

MANAGING ENERGY AT WARREN AREA SCHOOL DISTRICT



Office of Energy & Technology Deployment





OETD?!?!

- Assist organizations in reducing pollution and saving energy
- Encourage the use of innovative energy technologies, including renewable energy
- Promote and support energy education & conservation



Schools & OETD

- Save schools money
- Fantastic learning/educational opportunity
- Reduce air pollution/greenhouse gases



Pennsylvania Schools

- Average building age is 42 years
- Increasing energy & equipment replacement costs
- Managing or monitoring energy costs receive little attention
- 1/3 energy consumed in schools is wasted!!



OETD Energy Assessment

- Compile energy bills and building information
- Grade or “benchmark” buildings through “Energy Star” Portfolio Manager software
- Present and interpret results
- Discuss potential options and assistance



Portfolio Manager

- “Benchmarks” or compares buildings nationally
- 0 to 100 scale using detailed data on building's
 - physical attributes
 - operating characteristics
 - monthly energy consumption
- Projects savings from energy efficiency and improvements
- Provides information on annual costs and emissions

Outstanding performance

Average performance

Low performance

100


75

50

25

PropertyID
DataYear
Source
Currency
ChainID
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SumOfDetail
WhoModified
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Mt@McBus
Mt@McTourist
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Energy Performance Ratings



School	Year Built	Floor Space	Rating	Annual Energy Costs
Allegheny Valley Elementary	1969	49,640	7	\$37,543
Beaty-Warren Middle School	1929	142,333	41	\$68,714
Eisenhower MS/HS	1956	121,406	14	\$147,745
Russell Elementary	1964	47,590	30	\$46,243
Sheffield Elementary	1963	26,994	9	\$35,831
Sheffield Middle/High School	1974	102,230	20	\$111,681
South Street Elementary	1971	33,460	28	\$33,640
Sugar Grove Elementary	1963	36,000	36	\$34,947
Warren Area High School	1974	146,253	17	\$171,842
Youngsville Elementary/Middle School	2001	100,465	66	\$64,228
Youngsville High School	1955	104,955	48	\$95,381
			29	\$847,797

Energy Savings Summary

School	Rating	Target Rating	Annual Energy Costs	Energy Cost Savings	Reduction
Allegheny Valley Elementary	7	75	\$37,543	\$23,000	62%
Beaty-Warren Middle School	41	75	\$68,714	\$14,000	21%
Eisenhower MS/HS	14	75	\$147,745	\$60,000	41%
Russell Elementary	30	75	\$46,243	\$14,000	31%
Sheffield Elementary	9	75	\$35,831	\$22,000	62%
Sheffield Middle/High School	20	75	\$111,681	\$44,000	40%
South Street Elementary	28	75	\$33,640	\$11,000	32%
Sugar Grove Elementary	36	75	\$34,947	\$9,500	27%
Warren Area High School	17	75	\$171,842	\$51,000	39%
Youngsville Elementary/Middle	66	75	\$64,228	\$6,500	10%
Youngsville High School	48	75	\$95,381	\$20,000	21%
			\$847,797	\$275,000	



Just the Facts...

- \$848,000 annual energy costs
\$187/ student
 - NE average is \$130/student
- Potential to save \$275,000 per year
- Every 1000 kWh reduced prevents
 - 1600 pounds CO₂
 - 20 pounds SO_x
 - 30 pounds NO_x

You are paying
for energy efficient
projects



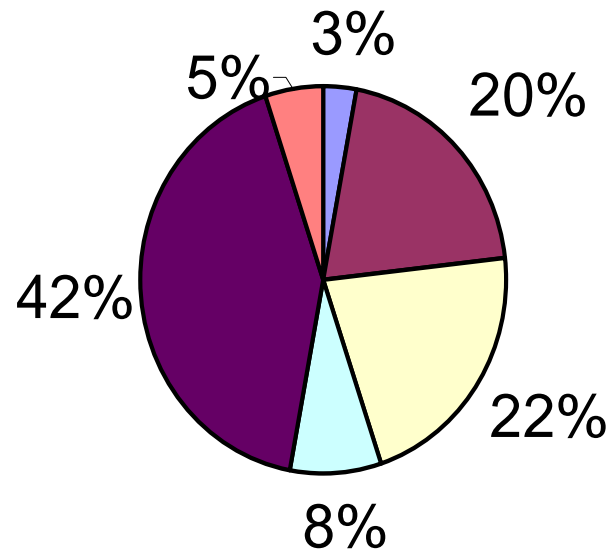
whether or not
you do the projects.



What is the next step?

