Utility Brown Bag Series

of moderated conference calls on energy efficiency

Helping Schools Become More Efficient

Facilitator: Lloyd Meyer, BPA

Speakers: Mira Vowles, BPA
Brandon Adams, ODOE
Mary Huff, Washington CSG

June 4, 2008
12 to 1 p.m. (PDT)

Tools for Schools

- Commercial Technical Services
- Incentives
- School tools
- Oregon and Washington school resources

Commercial Technical Services

- Scoping and detailed audits
- Energy studies
- Design reviews
- Modeling
- Metering
- Commissioning
- PTR Custom Project Proposal development, including M&V plan
- PTR completion report development

Incentives for Schools

- Deemed measures
- Energy Smart Grocer Program
- Custom Project Proposals

Under development:

- HVAC retro-commissioning service
- New school prescriptive package

Energy Smart Grocer Program

- Refrigeration
- Lighting
- Controls

BPA Deemed Measures

- Lighting (new and retrofit)
- CEE Tier 2 refrigerators & freezers
- Pre-rinse sprayers
- ENERGY STAR® commercial clothes washers

Commercial Custom Proposals

BPA reimbursement:

- Retrofit - $0.13 per kWh, capped at 60% of project costs
- New construction - $0.20 per kWh, capped at 70% of project costs (which includes payments for technical assistance)

Custom proposal requirements:

- Customer/ project/ measure description
- Estimated site energy savings
- Estimated project costs
- Estimated O&M costs
- Measurement & verification (M&V) plan
- Completion report

Commercial Technical Services

Overview

1. **Initial CTS Inquiry**

2. **Request for BPA Funded CTS entered into TSP portal**
   Entered by: Utility, end-use customer, consultant or BPA

3. **Assess Request and Project Potential**
   Who: BPA with input from Utility and end-use customer

4. **If CTS has potential, request proposal**
   From: BPA - To: CTS Consultant

5. **Negotiate contract Release** *Who: BPA and CTS Consultant*

6. **Once Release is sent, CTS work can start**
   With input from: BPA, Utility and end-use customer

7. **CTS work complete**
   CTS Consultant sends report to: BPA, Utility and end-use customer

8. **CTS work presented to end-use customer**
   Who: CTS Consultant

Commercial Technical Services

Next Steps

CTS project agreed to by end-use customer and utility

↓

CTS project entered into PTR system as Custom Project Proposal with M&V plan

↓

BPA review and approval of M&V plan

↓

CTS project implemented by end-use customer

↓

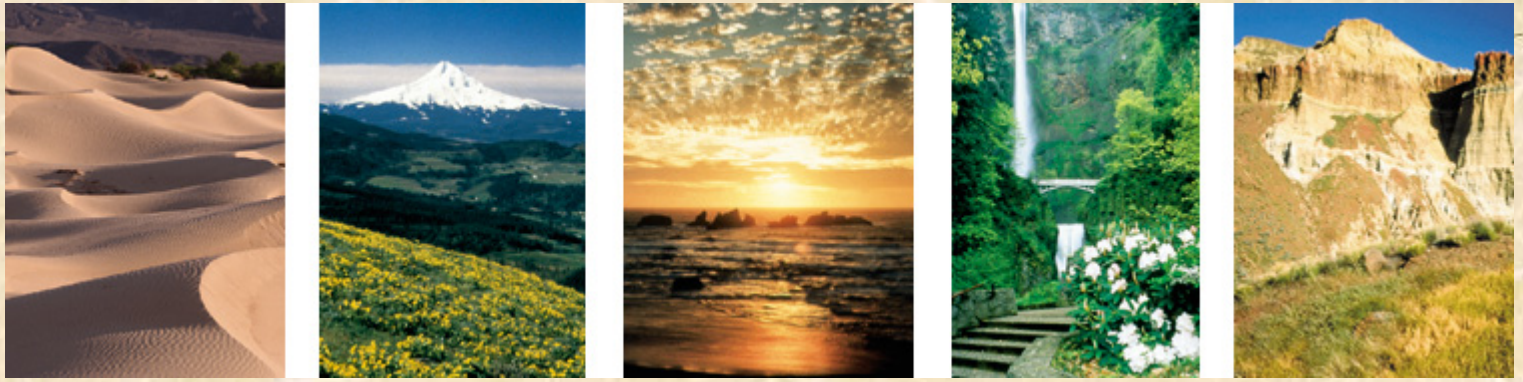
M&V and Completion Report entered into PTR system

