



The Sun is Shining Now, We Can Wait for the Rainy Day!



Learning Objectives

- Think differently
- Recognize the advantages of keeping it simple
- Learn about different approaches
- Discuss strategies for your plan
- Consider moving the needle on the dial as goal





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HIGHER EDUCATION
COMPACT**

About me



Glen Haubold



Associate Vice President, Facilities and Services
New Mexico State University



Doctoral High Research

14,000

Established in 1888

Housing for 3,800 students

1,200 acres

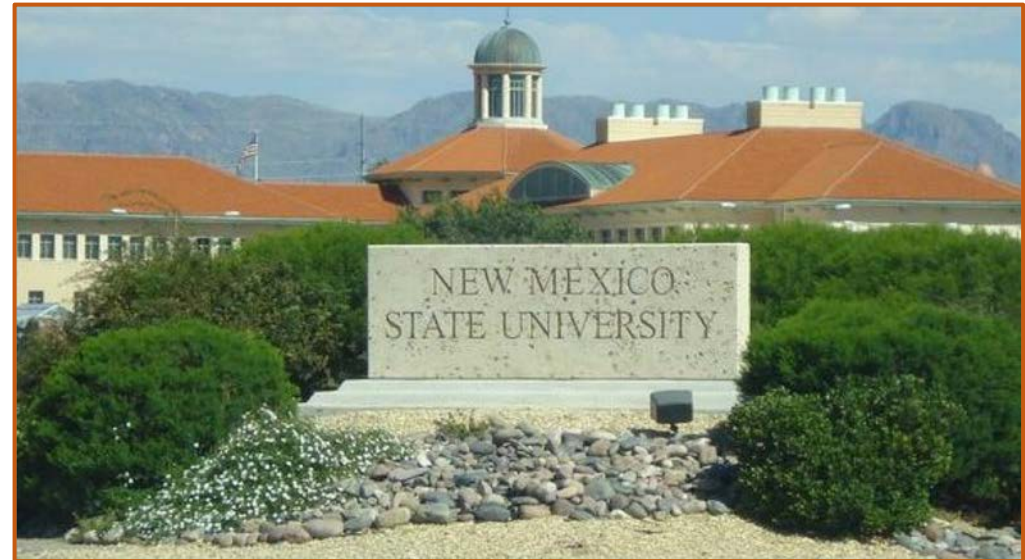
151 Buildings

5.3 / 7 Million Building GSF

FM – 325 employees

Cogeneration and thermal storage

New Mexico State University











SENIOR INSTRUMENT TECHNICIAN / OWNERS REPRESENTATIVE MEP





GHaubold Consulting

Facilities Organizational Assessments
Benchmarking and Analysis
Leadership and Supervisory Training
Strategic Planning

- University Massachusetts Dartmouth
 - Montana State University
 - Research: Recharge and Recovery
 - Body of Knowledge chapter
-
- NMSU is 2016 APPA Award for Excellence recipient





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Think differently



<https://www.youtube.com/watch?v=71Bu8BZBeAg>



Facilities Condition Index

$$\text{Facilities Condition Index} = \frac{\text{Maintenance and repair needs}}{\text{Replacement Cost}}$$

$$\text{Facilities Needs Index} = \frac{\text{Condition} + \text{functionality} + \text{regulatory}}{\text{Replacement Cost}}$$



Facilities Condition Index

A word about replacement cost

- Separate square foot costs..or not
- Granularity is up to you or your governing agency
- Full costs or construction only



Example

$$\text{Facilities Condition Index} = \frac{\text{Maintenance and repair needs}}{\text{Replacement Cost}}$$

$$\text{Replacement cost} = 5,300,000 * \$250 = \$1,325,000,000$$

$$\text{FCI 15\%} = \$198,750,000$$

$$\text{FCI 1\%} = \$13,250,000$$



Take Away -

Keep it simple





If you don't know
where you're going,
any road will get
you there

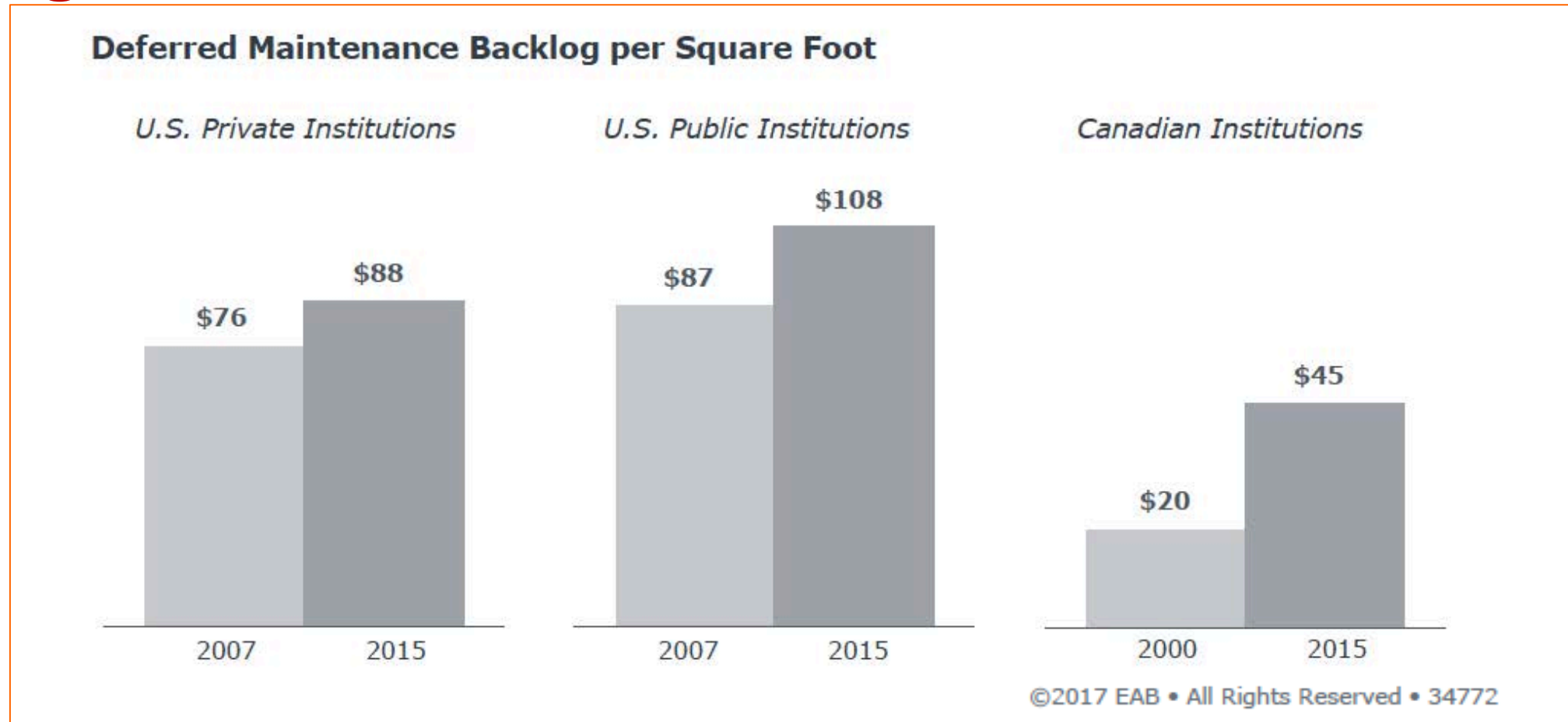




Define the problem



Magnitude



Facility Review

Missouri Department of Higher Education



Missouri Review

At this time, the known deferred maintenance for IHEs is as follows:

