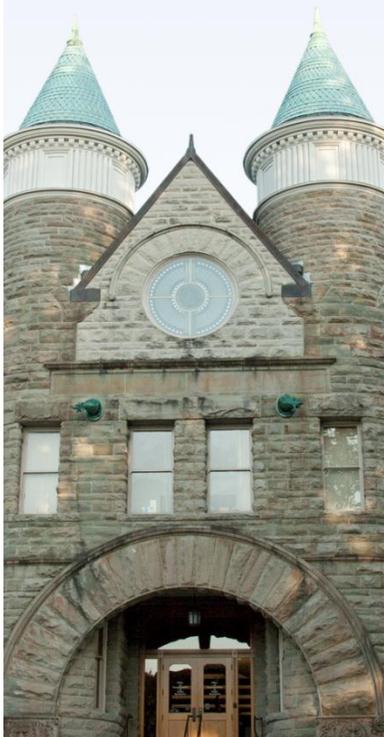


REPORT TO THE LEGISLATURE

# High-Performance School Buildings 2012

October 2012



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State Superintendent  
of Public Instruction

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October 2012

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**School Facilities and Organization**  
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# Executive Summary

The School Facilities and Organization section of the Office of Superintendent of Public Instruction (OSPI) manages the High-Performance School Building Program. The program is a result of chapter 39.35D RCW that requires state-assisted major building projects to be built to a green-building standard. Washington K–12 schools have a choice to use either the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) or the Washington Sustainable Schools Protocol (WSSP). These program requirements for designing and building have been incorporated into the School Construction Assistance Program, also administered by OSPI.

Since the law took effect in July 2006 for volunteering schools, OSPI has monitored 159 public school projects. One hundred of these projects have been designed and built, or are being built, to meet the LEED or WSSP green building standard. This includes major remodels and additions as well as new construction. Fifty-nine requests were made and granted a “not practicable–bond date” exemption.

This report, due to the Governor and Legislature by September of each even-numbered year (beginning in 2006 and ending in 2016), consolidates all school district reports on high-performance credits earned as well as project costs of compliance and annual operations. Findings in this report are based on data reported by districts that reached reporting milestones during 2011 and 2012. The findings include:

- All projects exceeded the minimum points required to self-certify as a Washington Sustainable School.
- Schools are earning credits that focus on site amenities, natural resource conservation, indoor environmental quality and comfort that have a direct relationship to providing a healthy, safe learning environment.
- Incremental costs to build a high-performance school range from less than \$1 per square foot to \$23 dollars per square foot.
- Recent school designs modeled energy use reduction exceeds the median and an Energy Star Certified school.
- High-performance materials, systems and features are receiving annual review comments that include “excellent, works well,” “ongoing costs to maintain,” “user-training required.”

The requirements for state-assisted public schools to design and construct to high-performance green building standards is achievable. High-performance schools may have a positive impact on student achievement, or student wellness and staff retention; however, OSPI cannot substantiate or refute that.

# I. Introduction

## **WASHINGTON HIGH-PERFORMANCE SCHOOL BUILDING PROGRAM**

Chapter 39.35D RCW, High-Performance Public Buildings, requires that all state-assisted new construction or modernization projects at state-owned and K–12 facilities, over 5,000 square feet, are designed and built to a high-performance green building standard. A high-performance building is one that achieves a high level of energy and resource efficiency, reduces its impact on the environment, and provides a healthy and comfortable indoor environment.

School districts may choose between two high-performance green building standards; the Washington K–12 schools-specific Washington Sustainable Schools Protocol (WSSP) and the national Leadership in Energy and Environmental Design (LEED), developed by the non-profit U.S. Green Building Council. The RCW exempts specific building types and allows districts to request a “not practicable” exemption status if there are circumstances that would create a hardship if required to comply with a green building standard.

Districts with new construction and modernization projects, that meet the thresholds for compliance, must periodically report their progress of incorporating high-performance standards into the design and construction. Additional reporting of actual operating performance is required annually for five years, following local school board acceptance of the project, including energy and water use and high-performance building features performance. The School Facilities and Organization section of OSPI manages the reporting requirements of the High-Performance School Building Program.

RCW 39.35D.040 (3) requires OSPI to consolidate district reports into one report for the Washington State Governor and the Legislature in September of each even-numbered year beginning in 2006 and ending in 2016. The purpose is to inform the Governor and Legislature about meeting legislative intent to save money, improve school performance and make workers more productive, to report on incentives and disincentives of the high-performance building program, and to provide recommendations about the ongoing implementation of the chapter.

The high-performance school requirements have been phased in over a period of three years: 1) volunteer projects prior to 2006, 2) projects in larger school districts that had not received project approval from OSPI prior to July 1, 2007, and 3) projects in smaller districts that had not received project approval from OSPI prior to July 1, 2008. Large districts, called Class I districts, have more than 2,000 full-time equivalent students, and smaller districts, called Class II districts, have less than 2,000 full-time equivalent students. All of the school projects that fell within a phase-in group have either proceeded into design and construction or fallen out of the building process by now.

As of July 2008, all state funded school construction projects must comply with the high-performance building requirements, using either WSSP or LEED<sup>®</sup>, unless an exemption is applicable. The most notable exemption is “not practicable–bond date” which allows an exemption for projects using local district funding from bonds that were issued prior to

June 2008 for Class I districts and June 2009 for Class II districts. Most current projects applying for State Construction Assistance have passed bonds more recently than 2008 and 2009 making it likely that fewer and fewer districts will be requesting this exemption.

**Table 1: Compliance Dates for High-Performance Schools**

Project Type	Effective Date	Bond Date Exemption
Volunteer School Districts	July 1, 2006	
Class One School Districts	July 1, 2007	June 2008
Class Two School Districts	July 1, 2008	June 2009

There are a total of 159 school projects subject to high-performance building requirements and reporting. Of the 159 projects, 100 are in various phases of design, construction and post occupancy, and 59 projects were granted a not practicable exemption. A complete list of all 159 school projects from August 2006 to September 2012, with the project status, is included as Appendix A.

**Table 2: Projects Status Summary**

Projects Status	Number of Projects
Application	2
Design	13
Construction	46
Complete	39
Not Practicable Exemption	59

Simple reporting tools were developed for districts to use during planning, design, construction and post-occupancy. These were developed by a technical advisory group made up of design professionals, OSPI School Facilities and Organization staff, and most importantly school district personnel with a vested interest in the requirements. Data that is reported includes WSSP or LEED earned credits, the incremental cost to earn the credit, the modeled annual energy use, a narrative of the sustainable strategies applied to the project, annual energy and water use; as well as annual performance, maintenance and operations observations for each of the earned credits. In 2008, OSPI’s High-Performance Schools report to the Legislature, written by OSPI and O’Brien & Company, relied on similar reporting tools to collect data from the 18 volunteer-grant projects that began in 2006. OSPI’s 2010 report provided an update of the changes to the High-Performance Schools Program, including the updated WSSP standard. The basis for this 2012 report to the Governor and the Legislature is data that has been reported by school districts that have reached reporting milestones in 2011 and 2012, as well as the status of all projects to date.

## **HIGH-PERFORMANCE BUILDING STANDARDS IN USE IN WASHINGTON STATE SCHOOLS**

High-performance, or green building, standards require an integrated design process to create projects that are environmentally responsible and resource-efficient throughout a building's life-cycle from site selection to interior design, construction, operation, maintenance, renovation, and demolition. A common objective is that projects awarded or certified within these programs are designed to reduce the overall impact of the built environment on human health and the natural environment.

Washington schools are allowed to choose between the nationally recognized green building standard called Leadership in Energy and Environmental Design (LEED) developed in 2000 by the U.S. Green Building Council, or a Washington state K–12 school-specific standard called Washington Sustainable Schools Protocol (WSSP) that is based on the principles of the Collaborative of High-Performance Schools (CHPS). Washington is one of 13 states that have developed a K–12, state-specific standard. The purpose of LEED and WSSP standards is to assist in the creation of high-performance, healthful, durable, affordable, and environmentally sound school buildings.

Both high-performance building standards provide designers, owners, and operators with a framework for identifying and implementing practical and measureable green building design, construction, operations and maintenance solutions. In addition to site, water, energy, indoor environment, materials, and planning and operations; LEED for Schools (first introduced in 2007) and WSSP both recognize the unique nature of design and construction of K–12 schools by addressing issues such as acoustics and mold prevention—two key children's health related issues.

LEED for Schools, designed by a committee-based, diverse group of industry stakeholders, is applied to schools across the nation. Certification that a school has met a certain level of high-performance requires an independent, third-party verification. Certification confirms the school was designed and built using strategies aimed at achieving high-performance in key areas of human and environmental health including sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

The WSSP was developed through a stakeholder process to create a set of green building standards that define a sustainable school for the state of Washington. First published in 2006, a result of a three-year long pilot program, the WSSP includes a point-based scorecard (or checklist) of green building measures and identifies a minimum point level that school projects need to achieve for compliance. The checklist is organized around six categories: 1) Site Planning, 2) Water Efficiency, 3) Materials Use, 4) Energy Efficiency, 5) Indoor Environmental Quality and Planning, and 6) Organization and Education (formerly called Extra Credit in WSSP 2006). The WSSP is a self-certifying standard. It is designed as a pass-fail rating system with optional and prerequisite credits. A stakeholder committee of school district staff and design professionals wrote the first major update to the standard in 2010. The update became effective for all projects receiving OSPI approval after November 15, 2010.

Only one district reported using the LEED standard for a project. The rest of the schools have reported that they used, or are using, the WSSP as their preferred standard to meet the

high-performance requirements. A comparison of the most recent versions of the LEED and the WSSP checklist can be found on the [OSPI High-Performance School Buildings Program website](#).

## II. Process

### **PROJECT COMPLIANCE AND REPORTING**

OSPI's tracking of high-performance compliance begins with the school district's Project Application and continues through the fifth year of performance reporting. Two reporting workbooks have been developed for districts to plan and report their high-performance efforts. The WSSP Workplan workbook (used during project initiation, design, and construction) includes the credit checklist, strategies for compliance, and incremental cost analysis. Schools comply and report using either the 2006 or 2010 version of WSSP depending on the project approval date. Once the project is complete, districts use the WSSP Annual Reporting workbook to report energy and water use, as well as building performance observations. The annual report is due to OSPI in June, for five years, following board acceptance of the project. A copy of the WSSP 2006 Workplan and the Annual Reporting workbook can be found on the [OSPI High-Performance School Buildings Program website](#). Schools that comply with LEED are required to provide the same reporting in a similar format.