↓

Serving utility and BPA may perform inspection

↓

Utility pays end-use customer incentive



Incentive Programs and Financing Options for Oregon K-12 Public Buildings

Brandon Adams, ODOE

OREGON DEPARTMENT OF ENERGY

School District Contacts

- Facilities Director
- Business Manager
- Superintendent

The Majority of interaction for energy efficiency projects will be with the Facilities Director and Business Manager

OREGON DEPARTMENT OF ENERGY

Incentives and Financing

- BETC (Business Energy Tax Credit)
- SELP (State Energy Loan Program)
- BPA Incentives

OREGON DEPARTMENT OF ENERGY

Business Energy Tax Credit Program

- Provides tax credits for energy efficiency projects for businesses
- Schools use through the pass-through option

OREGON DEPARTMENT OF ENERGY

Incentives and Financing

- Eligible BETC Projects
  - Lighting (including PCBs)
  - Mechanical systems
  - Building automation controls
  - Renewable energy

OREGON DEPARTMENT OF ENERGY

Incentives and Financing

- BETC
  - Tax Credit is worth 35% of project cost (over 5 years; Yr.1=10%, Yr.2=10%, Yrs.3,4,&5=5% each.)
    - Goes to the business
  - Pass Through Rate is 25.5% of eligible capital project (or 30.5% if project cost is under $20,000)
    - Goes to the school in a lump sum payment

OREGON DEPARTMENT OF ENERGY

Example of BETC Funded Project

Energy Efficiency Measure	Cost	Tax Credit	Payment to SD
Lighting retrofit	$ 45,000	$ 15,750	$ 11,475
HVAC Control upgrade	$ 55,000	$ 19,250	$ 14,025
Total	$ 100,000	$ 35,000	$ 25,500

OREGON DEPARTMENT OF ENERGY

BETC *cont.*

- What is NOT covered
  - Projects with simple payback < 1 year
  - Projects with simple payback > 15 years (is pro-rated to 15 years, $avings * 15 = max eligible project cost)
  - Maintenance items (e.g., steam traps)
  - Some costs may be deemed ineligible when apply

OREGON DEPARTMENT OF ENERGY

BETC *cont.*

- Options
  - Conservation Track
    - Energy Efficiency Measures *(new and retrofit projects)*
  - Sustainability Track
    - For LEED Silver or better (NC, EB, CS)
      - Incentives based on sq.ft. of building

OREGON DEPARTMENT OF ENERGY

BETC - How to get the money

- Save 10% of energy for system (and 25% for lighting)
  - Need calculations (usually from the audit)
- Apply before project starts
- Find a pass-through partner (can find after project is complete)
- Implement project
- Get invoices (and/or CPA letter)
- Apply for final certification

OREGON DEPARTMENT OF ENERGY

State Energy Loan Program

- Loans
  - $20,000 to $20,000,000
  - Application fee + 1% loan fee
  - Low fixed rates (April, 2007)
    - Public 5.5% approx. (*may be less*)
    - 5 to 20-year terms
- What is covered
  - 100% of capital project (can include more than capital items)

OREGON DEPARTMENT OF ENERGY

State Energy Loan Program

- How to get the money
  - Typical application process
    - http://egov.oregon.gov/ENERGY/LOANS/docs/app-muni.pdf
  - Approval within 2 weeks if less than $100k
  - Advisory Committee reviews loans more than $500k

OREGON DEPARTMENT OF ENERGY

Gas Project Incentives

- Energy Trust of Oregon
  - Incentives for natural gas efficiency projects in NW Natural Gas and Cascade Natural Gas service territories.