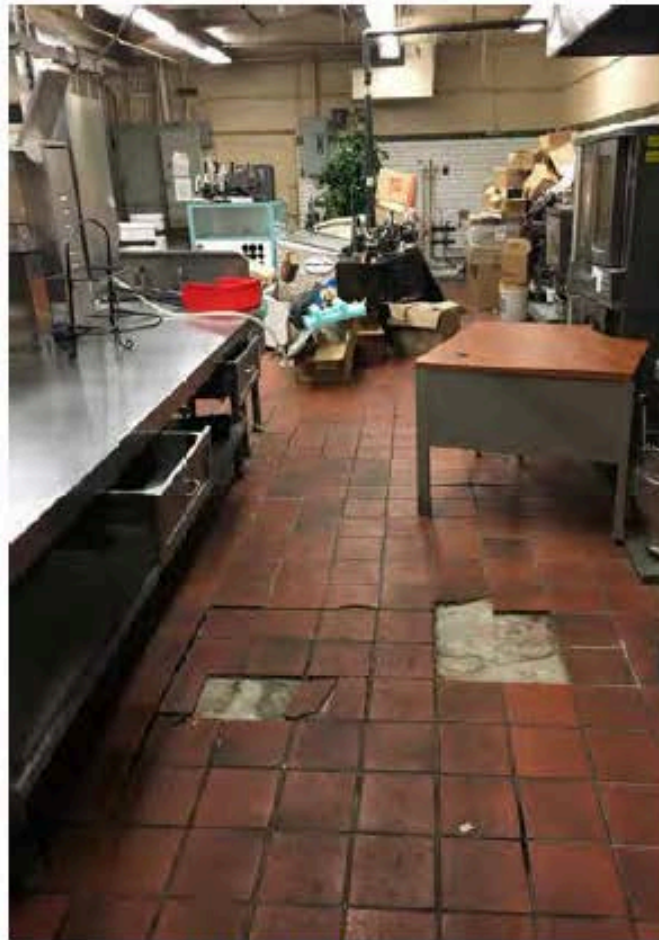
- Community Colleges: \$118,618,035
- Public Universities: \$1,377,628,664
- State Technical College of Missouri: \$2,212,108

Total known deferred maintenance for all IHEs: \$1,498,458,807

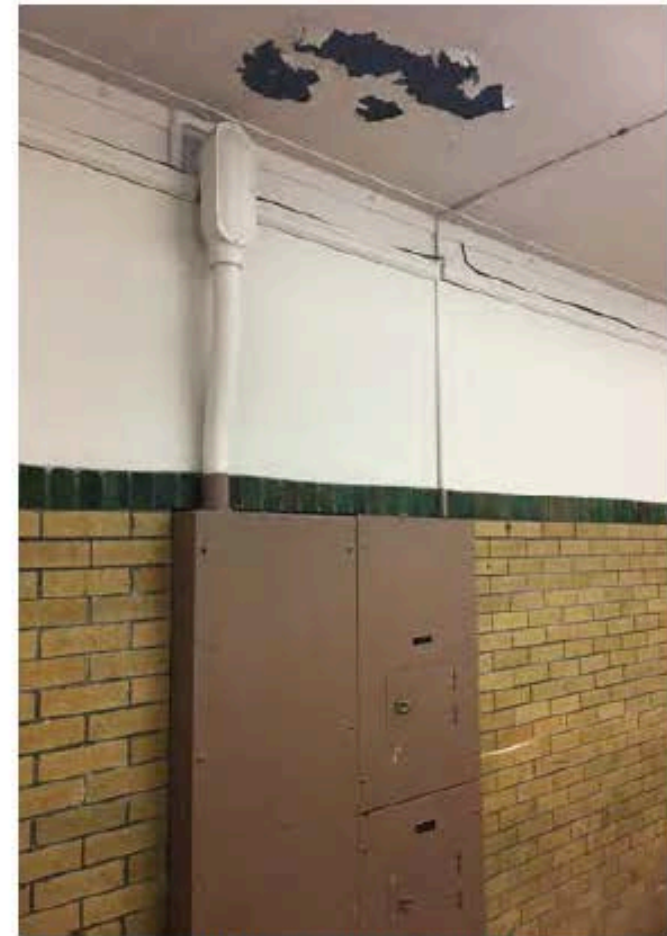




An outdated lecture hall



Unusable space



Ceiling paint peeling

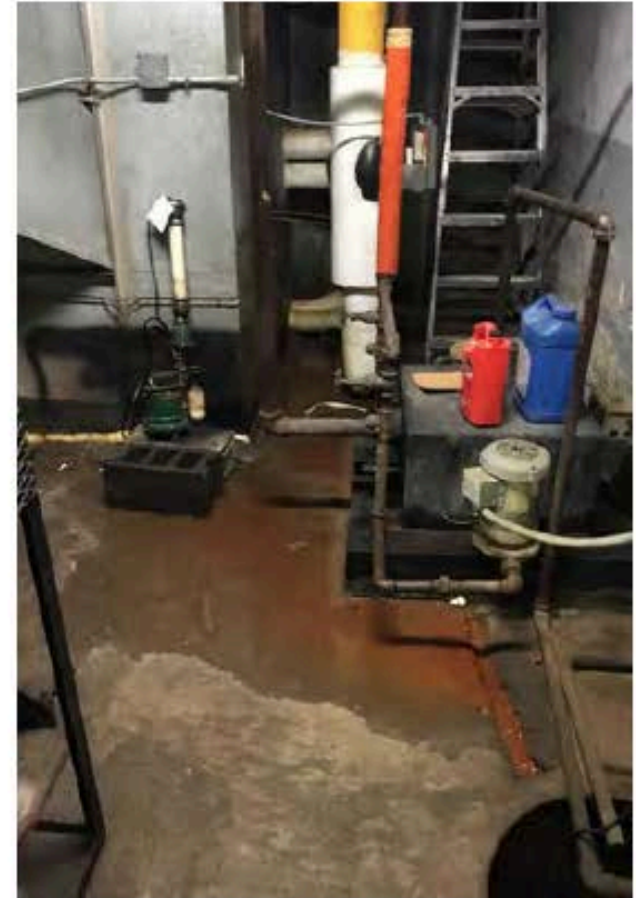




Water issues, leaky pipes,
and condensation affecting ceilings



An emergency station created in a
hallway instead of a classroom



Water problems caused
by old pipes



Missouri Review

2018 HIGHER EDUCATION FACILITY SUMMARY

4-YEAR INSTITUTIONS SUMMARY

Education & general (E&G) buildings	1,433
E&G building SQ FT.	28,630,561
Auxiliary (AUX) buildings	670
AUX building SQ. FT.	22,181,695
Number of buildings	2,103
Buildings leased	141
Leased Building SQ FT.	631,101
Student housing/bed space	30,628
Percent of bed space utilization	86%
Total Maintainable Campus SQ FT.	50,812,256
Total size of all campuses (Acres)	22,416
Physical Asset Reinvestment (M&R) for E&G Purposes	
Deferred maintenance for E&G buildings	\$1,377,628,664

Total Institutional Facility Debt/Bonds	
E&G buildings	\$388,459,456
AUX buildings	\$1,839,883,890
Estimated Demolition Need	\$15,307,135
Number of buildings needing demolished	61
E&G Facilities FY18 Planned Budget	
Admin	\$5,063,191
Grounds	\$6,009,588
Maintenance	\$39,056,976
Custodial	\$20,902,740
Utilities	\$71,227,022
Other	\$4,833,016
Total	\$147,092,533



Southeast Missouri University

Utility Providers

Electric	Ameren
Natural gas	Ameren
Water	Cape Girardeau
Phone	AT&T
Internet	MOREnet

Total Institutional Facility Debt/Bonds

E&G Buildings	\$50,490,000
AUX Buildings	\$125,405,000

Buildings on Historic Registers

River Campus Seminary Building (1843)

Buildings needing Demolished

Henderson Hall	\$500,000
Dearmont	\$2,060,050
International House	\$227,475
902 College Hill	\$96,800
810 Normal	\$92,000

Physical Asset Reinvestment (M&R) for E&G Purposes

Total deferred maintenance for E&G Buildings	\$95,095,330
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Central Plant/Power Plant

Year Built	1948
Electricity Producing	No
Nominal Chilled Water Tonnage	NA
Nominal Boiler Capacity (lb./hr.)	68,800

Utility Distribution (Ft.)