There are currently 100 school projects reporting on high-performance compliance, including the 18 High-Performance School Building Program volunteer project grant recipients from 2006. All of these schools are reporting on their second, third, or fourth year of annual performance. New Market Skills Lab Building D, located in the Tumwater School District, is preparing their fifth and final annual performance report. Also included are Parkside Elementary, nine technical skills centers, and four transportation cooperatives. Parkside, a Highline School District elementary school, was not state-funded but chose to comply. Yakima Valley Technical Skills Center's Phase I was accepted by the board in late 2010 and included in this reporting period.

High-performance school building reporting requirements are imbedded in the School Construction Assistance Program (SCAP) development process. The primary documents that form the basis of the SCAP development process are "D-form" documents. These documents, when properly completed and signed by all parties, form official notices of agreement and intent on behalf of the district and OSPI. Essentially, D-form documents are used to request and record required submittals and tasks that need to occur in a sequential order throughout the project life-cycle.

Districts have a specific set of high-performance documentation that must be submitted in order to be in compliance. The required high-performance submittals align with the D-form process for projects that receive state construction assistance. District high-performance submittals consist of the following documents:

- **Intent to Comply**

Districts indicate on the D-3 Project Application which high-performance standard the project will follow or requests an exemption by including a letter describing the justification for an exemption.

- **Checklist**

The WSSP and LEED checklists are commonly referred to as the scorecard. The scorecard lists all the credits, and the points attributed to each credit, that are either required to be met or optional. The checklist is completed prior to the design phase of the project and used as a green-building design guideline as the project progresses. The checklist (included in the WSSP Workplan workbook) is required to be submitted with the D-5, the D-9, and at project completion or prior to the D-11, to capture the final credits earned.

- **Cost Analysis**

The cost analysis captures the incremental cost to design and construct or operate a facility to meet a credit requirement. The incremental cost is the difference between the baseline cost, which is either the cost to meet code compliance or the cost of standard district practice, and the actual cost to implement a high-performance measure. The cost analysis (included in the WSSP Workplan workbook) is completed at the D-9 step and at project completion or prior to the D-11.

- **Energy Life Cycle Cost Analysis (ELCCA) Executive Summary**

The executive summary of the ELCCA explains the different building designs studied and goes into depth about reasons for choosing a particular design over another. The ELCCA includes estimated annual energy consumption of the various designs through the use of standardized modeling software. In turn, it is used to estimate the percentage of energy-use reduction, above code-compliance, when determining points earned in the Energy category of the high-performance project checklist. The ELCCA Executive Summary is due at D-9.

- **Strategies Summary**

The sustainable strategies summary tells the project story of why and how the district chose particular credits to earn and the design strategies implemented to meet the credit requirements. The Strategy Summary is due at D-9.

- **Certification of Compliance**

The certification of compliance is a form letter addressed to the OSPI School Facilities and Organization Disbursement Officer certifying the district has complied with all of the



Figure 1: Yakima School District, Yakima Valley Technical Skills Center Phase I

high-performance school requirements throughout the project life cycle and their commitment to provide five years of annual performance reporting. The certification letter is submitted with the D-11.

- **Energy and Water Use, Performance Observations**

Annually in June, for five years following school board acceptance of the project, districts are required to report the building annual energy and water use, as well as performance observations about measures specifically included in the project, to meet credit requirements. Districts use the WSSP Annual Reporting workbook. Modeled after the Energy Star Portfolio Manager, the Excel workbook captures general building characteristics and monthly energy and water use. The observations are meant to be reported by facility maintenance and custodial staff or others familiar with the building performance. Observations about new material performance and new building systems performances are helpful lessons learned and can influence subsequent high-performance choices. Districts can use the Energy and Water Use workbook to monitor their building’s utilities use, identify spikes and take corrective action, request rate changes based on use, or estimate utility operating costs for future budgets.

**Table 3: School Facilities Development Process**

D-Form Application	Design-Bid-Build Projects					High-Performance School Requirements
	Planning Project Application	Predesign Analysis	Preparing for Construction	Construction	Occupancy	
D-3 Project Application	<b>Intent to Comply</b>					
D-5 Preliminary Funding		<b>Checklist</b>				
D-9 Authorization to Sign Contracts			<b>Checklist Cost Analysis ELCCA Strategies</b>			
D-11 Release Retainage				<b>Checklist Cost Analysis Certification</b>		
Annually for 5 years					<b>Energy Use Water Use Performance</b>	

### III. Findings

The findings listed here are, for the most part, based on data reported by school districts in 2011 and 2012 when projects reached reporting milestones. Final credits earned, incremental costs, and annual operating observations reported in previous periods have not been included or compared to the data reported this period. The exception is the comparison of the most recent electrical energy use to the first year electrical energy use of the 18 volunteer-grant projects.

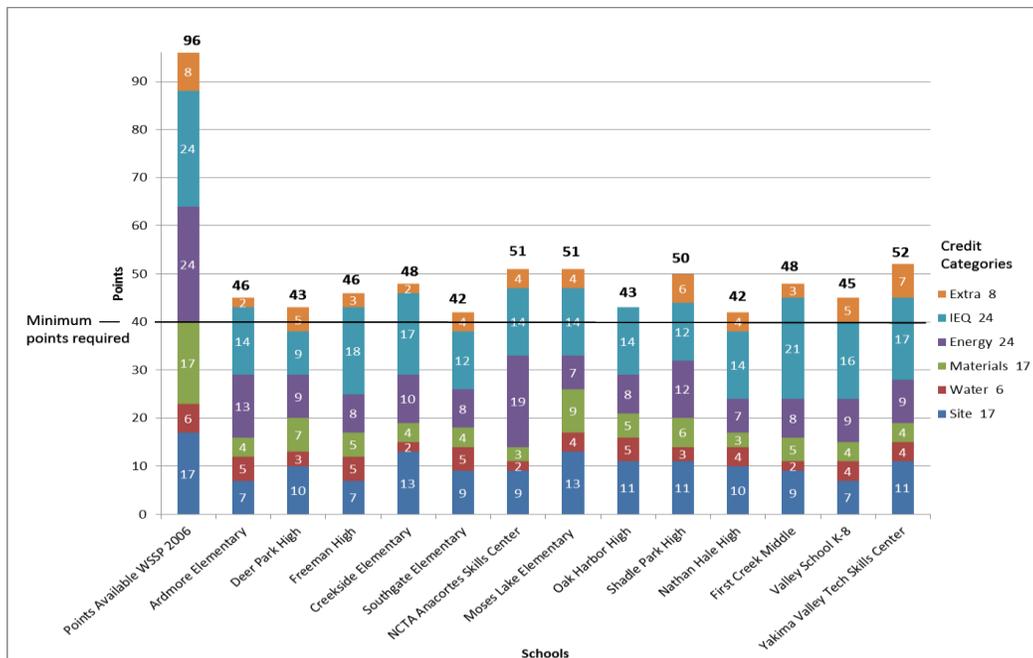
#### COMMON CREDITS EARNED TO SELF-CERTIFY

Seventeen projects received school board acceptance during this reporting period. Those schools are required to submit the final WSSP checklist and cost analysis prior to, or with, their D-11 application. Thirteen schools have submitted their documentation and four schools have not.

There are ten prerequisite credits and 57 optional credits included in WSSP 2006 which is the high-performance building standard used by all but one district that completed the final credit checklist and cost analysis in this report period. Yakima Valley Technical Skills Center used WSSP 2010, which requires a minimum of 45 points. A minimum of 40 points, out of 96 points available, must be earned to self-certify as “WSSP certified” using the 2006 version. Each of the 57 optional credits is worth at least one point.

Some credits have additional points that can be earned by going beyond the minimum credit requirement. Prerequisite credits must be achieved; they earn no points.

**Figure 2: Summary Comparison of WSSP Credits Earned**



**Finding:** All 13 schools that completed their final report exceeded the 40 point minimum requirement to be self-certified as “WSSP-certified.” For the most part, all 13 schools earned a similar number of points in each of the credit categories. Noticeable differences in Figure 3 are First Creek Middle School earning 21 points in Indoor Environmental Qualities, NCTA Anacortes Campus earning 19 points in the energy category, Moses Lake earning twice as many points in the material category as other schools, and Oak Harbor High earning no points in the extra credit category.

The same 13 school reports show that 20 of the 57 optional credits were earned by at least 10, or 75 percent, of the school projects that submitted final credit checklists in this report period. These 20 credits focus heavily on selecting and preserving a suitable site, conserving natural resources, and creating and maintaining a healthy indoor environment for student learning.

**Table 4: Common Credits Earned by Completed Projects**

WSSP 2006			
Credit	Credit Name	Brief Project Description	Out of 13
S1.1	Sensitive Areas	Avoidance of environmentally sensitive areas	11
S1.2	Greenfields	Avoidance of sites that are undeveloped	12
S1.4	Joint Use on-Site	Shared or dedicated portions of the site	13
S2.1	Public Transportation	Proximity to public transportation	12
S2.2	Bicycles	Provide bicycle lanes and secure bicycle parking	13
S3.2	Stormwater	Treat and reduce stormwater	12
S5.1	Light Pollution	Eliminate light trespass from site	11
W1.1	Irrigation Water	Reduce irrigation water use by 50%	13
W1.2	Scheduling Water	Manage irrigation water use	11
M1.1	Construction Site Waste Management	Divert construction debris from the landfill by 50% or 75%	11
M2.4	Eliminate Ozone Depleting Substances	New base building equipment must be free of HCFCs and halon	10
M2.5	Regional Materials	Install building materials that are extracted and manufactured within 500 miles	10
E1.1	Superior Energy	Increase energy efficiency	13
E4.1	Additional Commissioning	Cx Agent shall be involved in design, construction, post-occupancy, and training	11
IEQ2.1	Electric Lighting Quality	High-quality, adjustable, and task lighting	12
IEQ3.3	Source Control -	Isolate spaces that produce pollutants	10
IEQ3.4	Ducted HVAC Returns	Install ducted HVAC returns, not plenum	10
IEQ4.2	Enhanced Audio	Sound systems and assistive listening	12
IEQ6.1	User Controls Windows	Provide one operable window in each classroom	11
IEQ6.2	User Controls	Provide temperature and lighting controls	13

## COST OF COMPLIANCE

Districts are required to report the incremental cost, or savings, related to earning an optional credit at two different phases of the project: 1) during the design phase when credits have been targeted and costs have been estimated, and 2) at project completion, or prior to board acceptance, when the actual costs of construction are known. The WSSP defines an incremental cost as the calculated cost difference between the baseline cost and the actual cost. It further defines a baseline cost as the cost of code compliance or the cost of standard district practice, and the actual cost, or savings, as the amount directly attributable to achieving a credit. It is valuable for districts to analyze the incremental cost or savings attributable to high-performance measures within an individual project to assess the financial return on the investment over time and to make informed decisions for future projects. However, it is of little value to compare the incremental costs of one project to another given the variables inherent in the design and construction processes.

