

2001 AIA Wisconsin Fall Workshop

Emerging Technologies & New Services



Alan Edgar
Graphic Systems,
Inc.

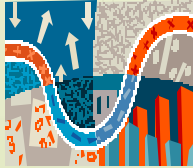
www.graphsys.com
aedgar@graphsys.com



Agenda



The Owner's View



The Architect's Role



Opportunities, Strategies & Tactics



Resources for Further Research



Learning Objectives

- Recognize emerging Owner requirements
 - Business environment and mgmt requirements
 - Total Asset Management
 - Lifecycle approach
- Information & technology response
- Understand emerging service offerings
 - Data Commissioning
 - Strategic & tactical planning
 - Real property provisioning
 - Outsource total facility management



“The CEO’s role in raising a company’s corporate IQ is to establish an atmosphere that promotes knowledge sharing and collaboration, to prioritize the areas in which knowledge sharing is most valuable, to provide the digital tools that make knowledge sharing possible, and to reward people for contributing to a full flow of information.

- Bill Gates



FM Business Case

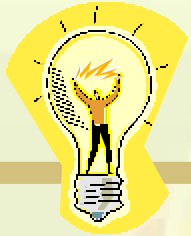
- Facility operations typically 8-12% of corporate budget
- ca. 30% of corporate assets are in real estate and operations
- ca. 60-80% of Facilities budget is related to work and asset management.
- Design/Construction only ca. 15% of lifecycle costs. 7-8 yrs. for ops costs to exceed initial construction cost.
- ca. 5% of renovations involve Architects.



Background and Theory

Evolution of the Facility Manager - from basement to boardroom

- Need to deal with IT
- IT is typically a major (14.2%) capital expense of service corporations, growing at 3%/year
- Management's Need for Information
- Need to integrate with other legacy systems; no point solutions
- Need for single infrastructure management



Potential IRM Sphere Of Influence For Corporate FM/RE

- Real estate planning and fulfillment
- Property management
- Space management
- Telecom infrastructures
- IT infrastructures - Inter/Intranet, desktop
- Facilities procurement and vendor relationships - eCommerce
- Project planning, development and management
- Asset management - Capital, personal, inventory
- Performance metrics - financial/operational



Emerging FM Environment

- **Globalization**
- **Accountability (show/chargebacks)**
- **Outsourcing/in-sourcing/out-tasking**
- **Greater management and contract expertise in-house**
- **Supply chain integration - Infrastructure Resource Management (IRM) FMs version of ERP, addresses the relationships between all people, locations and assets throughout an enterprise. IRM principles enable the management of strategic and tactical processes related to all corporate assets from a common, integrated environment.) .**
- **ERP/FM boundaries are very fuzzy**



Business/Technology Drivers

- **Accounting Requirements (FASB, GASB 34)**
- **Quality assurance/mgmt (ISO)**
- **Regulatory requirements (JCAHO, business resumption, ADA, A21 ICR)**
- **Mergers and acquisitions**
- **Alternative design strategies (telecommuting, virtual office, non-territorial office, free address, etc.)**
- **Customer controlled facility destiny (new FM organizational models)**



TAM Philosophy

Total Asset Management (TAM) is a holistic, inclusive and coordinated approach to facility asset management. It promotes both a philosophy and a set of best practices intended to overcome limiting conditions by coordinating asset-related business processes across multiple business units, integrating asset-related information systems, and adopting best-in-class practices for maintaining and using the information resource.



Facility Asset Elements

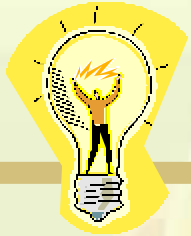
A facility-related physical resource that is significantly important to the organization and requires management.

Types of Assets

- Property
- Buildings
- Infrastructure
- Building Equipment
- Office Equip/Furn
- Vehicles
- Grounds/Plant Matls
- People

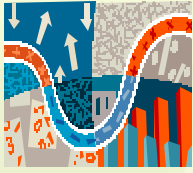
Why Important?

- Legal
- Financial
- Compliance
- Policy
- Mission Critical
- Owned/Not Owned
- Maintained
- Historical Signif.



