



**Energy Services Coalition**  
North Carolina Chapter

# **From Energy Waste to Capital Dollars**

***Transforming Savings Into Capital***

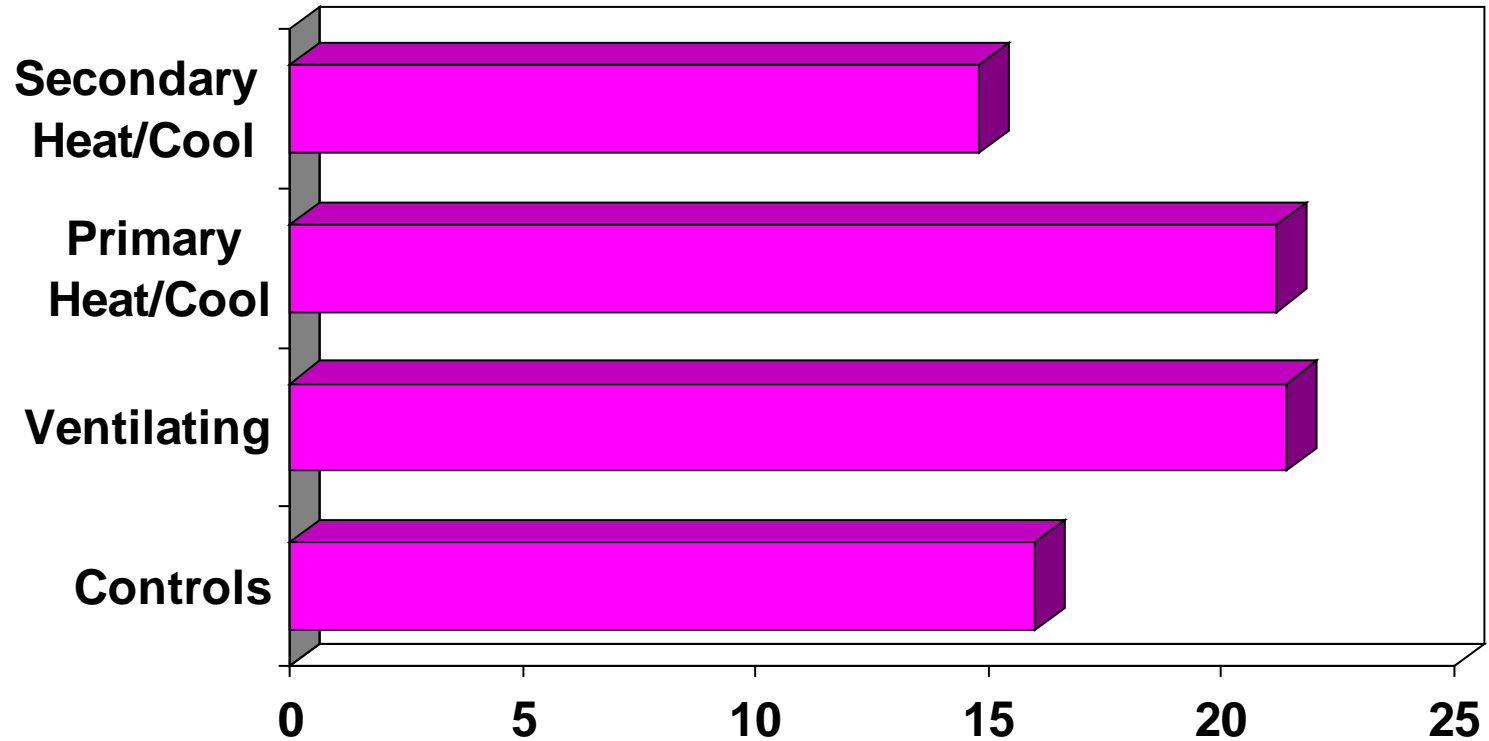
Tim Gasper, PE – ESC Chapter Secretary  
Steve Martin, AIA – AVC Facilities Management - UNCP

4/26/11

# Equipment Service Life

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ASHRAE National Survey



# Options for Systems Replacement

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- **Do nothing/fix on fail**