http://www.energytrust.org/

1-866-368-7878

OREGON DEPARTMENT OF ENERGY

Qualified Zone Academy Bonds
U.S. Department of Education

- Federal loans for facility improvements
  - VERY LOW RATES
  - Each state receives a specific amount of funds per year
  - Funding is applied for
    - First come, first served…

http://www.qzab.org/qzab_grant.asp

OREGON DEPARTMENT OF ENERGY

High Performance Schools Program

- ODOE provides $50,000 grant to SD *(may be increasing)*
- School must be designed to exceed Oregon energy code by 30%
- Third Party Cx required
- SD signs IGA with ODOE
- ODOE participates in design process and reviews energy model and ECM lists

OREGON DEPARTMENT OF ENERGY

Sustainable Oregon Schools Initiative

What is it?

SOSI is a long-term, comprehensive, state-wide program to help interested schools integrate sustainability into their operations and classrooms. It is being developed now with a multi-stakeholder process. It is guided by a steering committee with staff support from the Zero Waste Alliance

http://www.zerowaste.org/schools/

OREGON DEPARTMENT OF ENERGY

Case Study - Vale School District

Pre-Project

Post Project

OREGON DEPARTMENT OF ENERGY

Case Study - Vale SD

- Project cost - $57,760
- BETC pass-through payment - $15,445
  - Idaho Power was also P-T partner
- Idaho Power incentive - $11,477
- ODOE Williams Grant - $25,307
- Annual energy cost savings - $4,140
- Simple payback - 14 years
  - Simple payback for SD's investment - 1.5 years

OREGON DEPARTMENT OF ENERGY

Case Study - Hermiston SD (two schools)

- Project cost - $150,000
- BETC pass-through payment - $38,000
- Utility incentive - $40,000
- ODOE Williams Grant - $72,000
- Annual energy cost savings - $11,232
- Simple payback - 13.3 years
  - No SD investment required for this project

OREGON DEPARTMENT OF ENERGY

ODOE K-12 Target Ranges

Region	School Type	Target Ranges [1]	Typical Operating Hours
Western	Elementary School	37,800 - 43,200 Btu/sf-yr	2,400 Hours
	Middle School	39,900 - 45,600 Btu/sf-yr	2,600 Hours
	High School	44,800 - 51,200 Btu/sf-yr	3,200 Hours
Eastern	Elementary School	47,600 - 54,400 Btu/sf-yr	2,400 Hours
	Middle School	46,900 - 53,600 Btu/sf-yr	2,600 Hours
	High School	46,900 - 53,600 Btu/sf-yr	3,200 Hours

OREGON DEPARTMENT OF ENERGY

Contact ODOE

- 1-800-221-8035
- www.oregon.gov/ENERGY

OREGON DEPARTMENT OF ENERGY

ESD112 / Construction Services Group

Vancouver, WA **http://www.esd112.org**

Demonstrated expertise:

- Schools and related buildings

  (i.e., day care centers, libraries, offices, etc.)
- Facility assessment & scoping audits
- Detailed studies
- Baseline determination
- New construction design review
- Custom project proposal & completion report development

ESD112 / Construction Services Group

Technical Services - Commercial and Agricultural (Schools)

Helping Schools Build & Maintain
Healthy Environments for Student Learning

CSG
CONSTRUCTION SERVICES GROUP
Specialists in School Buildings

Washington Schools

School District Contacts

- Same as Oregon
  - Facilities Director
  - Business Manager
  - Superintendent

Incentives and Financing

- NO BETC (Business Energy Tax Credit
- Similar to Oregon
- LOCAL Loans, not restricted to energy
- BPA Incentives
- Q-Zab Bonds

Washington State LOCAL Loan Program

- Local Option Capital Asset Lending Program
- http://tre.wa.gov/LOCAL/local.htm
- Available to any municipal corporation in Washington which includes public school districts
- Quarterly applications minimum $10,000 up to $1,000,000
- Not limited to energy measures
- Loan payback period is the useful life of equipment or capital purchased. Preapproval is required.