Lifecycle Asset Management

- Property/RE Portfolio management
- Pre-development planning
- Design & CDs
- Space management
- Capital Planning & Management Solutions (CPMS)
- Maintenance & Repair
 - Routine, Demand, Preventive & Predictive
- Procurement/Materials Handling/Disposal
- Project planning and management
- Budgeting
- Personnel/Work Mgmt.
- Executive Information, Reporting



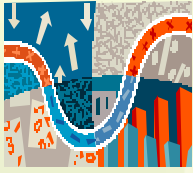
The Architect's Role - Participant or Host?

Participant Role

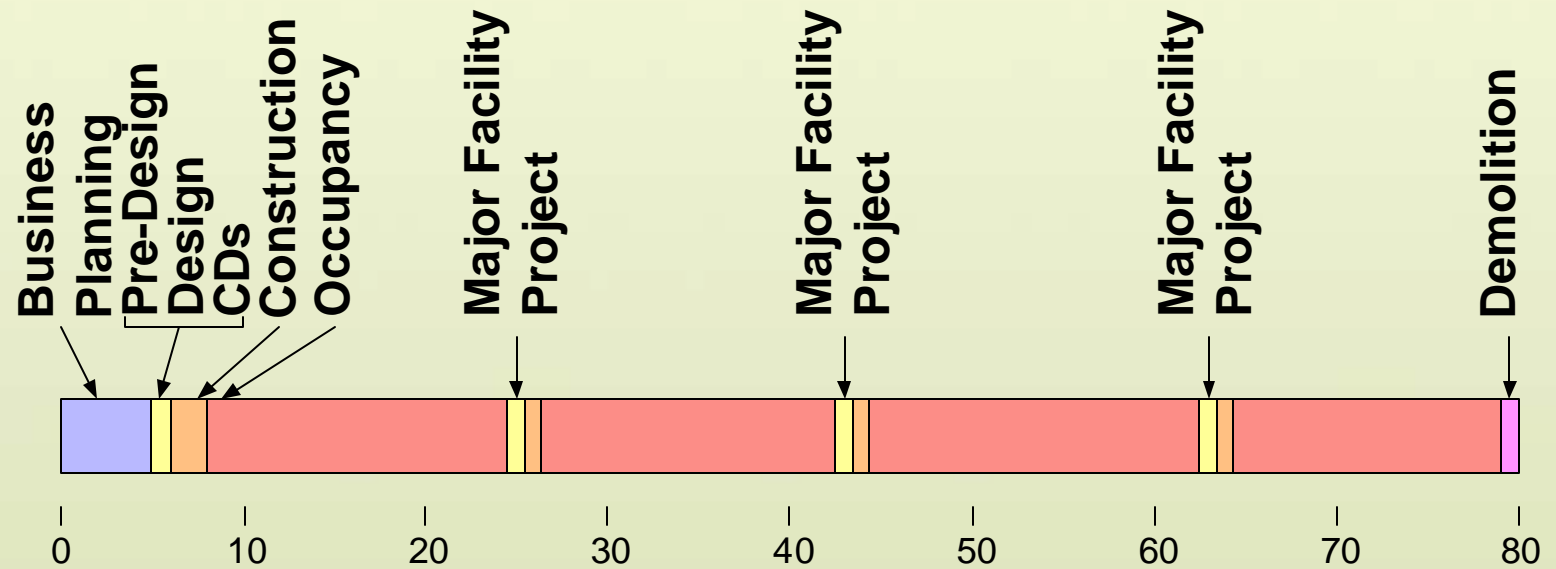
- Architectural services are commissioned on a project by project basis.
- Others set standards and Architect participates.
- Architects participation is ended when project is complete.

Host Role

- Services are provided by longer-term contract and service level agreement.
- Architect and Owner set standards that Architect maintains and all parties use.
- Architect hosts facility information resource.



The Architect's Role - Facility Lifecycle



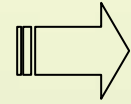
Opportunities

- Data Commissioning
- Capital Planning and Management Solutions (CPMS)
- Business Unit Forecasting
- Real Property Provisioning
- Outsource Total Asset Management



Data Commissioning

A/E/C Information



Owner's Needs

- Const Drawings
 - Schedules
 - Specifications
 - Operating manuals
 - Shops & Submittals
 - Supl'mtl Instructions
 - Change Orders
 - FF&E Plans/Specs
 - Personnel Assign't
- Asset capitalization
 - Capital budgets
 - Risk mgmt/insurance
 - Property inventory
 - Space management
 - Facility operations
 - Custodial care
 - Equipment maint.
 - Security/fire/life safety operations



