



Implementation of RCW 39.35D High Performance Green Buildings

Through June 2012

Published September 2012

Contacts:

Joyce Turner, Director, Enterprise Services, (360) 407-9201

Tom Henderson, Assistant Director, Enterprise Services, (360) 407-9311

Table of Contents

Report Background and Highlights	3
Enterprise Services Green Building Program	
State Leadership in Energy and Environmental Design (LEED) Results Summary	4
Determining the Costs and Savings of LEED Buildings	13
Actual Energy Use Reports Summary	17
Overview of Enterprise Services LEED Quality Assurance Process.....	18
LEED Quality Assurance Process Goes On-Line	19
Training on LEED Requirements	20
Building Operator Interview (Proposed)	20
Post Occupancy Evaluation (Proposed)	21
Rules	21
Green Building Metrics	22
Use of Energy Star in Reporting and Actual Energy and Water Use	28
Agency/University Sustainable Building Reports Summary	28
Exemption Declarations Summary	28
Recommendations for Improvement - Issues and Challenges	29
Appendices	31

Background

Leadership in Energy and Environmental Design (LEED) is an internationally recognized green building certification system. Developed by the U.S. Green Building Council (USGBC), LEED certification provides verification that a building or community was designed and built using strategies aimed at improving performance across a variety of metrics, including: energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts. LEED provides a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

Chapter 39.35D RCW requires major facility projects funded in the capital budget or projects paid for through financing contracts to be certified to at least the LEED Silver standard. This applies to public agencies that enter into the design phase or the grant application process after July 24, 2005.

Enterprise Services is responsible for developing and issuing guidelines for green building by public agencies in Washington. The department is also charged recommending improvements to the overall process.

Agencies report annually to the department about their projects. Enterprise Services reports to the Governor and Legislature by September 1 of each even-numbered year. This report covers the period through June 30, 2012.

Report Highlights

- Enterprise Services is tracking 125 state-owned projects, representing more than \$2 billion in construction costs.
- 91 percent of state agency, university, and college projects are participating, with a large percentage of the projects seeking and achieving LEED Gold.
- To date, 52 state-owned projects have been LEED certified. The LEED levels reached were as follows: Two LEED Platinum, 29 LEED Gold, and 22 LEED Silver. Case studies are included in Appendix 1.
- Added cost for LEED ranges from -1.4 percent to +3.4 percent based on total project cost data.
- Estimated energy savings range from 12 percent to 46 percent. For 75% of the projects for which complete data is available, the payback for LEED related costs is between 0 and 18 years.
- Construction waste recycling in 16 projects diverted over 93 percent of construction debris, totaling 15,722 tons, from landfills.
- Metering and reporting of actual energy and water use continues to be challenging due to technical problems and lack of resources.

State LEED Results Summary

This section provides a summary of the state Green Building program. Included are tables and graphics illustrating costs and calculated performance data, along with a spreadsheet showing the status of all 125 state-owned projects under the program.