Chilled water	12,424
Domestic water	6,629 Ft (cold)
Steam/Hot water	8,323(S) 11,086(H)
Electrical	NA

Community Facilities on Campus

Show Me Center & River Campus Center



Missouri Review

- Establish statutory authority and appropriate funds to be allocated by the CBHE based on emergency capital improvement needs.
- Increase appropriations for all institutions to address major deferred maintenance.
- Create a new appropriation specifically for CBHE-designated critical capital improvements.



Missouri Review

- Link new capital budget recommendations to workforce needs as special programs often require specialized facilities and equipment for accreditation.
- Create a more formal justification process for all new state-funded construction to be included with state funding requests that require CBHE endorsement.
- Allocate a special appropriation to the CBHE to prioritize the demolition of buildings.



Everyone's problem

- Difficulty meeting workforce demands due to inadequate quantity and quality of space
- Bandwidth
- Safety and security
- Americans with Disabilities Act (ADA)
- Reputational risk and building closures
- Service to the public





Where are you now?

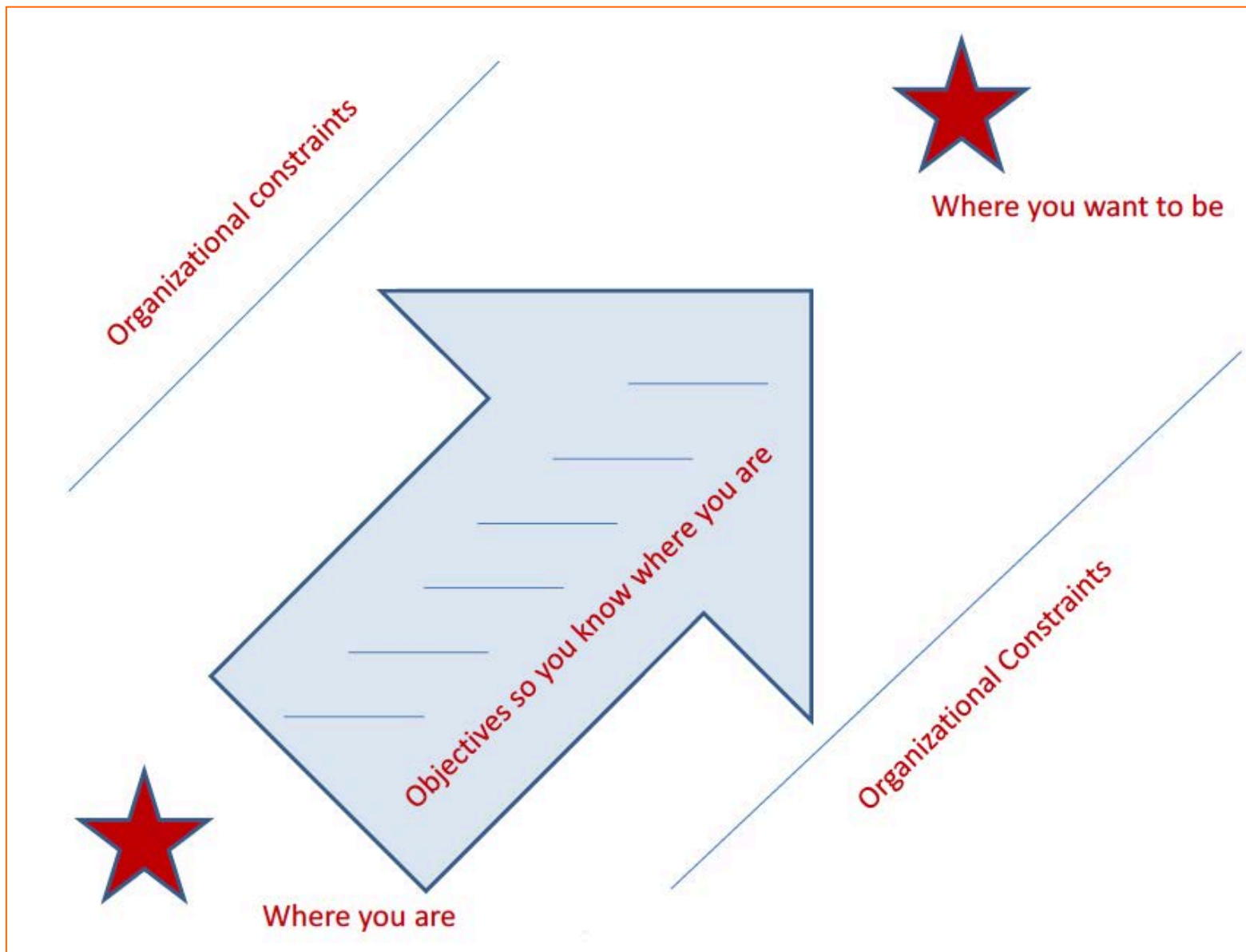


Assessment

- Formal assessment
- By building by component
- By category
- Project estimates



Strategic Planning



IF YOU DON'T KNOW
WHERE YOU ARE GOING
YOU MIGHT WIND UP
SOMEPLACE ELSE

Yogi Berra





Buckets or portfolios



What's your choice of buckets?



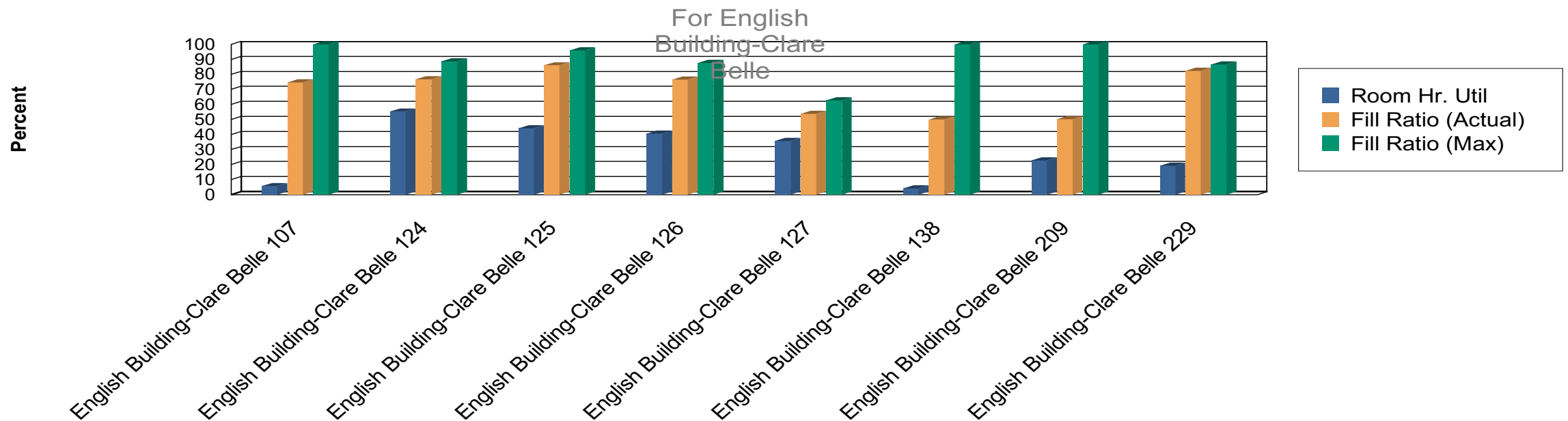
What is the goal? Texas MP2

MP2 – Cost of Accumulated Deferred Maintenance Needs Reported October 2001

Institution	Architectural	HVAC	Plumbing & Electrical	Safety	Legislated & Mandated	Other
Midwestern State University	2,791,000	920,000	1,098,000	2,200,000	345,000	20
Stephen F. Austin State University	6,165,750	3,384,000	9,633,405	50,000	3,924,405	20
Texas A&M University System						
Prairie View A&M University	10,119,236	1,435,000	10,100,900	1,730,000	0	180