- More expensive
- Reactive
- Emergency Funds

- **Capital Budget, R&R**

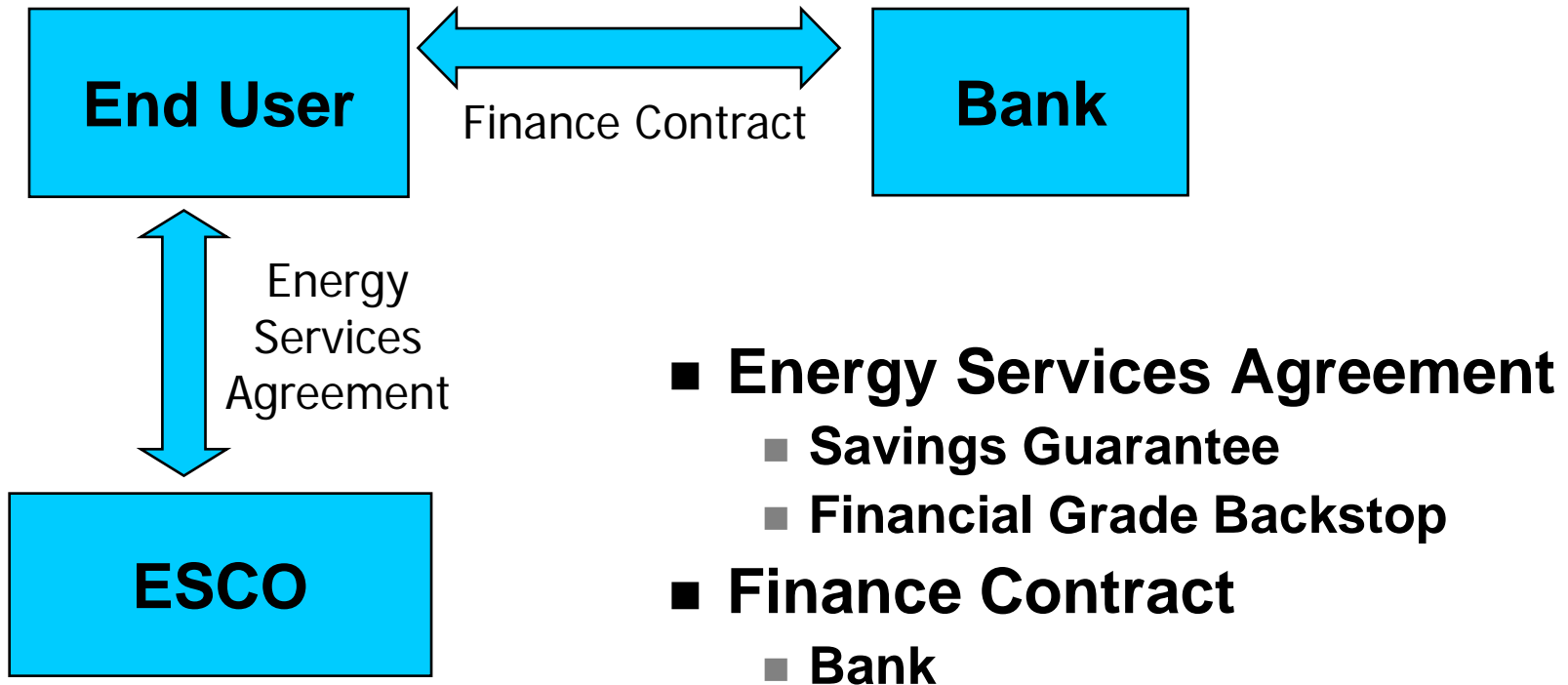
- Typically short term strategy
- Change out “like for like”

- **Performance Contracting**

- Leverage operating budget into capital purchases
- Comprehensive retrofits with performance guarantees

# Performance Contract = ESA + Finance

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# Sources of Funds

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*Always About the Money*

## ■ **Traditional Sources of Funds**

- Annual Appropriations, Bonds, Lottery, R&R
  - Limited capital-competing projects
  - Drying up - Never Enough
  - Informal & Formal Bidding