Data Standards and Definitions

- Accounting (FASB, GASB Statement 34)
- Building, Land (MasterFormat/Uniformat, IFMA/BOMA space definitions)
- Graphics (AIA layering, CSI NCS/UDS)
- Data (Oracle native, ODBC, aecXML)
- Inventory (GSA/Federal Supply Codes)
- Estimating (Means, Whitestone)
- Bldg. Systems (Honeywell, Siemens, Johnson Controls, ANSI/ASHRAE Standard 135-1995 (BACnet))



CPMS

Strategic and Tactical Planning

Capital Planning and Management Solutions

- Component Renewal
 - Major Building Systems
 - Component Life Expectancy
 - Extent and cost of replacement at end of useful life.
 - Useful for Strategic Capital Planning
- Condition Assessment
 - Define and classify deficiencies
 - Identify and inventory deficiencies
 - Quantify remediation quantities and costs
 - Useful for annual capital budgeting, planning facility projects, asset valuation - required by GASB 34.



Lifecycle Info - Expected life and condition of major systems

Building Components

Building Subsystems			
UniFormat Category	Lifetime	Orig. Cost %	Renewed %
Site	20	0.04%	25.00%
Foundation	75	1.87%	5.00%
Superstructure	75	11.17%	5.00%
Exterior Walls	40	6.51%	45.00%
Windows	30	4.78%	100.00%
Roofing	20	0.77%	100.00%
Partitions	50	1.25%	20.00%
Wall Surfaces	10	0.84%	50.00%
Doors	30	0.51%	80.00%
Flooring	10	1.77%	50.00%
Ceilings	20	0.76%	40.00%
Fixed Equipment	25	36.32%	85.00%
Elevators	25	2.47%	25.00%
Plumbing	40	16.93%	50.00%
Fire Protection	50	0.28%	50.00%
HVAC	20	7.47%	75.00%
Electrical Service	30	0.65%	100.00%

Name	PercentUsed
Emergency/Fire Alarms	20
Site	10
Wall Surfaces	25
Elevators	15
Foundation	5
Superstructure	5
Roofing	15
Exterior Walls	10
Doors	20
Windows	10
Partitions	5
Flooring	15
Ceilings	20
Fixed Equipment	15
Plumbing	15
Fire Protection	10
HVAC	15
Electrical Service	20
Electrical Distribution	20

Cost Model: Criminal Justice Facility in Building: Crimi...
Duplicate Used Unused All Equalize

Systems Condition: in Building:...