**Finding:** Incremental costs or savings, reported in 2011–2012, for 13 schools range from \$23 dollars per square foot to less than \$1 per square foot for design, construction and administrative services. Incremental costs or savings for credit compliance, and costs per square foot, vary from project to project for a wide range of reasons including site-specific requirements, jurisdictional codes, district design standards, environmental project goals, time of year of construction, material availability, designer and contractor experience, and cost estimator.



Figure 3: Spokane School District, Shadle Park High School

**Table 5: Reported Incremental Costs for Completed Projects**

District and School	Square Feet	Year Reported	Credits Earned	Incremental Cost	Incremental Cost per Square Foot	Percent of Total Project Cost *
<b>Bellevue School District</b>						
Admore Elementary	70,330	2011	48	\$932,479	\$13	4.67%
<b>Deer Park School District</b>						
Deer Park High	152,119	2011	40	\$3,278,160	\$22	7.87%
<b>Freeman School District</b>						
Freeman High	85,059	2011	46	\$232,330	\$3	1.36%

**Table 5: Reported Incremental Costs for Completed Projects (Continued)**

District and School	Square Feet	Year Reported	Credits Earned	Incremental Cost	Incremental Cost per Square Foot	Percent of Total Project Cost *
<b>Issaquah School District</b>						
Creekside Elementary	72,576	2011	48	\$1,018,060	\$14	4.96%
<b>Kennewick School District</b>						
Southgate Elementary	50,966	2011	42	\$160,725	\$3	1.76%
<b>La Conner School District</b>						
NCTA Anacortes Campus Skills Center	18,189	2011	51	\$373,620	\$21	Not Available
<b>Moses Lake School District</b>						
Moses Lake Elementary	46,850	2012	51	\$620,675	\$13	5.53%
<b>Oak Harbor School District</b>						
Oak Harbor High	211,085	2012	43	\$842,100	\$4	1.51%
<b>Seattle School District</b>						
Nathan Hale High	191,057	2012	42	\$2,000	<1	0.00%
<b>Spokane School District</b>						
Shadle Park High	274,975	2012	50	\$2,805,704	\$10	4.17%
<b>Tacoma School District</b>						
First Creek Middle	119,861	2011	48	\$420,600	\$4	1.07%
<b>Valley School District</b>						
Valley K–8 Phase 3	20,003	2012	45	\$48,250	\$2	.95%
<b>Yakima School District</b>						
Yakima Valley Tech Skills Center Phase 1	21,956	2012	52	\$504,980	\$23	3.30%
<b>Total Incremental Cost</b>				<b>\$11,239,683</b>		

\*Total project costs represent total cost reported by districts, at project completion, for purposes of recovering SCAP funding. Kennewick, Moses Lake, and Spokane are calculated using total project cost at D-10 which is prior to final reconciliation.

A detailed list of the cost, or savings, attributable to individual credits earned by each project is included as Appendix B.

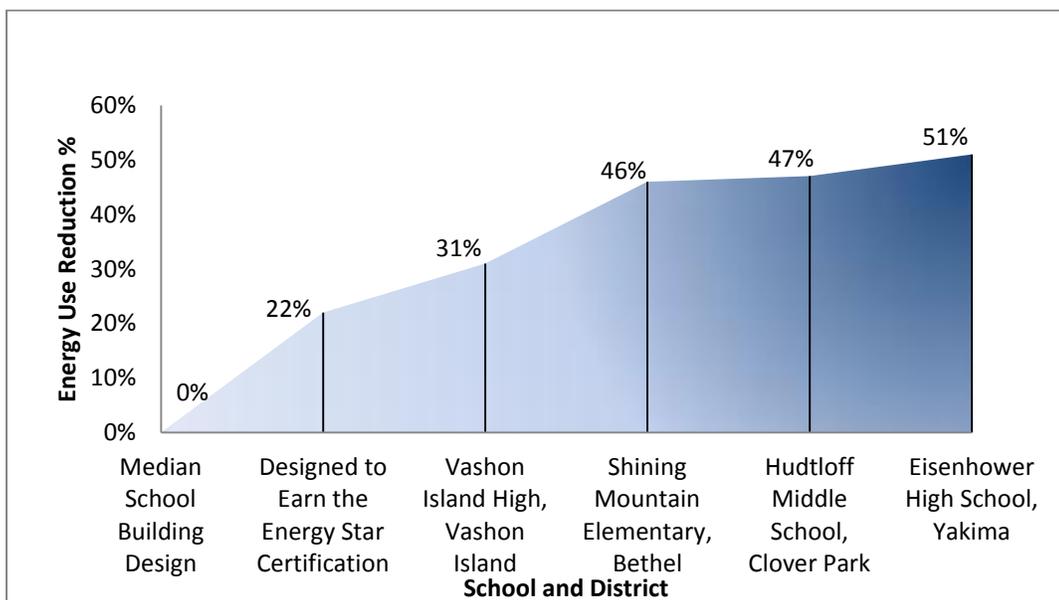
## RESOURCE CONSERVATION

Chapter 39.35 RCW Energy conservation in design of public facilities requires schools that are 25,000 square feet and above to complete an Energy Life Cycle Cost Analysis (ELCCA) following the guidelines and using the services of the Department of Enterprise Services (DES) Energy Program. School designs appear to be reaching high energy efficiency marks. This may be attributable to the 2009 Washington State Energy Code, the analysis requirements in the Energy Life Cycle Cost Analysis (ELCCA) Guidelines for Public Agencies in Washington State, the increased options for alternate energy systems, or simply the goals of the district to build a sustainable school. Recent school project designs compared to the national benchmarking energy use program, Energy Star, demonstrate that Washington schools are being designed with modeled energy use that would qualify them for an Energy Star Rating of 80 to 90 with 75 being the minimum rating to be labeled an Energy Star certified building.

Energy Star has a new tool, Target Finder, which enables design professionals and school building owners to set energy targets during design and receive an EPA energy performance score for projects during the design process. The modeled energy use for the chosen design from four recently completed ELCCA's was entered into the Energy Star Target Finder program to see how the chosen design would rate. Each project was targeted to meet an energy performance rating of 75, which equates to an energy reduction target of 22 percent above a median school building. The results show that all four designs significantly beat the target energy performance rating of 75, showing modeled energy reductions above the median school building of 31 to 51 percent.

**Finding:** School buildings designed in 2011–2012 have chosen a building design with a modeled energy use reduction that exceeds the reduction of a school designed to meet the EPA's minimum Energy Star certified performance rating.

**Figure 4: Designed Energy Use Reduction**



District annual reporting is required for five years following board acceptance of a project. Some districts have begun to report annual energy and water use and building performance observations one year after occupancy, as opposed to waiting for board acceptance. In some cases the first year energy use is higher than the modeled use, and higher than subsequent years, as operators learn to commission and operate the new systems. The first 18 volunteer-grant schools have been providing annual reports of energy and water use for one to four years. The most current electrical energy use reported by these schools, compared to the first year electric energy use, shows a decrease in energy use in ten of the schools, an increase in two schools, and is not yet able to be determined for six schools.

Appendix C is a list of the 18 volunteer-grant schools reported annual electrical energy use comparison of the first year use to the most recent year use. The Snohomish High School is reported as two separate projects.

**Finding:** Ten of the 18 schools show an electrical energy use reduction in the most recent year as compared to the first year; three have reductions over 17 percent.

## **BUILDING MATERIALS AND SYSTEMS PERFORMANCE OBSERVATIONS**

For five years following board acceptance, districts are required to report observations annually regarding the ways their achieved credits have resulted in benefits or problems in the subsequent operations and maintenance of the facility.

Positive and negative observations are expected to be reported and include related repairs, added or avoided maintenance, performance and custodial issues. The annual reports received have been prepared by various people in the districts.

The demand for, and availability of, green building products and systems has expanded in recent years.

Districts that once had building standards that they relied on are now incorporating new materials and systems that they have no experience with regarding durability, user operations, and useful life. These new materials and systems, selected for low volatile organic compound content or the energy efficiency, need to be monitored in order to establish a true value to the project over time. Districts that assess and voluntarily record the performance of new building materials, new building systems, and advanced technology are building an invaluable foundation to guide subsequent school construction projects.



Figure 5: Kennewick School District, Cottonwood Elementary

Appendix D captures all of the performance observations reported in 2011 and 2012. Comments include “excellent, works well,” “ongoing costs to maintain,” and “user-training required.”

## **SUPPORT FOR OTHER STATE INITIATIVES**

Districts are using the Environmental Protection Agency’s (EPA) Energy Star Portfolio Manager, utility-provider tracking software, to record and track actual energy and water use whether or not they are subject to high-performance compliance. Districts that enter energy and water consumption and cost data into Portfolio Manager are availing themselves of a powerful facility management tool to benchmark building energy performance, assess energy management goals over time, spot operating problems, and identify strategic opportunities for savings. The Energy Star program is also capable of calculating the CO2 reduction of the building.

Portfolio Manager compares district facilities against similar buildings using a national survey conducted by the Department of Energy’s Energy Information Administration. This national survey, known as the Commercial Building Energy Consumption Survey (CBECS), is conducted every four years and gathers data on building characteristics and energy use from thousands of buildings across the United States. Schools are compared to other schools in the CBECS survey. After districts enter a full year of data, the system will rate the school against the comparison schools. A rating of 50 indicates that the building, from an energy consumption standpoint, performs better than 50 percent of all similar buildings nationwide. A rating of 75 indicates that the building performs better than 75 percent of all similar school buildings nationwide. To qualify for an Energy Star Label, a school must earn a 75 or higher on EPA’s 1–100 energy performance scale, indicating that the facility performs better than at least 75 percent of schools nationwide. As of August 2012 there are 127 Energy Star Labeled Washington State school buildings. Eight of them are subject to the state’s high-performance building requirements.