## ■ **Alternative Sources of Funds**

- Grants, Rebates, Tax Incentives
- Performance Contracting

# *Transforming Waste Into Capital*

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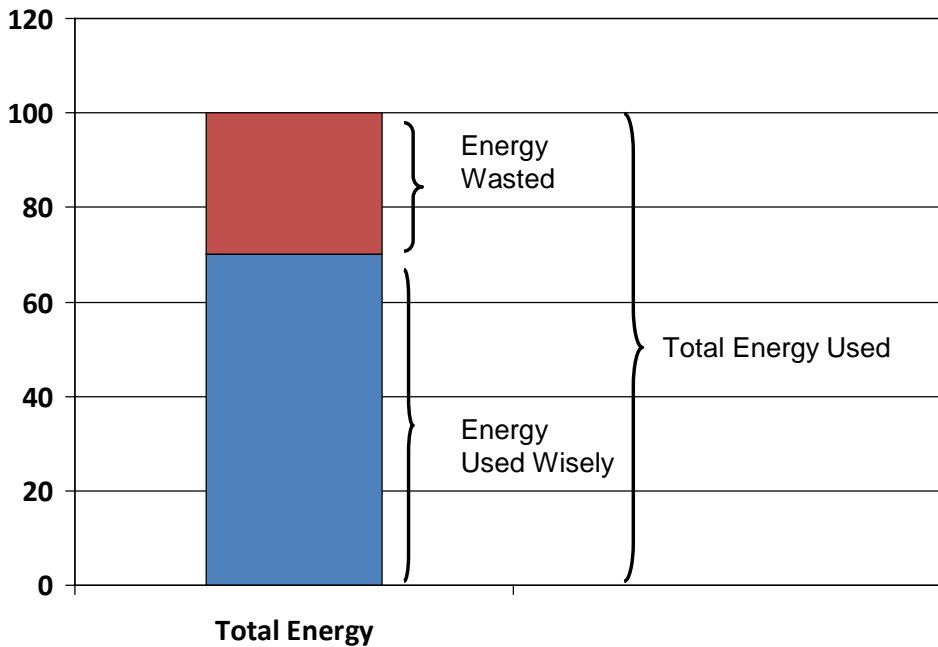
1. Use Wasted Energy to Leverage Capital
  1. *Guaranteed* Source of Funds
2. Bundle Fast & Slow Payback Measures
3. Financing
  1. Term, Rate, Escalation
  2. Use Rebates for Ongoing Services
4. PC and Traditional Procurement Methods
  1. Separate scope – Potentially Better Project
    1. Informal/Formal Bidding, Cooperative Purchasing
    2. Traditional Sources of Capital Required However

# #1 Use Wasted Energy as *Source of Funds*

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## ■ Total Energy Consumption