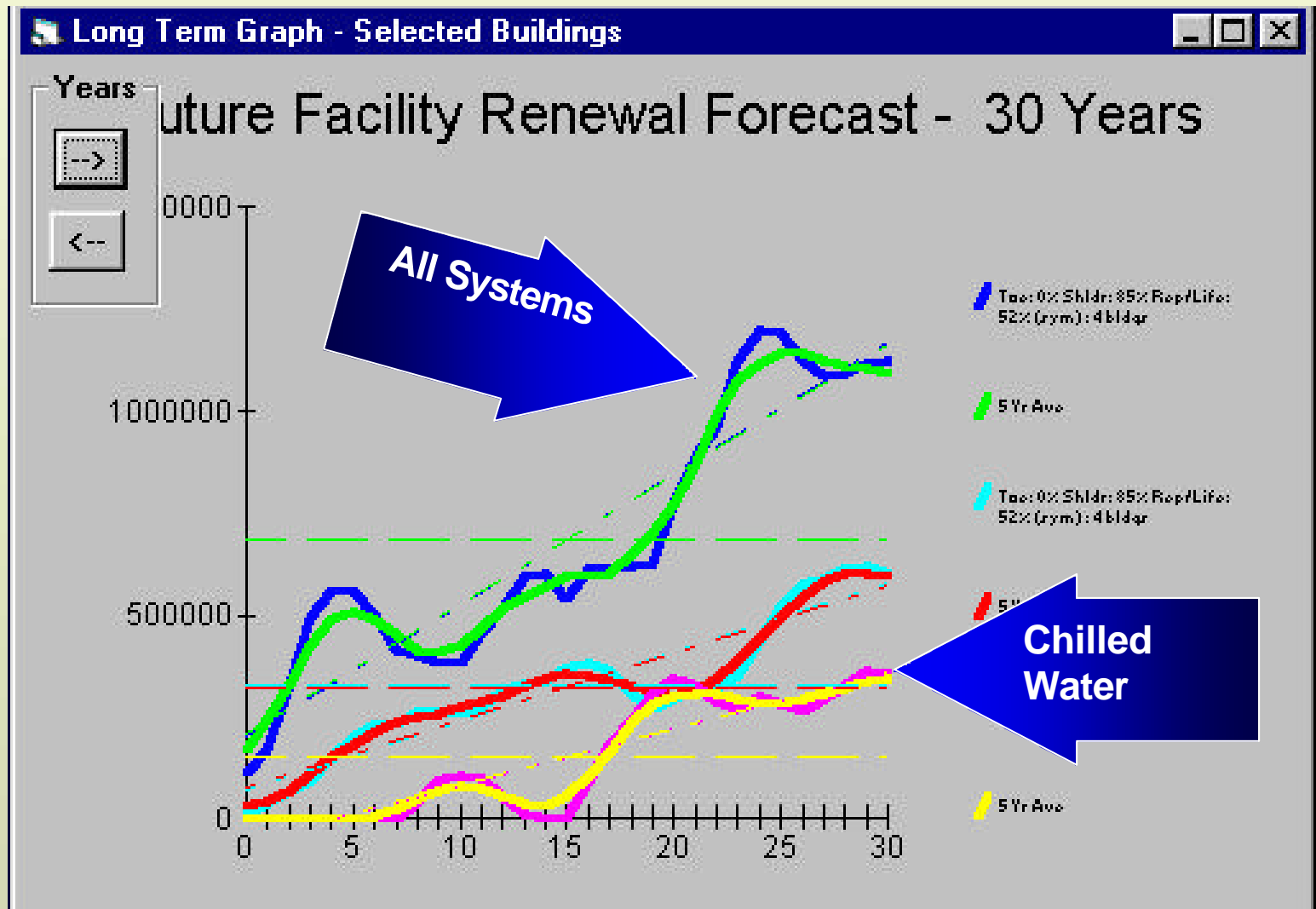
Name: Criminal Justice Facility \$'s / GSF: 245

Useful life, Component Value, Salvage Value

Percent used



Capital Renewal Projections





Current Condition Assessment

Building: Goessman Lab -> Deficiency: Insufficient quantities of outdoor air

Options Edit

16 of 55

Drawings... Linked Documents...