**Table 6: Energy Star Labeled High-Performance Schools**

<b>District</b>	<b>School</b>	<b>Year Energy Star Labeled</b>	<b>Energy Star Rating</b>
Bellingham School District	Shuksan Middle School	2011	97
Bellingham School District	Wade King Elementary School	2011	98
Bethel School District	Liberty Junior High School	2011	76
Camas School District *	Camas High School	2010	76
Camas School District *	Hayes Freedom High School	2012	98
Edmonds School District	Lynnwood High School	2011	94
Lake Washington School District	Rachel Carson Elementary	2010	84
Vancouver School District	VSAА (Arts and Academics)	2010	78

\*Schools were granted a not practicable exemption from high-performance requirements.

**Finding:** Schools using Energy Star are able to report GHG emission reductions in support of RCW 70.235.020 GHG Reduction and Planning.

**Finding:** High-performance schools respond to E2SSB 5854 Energy Reporting requirements, for State Owned Buildings, by building energy efficient schools and then tracking and reporting energy and water use.

A complete list of the 127 Energy Star Labeled schools as of August 15, 2012 is available on the [OSPI High-Performance School Buildings Program website](#).

## IV. Incentives and Disincentives

### INCENTIVES

1. High-performance building standards used as a design and construction guideline provide an awareness of the options for creating a sustainable school. Thirty-seven percent of the school projects subject to high-performance requirements have requested, and been granted, a not practicable exemption; however, many of these schools have incorporated high-performance measures into their buildings.
2. The WSSP standard supports the commitment to implement best practices of school building maintenance and operations.
3. High-performance schools may reduce natural resource use including the first-time purchase of building materials and energy and water use over the life of the building.
4. One third of the credits included in WSSP 2010 are measures to protect or enhance the indoor learning environment of schools.
5. Building high-performance schools builds public support and may incentivize the community to endorse local bond initiatives for school construction.

### DISINCENTIVES

1. Annual reporting may create a hardship for districts with or without facility services departments. The transition of monitoring and reporting from capital-development staff to operating staff creates an unrecognized workload.

## V. Recommendations

1. Change the five year annual reporting period in RCW 39.35D.040 (2) from a minimum of five years following local board acceptance to a minimum of five years following building occupancy.

2. Currently, there is no built-in mechanism to trigger annual reports or any incentive for districts to complete them. Coordinate the five year annual reporting of high-performance buildings, currently due in June, with Assest Preservation Program (APP) reporting that is due to OSPI prior to April 1. The building performance observation section of high-performance annual reporting would be conducted as part of the building condition assessment review for APP.
3. Change annual reporting of energy and water use from the current Annual Reporting Workbook to a centralized repository, Energy Star Portfolio Manager, under one account for Washington State Schools.
4. Incorporate all high-performance building reporting requirements into the Inventory and Condition of Schools (ICOS) web-based system where inventory and condition details, about facilities and sites operated by districts, are documented and stored. ICOS benefits districts by providing functionality for inventory tracking, condition rating, record keeping, and comparative and report analysis.
5. Provide additional training for project stakeholders about the submittal requirements to meet the high-performance school building program requirements.
6. Update the High-Performance School Program guidelines to better convey existing requirements, practices, and tools.

## VI. Conclusion

School districts statewide are engaged in “green school” activities beyond building and operating high-performance schools. They are striving to improve the health and wellness of students and staff, to provide effective environmental and sustainability education, and to reduce environmental impacts and costs. Washington Green Schools and the U.S. Department of Education’s Green Ribbon Schools are just two of the many sustainable schools programs that encourage, promote, and educate school districts on how to transform school environments.



Figure 6: Oak Harbor School District, Oak Harbor High

The use of the Washington Sustainable Schools Protocol, as a design and planning tool for major school construction projects, is valuable, achievable, and generally acceptable. Many of the credits are now standard best practices, while others cause the district and design team to consider new options. The protocol will need to continue to evolve as sustainable practices and technology evolves to keep up with building code requirements. Most of the districts currently

applying for State Construction Assistance Program funding have passed bonds more recently than 2008 and 2009 making it likely that fewer and fewer districts will be requesting an exemption from high-performance requirements.

Districts are providing annual reports of energy and water use as well as performance observations, and the data is being collected by OSPI. No reporting or analysis methodology has been developed to correlate student achievement, staff and student attendance, or health and wellness benefits to schools built to high-performance standards.

Costs of compliance with high-performance requirements are also reported by districts and captured by OSPI; however, the district-to-district cost differences do not enable OSPI to draw any conclusions on the “typical” incremental cost of high-performance schools. Additional analysis is necessary to draw more definitive conclusions about the financial return on the initial cost of compliance.

So much attention is focused on the cost of compliance as opposed to the improved quality of the school environment. Washington’s one million students and 100,000 faculty and staff that spend time in our K–12 schools benefit daily from the additional care and concerned choices to provide a healthy, safe, and comfortable sustainable school.

## **ACKNOWLEDGMENTS**

This report is made possible by the many school district staff and their professional service providers who have incorporated high-performance measures into their capital improvement projects and reported their accomplishments to OSPI. Acknowledgment is also due the WSSP Review Team whose members are Brian Carter, Bruce Pitts, Carter Bagg, Ed Peters, George Bryant, Greg Brown, Jim Hansen, Mike Laverty, Nancy Bernard, and Tim Byrne.

## VII. Appendices

Appendices A through D are incorporated in the electronic report file on the OSPI website under Reports to the Legislature, High Performance School Buildings 2012 at <http://www.k12.wa.us/LegisGov/Reports.aspx>.

Appendix A: All School Projects Subject to High-Performance Building Requirements  
August 2006 Through September 2012

Appendix B: Reported Incremental Cost Detail by Credit

Appendix C: Comparison of Annual Electrical Energy Use

Appendix D: Maintenance and Operations Performance Observations

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Old Capitol Building  
P.O. Box 47200  
Olympia, WA 98504-7200

# Appendix A: All School Projects Subject to High-Performance Building Requirements - August 2006 Through September 2012

School District	School Name & Project Type	High Performance Designation	Project Status	Annual Reports Received	Submittals Due From the District
Bainbridge	Bainbridge HS Bldg 200	Volunteer - Grant	Complete	Year 1, 2	Year 3
Bellevue	Ardmore El	Yes	Complete	Year 1, 2	
Bellevue	Bellevue HS Repl (N/L) & Mod	Yes	Construction	Not due yet	D9
Bellevue	Eastgate El Repl (N/L)	Yes	Complete	Year 1, 2	D11 Cost
Bellevue	Sherwood Forest El	Volunteer - Grant	Complete	Year 1, 2, 3, 4	
Bellevue	Spiritridge El Repl (N/L)	Yes	Construction	Not due yet	D9
Bellingham	Shuksan MS	Yes	Complete		D9, D11, Year 1
Bellingham	Wade King El	Volunteer - Grant	Complete	Year 1	Year 2
Bethel	Clover Creek El Repl (N/L)	Yes	Construction	Not due yet	
Bethel	Liberty Jr.	Volunteer - Grant	Complete	Year 1, 2, 3	
Bethel	Pierce Co Skills Center Phase 1	Yes	Complete	Not due yet	D11
Bethel	Pierce Co Skills Center Phase 2	Yes	Construction	Not due yet	
Bethel	Shining Mountain El Repl (N/L) & Mod	Yes	Construction	Not due yet	
Bethel	Spanaway El Repl (N/L)	Yes	Construction	Not due yet	
Bethel	Spanaway Lake HS Addition	Yes	Construction	Not due yet	
Bickleton	Bickleton K-8 Ad Repl (N/L) Mod	Yes	Construction	Not due yet	D9 ELCCA and narrative
Camas	Garfield Bldg Repl (N/L) <i>Camas HS</i>	Not Practicable Exemption	N/A	N/A	
Camas	Hayes Freedom HS (N/L)	Not Practicable Exemption	N/A	N/A	
Centralia	Oak View El Add	Volunteer - Grant	Complete	Year 1	Year 2, 3
Cheney	Middle School Repl -Betz Road Site	Yes	Construction	Not due yet	
Cheney	New Middle - Abbott Road Site	Yes	Construction	Not due yet	
Clover Park	Harrison Prep & Associated Elementary School	Yes	Design	Not due yet	
Clover Park	Lakes HS Aux Gym Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Clover Park	Hudtloff Middle	Yes	Construction	Not due yet	
Clover Park	Hillside Elementary	Yes	Design	Not due yet	
Clover Park	Carter Lake	Yes	Design	Not due yet	
Davenport	Davenport K-8 Add (Repl (N/L) & Mod)	Yes	Design	Not due yet	D9 ELCCA and narrative
Deer Park	Deer Park HS Add/Mod	Yes	Complete	Not due yet	
Eastmont	Grant El Mod	Yes	Design	Not due yet	
Eastmont	Sterling Intermediate Mod	Yes	Construction	Not due yet	
Eastmont	Eastmont High Ad & Mod	Yes	Design	Not due yet	

Application: D-3

Design: Between D-5 and D-9 Received/Due

Construction: Between D-9 and D-11 Final Reporting

Complete: D-11 Final Reporting Received/Due

# Appendix A: All School Projects Subject to High-Performance Building Requirements - August 2006 Through September 2012

School District	School Name & Project Type	High Performance Designation	Project Status	Annual Reports Received	Submittals Due From the District
East Valley	Terrace Heights Elementary	Yes	Design	Not due yet	D9 cost, strategy, ELCCA
Eatonville	Eatonville MS Add & Mod	Not Practicable Exemption	N/A	N/A	
Eatonville	Eatonville High School	Not Practicable Exemption	N/A	N/A	
Eatonville	Eatonville Elementary	Not Practicable Exemption	N/A	N/A	
Eatonville	Weyerhaeuser Elementary	Not Practicable Exemption	N/A	N/A	
Edmonds	Meadowdale MS Repl (N/L) 1 & 2	Yes	Construction	Not due yet	
Edmonds	Lynnwood HS	Volunteer - Grant	Complete	Year 1, 2, 3	
Everett	Everett HS Little Theatre Mod	Not Practicable Exemption	N/A	N/A	
Everett	Forest View El	Volunteer - Grant	Complete	Year 1, 2, 3, 4	
Everett	Everett HS Gym Building	Not Practicable Exemption	N/A	N/A	
Everett	James Monroe El Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Everett	Jefferson El Mod & N/L	Not Practicable Exemption	N/A	N/A	
Everett	View Ridge El	Not Practicable Exemption	N/A	N/A	
Everett	Whittier El Mod & N/L	Not Practicable Exemption	N/A	N/A	
Evergreen	Health and Bioscience academy	Not Practicable Exemption	N/A	N/A	
Federal Way	Lakeland ElRepl (N/L)	Not Practicable Exemption	N/A	N/A	
Federal Way	Lakota MS (N/L)	Not Practicable Exemption	N/A	N/A	
Federal Way	Panther Lake El Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Federal Way	Sunnycrest El Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Federal Way	Valhalla El Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Freeman	Freeman El Add & Mod	Yes	Construction	Not due yet	
Freeman	Freeman HS Mod	Yes	Complete	Year 1	
Highline	McMicken Hts El Repl (N/L)	Yes	Complete	Not due yet	D11 Cost Analysis
Highline	Parkside Elementary NOT STATE FUNDED	Yes	Complete	N/A	
Issaquah	Creekside Elem (#15)	Yes	Complete	Year 1	
Kennewick	Cascade Elementary	Yes	Construction	Not due yet	
Kennewick	Cottonwood El	Yes	Complete	Year 1	D11
Kennewick	Canyon View El Add & Mod	Yes	Construction	Year 2	
Kennewick	Lincoln Elementary	Yes	Construction	Not due yet	