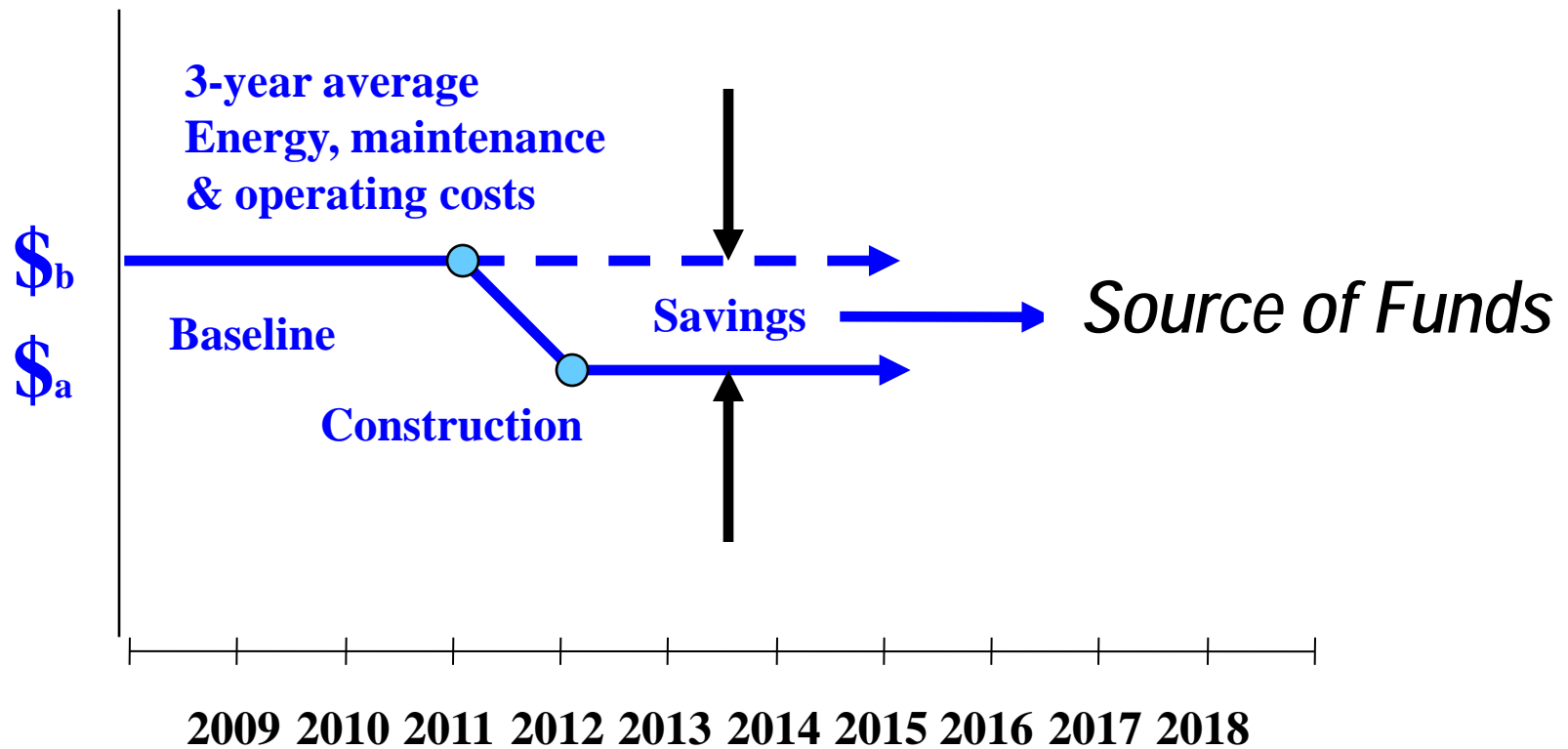
- Energy used wisely
- Energy wasted



- If choose not to invest in efficiency, you choose to *continue to waste!*

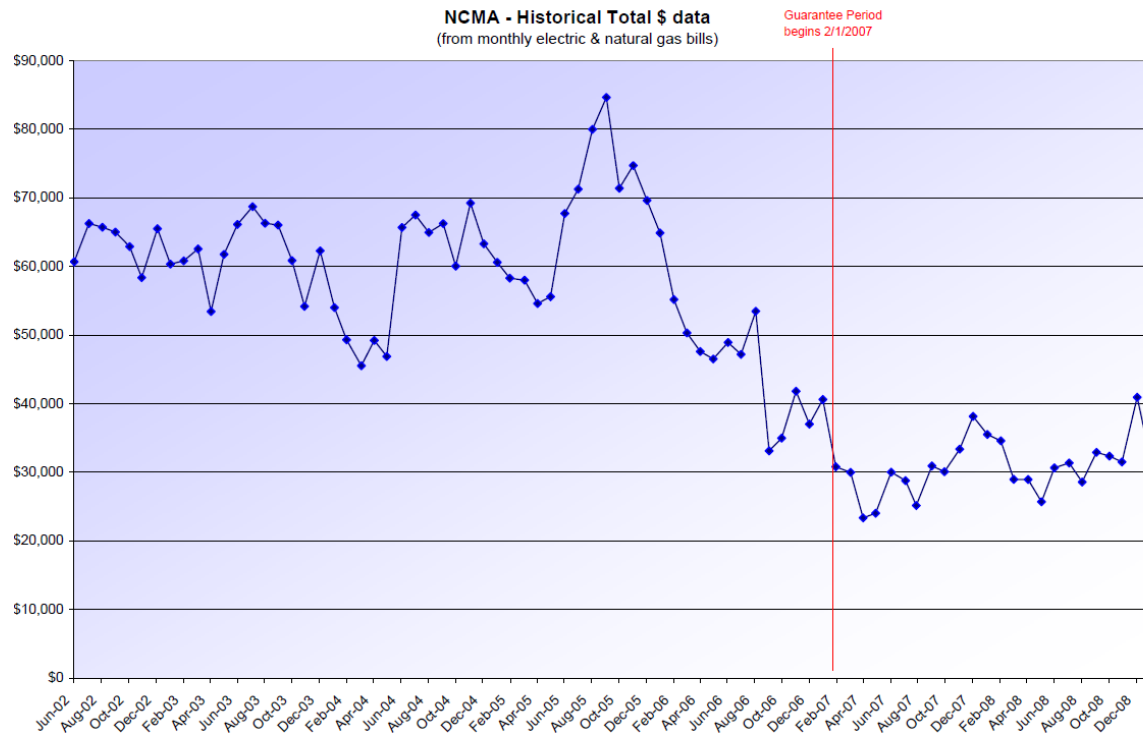
*Your Wasted Energy Clock is Running!*

# #1 Use Wasted Energy as *Source of Funds*



# North Carolina Museum of Art

Measured & Verified – 60% Savings



*Highest Museum Environmental Rating*  
*ASHRAE - AA*

## #2 - Blend Fast & Slow Paybacks

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<b>Upgrade</b>	<b>Cost</b>	<b>SPB</b>
Chiller System Upgrade	\$1,250,000	17
Boiler Upgrade	\$550,000	8
Insulation	\$225,000	10
Underground Piping	\$200,000	20
Windows	\$500,000	40
Other HVAC	\$350,000	20
<hr/>		
<b>Total</b>	<b>\$3,075,000</b>	<b>19.15</b>
Commissioning	\$350,000	2
Controls Upgrade	\$1,000,000	8
Lighting Upgrade	\$2,000,000	4
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<b>Total</b>	<b>\$6,425,000</b>	<b>11.77</b>