Table 1 – State-Owned Projects Achieving LEED Certification to Date

LEED Rating	Agency/University Name	Building Name	Location
Platinum	Skagit Valley College	Science & Health Building	Mount
	University of Washington	UWT - Joy Building Remodel (Ph 3)	Seattle
Gold	Bellevue College	Science & Technology Bldg.	Bellevue
	Central Washington University	Dean Hall Renovation	Ellensburg
	Centralia College	New Science Center	Centralia
	Clark College	East County Satellite Campus	Vancouver
	Columbia Basin College	Business Education "B" Bldg.	Pasco
	Corrections, Dept. of	Coyote Ridge Corrections Facility	Connell
	Eastern Washington University	EWU Student Sport & Rec. Ctr.	Cheney
	Eastern Washington University	Hargreaves Hall Renovation	Cheney
	Everett CC	Student Fitness & Health Center	Everett
	The Evergreen State College	Campus Activities Bldg. (Remodel)	Olympia
	Grays Harbor College	Childcare Center	Aberdeen
	North Seattle CC	Integrated Services Center	Seattle
	Olympic College	Humanities Building	Bremerton
	Peninsula College	Business & Humanities Center	Port Angeles
	Pierce College	Ft. Steilacoom - Science & Tech. Center	Tacoma
	Pierce College	Communication, Arts & Allied Health	Puyallup
	Washington School for the Deaf	Vocational Education & Support Bldg.	Vancouver
	South Puget Sound CC	Natural Sciences Complex	Olympia
	South Puget Sound CC	Instructional Building 23	Olympia
	South Puget Sound CC	Vocational Tech. Building	Olympia
	Spokane CC	Building 7	Spokane
	Spokane Falls CC	sn-w'ey'-mn (Bus. and Social Science)	Spokane
	Spokane Falls CC	Science Building	Spokane
Tacoma CC	Early Learning Center	Tacoma	
University of Washington	UW - Clark Hall	Seattle	
University of Washington	UW Floyd and Delores Jones Playhouse	Seattle	
University of Washington	Savery Hall Renovation	Seattle	
University of Washington	UWT - William W. Philip Hall	Seattle	
Yakima Valley CC	Grandview Library	Yakima	

LEED Rating	Agency/University Name	Building Name	Location
Silver	Corrections, Dept. of	Cedar Creek Corrections Center - 100 Bed Expansion	Little Rock
	Corrections, Dept. of	WCCW - Health Care	Purdy
	Corrections, Dept. of	AHCC - Minimum Security Beds (200)	Airway Heights
	Corrections, Dept. of	AHCC Building C2	Airway Heights
	Corrections, Dept. of	AHCC Treatment Program Building	Airway Heights
	Corrections, Dept. of	South Close - Warehouse	Walla Walla
	Corrections, Dept. of	South Close - Health Unit	Walla Walla
	Edmonds CC	Meadowdale Hall Renovation	Edmonds
	Everett CC	Undergraduate Education Center	Everett
	The Evergreen State College	Lab 1 - 1st Floor Renovation	Olympia
	Green River CC	Salish Hall	Auburn
	Lake Washington Institute of Technology	Allied Health Bldg	Kirkland
	Military Dept., WA State	Washington Youth Academy	Bremerton
	Washington State School for the Blind	New Phys. Ed. Center	Vancouver
	Social and Health Services, Dept. of	Echo Glen – Residential Housing Renovations	Snoqualmie
	Social and Health Services, Dept. of	Green Hill School - HCA Building	Chehalis
	Spokane Falls CC	Music Building	Spokane
	Walla Walla CC	Center for Water and Environmental Studies	Walla Walla
	Washington State University	Olympia Avenue Student Housing	Pullman
	Washington State University	Undergraduate Classroom Building	Vancouver
Washington State University	Engineering/Computer Science Bldg.	Vancouver	

Note: Projects are not in order of when LEED certification was awarded.

Table 2 – Status of State-Owned Projects Subject to LEED Requirements

Status	# of Projects
Design	11
Construction	21
Substantial Completion or Completed (but not yet certified)	16
Projects with LEED Certification	52
Miscellaneous Projects (on hold or dropped)	19
Projects Taking an Exemption	10

Department of Commerce Update

Under RCW 39.35D.080, all affordable housing projects or programs receiving Housing Trust Funds from the state capital budget must be built or implemented according to the Evergreen Sustainable Development Standard (ESDS).

Community Capital Facilities

Active contracts overview: 74 projects have certified that they are going through the LEED process since its inception. To date, the LEED status for projects participating in the Commerce grant program is as follows:

- 22 achieved LEED Silver.
- 14 achieved LEED Gold.
- 38 have not yet completed the LEED certification process.

Competitive grants overview: With the completion of our 2013-2015 application submittals on July 19, 2012, a total of 66 projects have applied for grant funding. The intentions of the applicants are as follows:

- 32 (48 percent) plan to achieve LEED Silver certification.
- 16 received a facility-type exemption.
- 18 received a “not practicable” exemption.