Utilization data from Ad Astra



Using the detailed analysis for multi-year investment planning

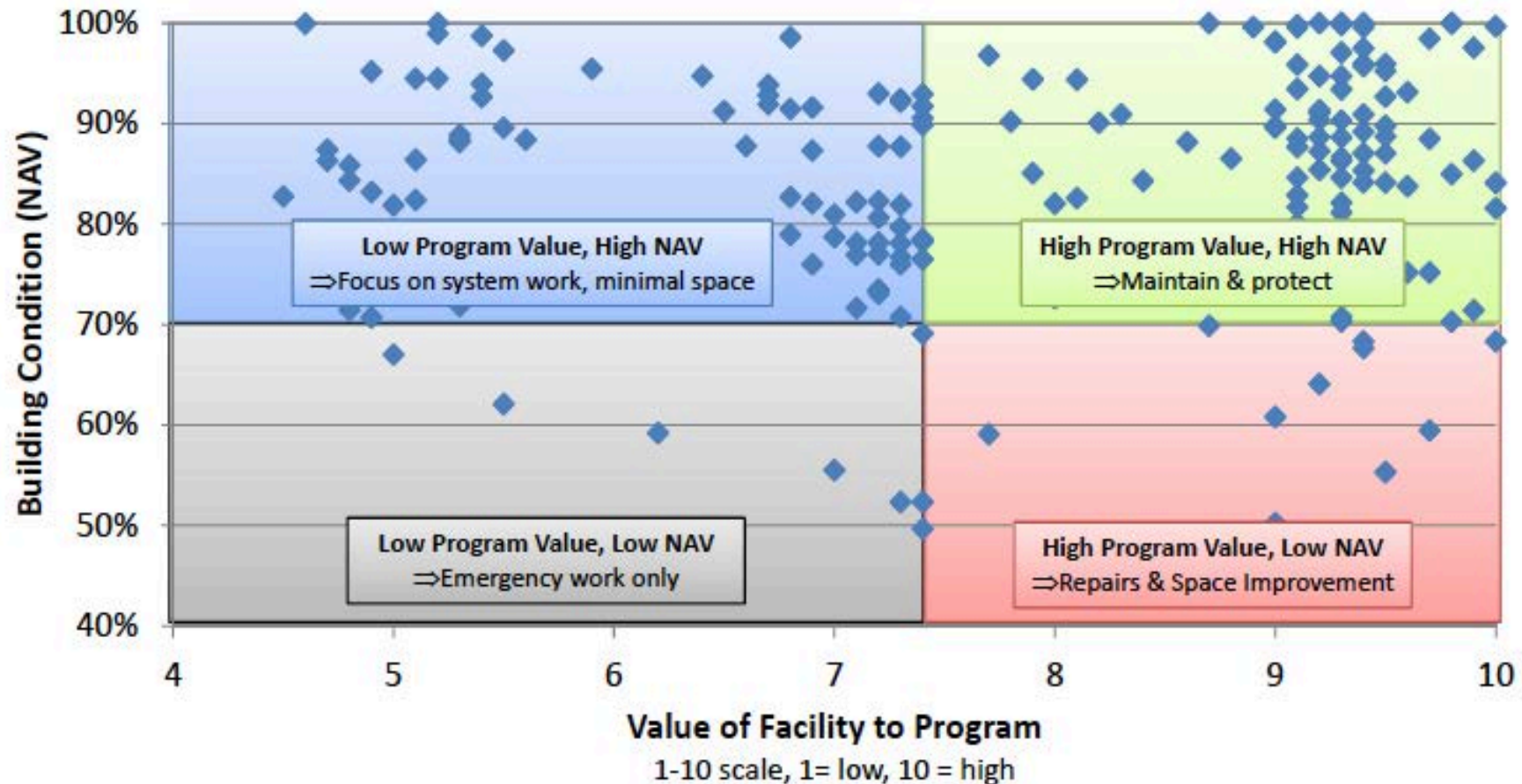
Investment strategy and project selection based on facts