# #3 –Finance Strategy – Example

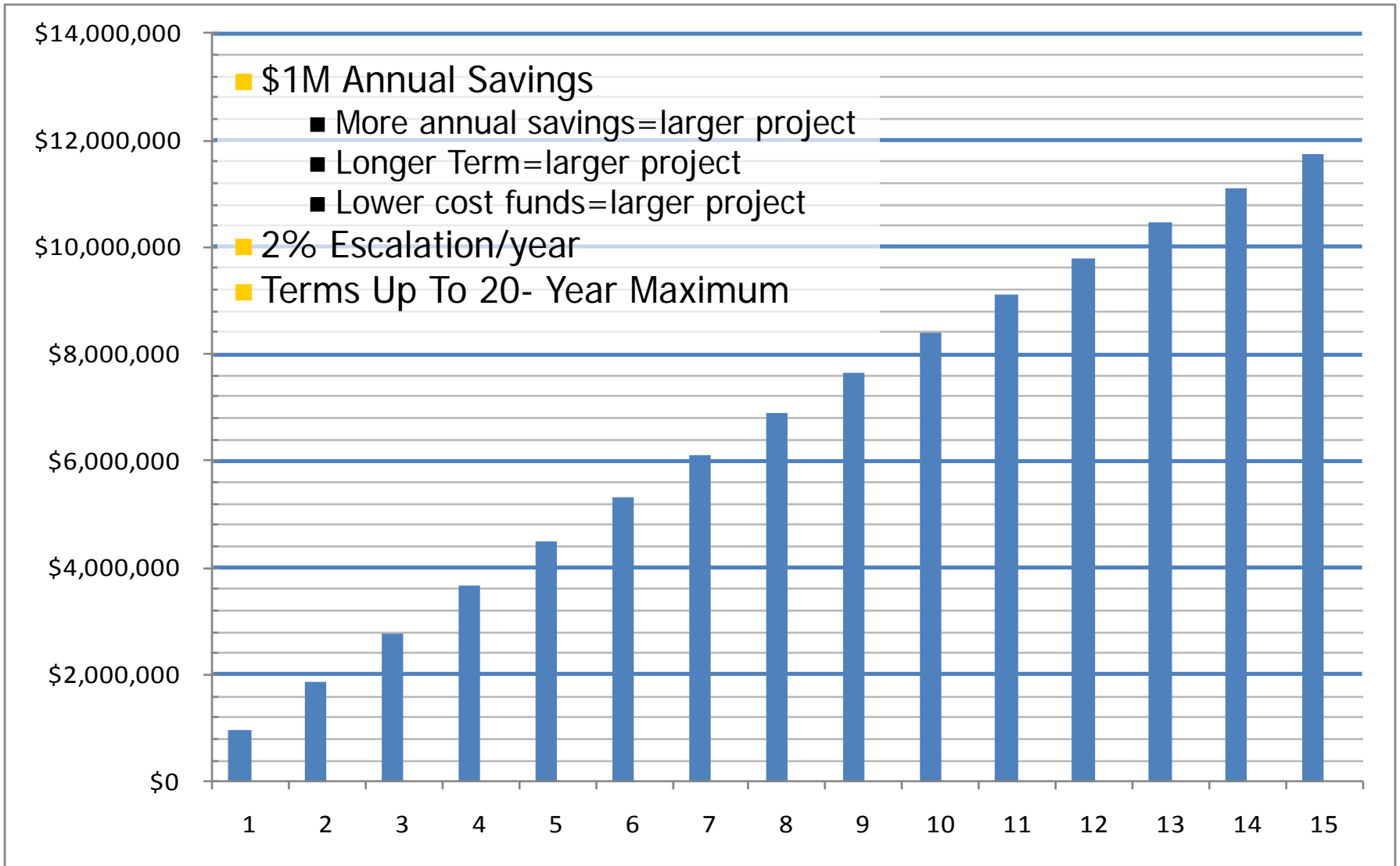
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		1	2	3	4	5	14	15
Net Annual Savings		\$ 1,000,000	\$ 1,020,000	\$ 1,040,400	\$ 1,061,208	\$ 1,082,432	\$ 1,293,607	\$ 1,319,479
Annual Savings	\$1M							
Interest Rate	5.00%							
Escallation	2.00%							
Term	15 Years							
<b>Net Present Value</b>	<b>\$11,753,811</b>							

- \$1M Annual Savings
  - More annual savings=larger project
  - Longer Term=larger project
  - Lower cost funds=larger project
- 2% Escalation/year
- 15 Year Term

*Wasted Energy Leveraged Into Capital*

# #3 –Finance Strategy –Term Leverage



# #4 PC and Traditional Procurement Methods

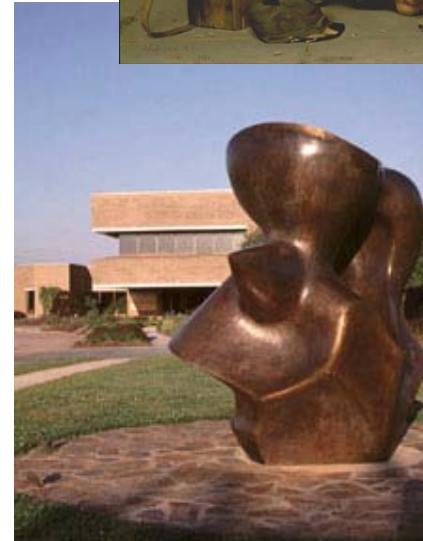
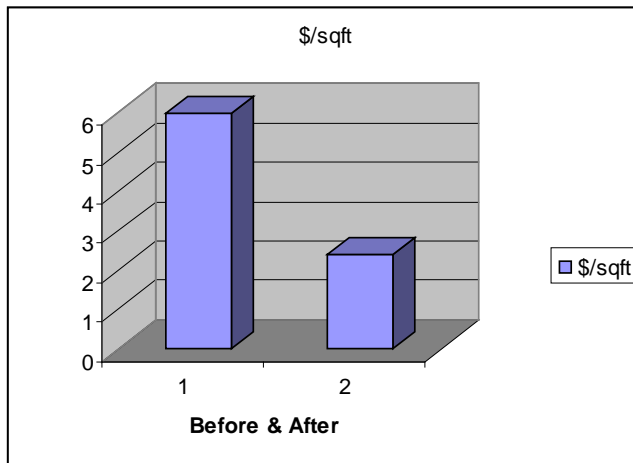
## *Hybrid Approach*