WA State Housing Trust Fund (HTF)

Initially, the Evergreen Sustainable Development System (ESDS) projects exceeded the energy requirements of the 2006 Washington State Energy Code (WSEC), and subsequently the ESDS v1.3 required projects to achieve 15 percent greater energy efficiency over the 2006 WSEC. The ESDS was updated in 2011 (ESDS v2.0), calling for increases in energy efficiency by about 7 percent over the 2009 WSEC.

The HTF is tracking over 130 Affordable Housing ESDS projects.

State LEED Project Tracking

The department’s Green Building Program tracks LEED projects through its LEED Quality Assurance (QA) process. This process consists of four to five submittals depending on whether a project has a pre-design phase. The initial submittal provides a project schedule that is used to populate the State LEED Project Tracking table.

Table 3, below, provides information about all 125 state-owned projects. When the design development submittal is received, the projected LEED level is indicated by the coloring of the project schedule on the design development cell of the spreadsheet. The table also indicates which projects have received LEED certification (far right side), the level achieved, and the month and year received.

State LEED Projects (Table 3)

Master List													
Reference No.	Project Information		Project No.	Construction Cost Estimate	Project Square Footage	Submittal Received					LEED Certification		
	Project Mgt.	Project Name				(Note: Dates not shaded are anticipated submittal dates.)							
						Exemption	Pre-Design	Schem. Design	Design Dev.	Construction Docs.		Subst. Completion	
1	DES-A	Military - Washington Youth Academy	07-189	\$5,000,000	20,000						LEED Silver	1/7/2009	Aug-10
2	DES-A	Centralia College - Science Complex	03-218	\$20,400,000	70,000						LEED Gold	3/9/2009	Aug-10
3	DES-A	Clark College - East County Satellite Campus	05-099	\$20,470,000	70,000						LEED Gold	4/22/2009	Jun-10
4	DES-A	Clover Park TC - Allied Health Care Facility	06-092	\$21,480,000	56,000		6/16/2006	3/19/2008	5/1/2008	9/1/2008		12/1/2010	
5	DES-A	Grays Harbor CC - Voc. Ed. Renovation	05-186			2/6/2006							
6	DES-A	Grays Harbor CC - Childcare Center	09-015	\$1,635,000	6,246						LEED Gold	2/4/2010	Sep-10
7	DES-A	Olympic College - Humanities Building	05-187	\$21,200,000	85,012						LEED Gold	1/8/2010	Aug-11
8	DES-A	Olympic College - Sophia Bremer Child Development Ctr	08-256	\$3,318,000	12,890		12/1/2008	2/1/2009	4/1/2009	10/1/2009		10/1/2010	
9	DES-A	Peninsula College - Business & Humanities Center	06-125	\$26,000,000	63,000		6/11/2009	6/11/2009	6/11/2009	2/9/2009		3/28/2011	May-12
10	DES-A	Peninsula College - Fort Worden Building 202	12-050	\$3,300,000	14,000		3/1/2012	6/21/2012	10/17/2012	4/26/2013		9/1/2014	
11	DES-A	Pierce College - Ft. Steilacoom - Science & Tech Center	03-200	\$21,300,000	70,000						LEED Gold	2/25/2010	Aug-10
12	DES-A	Pierce College - Puy - Communication, Arts & Allied Health	03-198	\$19,000,000	60,000						LEED Gold	9/22/2010	Feb-11
13	DES-A	South Puget Sound CC - Science Complex	03-223	\$18,546,500	66,990						LEED Gold	10/30/2008	May-10
14	DES-A	South Puget Sound CC - Vocational Tech Building	08-150	\$8,550,000	40,000						LEED Gold	6/1/2010	Apr-11
15	DES-A	South Puget Sound CC - Instructional Building 23	08-150	\$16,831,000	30,000						LEED Gold	9/1/2010	Mar-11