Application: D-3

Design: Between D-5 and D-9 Received/Due

Construction: Between D-9 and D-11 Final Reporting

Complete: D-11 Final Reporting Received/Due

# Appendix A: All School Projects Subject to High-Performance Building Requirements - August 2006 Through September 2012

School District	School Name & Project Type	High Performance Designation	Project Status	Annual Reports Received	Submittals Due From the District
Kennewick	Southgate El Add & Mod	Yes	Complete	Year 1	
Kennewick	Sunset View El Ad & Mod	Yes	Construction	Not due yet	
Kent	Mill Creek MS Repl (N/L) & Mod	Not Practicable Exemption	N/A	N/A	
Kent	Kent Meridian HS Main Gym	Not Practicable Exemption	N/A	N/A	
La Conner	Northwest Career & Tech Academy (NCTA) <b>Mt Vernon</b>	Yes	Complete	Not due yet	
La Conner	Northwest Career & Tech Academy (NCTA) <b>Anacortes</b>	Yes	Complete	Year 1	
Lake Washington	Finn Hill Jr Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Lake Washington	John Muir El Repl (N/L)	Yes	Construction	Not due yet	D9 ELCCA and narrative
Lake Washington	Helen Keller El Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Lake Washington	Carl Sandburg El Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Lake Washington	Lake WA HS Repl (N/L)	Yes	Construction	Not due yet	
Lake Washington	International Community School and Community Elementary	Not Practicable Exemption	N/A	N/A	
Lake Washington	Alexander Graham Bell El Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Lake Washington	Benjamin Rush El Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Lake Washington	Rose Hill Jr High Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Lake Washington	Rachel Carson El	Volunteer - Grant	Complete	Year 1, 2, 3, 4	
Marysville	Grove El	Volunteer - Grant	Complete	Year 1, 2	Year 3
Marysville	Transportation Coop Facility	Not Practicable Exemption	N/A	N/A	
Meridian	Meridian Elementary	Yes	Design	Not due yet	
Meridian	Meridian MS Ad, Repl (N/L) & Mod	Not Practicable Exemption	N/A	N/A	
Meridian	Meridian HS Ad, Repl (N/L) & Mod	Yes	Design	Not due yet	
Montesano	Beacon Ave El Mod	Not Practicable Exemption	N/A	N/A	
Moses Lake	New El Sage Point	Yes	Complete		Year 1, 2, 3
Moses Lake	Chief Moses MS Gym Ad	Not Practicable Exemption	N/A	N/A	
Moses Lake	Park Orchard El <i>Paxton Site</i>	Yes	Complete	Not due yet	
Moses Lake	Central Washington Transportation Cooperative	Not Practicable Exemption	N/A	N/A	
Mount Vernon	Mount Vernon HS Gym Mod	Yes	Design	Not due yet	

Application: D-3

Design: Between D-5 and D-9 Received/Due

Construction: Between D-9 and D-11 Final Reporting

Complete: D-11 Final Reporting Received/Due

# Appendix A: All School Projects Subject to High-Performance Building Requirements - August 2006 Through September 2012

School District	School Name & Project Type	High Performance Designation	Project Status	Annual Reports Received	Submittals Due From the District
Mukilteo (host)	Sno-Isle Technical Skills Center	Not Practicable Exemption	N/A	N/A	
North Franklin	N Franklin Region Transp Coop	Not Practicable Exemption	N/A	N/A	
North Franklin	Connell El Repl (N/L)	Yes	Construction	Not due yet	
North Franklin	Olds Jr Mod & Add	Yes	Construction	Not due yet	
North Thurston	Chinook MS Add & Mod	Not Practicable Exemption	N/A	N/A	
North Thurston	Nisqually MS Add & Mod	Not Practicable Exemption	N/A	N/A	
Northshore	Bothel HS Phase 3 Mod & Add	Volunteer - Grant	Complete	Year 1, 2, 3, 4	
Northshore	Kenmore Jr High Repl (N/L) - Phase 3		Construction	Not due yet	
Northshore	Woodinville HS Repl (N/L) Phase 1&2	Yes	Construction	Not due yet	
Oak Harbor	Oak Harbor HS Repl (N/L)/Mod	Yes	Complete	Year 1	
Orient	Orient El Ad & Mod	Yes	Construction		D9
Othello	High Classroom Add	Not Practicable Exemption	N/A	N/A	
Othello	Lutacaga El Ad /Mod	Not Practicable Exemption	N/A	N/A	
Othello	McFarland Jr High Ad/ Mod	Not Practicable Exemption	N/A	N/A	
Othello	Othello HS Ad/Mod	Not Practicable Exemption	N/A	N/A	
Othello	Hiawatha El Ad & Mod	Not Practicable Exemption	N/A	N/A	
Othello	Scotney El Ad & Mod	Not Practicable Exemption	N/A	N/A	
Pomeroy	Pomeroy Jr/Sr High	Yes	Construction	Not due yet	
Quillayute Valley	Forks HS Add& Repl (N/L)	Yes	Construction	Not due yet	
Renton	Hazen HS Add (N/L)	Yes	Construction	Not due yet	
Riverview	Carnation El Mod	Not Practicable Exemption	N/A	N/A	
Riverview	Cherry Valley El Repl (N/L) & Mod	Not Practicable Exemption	N/A	N/A	
Riverview	Riverview Alternative	Not Practicable Exemption	N/A	N/A	
Seattle	Denny MS /Chief Sealth HS)	Yes	Construction	Not due yet	
Seattle	Hamilton Int MS	Volunteer - Grant	Complete	Year 1	
Seattle	Ingraham H Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Seattle	Nathan Hale HS (N/L) and Mod-Phase 1 and Phase II	Yes	Complete	Not due yet	
Sedro-Woolley	Cascade Middle School Modernization and Addition	Yes	Construction	Not due yet	
Shoreline	Shorecrest HS Repl (N/L) & Mod	Yes	Construction	Not due yet	
Shoreline	Shorewood HS Repl (N/L)	Yes	Construction	Not due yet	

Application: D-3

Design: Between D-5 and D-9 Received/Due

Construction: Between D-9 and D-11 Final Reporting

Complete: D-11 Final Reporting Received/Due

# Appendix A: All School Projects Subject to High-Performance Building Requirements - August 2006 Through September 2012

School District	School Name & Project Type	High Performance Designation	Project Status	Annual Reports Received	Submittals Due From the District
Snohomish	High School - Phase 1 sets 1,2,3 and Phase 2 set 4. Mod/New/Non-	Volunteer - Grant	Complete	Set 2 Year 1, 2, 3 Set 3 Year 1	
Snohomish	Machias El Repl N/L	Yes	Complete	Not due yet	D11
Snohomish	Riverview El Repl (N/L)	Yes	Construction	Not due yet	
Snohomish	Valley View MS Repl (N/L)	Yes	Construction	Not due yet	
Spokane	Shadle Park HS mod	Volunteer - Grant	Complete	Year 1	
Spokane	Westview El Repl (N/L)		Construction	Not due yet	
Spokane	Ferris High Repl (N/L) & Mod		Construction	Not due yet	
Spokane	Jefferson Elementary	Yes	Construction	Not due yet	
Steilacoom	Pioneer MS	Volunteer - Grant	Complete	Year 1, 2	Year 3, 4
Sumner	Bonney Lake El Repl (N/L) & Mod	Not Practicable Exemption	N/A	N/A	
Sumner	Victor Falls El	Not Practicable Exemption	N/A	N/A	
Sumner	Lakeridge MS N/L	Not Practicable Exemption	N/A	N/A	
Sumner	Maple Lawn El	Not Practicable Exemption	N/A	N/A	
Sumner	Sumner MS Repl (N/L) & Mod	Not Practicable Exemption	N/A	N/A	
Sunnyside	Sunnyside HS Add & Mod (N/L)	Yes	Construction	Not due yet	
Tacoma	Baker MS Repl (N/L)	Yes	Construction	Not due yet	
Tacoma	First Creek MS (Portland Ave MS @ McIlvaigh Site)	Yes-Volunteer thru construction	Complete	N/A	
Tacoma	Gray MS	Volunteer - Grant	Complete	Year 1, 2	Year 3, 4
Tacoma	Geiger El Repl (N/L)	Not Practicable Exemption	N/A	N/A	
Tacoma	Washington Elementary Mod	Yes	Application	Not due yet	
Tumwater	New Market Skills Lab Bldg D	Volunteer - Grant	Complete	Year 1, 2, 3, 4	Year 5
University Pl	Curtis HS Gym Replacement	Not Practicable Exemption	N/A	N/A	
University Pl	Curtis HS Aquatic Ctr Repl (N/L) & Mod	Not Practicable Exemption	N/A	N/A	
Valley	Valley K-8 School Add	Yes	Complete	Year 1	
Vancouver	Vancouver Arts & Acad Mod	Volunteer - Grant	Complete	Year 1, 2, 3	
Vashon	Vashon Island High School N/L	Yes	Construction	Not due yet	
Walla Walla	South East Area Technical (SEA Tech) Skills Center	Yes	Application	Not due yet	
Wapato	Wapato HS Addition & Mod	Yes	Construction	Not due yet	
Warden	Warden MS/HS Gym Mod	Yes	Construction	Not due yet	
Warden	Warden Vo-Ag Bldh Mod and Addition	Yes	Design	Not due yet	

