

Solutions for success...

George Mason University Energy Performance Project



**Greening Virginia Universities and Colleges Conference
Session 3: Track Records of High Performance Buildings
October 26, 2007**

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George Mason University

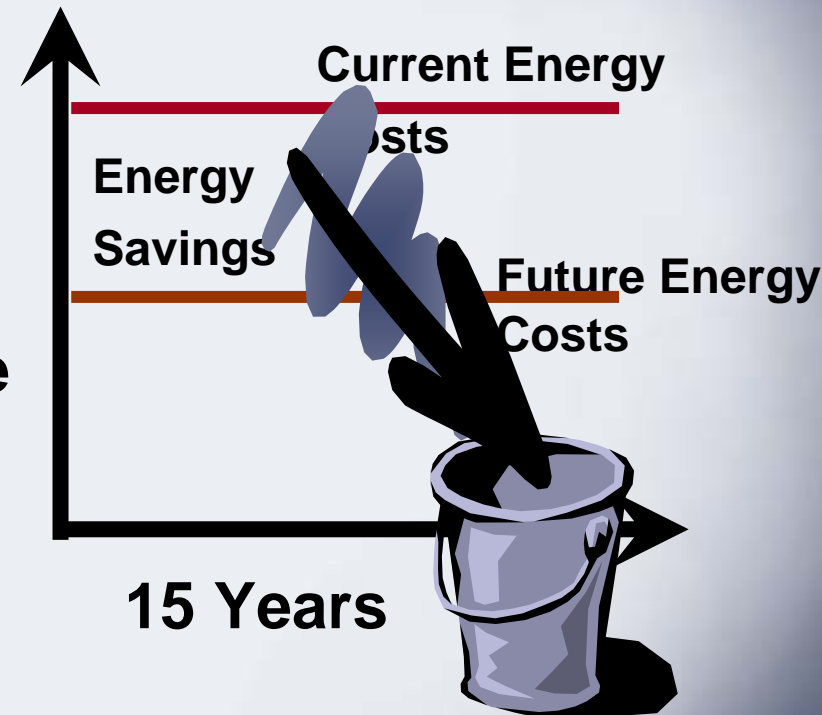
- Largest public university in VA
- 29,000 students
- 3 Campuses
 - Arlington
 - Fairfax
 - Prince William
- 87 Buildings
 - Classrooms, offices, labs, athletic facilities, theatres, housing, etc.



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Energy Performance Contract

- All project implementation costs and fees are predetermined & offset by guaranteed savings
- Difference in costs funds the project & delivers positive cash flow savings.



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George Mason Performance Contract

- July 2005
- 15 year term
 - 15 months construction
 - \$1.3 million per year guaranteed savings



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Major Facility Improvement Measures

- Central Plant Modifications – Replace 2,000 tons of chillers with 2,940 tons including pumps, towers, VFDs etc. (running and commissioned in 6 months)
- HVAC Replacement – new chillers, towers, boilers, AC units, air handling units, fans, ductwork etc.
- Motors and VFDs – new hi-efficiency motors & VFDs
- Conditioning – coil cleaning & treatment, pipe cleaning & treatment, air & water balancing
- Conversion of hot/cold deck to VAV system



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Major Facility Improvement Measures

- New BAS controls – pneumatic to DDC, rework all outside air dampers, CO2 sensors
- Reprogram existing BAS & add fiber optic communication
- Metering – individual building electric, water and gas monitoring equipment



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Major Facility Improvement Measures

- Lighting - including football field lights, gym & field house conversion of metal halide to T5 technology
- Water – including side stream filtration for towers
- Vending machine controls
- Domestic hot water conversion – including from heat exchangers to electric hot water heaters for winter



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The Results – Year 1 Energy Savings

Project completed in 10 months

- 15,343,000 kWh 2% more than guaranteed
- 2,600 kW/month 66% more than guaranteed
- 697,900 Therms 188% more than guaranteed
- 64,500 kgal 37% more than guaranteed

- 480 million pounds of CO₂

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The Results – Year 1 Cost Savings

- **Construction Savings** **\$716,000**
- **Operational Savings** **\$172,000**
- **Utility Savings**
 - **Contract Rates** **\$1,646,000**
 - **Current Rates** **\$1,871,000**

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Bottom Line Year 1 Savings

\$2,535,000 **Contract Rates**

\$2,759,000 **Current Rates**



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Questions?

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