Qualified Zone Academy Bonds
Q-Zab for Short

- Good news is there is still money available in Washington
- ESD112 is working with several partners to secure the 10% matching required
- 10% matching can no longer be subsidized by the contractor or designer of the project. Must be donated by a third party not receiving any taxpayer funding.

WSSP - Washington's Program for High Performance Schools

- The High Performance Public Building Act was signed into law in 2005.
- For school buildings, the goal of this law is to build high performance schools that will improve student achievement and occupant comfort, reduce costs, and preserve environmental resources.

High Performance Public Building Act Signed into law in 2005

All major facility projects of public school districts receiving any funding in a state capital budget must be designed and constructed to at least the LEED Silver Standard or the Washington Sustainable School Design Protocol.

Goals of WSSP

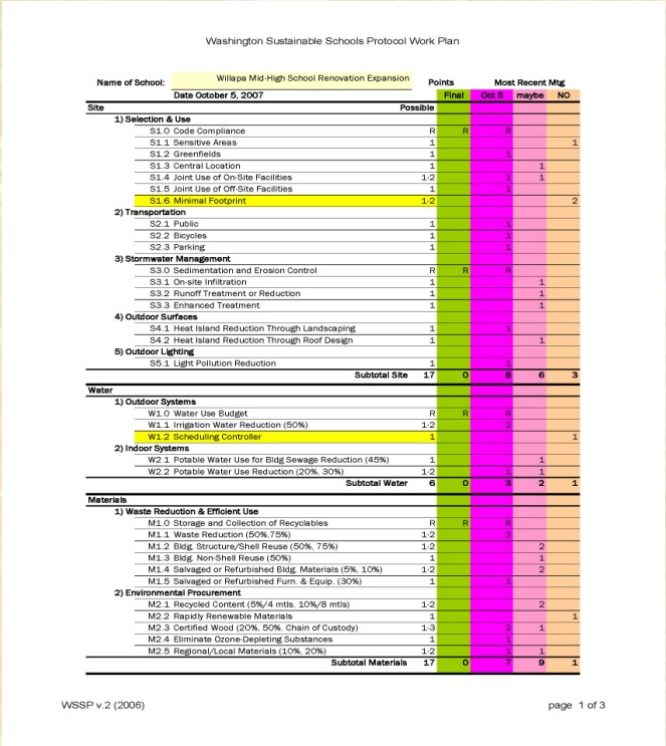
Benefits of high performance schools include:

- Retaining teachers
- Increasing average daily attendance
- Reducing utility costs
- Strengthening the local community and economy, and
- Educating students on the values of sustainability

Washington Sustainable Schools Program (WSSP) and ESD112

- ESD112 is helping two of the six schools in the 2006 WSSP pilot program (Willapa and Centralia) comply with the protocol
- ESD112 has been working closely with OSPI on adapting and implementing the protocol
  - Held the first WSSP/DOE Workshop for contractors to clarify their roles & responsibility
  - Developed customized WSSP compliance forms
  - Developed a compliance Web site to easily assign points to integrated team