Sightlines

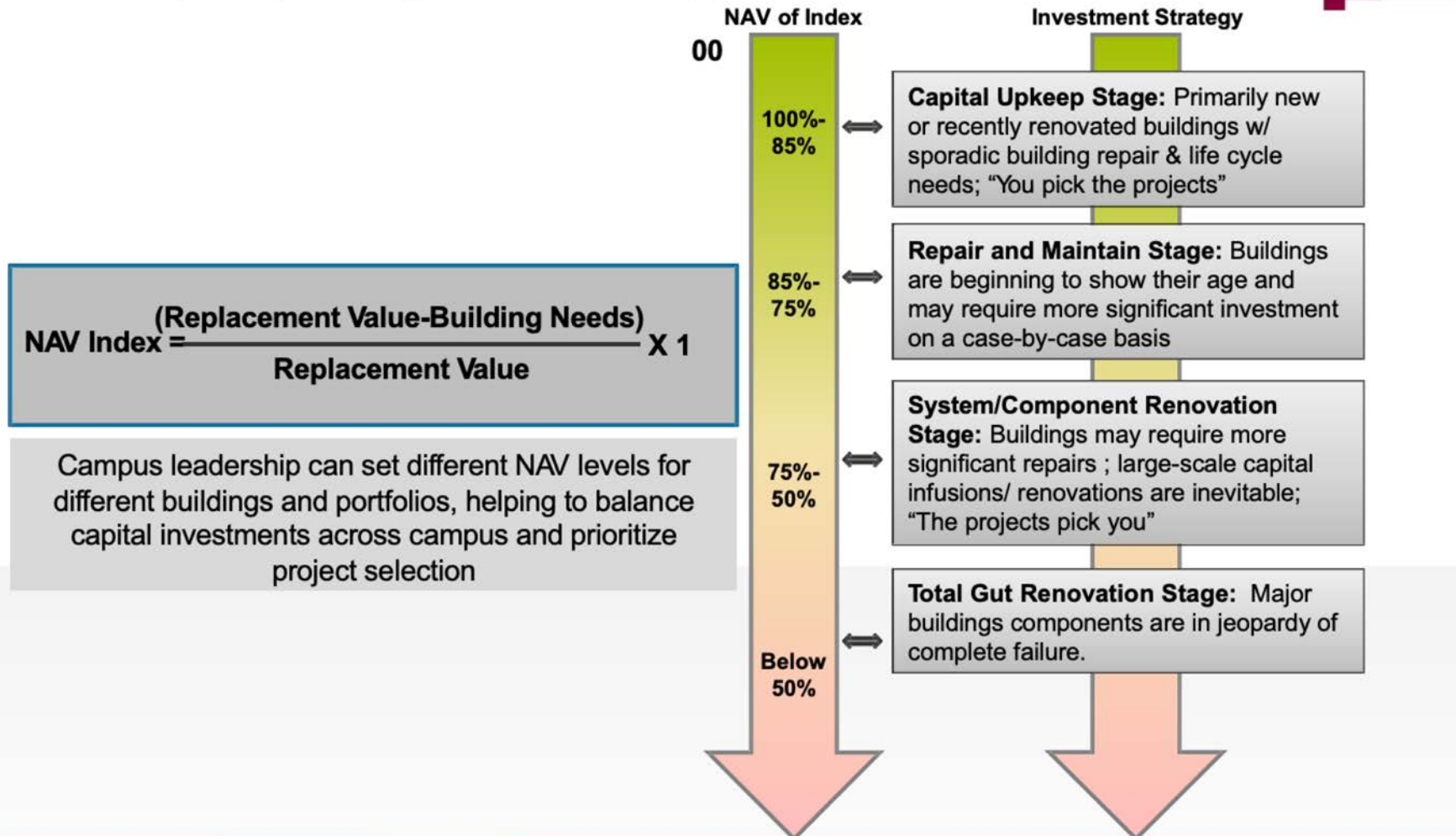
Net Asset Value vs. Program Value

By Building

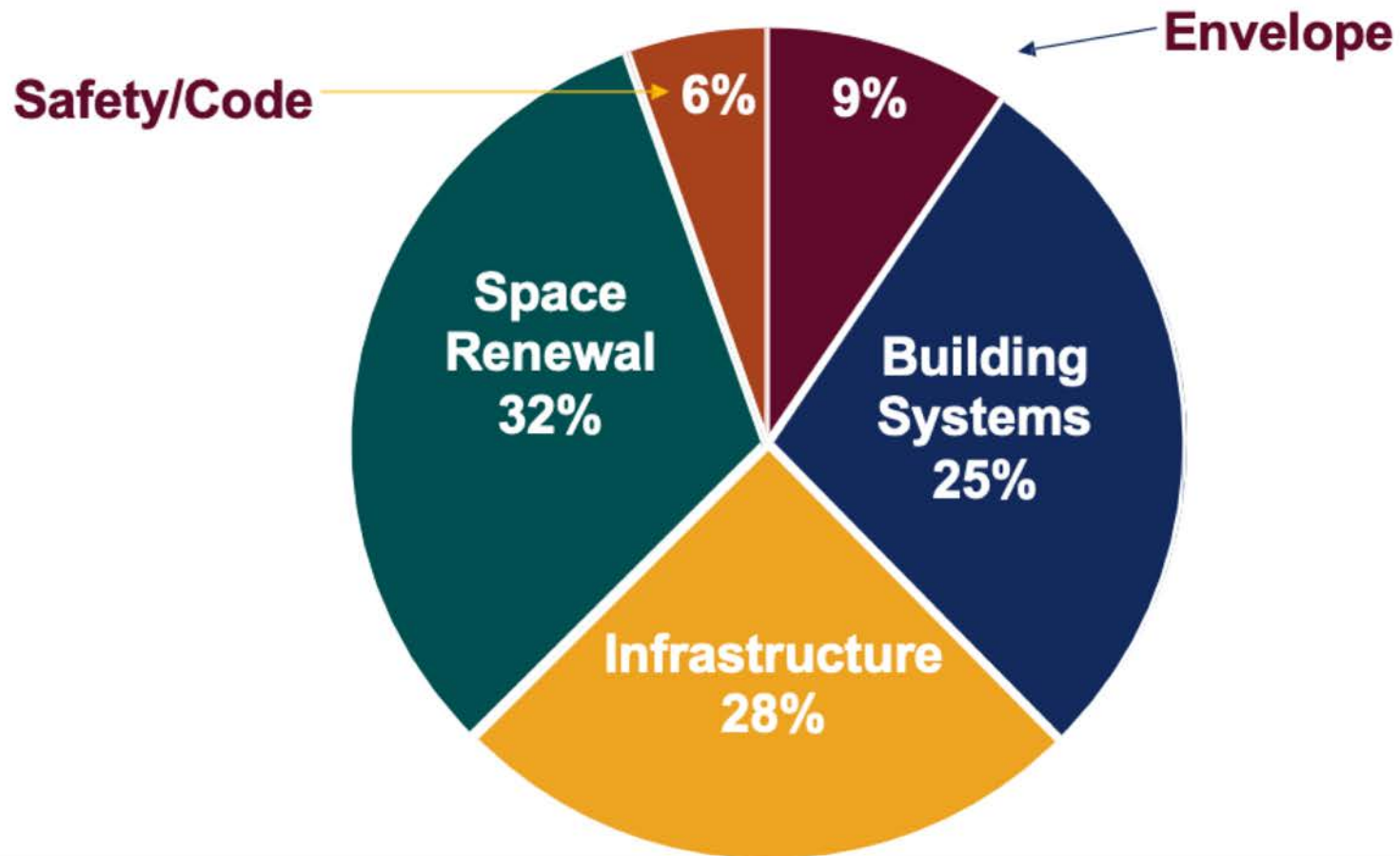


Net Asset Value

Measuring the “percent good” in a building



Facilities: An Investment Portfolio?

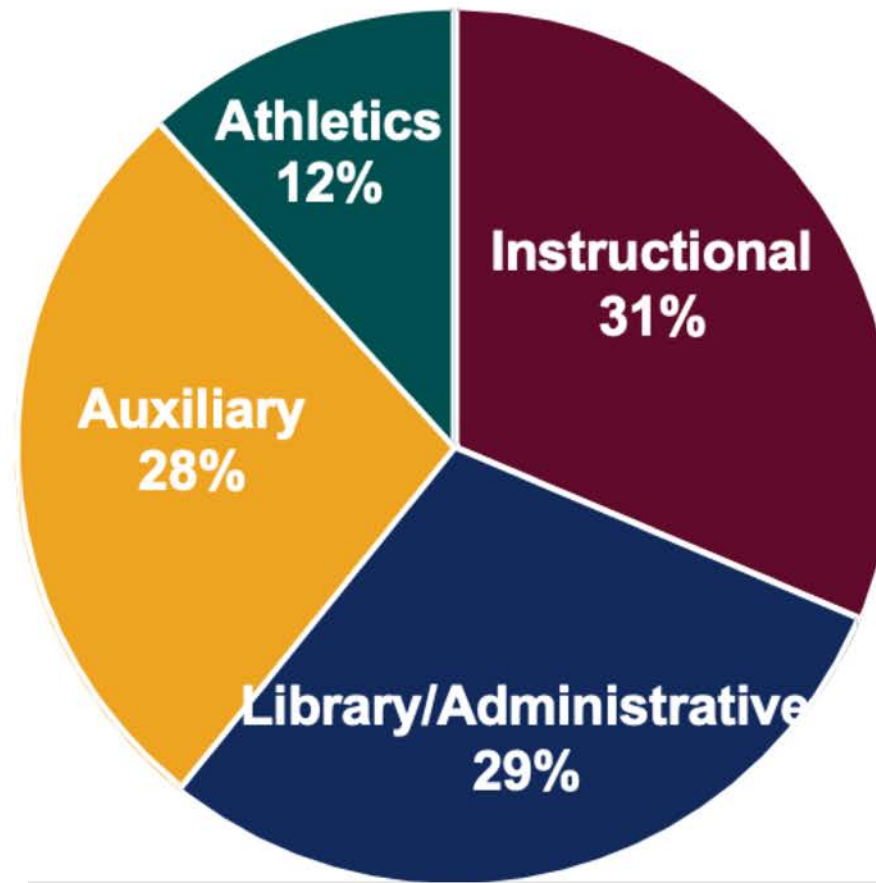


What is
the
desired
result?
NMSU



Facilities: An Investment Portfolio?