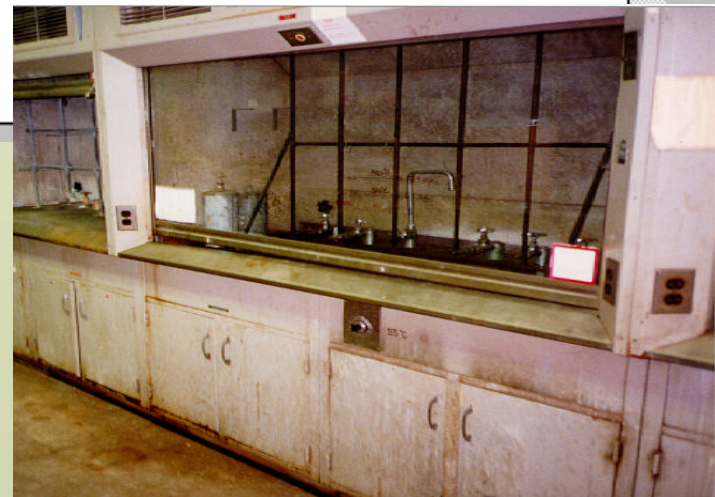
ID 118621346

Category Air Quality 910 Prime System Ventilation Systems

Building Goessman Lab Corrected

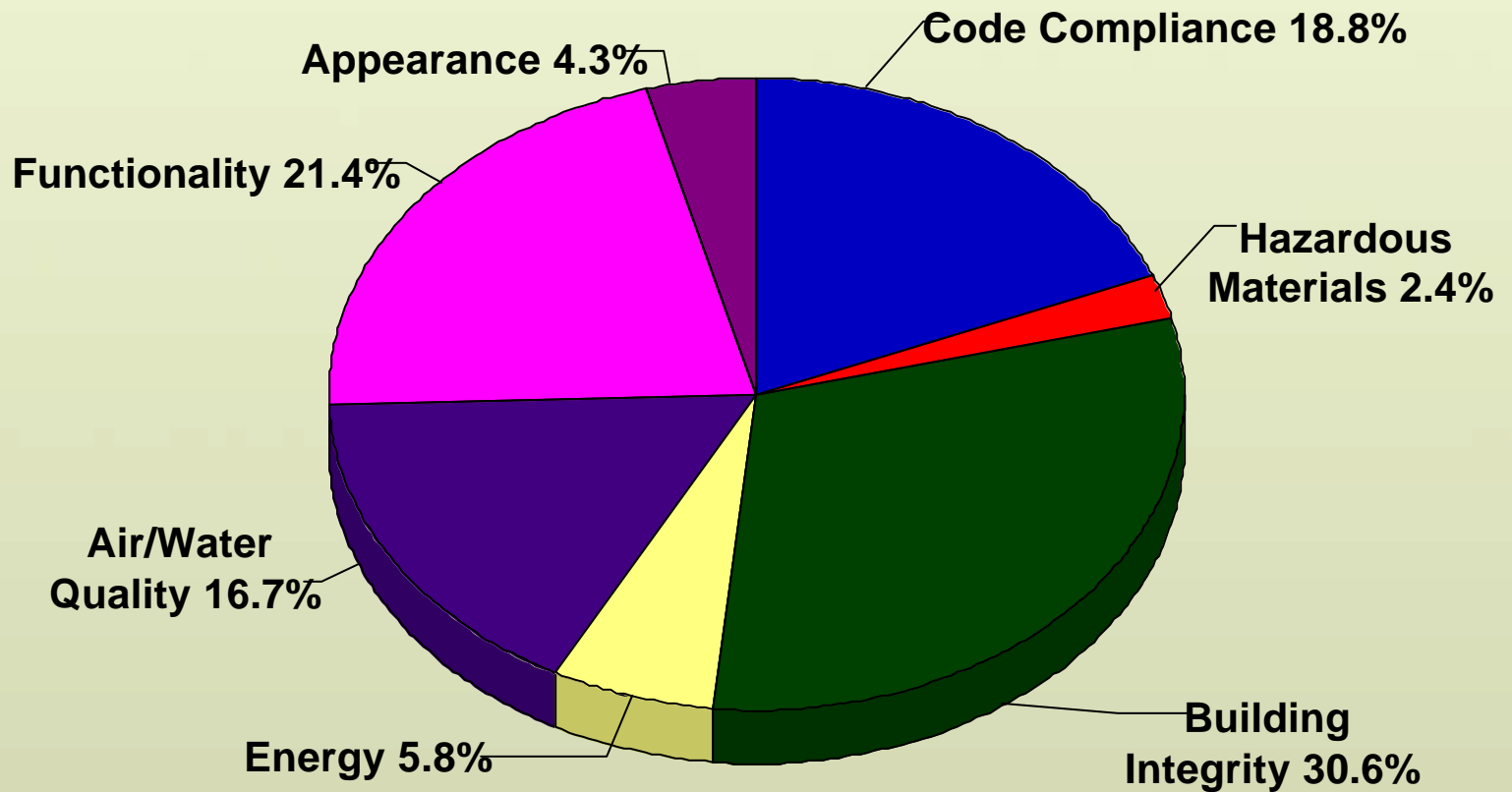
Name Insufficient quantities of outdoor air Priority 1

Description
Lab exhaust hoods are extensive throughout this building. In many cases, these were added to meet the requirements of individual suites. There is insufficient make-up air to accomodate the draw of the hoods. The building is under a severe negative air pressure.





Current Condition Assessment Deficiencies by Category





Current Condition Assessment Benchmark & Standard

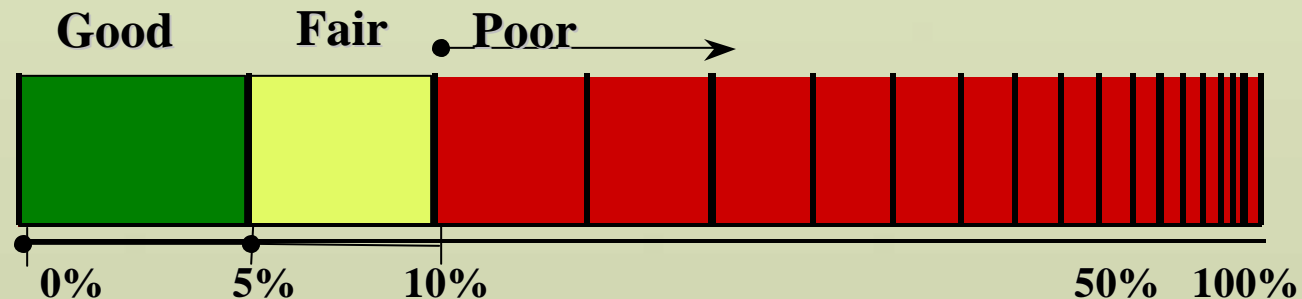
FINANCIAL BENCHMARKING:

Facility Condition Index (FCI) is an industry accepted standard method for comparison of relative building condition.

$$\text{FCI} = \frac{\text{total cost of existing deficiencies}}{\text{current replacement value}}$$

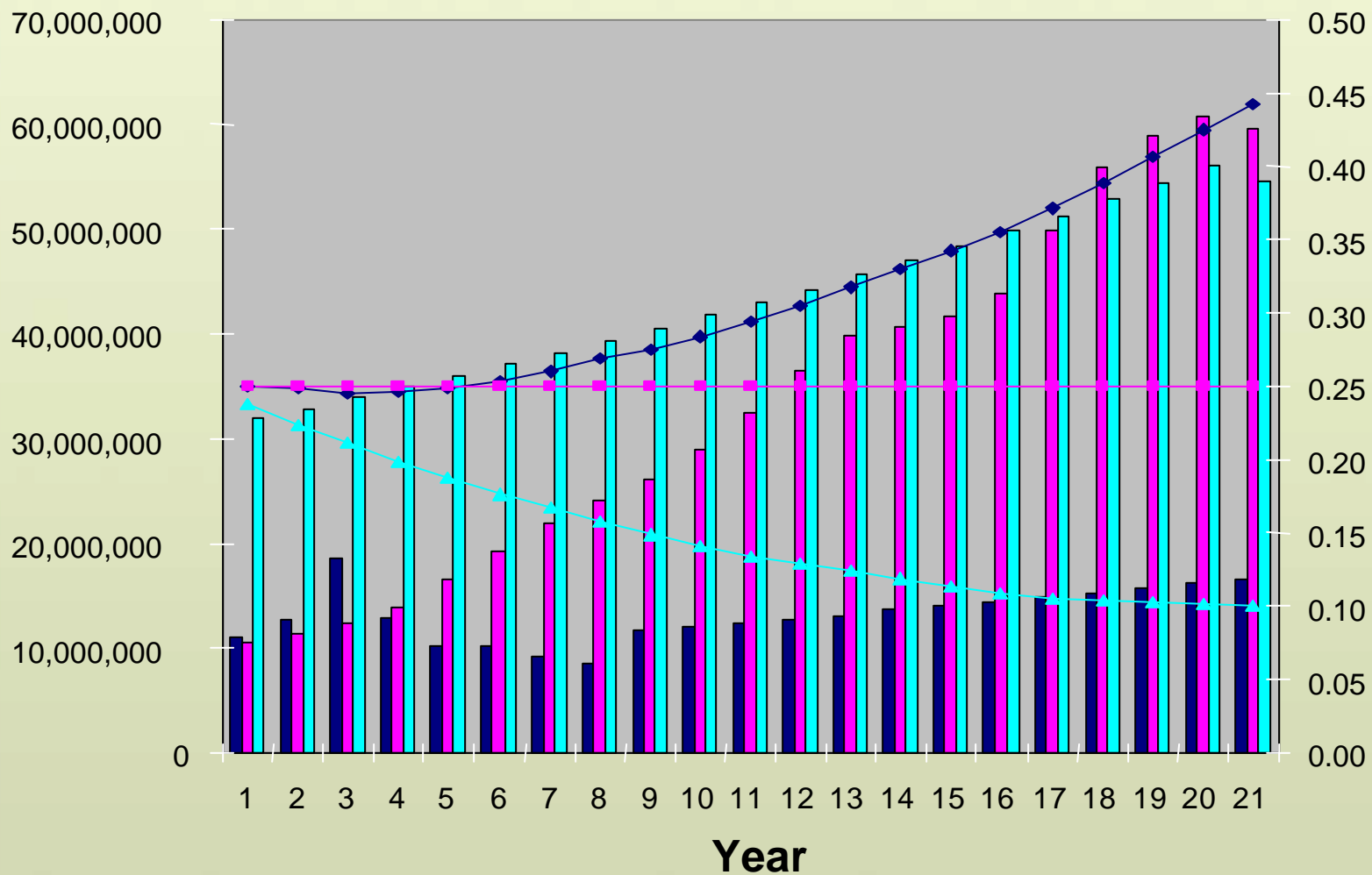
SUGGESTED NACUBO RATINGS:

Under .05 (good), .05-.10 (fair), Over .10 (poor)



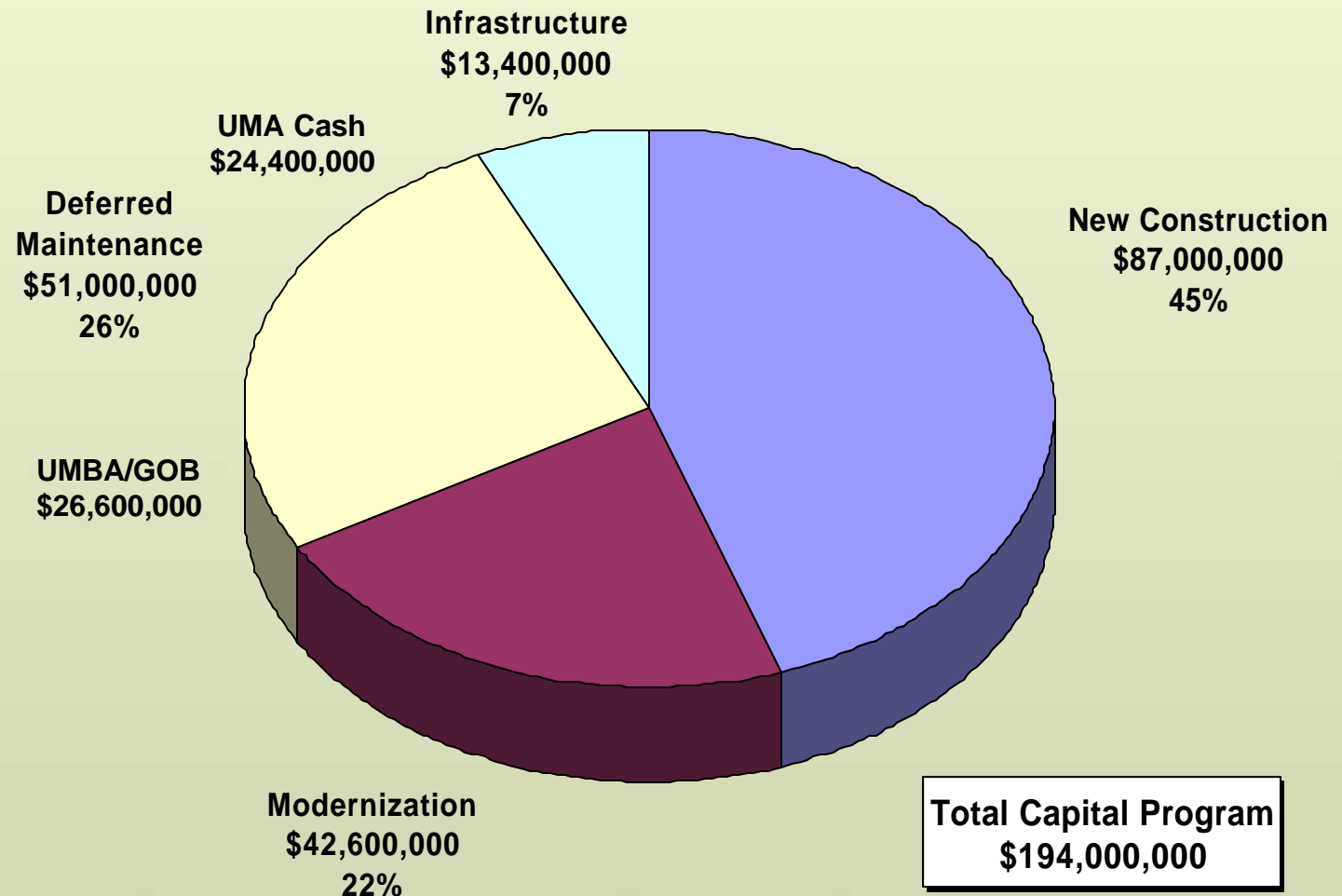


Financial Modeling





Capital Program FY 2002- 2004





TDMHMR Results

- San Angelo kitchen renovation
 - Q: Use old building or build new?
 - A: Renovation would be 85-90% of new in new location
- Big Spring Children's Center
 - Q: Is existing building suitable?
 - A: \$1M renovations needed. Located other suitable building at fraction of cost.
- e-Texas leadership
 - def: "acquisition, management & disposition of real property, personal property, intellectual property, inventories..."
 - goals: "...accountability, uniformity, transparency, velocity, efficiency and customer satisfaction".