Application: D-3

Design: Between D-5 and D-9 Received/Due

Construction: Between D-9 and D-11 Final Reporting

Complete: D-11 Final Reporting Received/Due

# Appendix A: All School Projects Subject to High-Performance Building Requirements - August 2006 Through September 2012

School District	School Name & Project Type	High Performance Designation	Project Status	Annual Reports Received	Submittals Due From the District
Warden	Cafeteria Ad & Mod	Yes	Construction	Not due yet	
Wellpinit	El-High Mod	Yes	Construction	Not due yet	
West Valley	9th Grade Center Modernization	Not Practicable Exemption	N/A	N/A	
White Pass	White Pass El Ad (N/L) & /Mod	Not Practicable Exemption	N/A	N/A	
White Pass	White Pass Jr/Sr	Not Practicable Exemption	N/A	N/A	
Willapa Valley	Willapa Valley HS&MS	Volunteer - Grant	Complete	Year 1, 2, 3	
Willapa Valley	Elementary Remodel and Modernization	Not Practicable Exemption	N/A	N/A	
Yakima	A.C. Davis High School Mod & Rev	Yes	Design	Not due yet	
Yakima	Yakima Valley Tech Skills Center Phase 2	Yes	Construction	Not due yet	
Yakima	Yakima Valley Tech Skills Center Phase 1	Yes	Complete	Year 1, 2	
Yakima	Stanton Alternative High Ad & Repl (N/L)	Yes	Design	Not due yet	
Yakima	Eisenhower HS Add & Repl (N/L)	Yes	Construction	Not due yet	

Application: D-3

Design: Between D-5 and D-9 Received/Due

Construction: Between D-9 and D-11 Final Reporting

Complete: D-11 Final Reporting Received/Due

# Appendix B: Reported Incremental Cost Detail by Credit

School District Name	Bellevue SD	Deer Park SD	Freeman SD	Issaquah SD
School Name	Admore Elem	Deer Park High	Freeman High	Creekside Elem
Year Costs Reported	2011	2011	2011	2011
Building Size in Square Feet	70,330	152,119	85,059	72,576
WSSP 2006 Credit, *WSSP 2010 Credit				
<b>Site</b>				
S1.4 Joint Use On-site				
S1.5 Joint Use Off Site				
S2.1 Public Transportation				
S2.2 Bicycles		\$12,000		
S2.3 Minimize Parking				
S3.0 Sedimentation, Erosion Control				
S3.1 On-Site Infiltration				
S3.2 Stormwater Treat & Reduce				
S3.3 Enhanced Stormwater Treatment				\$153,000
S4.2 Heat Island Roof				
<b>Subtotal</b>	\$0	\$12,000	\$0	\$153,000
<b>Water</b>				
W1.1 Irrigation Water Reduction 50%			\$3,490	
W1.2 Irrigation Water Control		\$12,210		\$2,400
W1.3 Irrigation System Testing				
W2.1 Potable Water Use Sewage				
W2.2 Potable Water Use Indoor		\$21,150		
<b>Subtotal</b>	\$0	\$33,360	\$3,490	\$2,400
<b>Energy</b>				
E1.1 Superior Energy Performance	\$695,999	\$765,800	\$85,000	\$86,000
E2.2 Daylight Responsive Controls				\$41,124
E3.2 Distributed Generation				
E4.0 Fundamental Commissioning				
E4.1 Enhanced Commissioning	\$9,660	\$15,000		\$28,000
E4.1.3 Systems Manual*				
E5.1 Energy Management System				
<b>Subtotal</b>	\$705,659	\$780,800	\$85,000	\$155,124
<b>Materials</b>				
M1.0 Recycling Location				
M1.1 Construction Waste Management	-\$12,000	\$5,000	\$5,000	
M1.2 Building Structure Reuse		\$1,795,800		
M2.1 Recycled Content		\$55,000		\$20,355
M2.2 Rapidly Renewable Materials				\$765
M2.3 Certified Wood				
<b>Subtotal</b>	-\$12,000	\$1,855,800	\$5,000	\$21,120
<b>Indoor Environmental Quality</b>				
IEQ1.0 Daylighting 2% Critical Spaces	\$204,320			
IEQ1.1 Daylighting 2% Renovation				\$32,450
IEQ1.2 Fixed Position Shading	\$34,500			\$134,000
IEQ2.1 Electric Lighting Quality		\$61,000		
IEQ3.0.2 Additional Mitigation Ventilation*				
IEQ3.3 Source Control		\$192,500		
IEQ3.4 Ducted HVAC Returns				\$21,000
IEQ3.5 Particle Arrestance Filtration				\$2,700
IEQ3.6 IAQ Management			\$8,000	\$4,500
IEQ4.1 Improved Acoustical Performance			\$20,000	
IEQ4.2 Enhanced Audio		\$52,200	\$102,000	\$350,000
IEQ6.1 User Controls Operable Windows		\$38,500		
IEQ6.2 User Controls Temp and Lights		\$225,000		
<b>Subtotal</b>	\$238,820	\$569,200	\$130,000	\$544,650
<b>Planning, Ed and Operations</b>				
EX1.1/PEO1.1 Eco-Charette		\$3,500		
EX2.2 Post Occupancy Evaluation				
EX2.3/PEO3.2 LCCA		\$10,000		\$10,000
EX3.1/PEO2.1 Green Building Learning				
EX4.1 Project/District Innovation		\$13,500		
<b>Subtotal</b>	\$0	\$27,000	\$0	\$10,000
<b>Designer, Contractor, Owner Premiums</b>	\$0	\$0	\$8,840	\$131,766
<b>Total Incremental Cost</b>	<b>\$932,479</b>	<b>\$3,278,160</b>	<b>\$232,330</b>	<b>\$1,018,060</b>
<b>Cost per Square Foot</b>	<b>\$13</b>	<b>\$22</b>	<b>\$3</b>	<b>\$14</b>
<b>Percent of Total Project Cost</b>	<b>4.67%</b>	<b>7.87%</b>	<b>1.36%</b>	<b>4.96%</b>
<b>Total Project Cost *</b>	<b>\$19,987,412</b>	<b>\$41,673,383</b>	<b>\$17,141,609</b>	<b>\$20,534,441</b>

\* Total project cost reported by districts at final completion for purposes of recovering SCAP funding. Kennewick, Moses Lake and Spokane are total project cost at D10, final reconciliation has not been completed

# Appendix B: Reported Incremental Cost Detail by Credit

School District Name	Kennewick SD	LaConnor SD	Moses Lake SD	Oak Harbor SD	Seattle SD
School Name	Southgate Elem	NCTA Anacortes Campus Skills Center	Moses Lake Elem	Oak Harbor High	Nathan Hale
Year Costs Reported	2011	2011	2012	2012	2012
Building Size in Square Feet	50,966	18,189	46,850	211,085	191,057
WSSP 2006 Credit, *WSSP 2010 Credit					
<b>Site</b>					
S1.4 Joint Use On-site			\$22,200		
S1.5 Joint Use Off Site					
S2.1 Public Transportation					
S2.2 Bicycles	\$2,507		\$6,100	\$3,000	
S2.3 Minimize Parking					\$2,000
S3.0 Sedimentation, Erosion Control					
S3.1 On-Site Infiltration				\$26,624	
S3.2 Stormwater Treat & Reduce				-\$90,017	
S3.3 Enhanced Stormwater Treatment					
S4.2 Heat Island Roof			\$4,500	\$23,900	
<b>Subtotal</b>	\$2,507	\$0	\$32,800	-\$36,493	\$2,000
<b>Water</b>					
W1.1 Irrigation Water Reduction 50%			\$15,000	-\$19,435	
W1.2 Irrigation Water Control			\$500		
W1.3 Irrigation System Testing					
W2.1 Potable Water Use Sewage	\$17,700				
W2.2 Potable Water Use Indoor	\$33,000		\$3,000	\$16,264	
<b>Subtotal</b>	\$50,700	\$0	\$18,500	-\$3,171	\$0
<b>Energy</b>					
E1.1 Superior Energy Performance	-\$120,482		\$48,000	\$253,376	
E2.2 Daylight Responsive Controls	\$14,000	\$20,334	\$12,400	\$17,908	
E3.2 Distributed Generation		\$247,330			
E4.0 Fundamental Commissioning			\$39,980		
E4.1 Enhanced Commissioning	\$1,000	\$24,500	\$19,990	\$15,750	
E4.1.3 Systems Manual*					
E5.1 Energy Management System					
<b>Subtotal</b>	-\$105,482	\$292,164	\$120,370	\$287,034	\$0
<b>Materials</b>					
M1.0 Recycling Location			\$3,900		
M1.1 Construction Waste Management			\$15,000	\$19,092	
M1.2 Building Structure Reuse				\$210,950	
M2.1 Recycled Content			\$15,000		
M2.2 Rapidly Renewable Materials					
M2.3 Certified Wood			\$11,000		
<b>Subtotal</b>	\$0	\$0	\$44,900	\$230,042	\$0
<b>Indoor Environmental Quality</b>					
IEQ1.0 Daylighting 2% Critical Spaces			\$193,500		
IEQ1.1 Daylighting 2% Renovation				\$115,000	
IEQ1.2 Fixed Position Shading		\$11,000		\$56,000	
IEQ2.1 Electric Lighting Quality	\$39,000		\$16,000		
IEQ3.0.2 Additional Mitigation Ventilation*					
IEQ3.3 Source Control	\$2,000			\$9,546	
IEQ3.4 Ducted HVAC Returns	\$29,000		\$32,000	\$164,842	
IEQ3.5 Particle Arrestance Filtration	\$3,100				
IEQ3.6 IAQ Management	\$10,000				
IEQ4.1 Improved Acoustical Performance			\$5,000		
IEQ4.2 Enhanced Audio	\$4,000	\$30,234	\$17,000	\$19,300	
IEQ6.1 User Controls Operable Windows			\$8,000		
IEQ6.2 User Controls Temp and Lights	\$108,400		\$85,000		
<b>Subtotal</b>	\$195,500	\$41,234	\$356,500	\$364,688	\$0
<b>Planning, Ed and Operations</b>					
EX1.1/PEO1.1 Eco-Charette	\$2,500		\$1,500		
EX2.2 Post Occupancy Evaluation					
EX2.3/PEO3.2 LCCA			\$10,000		
EX3.1/PEO2.1 Green Building Learning		\$15,000			
EX4.1 Project/District Innovation		\$6,000			
<b>Subtotal</b>	\$2,500	\$21,000	\$11,500	\$0	\$0
<b>Designer, Contractor, Owner Premiums</b>	\$15,000	\$19,222	\$36,105	\$0	\$0
<b>Total Incremental Cost</b>	<b>\$160,725</b>	<b>\$373,620</b>	<b>\$620,675</b>	<b>\$842,100</b>	<b>\$2,000</b>
<b>Cost per Square Foot</b>	<b>\$3</b>	<b>\$21</b>	<b>\$13</b>	<b>\$4</b>	<b>\$0</b>
<b>Percent of Total Project Cost</b>	<b>1.76%</b>	<b>Not Available</b>	<b>5.53%</b>	<b>1.51%</b>	<b>0.00%</b>
<b>Total Project Cost *</b>	<b>\$9,110,199</b>	<b>Not Available</b>	<b>\$11,231,449</b>	<b>\$55,907,840</b>	<b>\$57,753,198</b>