What is
the
desired
result?
NMSU





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Strategies

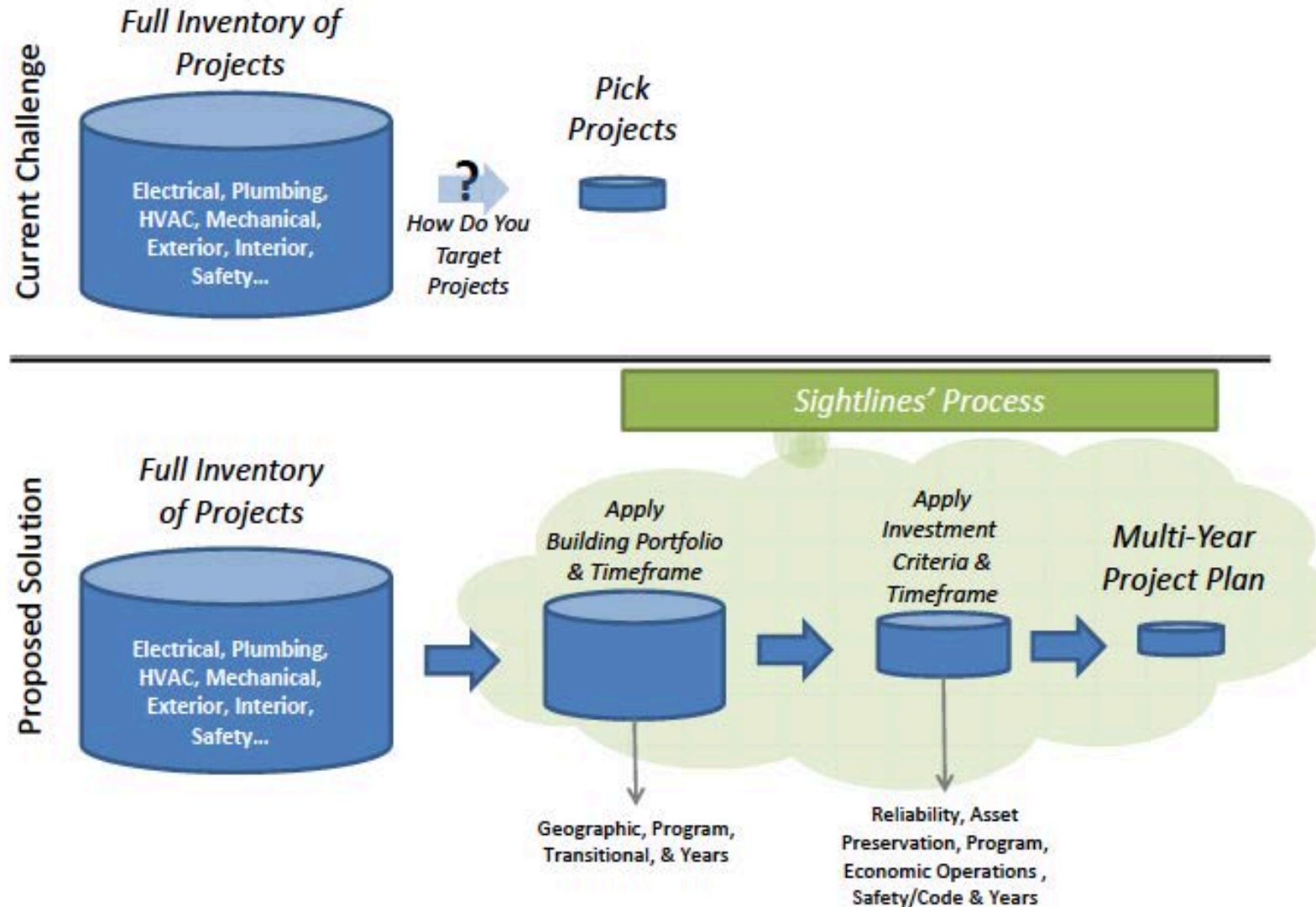


Defining a Multi-Year Investment Plan

Beyond Picking Projects

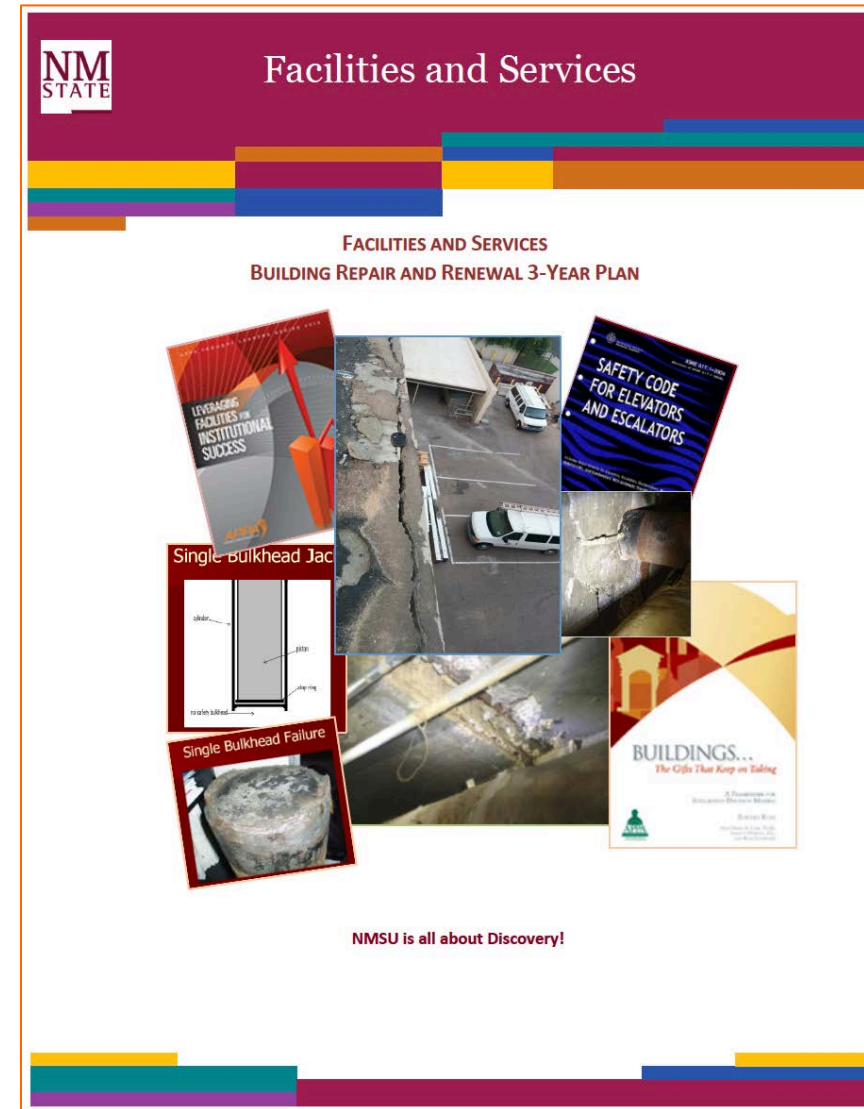


Sightlines



What is
the goal?
Sightlines

New Mexico State University Building Repair and Renewal Plan (BRR)



Categories

2015-2016 Category and Items	Estimate	Totals	Planning and Assessment Analysis
Building Exterior		\$ 500,000	FS Internal Assessment
EC1 stucco delamination safety issue	500,000		Building exterior has been maintained " as needed" rather than "as planned", the AD for Building Maintenance is managing.
Roads		\$ 150,000	FS Internal Assessment
Crackseal:			Interior roads belong to NMSU, Sr. AD Looney
Locust between Stewart and Wells	75,000		conducted a survey and developed a planned
College between Espina and Union	75,000		approach.
Wayfinding and Grounds		\$ 600,000	NMSU Master Plan
Community Park	200,000		These are in support of the campus master
McFie Circle	200,000		plan and Presidential campus beautification
Heritage Park	200,000		efforts.
Tunnel		\$ 400,000	BHI Engineering Tunnel Assessment
REMAINING ITEMS	TOTAL LIST		Bohannon Huston conducted a tunnel
A Highest Priority	1,761,400		assessment in 2014 and categorized repairs.
B High Priority	182,500		The NMSU utility tunnel supports ICT fiber
C Medium Priority	48,900		cables, electric power, and water piping.
D Low Priority	7,300		
E Lowest Priority	22,100		
Construction Subtotal	2,022,200		
Construction contingency 20%	404,400		
Structural Engineering 7%	141,600		
NM Gross Receipts Tax 7.56%	163,600		
Total Repair Estimate	2,731,800		
less funded to date	957,000		
balance to finish (from prior yr)	1,774,800		



Categories

2015-2016 Category and Items	Estimate	Totals	Planning and Assessment Analysis
Chilled water distribution		\$ 150,000	GLHN Utility Development Plan
Dove Hall	35,000		This initiative removes the chilled water pumps and installs bypasses, which is an energy and maintenance savings measure.
Engineering Complex III	35,000		
Guthrie Hall	17,500		
NMDA	35,000		
Operations		\$ 1,000,000	Historical recurring amount
Deferred maintenance replacement	1,000,000		See tab with 2014 itemized list.
Environmental Health and Safety		\$ 250,000	Historical recurring amount
Abatement and environmental compliance	200,000		
Urgent safety items	50,000		
Fire Alarm		\$ 493,298	AON Fire Protection Master Plan
Music Building	123,435		The AON Fire Protection Master Plan Phase I was completed in 2014 and these are the recommendations from that plan.
Chem. 1955, 1965, 1995	117,930		
Gerald Thomas Hall	61,305		
Milton Hall	65,629		
Additional buildings to study	125,000		
Elevator		\$ 375,000	ASME 17.3-2002 Safety Code Thyssen Krupp Assessment
SINGLE BOTTOM JACK / MODERNIZE			New Mexico is the singular state that does not require elevator certification; nonetheless, NMSU is developing a plan for voluntary ASME 17 compliance. In addition, we must remove all single bottom jacks.
Branson west	125,000		
Breland passenger	125,000		
Chemistry 55	125,000		