ESD112 Customized Reporting Forms

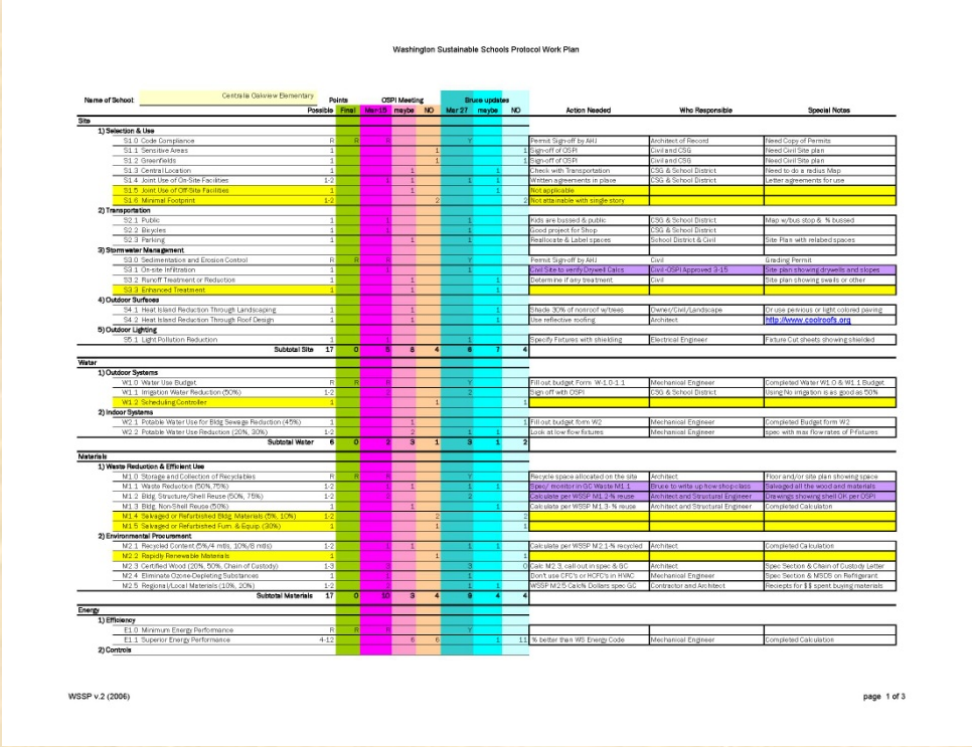


Washington Sustainable Schools Protocol Work Plan

Name of School: Willapa Mid-High School Renovation Expansion
Date October 5, 2007

Site	Possible	Points Final	Most Recent Mtg Oct 5	maybe	NO
1) Selection & Use					
S1.0 Code Compliance	R	R	R		
S1.1 Sensitive Areas	1				1
S1.2 Greenfields	1		1		
S1.3 Central Location	1			1	
S1.4 Joint Use of On-Site Facilities	1-2		1	1	
S1.5 Joint Use of Off-Site Facilities	1		1		
S1.6 Minimal Footprint	1-2				2
2) Transportation					
S2.1 Public	1		1		
S2.2 Bicycles	1		1		
S2.3 Parking	1		1		
3) Stormwater Management					
S3.0 Sedimentation and Erosion Control	R	R	R		
S3.1 On-site Infiltration	1			1	
S3.2 Runoff Treatment or Reduction	1			1	
S3.3 Enhanced Treatment	1			1	
4) Outdoor Surfaces					
S4.1 Heat Island Reduction Through Landscaping	1		1		
S4.2 Heat Island Reduction Through Roof Design	1			1	
5) Outdoor Lighting					
S5.1 Light Pollution Reduction	1		1		
Subtotal Site	**17**	**0**	**8**	**6**	**3**
Water					
1) Outdoor Systems					
W1.0 Water Use Budget	R	R	R		
W1.1 Irrigation Water Reduction (50%)	1-2		2		
W1.2 Scheduling Controller	1				1
2) Indoor Systems					
W2.1 Potable Water Use for Bldg Sewage Reduction (45%)	1			1	
W2.2 Potable Water Use Reduction (20%, 30%)	1-2		1	1	
Subtotal Water	**6**	**0**	**3**	**2**	**1**
Materials					
1) Waste Reduction & Efficient Use					
M1.0 Storage and Collection of Recyclables	R	R	R		
M1.1 Waste Reduction (50%,75%)	1-2		2		
M1.2 Bldg. Structure/Shell Reuse (50%, 75%)	1-2			2	
M1.3 Bldg. Non-Shell Reuse (50%)	1			1	
M1.4 Salvaged or Refurbished Bldg. Materials (5%, 10%)	1-2			2	
M1.5 Salvaged or Refurbished Furn. & Equip. (30%)	1		1		
2) Environmental Procurement					
M2.1 Recycled Content (5%/4 mtls. 10%/8 mtls)	1-2			2	
M2.2 Rapidly Renewable Materials	1				1
M2.3 Certified Wood (20%, 50%, Chain of Custody)	1-3		2	1	
M2.4 Eliminate Ozone-Depleting Substances	1		1		
M2.5 Regional/Local Materials (10%, 20%)	1-2		1	1	
Subtotal Materials	**17**	**0**	**7**	**9**	**1**