\* Total project cost reported by districts at final completion for purposes of recovering SCAP funding. Kennewick, Moses Lake and Spokane are total project cost at D10, final reconciliation has not been completed

# Appendix B: Reported Incremental Cost Detail by Credit

School District Name	Spokane SD	Tacoma SD	Valley SD	Yakima SD	Total Cost of Credit
School Name	Shadle Park High	First Creek Middle	Valley School K-8 Phase 3	Yakima Valley Tech Skills Center Phase 1 *	for All 13 Projects
Year Costs Reported	2012	2011	2012	2012	
Building Size in Square Feet	274,975	119,681	20,003	21,956	
WSSP 2006 Credit, *WSSP 2010 Credit					
<b>Site</b>					
S1.4 Joint Use On-site	\$52,500				\$74,700
S1.5 Joint Use Off Site	\$250,000				\$250,000
S2.1 Public Transportation				\$36,000	\$36,000
S2.2 Bicycles	\$12,600	\$6,200			\$42,407
S2.3 Minimize Parking					\$2,000
S3.0 Sedimentation, Erosion Control		\$87,000			\$87,000
S3.1 On-Site Infiltration					\$26,624
S3.2 Stormwater Treat & Reduce		\$115,000			\$24,983
S3.3 Enhanced Stormwater Treatment					\$153,000
S4.2 Heat Island Roof					\$28,400
<b>Subtotal</b>	<b>\$315,100</b>	<b>\$208,200</b>		<b>\$36,000</b>	<b>\$725,114</b>
<b>Water</b>					
W1.1 Irrigation Water Reduction 50%	\$20,000		\$4,250	\$140,000	\$163,305
W1.2 Irrigation Water Control	\$33,800	\$2,000		\$2,500	\$53,410
W1.3 Irrigation System Testing				\$1,000	\$1,000
W2.1 Potable Water Use Sewage					\$17,700
W2.2 Potable Water Use Indoor	\$16,200				\$89,614
<b>Subtotal</b>	<b>\$70,000</b>	<b>\$2,000</b>	<b>\$4,250</b>	<b>\$143,500</b>	<b>\$325,029</b>
<b>Energy</b>					
E1.1 Superior Energy Performance	\$326,900		\$21,200	\$50,000	\$2,211,793
E2.2 Daylight Responsive Controls	\$35,300				\$141,066
E3.2 Distributed Generation					\$247,330
E4.0 Fundamental Commissioning		\$30,000		\$62,000	\$131,980
E4.1 Enhanced Commissioning	\$16,644	\$16,400		\$43,000	\$189,944
E4.1.3 Systems Manual*				\$15,000	\$15,000
E5.1 Energy Management System		\$4,000			\$4,000
<b>Subtotal</b>	<b>\$378,844</b>	<b>\$50,400</b>	<b>\$21,200</b>	<b>\$170,000</b>	<b>\$2,941,113</b>
<b>Materials</b>					
M1.0 Recycling Location				\$15,000	\$18,900
M1.1 Construction Waste Management			\$3,000		\$35,092
M1.2 Building Structure Reuse					\$2,006,750
M2.1 Recycled Content				\$10,000	\$100,355
M2.2 Rapidly Renewable Materials					\$765
M2.3 Certified Wood					\$11,000
<b>Subtotal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$3,000</b>	<b>\$25,000</b>	<b>\$2,172,862</b>
<b>Indoor Environmental Quality</b>					
IEQ1.0 Daylighting 2% Critical Spaces					\$397,820
IEQ1.1 Daylighting 2% Renovation					\$147,450
IEQ1.2 Fixed Position Shading	\$1,025,000	\$85,000		\$9,480	\$1,354,980
IEQ2.1 Electric Lighting Quality	\$38,250	\$8,000			\$162,250
IEQ3.0.2 Additional Mitigation Ventilation*				\$10,000	\$10,000
IEQ3.3 Source Control					\$204,046
IEQ3.4 Ducted HVAC Returns	\$195,000			\$60,000	\$501,842
IEQ3.5 Particle Arrestance Filtration			\$1,400	\$5,000	\$12,200
IEQ3.6 IAQ Management		\$4,000	\$4,200	\$10,000	\$40,700
IEQ4.1 Improved Acoustical Performance			\$6,800	\$36,000	\$67,800
IEQ4.2 Enhanced Audio	\$45,000	\$40,000			\$659,734
IEQ6.1 User Controls Operable Windows	\$30,000	\$15,000			\$91,500
IEQ6.2 User Controls Temp and Lights	\$472,400				\$890,800
<b>Subtotal</b>	<b>\$1,805,650</b>	<b>\$152,000</b>	<b>\$12,400</b>	<b>\$130,480</b>	<b>\$4,541,122</b>
<b>Planning, Ed and Operations</b>					
EX1.1/PEO1.1 Eco-Charette	\$3,500	\$8,000			\$19,000
EX2.2 Post Occupancy Evaluation	\$23,300				\$23,300
EX2.3/PEO3.2 LCCA	\$20,000				\$50,000
EX3.1/PEO2.1 Green Building Learning					\$15,000
EX4.1 Project/District Innovation					\$19,500
<b>Subtotal</b>	<b>\$46,800</b>	<b>\$8,000</b>		<b>\$0</b>	<b>\$126,800</b>
<b>Designer, Contractor, Owner Premiums</b>	<b>\$189,310</b>		<b>\$7,400</b>	<b>\$0</b>	<b>\$407,643</b>
<b>Total Incremental Cost</b>	<b>\$2,805,704</b>	<b>\$420,600</b>	<b>\$48,250</b>	<b>\$504,980</b>	<b>\$11,239,683</b>
<b>Cost per Square Foot</b>	<b>\$10</b>	<b>\$4</b>	<b>\$2</b>	<b>\$23</b>	
<b>Percent of Total Project Cost</b>	<b>4.17%</b>	<b>1.07%</b>	<b>0.95%</b>	<b>3.30%</b>	
<b>Total Project Cost *</b>	<b>\$67,243,257</b>	<b>\$39,370,265</b>	<b>\$5,077,555</b>	<b>\$15,320,000</b>	

\* Total project cost reported by districts at final completion for purposes of recovering SCAP funding. Kennewick, Moses Lake and Spokane are total project cost at D10, final reconciliation has not been completed

## Appendix C: Comparison of Annual Electrical Energy Use

School and District	Project Size	Opened	1st Year kWh	2nd Year kWh	3rd Year kWh	4th Year kWh	Most Current Reported Use to 1st Year Use
Bainbridge School District Bainbridge HS Bldg 200	70,024	1/2009	480,840	430,800			-10.41%
Bellevue School District Sherwood Forest Elementary	65,773	9/2008	20,153	16,855	16,782	16,590	-17.06%
Bellingham School District Wade King Elementary	52,000	9/2008	380,898				Not Yet Determined
Bethel School District Liberty Jr. High	98,431	9/2009	1,337,673				Not Yet Determined
Centralia School District Oak View Elementary,	14,736	8/2008	532,320				Not Yet Determined
Edmonds School District Lynnwood High	217,559	9/2009	1,691,420	1,646,920	1,618,560 <sup>1/</sup>		-4.30%
Everett School District Forest View Elementary	61,156	9/2007	28,452	20,280	25,552	26966 <sup>2/</sup>	-5.22%
Lake Washington School District Rachel Carson Elementary	56,506	9/2008	337,248	342,499	285,639	318711 <sup>3/</sup>	-5.40%
Marysville School District Grove Elementary	45,713	9/2008	416,560	342,440			-17.79%
Northshore School District Bothel High Phase 3,	85,000	9/2008	2,551,459	2,178,680	2,220,080	2,099,080	-17.73%
Seattle School District Hamilton Int Middle	127,705	9/2010	584,496 <sup>4/</sup>				Not Yet Determined
Snohomish School District Snohomish High School D Bldg	79,500	10/2008	2,738,230	3,226,848	2,891,219		5.58%
Snohomish School District Snohomish High Set 3,	112,035	9/2011	3,040,209 <sup>5/</sup>				Not Yet Determined

## Appendix C: Comparison of Annual Electrical Energy Use

School and District	Project Size	Opened	1st Year kWh	2nd Year kWh	3rd Year kWh	4th Year kWh	Most Current Reported Use to 1st Year Use
Spokane School District Shadle Park High	260,030	8/2010	61,450				Not Yet Determined
Steilacom School District Pioneer Middle	100,000	9/2008	999,330	1197770 <sup>6/</sup>			19.86%
Tacoma School District Gray Middle	116,872	1/2009	45,779				Not Yet Determined
Tumwater School District New Market Skills Lab Bldg D	19,128	2/2007	1,128,600	1,074,900	1,020,600	1,034,700	-8.32%
Vancouver School District Vancouver Arts & Academy Mod	112,927	9/2010	567,518	551,621	540,389 <sup>7/</sup>		-6.64%
Willapa Valley School District Willapa Valley High and Middle	63,314	9/2009	697,200	715,200	692,880 <sup>8/</sup>		-0.06%

1/ Lynnwood High includes an estimate for 2 months in year 3

2/ Forest View Eeementary includes an estimate for 1 month in year 4

3/ Rachel Carson Elementary includes an estimate for 3 months in year 4

4/ Hamilton Int Middle began reporting at Board Acceptance. Energy use reported for 7 months starting 9/2011

5/ Snohomish High Set 3 includes 10 months energy use

6/ Pioneer Middle includes an estimate for 1 month in year 2

7/ VAA estimated two summer months in year 3

8/ Willapa Valley includes an estimate for 2 months in year 3

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
<b>Bainbridge</b>	<b>Bainbridge High School 200 Building Replacement</b>	Site	S3.2 Runoff Treatment or Reduction	Rain gardens, under warranty - maintained by outside vendor
		Water	W2.2 Reduce Potable Water Use	Waterless urinals require increased effort to maintain
		Energy	E1.1 Superior Energy Performance	Optimized daylighting partially configured, HVAC no performance problems
		Indoor Environmental Quality	IEQ3.1 Ventilation	Some control features modified during heating season, some modification to sequence of operation to gain efficiency in heating
		Indoor Environmental Quality	IEQ3.4 Ducted HVAC Returns	No issues
		Indoor Environmental Quality	IEQ6.2 User Control (temperature and lighting controls)	Limited features allowed to user group, ongoing training for users to optimize use
<b>Bellevue</b>	<b>Sherwood Forest Elementary</b>	No comments		
<b>Bellingham</b>	<b>Wade King Elementary</b>	No comments		
<b>Bethel</b>	<b>Liberty Middle School</b>	Energy	E2.2 Daylight Responsive Controls	Light ballast several thousand dollars
<b>Edmonds</b>	<b>Lynnwood High School</b>	No comments		