2015-2016 Category and Items	Estimate	Totals	Planning and Assessment Analysis
Roofs		\$ 1,436,785	BTA Roofing Assessment / Plan
REPLACE			The BTA Roofing Assessment was completed in 2012, previously there was no comprehensive plan to address roof issues.
Alumni & Visitors Center	20,011		
Clara Belle Williams Hall	204,537		
Engineering Complex I	181,956		
Nason House	13,813		
Nematology Lab	9,877		
Speech Building	123,929		
RECOAT			
Academic Research A	35,000		
Academic Research B	35,000		
Academic Research C	35,000		
Branson Library	135,625		
Business Complex Building	47,261		
Education Services Center	148,285		
Engineering Complex I	22,701		
Health and Social Services	23,198		
HSS Annex	3,539		
Jett Annex	22,880		
Jett Hall	128,440		
Science Hall	179,102		
Skeen Hall	51,734		
Williams Hall Annex	1,953		
Young Hall	12,947		
ADA		\$ 149,041	2004 ADA Plan
INITIAL COST PLAN UPDATE (PARTIAL)	105,000		The ADA Study was completed in 2004 and has been used as a guide.
Ed Services	6,052		
Goddard	4,823		
Young	758		
Biology Annex	32,408		

Categories



2015-2016 Category and Items	Estimate	Totals	Planning and Assessment Analysis
Fume Hoods		\$ 365,296	Huitt Zollars Engineering Fume Hood Assessment
Gerald Thomas	365,296		Bringing hoods up to code is important to support research.
Electric		\$ 450,000	Bohannon Huston Electric Master Plan GLHN Utility Development Plan
Replace 4160kV with 25kV circuits			It is extremely important to do planned replacement as high voltage cables age.
Turbine to Music	225,000		
Turbine to Walden	225,000		
Classrooms		\$ 250,000	Historical recurring amount
Knox Hall 142	125,000		All design work has been done for Knox 142, but this project is on hold because it will require renovation of the building's fire alarm
Guthrie 103	125,000		
Data Center		\$ 125,000.00	Huitt Zollars Planning Report
Repair existing Intergron system			This report was prepared to assist in planning data center physical facilities.
Provide exhaust, smoke dampers	100,000		
Seal all openings and test HVAC	15,000		
Remove hazardous materials subfloor	10,000		
Drainage		\$ 62,734.00	Parkhill Smith Cooper drainage survey
CUP tunnel	3,970		This study was completed to assist with reduction in flood damage and in compliance with our flood control plan.
repave bike path Monagle / Corbett	58,764		
Water System Improvements		\$ 125,000.00	Bohannon Huston Water Master Plan 2014 BHI plan update
Redrill well #11 planning	125,000		Need to begin planning for redrilling Well 11, wells do not last forever.
Total of all projects		\$ 6,882,154	NMSU is all about Discovery!

Categories



BRR Goals are to Multiply \$\$s

- Identify and replace assets with high maintenance requirements
 - increases dollars
 - example: an elevator with many calls
- Make repairs / replacements that extend the life of assets
 - defers repairs
 - example: new roof/exterior repairs



BRR Prioritization Process

- Priority ranking by sector applied by Facilities
 - the safety of faculty, staff, and students
 - critical components of the NMSU infrastructure
 - extend life
 - development of new initiatives and/or the continuation of existing programs



ADA Prioritization Process

- Compliance is required up to the point the 20% cost cap is reached. Compliance is prioritized thereafter -
 - accessible entrance
 - accessible route to the primary function area
 - restroom access
 - accessible telephone
 - accessible drinking fountain
 - access to other elements such as parking



When you come to a fork in the road,
Take it.