16	DES-A	South Puget Sound CC - Building 22 Renovation	08-150	\$23,700,000	89,000		10/23/2009	12/31/2009	4/30/2010	9/30/2010		1/2/2013	
17	DES-A	Tacoma CC - Early Childhood Education. & Child Care Center	06-205	\$4,242,000	15,000						LEED Gold	7/18/2008	Oct-09
18	DES-A	Tacoma CC - Health Careers Center	07-142	\$29,935,000	69,266		10/1/2009	3/1/2010	10/1/2010	7/1/2011		1/1/2013	
19	DES-A	WA School for the Deaf, New Voc. Ed. & Support Bldg	07-214	\$10,900,000	23,134						LEED Gold	8/1/2009	Aug-10
20	DES-A	WA State School for the Blind, New Phys. Ed. Center	08-040	\$8,000,000							LEED Silver	3/1/2009	Sep-09
21	DES-A	Capitol Campus - O'Brien Bldg.	07-022	\$27,000,000	103,987					5/27/2009		10/12/2012	
22	DES-A	Lower Columbia College - Myklebust Gym Renovation	12-001	\$4,388,000	34,655			3/24/2012	4/1/2012	5/23/2012		9/1/2013	
23	DES-A	Lower Columbia College - Health Sciences		\$20,000,000	70,000			6/1/2009	7/15/2009	1/15/2011		2/1/2013	
24	DES-B	Bellevue College - Science & Tech Bldg	06-123	\$27,500,000	69,511						LEED Gold	11/1/2008	Jul-10
25	DES-B	Bellevue College Health Sciences Building	08-036	\$25,538,000	70,000	On Hold	7/1/2008	2/15/2010	6/1/2010	11/15/2010		4/1/2013	
26	DES-B	Bellingham Technical College - Campus Center	08-070	\$22,400,000	74,000		3/5/2008	3/5/2008	7/2/2008	12/28/2009		3/1/2012	
27	DES-B	Cascadia CC - Center for the Arts, Tech, & Global Interact	06-144	\$26,440,529	54,300		9/15/2006		11/28/2006	12/5/2007		4/1/2009	
28	DES-B	Columbia Basin C - Social Science Ctr - Visual Arts Bldg.	07-153	\$12,410,000	40,520	On Hold	7/1/2008						
29	DES-B	Columbia Basin C - Business Education	07-151	\$4,715,245	24,000						LEED Gold	6/30/2009	Jul-10
30	DES-B	Columbia Basin C - V Building Career & Tech Education Ctr	07-152	\$1,802,000			2/30/2008	4/30/2008	7/31/2008	4/30/2009		1/1/2012	
31	DES-B	Edmonds CC - Meadowdale Hall Renovation	08-058	\$5,534,000	36,100		8/20/2007	8/20/2007	4/21/2008	11/10/2008		11/1/2010	Feb-12
32	DES-B	Everett CC - Undergraduate Education Center	05-219	\$21,000,000	86,000						LEED Silver	11/5/2007	Sep-09
33	DES-B	Everett CC - Student Fitness & Health Center	08-199	\$17,000,000	50,000						LEED Gold	12/14/2010	Jun-12
34	DES-B	Everett CC - Index Hall Replacement	09-207	\$27,000,000	70,000		8/16/2010	8/16/2010	11/1/2010	5/1/2011		4/1/2013	
35	DES-B	Green River CC - Salish Hall	07-193	\$26,281,180	79,996						LEED Silver	3/5/2011	Jun-12
36	DES-B	Lake WA Institute of Technology - Allied Health Bldg.	06-073	\$22,669,877	83,500						LEED Silver	5/2/2011	Aug-12
37	DES-B	North Seattle CC - Integrated Services Center	06-132	\$12,985,473	47,500						LEED Gold	3/25/2011	Oct-11
38	DES-B	North Seattle CC - Technology Building Renewal	08-177	\$16,000,000	50,600		8/16/2010	8/16/2010	11/1/2010	10/1/2011		5/1/2013	
39	DES-B	South Seattle CC - Colin Building Expansion	10-063	\$3,600,000	10,000			3/29/2010	6/14/2010	8/31/2010		3/1/2011	
40	DES-B	Seattle Central CC - Wood Construction Center	08-063	\$19,600,000	57,229		1/1/2008	1/1/2008	6/6/2009	1/1/2009		10/1/2011	
41	DES-B	Skagit Valley College - Science Bldg.	05-200	\$21,157,000	65,900						LEED Platinum	11/1/2008	Aug-10
42	DES-B	Skagit Valley College - Academic & Student Support Building	07-236	\$25,433,000	64,230		9/1/2009	9/1/2009	2/1/2010	6/1/2010		1/15/2014	