WSSP v.2 (2006) page 1 of 3



Washington Sustainable Schools Protocol Work Plan

Name of School: Centralia Oakview Elementary

Site	Possible	Points Final	OSPI Meeting Mar15	maybe	NO	Bruce updates Mar 27	maybe	NO	Action Needed	Who Responsible	Special Notes
1) Selection & Use											
S1.0 Code Compliance	R	R	R			Y			Permit Signoff by AHJ	Architect of Record	Need Copy of Permits
S1.1 Sensitive Areas	1				1			1	Sign-off of OSPI	Civil and CSG	Need Civil Site plan
S1.2 Greenfields	1				1			1	Sign-off of OSPI	Civil and CSG	Need Civil Site plan
S1.3 Central Location	1			1			1		Check with Transportation	CSG & School District	Need to do a radius Map
S1.4 Joint Use of On-Site Facilities	1-2		1	1		1	1		Written agreements in place	CSG & School District	Letter agreements for use
S1.5 Joint Use of Off-Site Facilities	1			1			1		Not applicable		
S1.6 Minimal Footprint	1-2				2			2	Not attainable with single story		
2) Transportation											
S2.1 Public	1		1			1			Kids are bussed & public	CSG & School District	Map w/bus stop & % bussed
S2.2 Bicycles	1		1			1			Good project for Shop	CSG & School District	
S2.3 Parking	1			1		1			Reallocate & Label spaces	School District & Civil	Site Plan with related spaces
3) Stormwater Management											
S3.0 Sedimentation and Erosion Control	R	R	R			Y			Permit Signoff by AHJ	Civil	Grading Permit
S3.1 On-site Infiltration	1		1			1			Civil Site to verify Drywell Locs	Civil / OSPI Approved 3-15	Site plan showing drywells and slopes
S3.2 Runoff Treatment or Reduction	1			1			1		Determine if any treatment	Civil	Site plan showing swals or other
S3.3 Enhanced Treatment	1			1			1				
4) Outdoor Surfaces											
S4.1 Heat Island Reduction Through Landscaping	1			1			1		Shade 30% of nonroof surfaces	Owner/Civil/Landscape	Or use pervious or light colored paving
S4.2 Heat Island Reduction Through Roof Design	1			1			1		Use reflective roofing	Architect	http://www.coolroofs.org
5) Outdoor Lighting											
S5.1 Light Pollution Reduction	1		1			1			Specify Fixtures with shielding	Electrical Engineer	Fixture Cut sheets showing shielded
Subtotal Site	**17**	**0**	**5**	**8**	**4**	**6**	**7**	**4**			
Water											
1) Outdoor Systems											
W1.0 Water Use Budget	R	R	R			Y			Fill out budget Form W-1.0-1.1	Mechanical Engineer	Completed Water W1.0 & W1.1 Budget
W1.1 Irrigation Water Reduction (50%)	1-2		2			2			Sign-off with OSPI	CSG & School District	Using No irrigation is as good as 50%
W1.2 Scheduling Controller	1				1			1			
2) Indoor Systems											
W2.1 Potable Water Use for Bldg Sewage Reduction (45%)	1			1				1	Fill out budget form W2	Mechanical Engineer	Completed Budget form W2
W2.2 Potable Water Use Reduction (20%, 30%)	1-2			2		1	1		Look at low flow fixtures	Mechanical Engineer	spec with max flowrates of Fixtures
Subtotal Water	**6**	**0**	**2**	**3**	**1**	**3**	**1**	**2**			
Materials											
1) Waste Reduction & Efficient Use											
M1.0 Storage and Collection of Recyclables	R	R	R			Y			Recycle space allocated on the site	Architect	Floor and/or site plan showing space
M1.1 Waste Reduction (50%,75%)	1-2		1	1		1	1		Spec/ monitor in SC Waste M1.1	Bruce to write up how shop class	Salvaged all the wood and materials
M1.2 Bldg. Structure/Shell Reuse (50%, 75%)	1-2		2			2			Calculate per WSSP M1.2-% reuse	Architect and Structural Engineer	Drawings showing shell OK per OSPI
M1.3 Bldg. Non-Shell Reuse (50%)	1			1			1		Calculate per WSSP M1.3-% reuse	Architect and Structural Engineer	Completed Calculation
M1.4 Salvaged or Refurbished Bldg. Materials (5%, 10%)	1-2				2			2			
M1.5 Salvaged or Refurbished Furn. & Equip. (30%)	1				1			1			
2) Environmental Procurement											
M2.1 Recycled Content (5%/4 mtls. 10%/8 mtls)	1-2		1	1		1	1		Calculate per WSSP M2.1-% recycled	Architect	Completed Calculation
M2.2 Rapidly Renewable Materials	1				1			1			
M2.3 Certified Wood (20%, 50%, Chain of Custody)	1-3		3			3		0	Calc M2.3, call out in spec & GC	Architect	Spec Section & Chain of Custody Letter
M2.4 Eliminate Ozone-Depleting Substances	1		1			1			Don't use CFC's or HCFC's in HVAC	Mechanical Engineer	Spec Section & MSDS on Refrigerant
M2.5 Regional/Local Materials (10%, 20%)	1-2		2			1	1		WSSP M2.5 Calc% Dollars spec GC	Contractor and Architect	Receipts for $$ spent buying materials
Subtotal Materials	**17**	**0**	**10**	**3**	**4**	**9**	**4**	**4**			
Energy											
1) Efficiency											
E1.0 Minimum Energy Performance	R	R	R			Y					
E1.1 Superior Energy Performance	4-12			6	6		1	11	% better than WS Energy Code	Mechanical Engineer	Completed Calculation
2) Controls											