-Yogi Berra





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Targets

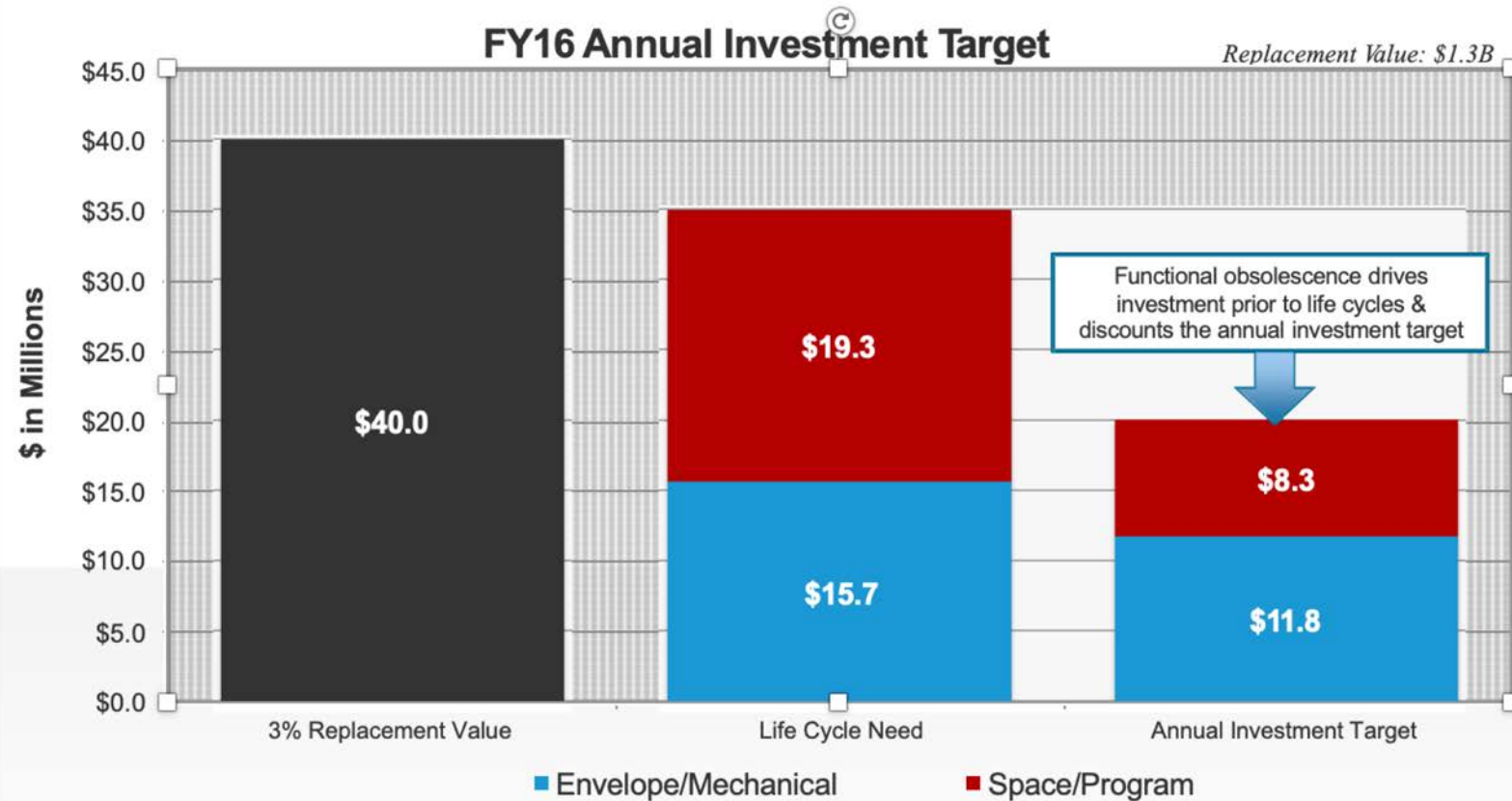


A seat at the table

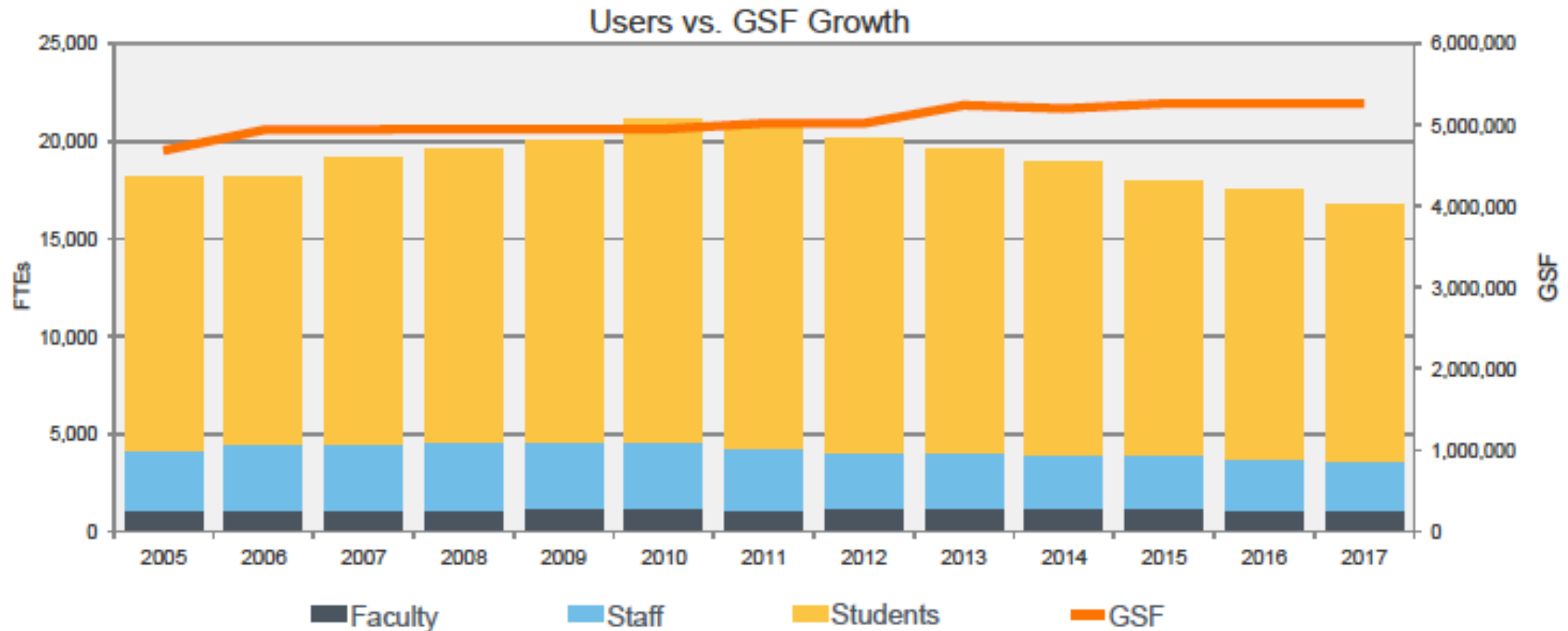


Defining an Annual Investment Target

Annual Funding Target: \$20.1M



Campus Users and GSF Growth

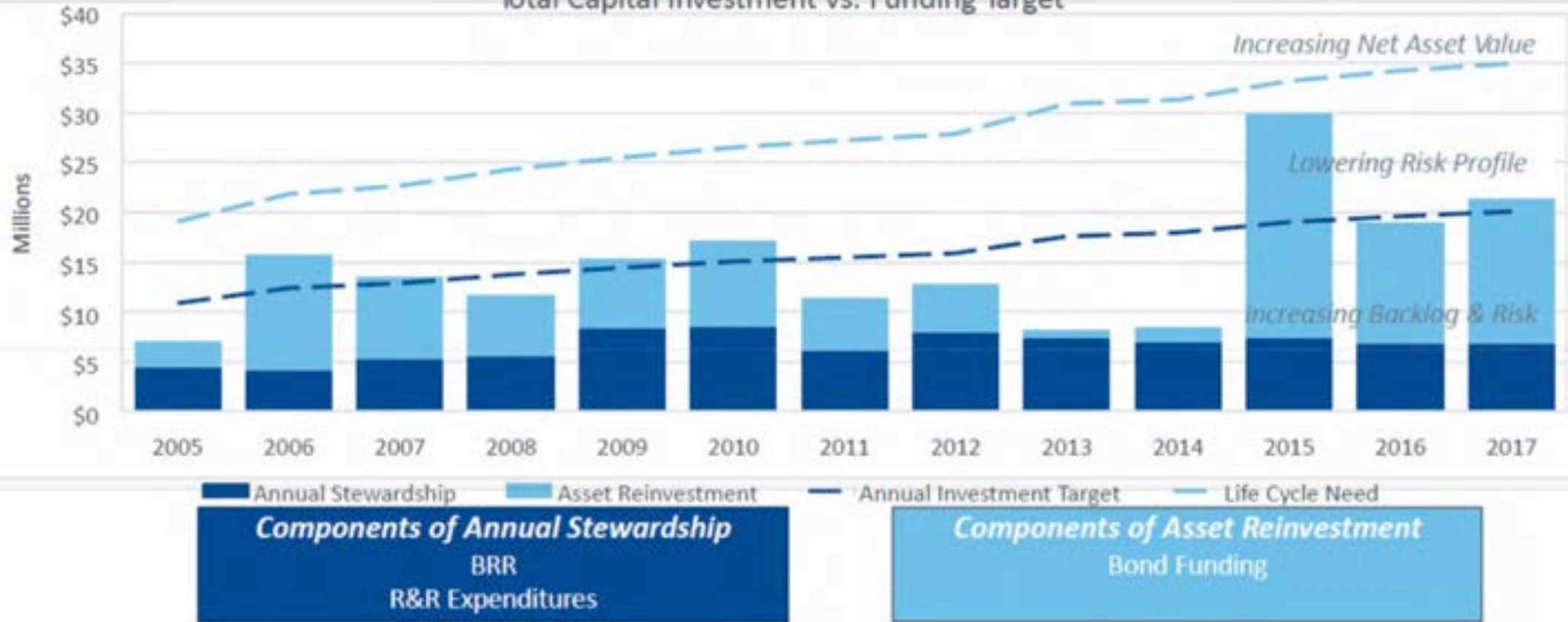


NMSU Managing Backlog Since FY15



$$\$1,300,000,000 / \$20,100,000 = 1.5\%$$

Total Capital Investment vs. Funding Target



Stewardship

Corbett/Pan Am

- 428,946 GSF @ \$250/SF replacement
- \$107.2 million

Investment Target

\$1,608,548

Athletics

- 92,535 GSF @ \$250/SF replacement
- \$23.1 million

Investment Target

\$347,006

Housing

- 1,039,730 GSF @ \$250/SF replacement
- \$259.9 million

Investment Target

\$3,898,988



Think differently and take action

- https://www.youtube.com/watch?v=VrSUe_m19FY



What if

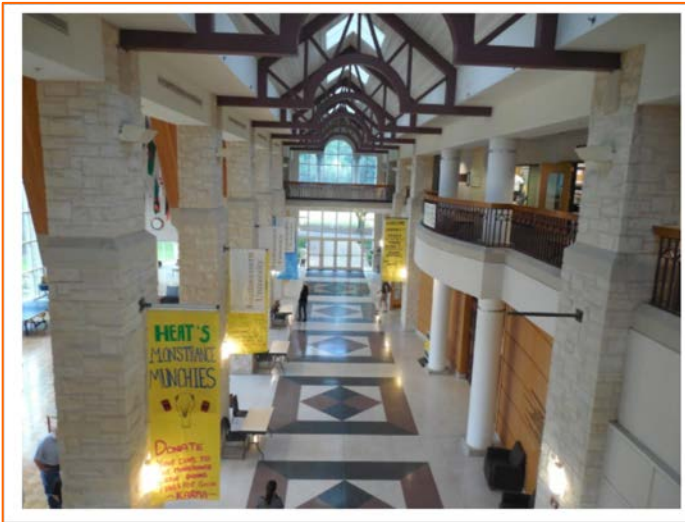
- Each new appropriation came with 1.5% annual funding?



Questions?



Thank you



GHaubold Consulting

**Facilities Organizational Assessments
Benchmarking and Analysis
Leadership and Supervisory Training
Strategic Planning**

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Assistant Professor

and

Pauline Karanja, M.S.

2017

References and suggested reading



Capital Renewal and Deferred Maintenance

Harvey Kaiser

Sponsored By



Addressing Increasingly Complex Deferred Maintenance Decisions

Six Lessons to Improve Planning, Prioritization,
and Executive Communication

Facilities Forum

