlog **$44M**	15% of DCR Backlog **$44M**	15% of DCR Backlog **$44M**
0.26 FCI	0.25 FCI	0.25 FCI	0.26 FCI

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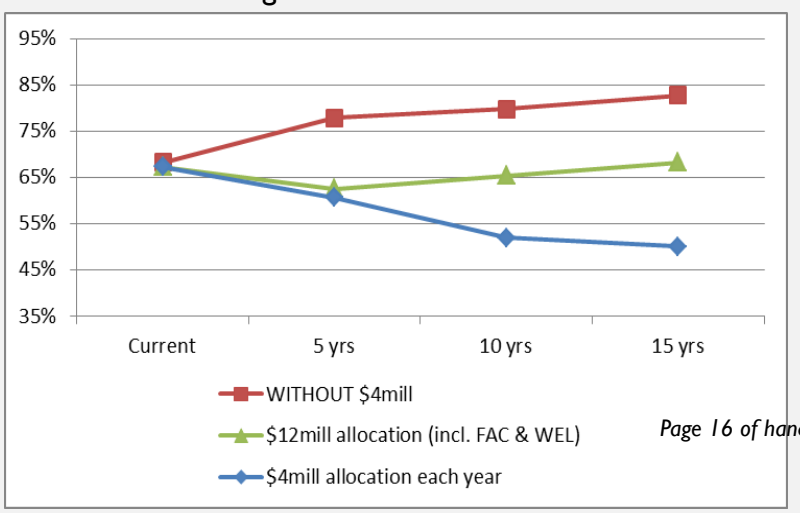
PERFORMANCE METRICS - RISK



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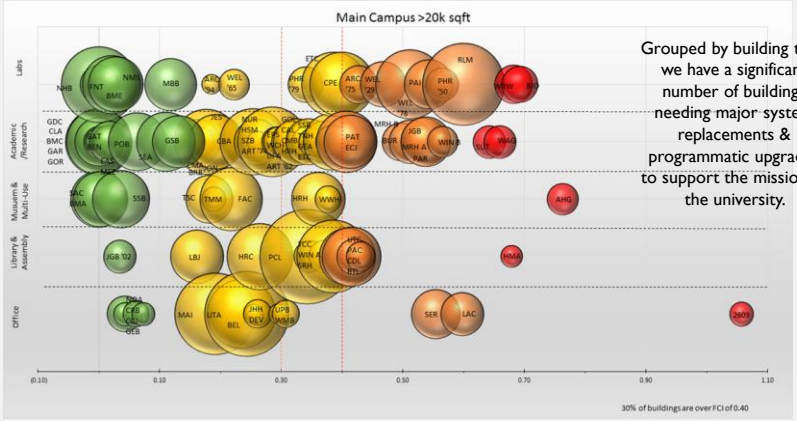
RISK TO UNIVERSITY AGE CORRELATES WITH FCI



Grouped by building type, we have a significant number of buildings needing major system replacements & programmatic upgrades to support the mission of the university.

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Prioritization Process

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REPLACEMENT & RENEWAL (R&R) PRIORITIZATION PROGRAM

- Identify critical areas
- Support university's strategy
- Consistent, repeatable, and defendable 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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PRIORITIZATION
RISK TO UNIVERSITY

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
	Public Image	5
System Impact	ROI	20
	Probability of Failure	8
	Total	-100.00

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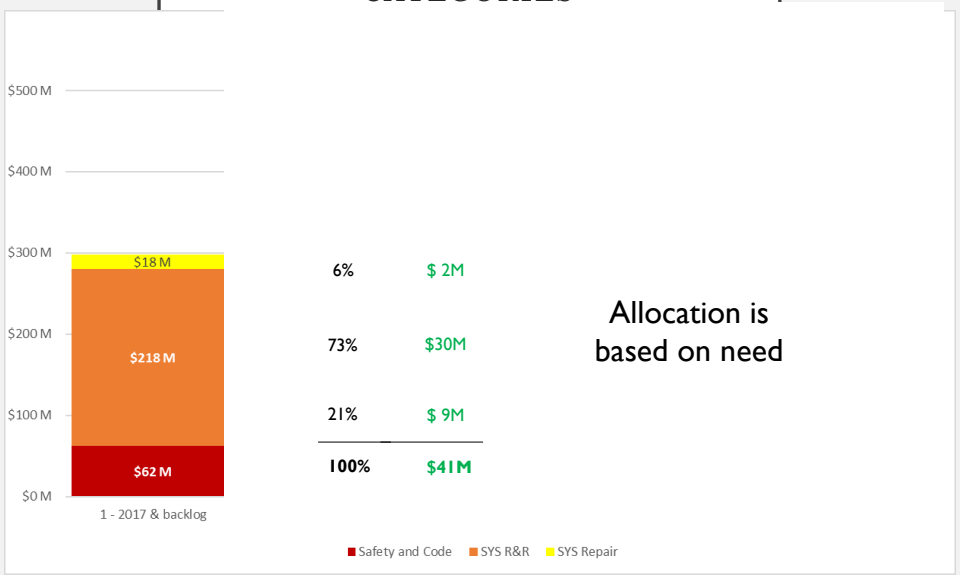
CRITICALITY OR RISK CATEGORIES



Allocation is based on need

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REPLACEMENT & RENEWAL (R&R) PROGRAM

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- 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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60

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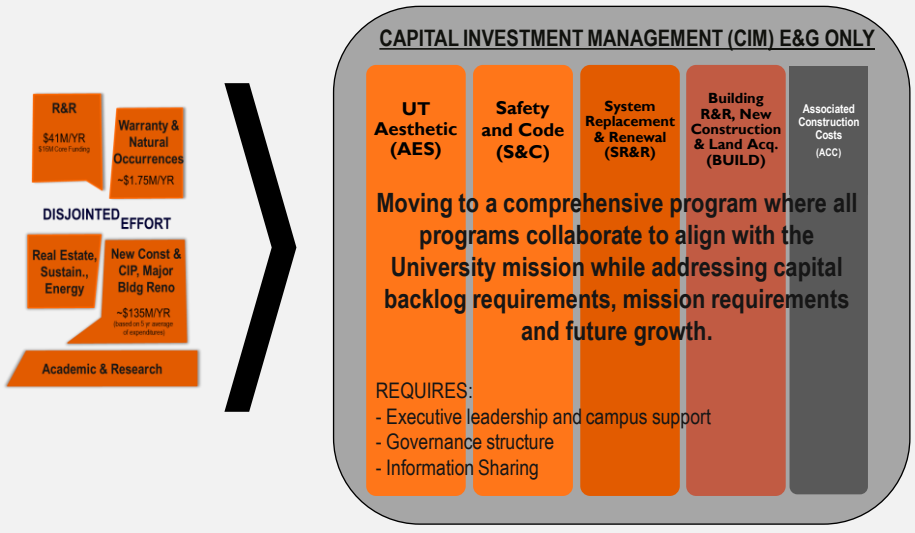
UT Austin
Real Time

Establish Comprehensive Investment Management (CIM)

aka Total Cost of Ownership



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THANK YOU

Ana.Thiemer@austin.utexas.edu

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