43	DES-B	Spokane CC - Tech Ed Building	07-132	\$19,804,000	70,000		4/1/2008	4/1/2008	6/15/2008	11/24/2009		3/6/2011	
44	DES-B	Spokane CC - Building 7	07-133	\$6,405,000	31,571						LEED Gold	11/10/2010	Nov-11
45	DES-B	Spokane Falls CC - Music Building	07-134	\$9,607,000	47,571						LEED Silver	1/22/2011	Jan-12
46	DES-B	Spokane Falls CC - Classroom Bldg.	07-148	\$12,825,910	51,143		12/12/2006	9/1/2007	4/13/2008	11/1/2009		12/30/2012	
47	DES-B	Spokane Falls CC - Business and Social Science	04-192	\$14,347,980	70,533						LEED Gold	8/1/2008	Dec-08
48	DES-B	Spokane Falls CC - Early Learning Center	07-149	\$2,960,000	16,000		12/1/2006	9/1/2007	1/27/2008	5/27/2008		9/30/2012	
49	DES-B	Spokane Falls CC - Science Building	07-150	\$19,547,000	69,825						LEED Gold	2/25/2011	Apr-12
50	DES-B	Walla Walla CC - Clarkston Health Sciences	05-162	\$2,252,000		10/12/2006	11/30/2004	8/12/2005	12/20/2005	5/15/2006			
51	DES-B	Walla Walla CC - Center for Water and Environ. Studies	05-210	\$2,000,000	10,500						LEED Silver	6/1/2008	Jun-10
52	DES-B	WSP - FTA Dormitory	07-203	\$1,900,000	9,484	9/2/2008							
53	DES-B	Yakima Valley CC - Grandview Library	09-172	\$3,116,878	12,553						LEED Gold	6/30/2011	Mar-12
54	DES-B	Yakima Valley CC - Brown Dental Renovation	07-155	\$3,898,000		5/19/2008	11/21/2007	11/21/2007	1/2/2008	4/2/2008		7/1/2009	
55	DOC	Coyote Ridge Corrections Center	06-313	\$190,000,000	564,000						LEED Gold	11/31/08	Jun-10
56	DOC	WSP - South Close - Voc Ed Building	06-314	\$8,351,351	22,400	On Hold	7/9/2007	7/18/2007	12/5/2007	4/10/2008		6/29/2010	
57	DOC	WSP - South Close - Warehouse	06-314	\$5,280,384	21,600						LEED Silver	6/29/2010	
58	DOC	Cedar Creek Corrections Center - 100 Bed Expansion	06-330	\$4,878,336	16,300						LEED Silver	7/6/2009	
59	DOC	WSP - South Close - Health Unit	06-314	\$22,931,500	49,022						LEED Silver	6/29/2010	Aug-11
60	DOC	Monroe Correctional Complex - Haz. Waste/Vehicle storage	06-305	\$1,403,990	6,000	On Hold	6/8/2006	10/23/2009	2/5/2010	7/30/2010		6/1/2012	
61	DOC	Monroe Correctional Complex - Warehouse Facility	06-305	\$5,985,000	26,000	On Hold	6/8/2006	10/23/2009	2/5/2010	7/30/2010		6/1/2012	
62	DOC	Monroe Correctional Complex - Health Care Facility	06-305	\$39,031,010	113,400	On Hold	6/8/2006	12/11/2009	7/16/2010	5/23/2011		6/1/2014	
63	DOC	WA Corrections Center for Women - Health Care	06-309	\$11,864,719	22,130		5/24/2006	8/1/2006	11/13/2006	3/13/2007		1/1/2010	Jan-10
64	DOC	WA Corrections Center - Health Care Facility Remodel	06-305			On Hold	6/7/2006	6/12/2006	9/19/2006	11/15/2006		5/1/2007	
65	DOC	Airway Heights Corrections Center - Min. Security Beds (200)	06-311	\$868,000	116,000						LEED Silver	9/1/2008	Oct-10
66	DOC	Airway Heights Corrections Center - New Visitation Building	06-311	\$1,975,000	6,100						LEED Silver	9/1/2008	Oct-09
67	DOC	Airway Heights Corrections Center - Treatment Program	08-300	\$3,100,000	9,510						LEED Silver	6/15/2009	Apr-10
68	DOC	Mission Creek Corrections Center for Women - 120 Bed	06-312	\$2,939,189	12,800	7/13/2007							
69	DOC	Mission Creek Corrections Center for Women - 100 Bed	08-303	\$4,033,163	12,800						LEED Silver	10/15/2009	Nov-11
70	DOC	WA Corrections Center - Expand Reception Center	08-314	\$46,265,000	87,583	On Hold	8/15/2009	2/15/2010	9/15/2010	7/1/2011		7/15/2013	