Real Property Provisioning

- Matching business requirements to facility assets.
- Improve CRE cash flows and cash allocation.
- High ROI by:
 - Strategic planning and effective ops mgmt.
 - Managing critical dates & transactions
 - Reducing vacancy, lead time, reporting costs, overlapping legacy systems
 - Optimize space use and layout



Real Property Provisioning

<i>Customer Designation</i>	A	B	C
Portfolio Square Feet (SF) Evaluated (millions)	3.10	9.0	6.1
Annual Operating Cost/SF	\$43.18	\$28.22	\$24.46
Annual Operating Budget (\$ Millions)	\$133.86	\$253.98	\$149.21
<i>Financial Performance with FIS</i>			
Average Annual Savings (\$ Millions)*	\$15.40	\$24.53	\$8.53
Total Cost to Implement FIS (\$ Millions)	\$2.32	\$2.72	\$2.32
Months to Reach ROI **	1.8	1.3	3.3

* Annual savings are averaged over 4 years

** ROI considers front-loaded system cost and implementation time prior to turn-on.



Pre-Predesign: VisionPlanner

VP - Planner

VP-Planner enables you to plan new construction projects.

- Parameters
- Regulations
- Programming Assumptions
- Design Criteria
- Milestone Schedule
- Cost Summary
- Teams

VP - Publisher Publish project-related information into an online database.

VP - Digital Address Comprehensive view of published projects.



Visioneering Architecture

- A/E/I Firm Model
- ASP Host
- Facilities Outsource Provider





A Parting Thought

“Total Asset Management (TAM) is a holistic, inclusive and coordinated approach to facility asset management.”

To be responsive to the TAM philosophy, Architecture must transcend the traditional approach of receiving commissions, designing buildings and observing their construction. Architecture must endeavor to participate fully in the facility lifecycle.



Resources

- <http://www.aecxml.org/wg.htm> - aecXML Working Group (standards)
- <http://www.ame.net> – Applied Management Engineering (CPMS services & apps)
- <http://www.bricsnet.com> - Brics|Net (Facilities portal)
- <http://www.csinet.org/technic/uds/udsfaq.htm#sub11> - CSINet Technical Publications - NCS/UDS (standards)
- <http://www.ab-controls.com/bacnet.htm> - BACnet (standards)
- <http://www.constructware.com> - Constructw@re (Construction-related project collaboration)
- <http://www.chssoftware.com> - CHS Software, Inc. (CPMS services & apps)
- <http://www.datastream.net> – Datastream Systems, Inc (CMMS services & apps)
- <http://www.e-texas.org/report> - Report of the e-Texas Commission (standards)
- <http://www.fasb.org> - Financial Accounting Standards Board (standards)
- <http://www.ecrc.scranton.edu/fsc-codes/fsc.html> - Federal Supply Codes (standards)
- <http://www.fisinc.com> – Facility Information Systems, Inc (infrastructure mgmt apps)
- <http://www.gasb.org/repmodel/index.html> - GASB 34 (standards)
- <http://www.isescorp.com> – ISES Corporation (CPMS services & apps)



Resources (cont.)

- <http://www.visionplanner.com> – VisionPlanner, Inc (Real property project info mgmt)
- <http://www.peregrine.com> – Peregrine Systems, Inc (Infrastructure mgmt apps)
- <http://www.rsmeans.com> - RS Means CMD Group (cost estimating info)
- <http://www.psd.com> – PSDI (CMMS services & apps)
- <http://www.vfa.com> – Vanderweill Facility Advisors (CPMS services & apps)
- <http://www.whitestoneresearch.com> - Whitestone Research (cost estimating info)
- Facility Design and Management Handbook, Teicholz, Eric (ed.), McGraw-Hill., 2001, ISBN: 0-07-135394-1.
- Accounting for Fixed Assets Raymond H. Peterson, Wiley & Sons, 1994.
- “Why ASPs will dominate AEC - Client-Server Technology will soon be obsolete”, Scott Unger, Constructware, Alpharetta, Ga.,
<http://www.constructech.com/printresources/v4n10/v4n10034.htm>.