- Separate Scopes & Contracts
  - Traditional – Fund Slow/No Payback Measures
  - PC – Fund Measures with Paybacks
  - Informal/Formal Bidding, Cooperative Purchasing
    - Traditional Sources of Capital

*PC + Traditional Methods = Better Project*

# North Carolina Museum of Art

- First NC PC Project – State Agency
- \$5M contract
- HVAC infrastructure renewal
- Critical environment control
- Over \$1B in artwork
- 58% guaranteed energy reduction

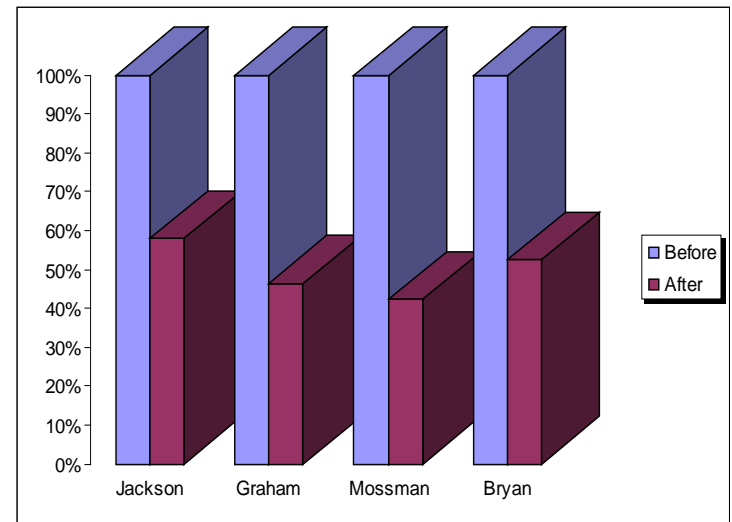


# University of North Carolina at Greensboro

- 1<sup>st</sup> UNC PC Project
- \$5.8M
  - HVAC Systems
  - Lighting
  - Commissioning
  - Water Conservation
- Savings 40-50%



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**GREENSBORO**  
*Inspire. Change.*





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# UNC Pembroke – Deferred Maintenance

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- Current R&R backlog: \$21,700,000
- Typical annual R&R funding: \$1,600,000
- Campus inventory
  - 52 buildings on 151 acre campus; 1.4 million GSF
- 2008 R&R
  - No funds from State
- 2009 R&R:
  - Received roughly half of typical R&R funding = \$700,000
- 2010 R&R
  - No funds from State

# UNC Pembroke – Deferred Maintenance

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- UNCP Performance Contract:
  - Oxendine Science Complex, Old Main (academic), Livermore Library, and Jones Health & PE Complex.
- Guaranteed Total Cost savings:     \$7,499,720
- Total Financed Project Costs:        \$4,500,000
  - Including third party consulting
- Total Value of Hard Costs:            \$3,464,352
- 27+ ECM's
  - Lighting Upgrades, Lighting Controls, Water Conservation, Building Envelope/Weatherization, DDC System upgrades, Boiler Plant Upgrades, HVAC Upgrades, Retro-commissioning

# Summary

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1. Convert Wasted Energy to Leverage Capital
2. Bundle Fast & Slow Payback Measures
3. Financing Strategy
4. Use Rebates for Ongoing Services
5. Combine PC and Traditional Methods
6. Create Green Jobs

*From Wasted Energy to Capital Investment!*