Reference No.	Project Information			Project No.	Construction Cost Estimate	Project Square Footage	Submittal Received						LEED		
	Project Mgt.	Project Name	(Note: Dates not shaded are anticipated submittal dates.)									Certification			
			Exemption				Pre-Design	Schem. Design	Design Dev.	Construction Docs.	Subst. Completion	Awarded			
71	DOC	WSP - 300 Bed Minimum Expansion	06-327	\$47,169,000	105,536	On Hold	7/1/08	11/12009	10/30/2009		7/15/2015	9/1/2016			
72	DOC	Statewide - 300 Bed Minimum Expansion	06-327	\$38,660,000	90,229	On Hold	6/30/2008	12/30/2012	2/28/2013		4/30/2013	9/30/2014			
73	DOC	WSP - MI Kitchen	06-307	\$37,487,140	65,089	Dropped	6/30/2008	11/30/2009	3/1/2010		5/30/2010	4/30/2013			
74	DSHS	McNeil Is. - Special Commitment Center	06-465	\$3,961,603	53,000	Dropped	10/16/2007	11/26/2007	1/21/2008		6/23/2008	7/6/2009			
75	DSHS	Echo Glen - Residential Housing Units Renovations	00-405	\$10,720,000	18,320							4/20/2010	Feb-12		
76	DSHS	Echo Glen - Residential Housing Units Renovations Ph 3	10-456	\$6,500,000	28,120		6/23/2010	9/7/2010	12/7/2010		6/1/2011	11/30/2012			
77	DSHS	Green Hill School-Residential Mental Health Unit	10-457	\$4,200,000	10,500		12/20/2010	5/4/2011	6/23/2011		9/9/2011	10/30/2012			
78	DSHS	Green Hill School - HCA Building	06-481	\$4,300,000	20,275							10/26/2009	Jul-11		
79	DSHS	Green Hill School - IMU Building	06-481	\$4,200,000	12,000	8/26/2008									
80	DSHS	WSH - New Kitchen & Commissary	08-409	\$4,400,000	50,000	Dropped									
81	DOT	Alaska Way Viaduct Tunnel Operations Building				7/2/2012						6/1/2015			
82	DOT	SR 520 Bridge Maintenance Facilities										7/1/2013			
83	DOT	Eagle Harbor Maintenance Facilities				7/30/2007						5/1/2011			
84	DOT	Anacortes Ferry Terminal										TBD			
85	DOT	Mukilteo Ferry Terminal										TBD			
86	DOT	Seattle Ferry Terminal										TBD			
87	DOT	Bainbridge Island Ferry Terminal				On Hold						TBD			
88	DOT	Olympic Regional HQ				On Hold						TBD			
89	UW	Business Hall (Balmer Hall)	201838	\$46,800,000	70,518		3/24/2008	11/14/2008	9/1/2009		7/30/2010	3/8/2012			
90	UW	Playhouse Theater Renovation	200912	\$5,660,000	13,554							7/1/2008	Jul-09		
91	UW	Clark Hall Renovation	200910	\$9,000,000	30,541							12/1/2008	Feb-10		
92	UW	Savery Hall Renovation	200911	\$36,200,000	102,105							6/1/2009	Oct-10		