WSSP v.2 (2006) page 1 of 3

- ESD112 has developed customized WSSP Point status and tracking forms, which include: costs, action items, and team involvement in the process of meeting the Protocol .
- WSSP Pilots also require five years of M & V. (Monitoring and Verification.

WSSP Alternative

- LEED Silver
- LEED for Schools
- Most schools choose WSSP because it allows more flexibility and has no registration or review fees
- http://www.k12.wa.us/SchFacilities/HighPerformanceSchoolBuildings.aspx
- Web site has a video showcasing the pilot projects now completed and in M & V

Case Study –Highland School District

Components

- GCHP (ground coupled heat pump system
- Lighting upgrade
- Domestic HW upgrade
- New windows and other envelope improvements (added some ceiling insulation)

Results

MARCUS WHITMAN HEATING COSTS

Actual 2006-07 heating and cooling bill	$25,671.20

2006-07 Comparative data

Average use of heating oil before new system	20,369.20
Average cost for 2006-07	$2.85
Diesel costs if we would not have changed systems	58,052.22
Add electrical bills for the year	25,671.20
Total cost if we would not have changed to geothermal	83,723.42

2006-07 cost difference if we would not have changed: -$58,052.22

2007-08 Comparative data

Average use of heating oil before new system	20,369.20
Average cost per gallon to date	$3.05
Diesel costs if we would not have changed systems	62,126.06
Add electrical bills	25,671.20
Total cost if we would not have changed to geothermal	87,797.26

2007-08 cost difference if we would not have changed -$62,126.06

EDUCATIONAL SERVICE DISTRICT112

CSG CONSTRUCTION SERVICES GROUP
Specialists in School Buildings

In addition to Energy Services, other CSG services include:

- Project Management
- Construction Management
- Constructibility Reviews
- Building Commissioning

Contact

Mary Ann Huff, PE

360-750-7500

mary.huff@esd112.org

What have you done for schools lately?

- **Benchmarking?**
- **Zero interest revolving loan?**
- **School facility groups?**
- **Other?**

Questions?