- Being aware of WASD's energy use/costs
 - 10-20% savings by turning off
- Energy Management System
- District wide energy policy
- Operation & Maintenance

Energy Consumption in Schools



■ Cooking & Refrigeration

■ Lighting

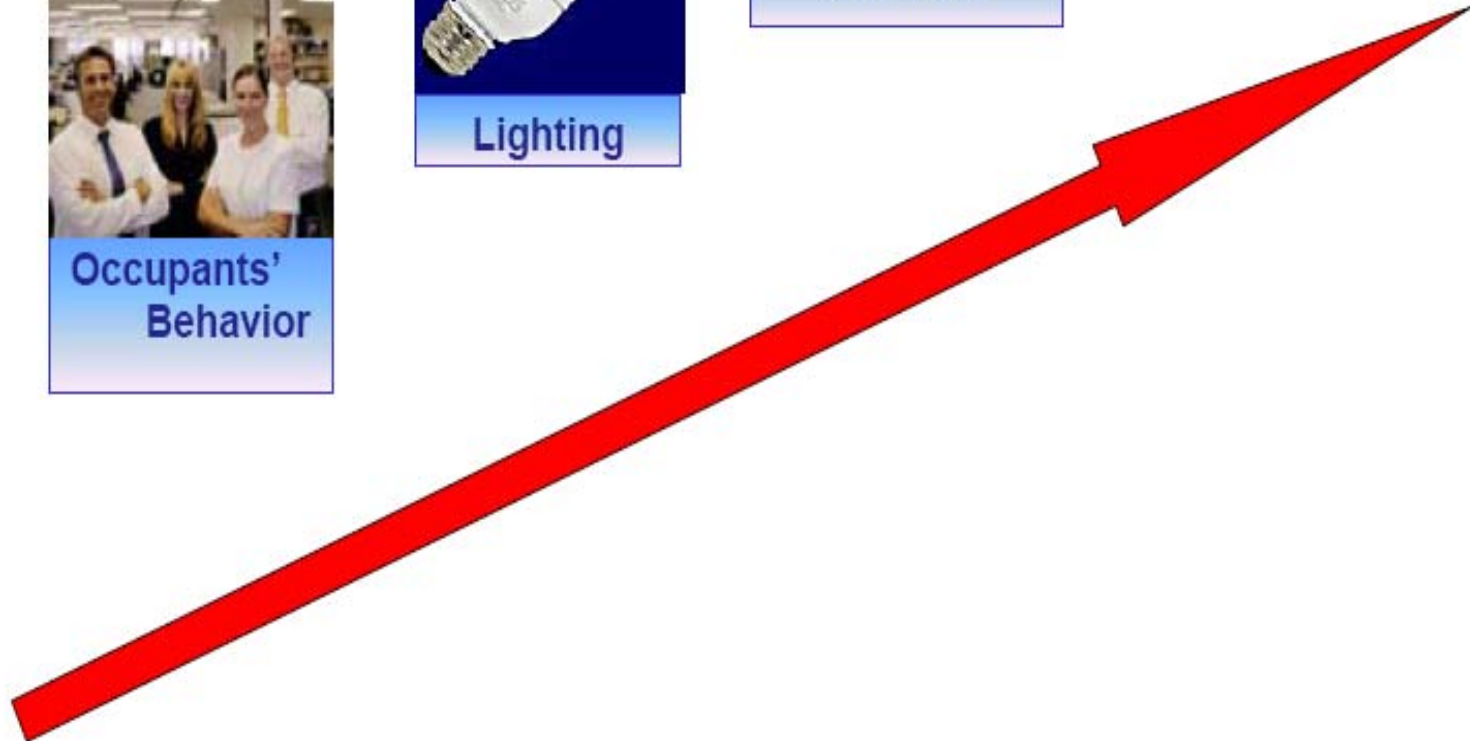
■ Water Heating

■ Cooling & Ventilator

■ Space Heating

■ Other

Low cost opportunities to improve facility and portfolio-wide energy performance





Energy Efficient Schools Cost Less to Operate

- Energy inefficient schools use 4 times as much energy/sq ft as efficient schools
- Research shows that upgrades involving a comprehensive range of technologies – including lighting, HVAC, etc. – can save facilities up to \$1 per s/f in energy costs
- The rates of return from investments to improve energy performance far exceeds those of many other investment options



Simple Paybacks from FEDS

- Insulate hot water tank, lower tank temperature, low flow devices ~ .5 yr
- Retrofit exit signs with LEDs ~ 1 yr
- Replace HVAC with more efficient Boiler
 - Beatty ~1.2 yrs
 - Allegheny Valley ~ 2.3 yrs
 - Sheffield Elem ~ 5.6yrs



Energy Smart Schools Provide An Effective Learning Environment

- Use energy savings to pay for books, computers and teachers
- Energy improvements have a positive impact on student health, comfort, and performance
- For a school district with six school buildings, 10% energy bill savings can mean the purchase of 30 more computers or 1,500 more textbooks



Energy Smart Schools

- Reduce operating costs
- Help children learn about energy
- Create improved teaching & learning environments
- Demonstrate environmental leadership



How can OETD assist?

- Assessment very preliminary
- Diagnostic software evaluation using FEDS (Facility Energy Decision System)
- District Energy Assessment Report
- Network/contact with other Districts
- EPA certification/recognition



Websites:

www.energystar.gov

www.rebuild.org

www.ase.org