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
Everett	Forest View Elementary	Site	S1.4 Joint Use of On-Site Facilities	Additional wear and tear on facility from outsiders
		Site	S3.1 On-site Infiltration	Requires ongoing monitoring
		Site	S5.1 Light Pollution Reduction	Lamps continue to fail/burn-out at a high rate
		Energy	E1.1 Superior Energy Performance	Room to room issues with air temp
		Indoor Environmental Quality	IEQ3.7 Natural Cooling	Lower level is cooler
Freeman	Freeman High School	Site	S3.1 On-site Infiltration	Additional mowing and weeding
		Water	W2.1 Potable Water Use for Bldg Sewage Reduction	Batteries/ replace control modules high maintenance
		Water	W2.2 Potable Water Use Reduction	Batteries/ replace control modules high maintenance
		Indoor Environmental Quality	IEQ3.5 Low Emitting Interior Finishes	Paint not durable

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
		Indoor Environmental Quality	IEQ3.5 Particle Arrestance Filtration	Requires changing filters more often
<b>Issaquah</b>	<b>Creekside Elementary School</b>	Energy	E2.1 HVAC and Operable Windows	No repairs, equipment is operating as intended. 4-pipe heating/cooling system much more efficient than previous 2-pipe system
		Energy	E2.2 Daylight Responsive Controls	Light shelves and corresponding light sensors better allow natural lighting into the classrooms and hallways while cutting back on the amount of electrical lighting needed
		Indoor Environmental Quality	IEQ6.1 User Control (operable windows)	Operable windows in individual classrooms have helped eliminate the need for cooling systems and helps ventilation needs
<b>Kennewick</b>	<b>Canyon View Elementary</b>	Water	S3.1 On-site Infiltration	In an effort to increase on-site infiltration and improve the aesthetics of the site, planting beds and trees were incorporated in the school design. However, the addition of these areas has likely resulted in increased maintenance and water usage
		Site	S4.1 Heat Island Reduction Site	Heat Island reduction through landscaping was incorporated in the school design. However, the addition of these areas has likely resulted in increased water usage and maintenance

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
		Water	W2.2 Potable Water Use Reduction	Water savings through the use of water efficient systems are unclear. Many of the fixtures will sometime have to be flushed twice. Also, it would seem that sinks with aerators are run twice during hand washing due to the reduced pressure. Aerators have also presented problems in school kitchens; many of the kitchen staff find the resulting water pressure inadequate
		Indoor Environmental Quality	IEQ3.0 Ventilation, Filtration, & Moisture	The HVAC units for this school were equipped with heat recovery wheels, but they were eventually removed. The units were regularly building-up mold which resulted in increased maintenance and a concern about indoor air quality
<b>Kennewick</b>	<b>Cottonwood Elementary</b>	Same as Canyon View		
<b>Kennewick</b>	<b>Southgate Elementary</b>	Same as Canyon View		
<b>LaConner</b>	<b>NCTA Marine Technology Center</b>	Site	S1.4 Joint Use of On-Site Facilities	Use has increased custodial duties
		Site	S2.2 Bicycle Parking	Bike racks per code but rarely used

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
		Energy	E2.2 Daylight-Responsive Controls	Difficult to adjust
		Indoor Environmental Quality	IEQ6.2 User Control (temperature and lighting controls)	Not end-user friendly. Steep learning curve
		Extra	EX1.1 Eco-Charette	Very beneficial design tool
<b>Lake Washington</b>	<b>Rachel Carson Elementary</b>	Site	S2.2 Bicycles	Bicycle racks have been installed and ridership is higher than our typical schools. Saving fuel costs for extra transportation either by the District or Parents
		Site	S2.3 Parking	Parking area reduced due to joint use of adjoining Jr. High eliminating additional infrastructure and maintenance of same
		Site	S3.1 On-site Infiltration	No maintenance impact regarding storm water. There has been an impact on maintenance in relation to maintaining the plantings in the rain gardens
		Site	S3.2 Runoff Treatment or Reduction	Maintenance agreement with KC requires annual maintenance of the systems

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
		Site	S4.2 Heat Island Reduction Roof	Minimal weeding in green roof
		Water	W2.2 Potable Water Use Reduction	All fixtures operating as designed
		Energy	E1.1 Superior Energy Performance	Energy Star rating currently 92
		Energy	E2.1 HVAC and Operable Windows	Minimal maintenance required on HVAC & operable window systems
		Indoor Environmental Quality	IEQ3.4 Ducted HVAC Returns	Standard filter changes
		Indoor Environmental Quality	IEQ3.7 Natural Cooling	Some fans and/or fan controls required repair
<b>Marysville</b>	<b>Grove Elementary</b>	No comments		
<b>Northshore</b>	<b>Bothel High</b>	No comments		
<b>Oak Harbor</b>	<b>Oak Harbor High</b>	Site	S3.0 Sedimentation and Erosion Control	Previous flooding issues have gone away

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
		Site	S3.1 On-site Infiltration	Majority of runoff contained on site although stormwater utility bill has increased
		Site	S4.2 Heat Island Reduction Roof	Low cooling demand during warm months
		Water	W2.1 Potable Water Use for Bldg Sewage Reduction	Waterless urinals appear to have high maintenance cost compared to water cost saving
		Energy	E1.1 Superior Energy Performance	New school is less efficient than old school EUI
		Energy	Daylight-Responsive Controls E2.2	Unproven technology, poor quality materials, expensive repair costs
		Energy	E5.1 Energy Management Systems	Very complex system has high probability of malfunctioning
		Indoor Environmental Quality	IEQ1.2 Fixed-position Shading	Works well

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
		Indoor Environmental Quality	IEQ2.1 Electric Lighting Quality	Excellent
		Indoor Environmental Quality	IEQ3.0 Ventilation, Filtration, & Moisture Control	100% outside air systems provide excellent air quality at a higher energy cost
		Indoor Environmental Quality	IEQ3.1 Low-Emitting Interior Finishes	Low VOC floor glue does not hold up well to occasional flooding
		Indoor Environmental Quality	IEQ3.3 Source Control	Poor ventilation design in chemistry labs contaminates building with noxious smells. Waiting for a solution from contractor
		Indoor Environmental Quality	IEQ3.7 Natural Cooling	Excellent
		Indoor Environmental Quality	IEQ4.2 Enhanced Audio	Wiring design has created technical issues in one building

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
		Indoor Environmental Quality	IEQ6.2 User Control (temperature and lighting controls)	Excellent temperature controls. Lighting controls are poor quality due to unproven technology
Seattle	Hamilton Middle	Provided one year of maintenance work orders that have not been sorted through yet to determine applicability		
Snohomish	Snohomish High Set 2	Site	S3.1 On-site Infiltration	Drainage still working well and no erosion noted
		Water	W2.1 Potable Water Use for Bldg Sewage Reduction	No sewage back up issues noted
		Energy	E1.1 Superior Energy Performance	Lighting controls are operating as designed after more training was provided by contractors
		Energy	E2.1 HVAC and Operable Windows	HVAC controls are working, though the building tends to heat up more than we'd like on warm days. Ventilation by opening windows doesn't seem effective as there is no prevalent wind in the area to come through the windows

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
		Indoor Environmental Quality	IEQ1.1 Daylight Factor (75%, 100% critical visual spaces)	Blinds were installed to allow room darkening during SmartBoard use
		Indoor Environmental Quality	IEQ1.2 Fixed-position Shading	Lifetime problem relating to fixed-position shades being in the way of typical window cleaning methods
		Indoor Environmental Quality	IEQ3.1 Ventilation, Filtration, & Moisture Control Minimums	Except for the difficulty ventilating warm air on warm days, the air quality is good. No moisture or smell issues
		Indoor Environmental Quality	IEQ3.5 Particle Arrestance Filtration	Filters are very expensive to replace and contractor does a pressure test to see if replacement is needed or not rather than a simple tri-annual replacement. This allows for them lasting longer than the recommended three year interval, which is likely with the amount that we use them vs. a year-round building in a dirty environment

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
		Indoor Environmental Quality	IEQ6.2 User Control (temperature and lighting controls)	Good controls that are responsive, though systems not able to handle ventilation requirements on warm days
<b>Spokane</b>	<b>Shadle Park High</b>	Site	S3.1 On-site Infiltration	Difficulty maintaining bio-swales
		Site	S4.2 Heat Island Reduction Roof	No problems related to roofing material
		Water	W1.1 Irrigation Water Reduction	Bubblers unreliable and vandal-prone
		Water	W2.2 Potable Water Use Reduction	Over 400 sensor batteries require maintenance
		Energy	E1.1 Superior Energy Performance	Systems performance is satisfactory
		Energy	E2.2 Daylight-Responsive Controls	Dimming ballast failure and restocking problems

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
		Indoor Environmental Quality	IEQ3.1 Low-Emitting Interior Finishes	Paint not abuse resistant
		Extra Credit	EX4.1 Innovation Project and/or District	Green housekeeping products satisfactory
<b>Tumwater</b>	<b>New Market Skills Bldg D</b>	Site	S3.1 On-site Infiltration	Plants growing very well, major pruning required
		Water	W1.1 Irrigation Water Reduction	Irrigation water use under tight control now
		Energy	E1.1 Superior Energy Performance	Exhaust fan motors burning up and need to be replaced. Wondering why variable speed feature of motors not programmed for use
<b>Vancouver</b>	<b>Vancouver Arts &amp; Academics</b>	No comments		
<b>Willapa Valley</b>	<b>Willapa Valley High &amp; Middle</b>	Indoor Environmental Quality	IEQ6.2 User Control (Temperature and Lighting Controls)	Thermostats not placed in best locations when classrooms are shared, for example computer lab with a science room

## Appendix D: Maintenance and Operations Performance Observations

All High-Performance Schools Providing Annual Reports in 2011 and 2012

District	School	Credit Category	Credit	Observation
		Extra Credit	EX202 Post Occupancy Evaluation	Ongoing maintenance cost of facility is much higher than expected
Yakima	Yakima Valley Tech Skills Center Phase I	No comments		