93	UW	UWT - William W. Philip Hall	10686	\$9,400,000	20,250							8/1/2008	Nov-10		
94	UW	Denny Hall Renovation	202039	\$56,915,000	87,549	Hold	12/31/2007	8/23/2008	3/10/2009						
95	UW	Ethnic Cultural Center				Dropped									
96	UW	Burke Museum	203007	\$52,500,000	100,000		7/12/2011	7/31/2013	7/31/2014		7/31/2015	4/1/2017			
97	UW	Intellectual House	202070	\$5,853,000	8,400		3/30/2012	10/31/2012	2/28/2013		8/31/2013	10/31/2014			
98	UW	Anderson Hall				Dropped									
99	UW	Lewis Hall Renovation	202040	\$25,130,000	33,736	Hold	4/1/2008	8/1/2008	12/1/2008		9/1/2009				
100	UW	Molecular Engineering Interdisciplinary Academic Bldg.	201989	\$75,423,000	90,374		3/24/2008	5/6/2008	5/6/2011		5/6/2011	7/15/2012			
101	UW	UWB - Science and Academic (Phase 3)	202235	\$68,000,000	74,975		2/18/2010	9/30/2010	4/1/2011		9/1/2012	6/1/2014			
102	UW	UWT - Joy Building Remodel (Phase 3)	200636	\$28,500,000	46,238							3/25/2011	Jan-12		
103	UW	UWT - Tioga Library (formerly Jefferson Bldg., Phase 3)	200636	\$25,800,000	47,035		5/1/2008	10/30/2009	12/30/2010		8/10/2012	9/10/2012			
104	WSU	Undergraduate Classroom Building - Vancouver			58,000								Aug-10		
105	WSU	Olympia Avenue Student Housing Project										8/1/2009	Aug-10		
106	WSU	Engineering and Computer Science Building - Vancouver			56,000										
107	WSU	Global Animal Health			62,000							1/1/2012			
108	WWU	Academic Instruction Center										8/31/2009	Sep-09		
109	WWU	Buchanan Tower Addition				1/10/1900						9/1/2010			
110	WWU	Miller Hall Renovation	PW465	\$35,801,240	133,117		2/11/2008	2/11/2008	4/23/2009		10/6/2009	10/31/2011			
111	WWU	Carver Academic Renovation										9/1/2014			
112	EWU	Hargreaves Hall Renovation	AE0511	\$9,292,000	45,172							3/1/2010	Sep-10		
113	EWU	Patterson Hall Renovation	AE0614	\$41,266,000	139,900		6/2/2008	6/2/2008	4/6/2009		1/4/2010	1/1/2014			
114	EWU	University Recreation Center										9/1/2008	Mar-09		
115	EWU	Martin/Williamson Hall Remodel		\$24,636,277			2011	2015				2018			
116	EWU	University Science Center I					2013								
117	EWU	University Science Center II					2013								
118	CWU	IET/Hogue Technology Project			95,996							9/1/2012			
119	CWU	Dean Hall Renovation	5229	\$18,038,328	79,553							5/10/2008	Nov-10		
120	CWU	Samuelson Communications & Technology Center			129,260										
121	CWU	Health Sciences			72,200										
122	TESC	Campus Activities Bldg Add. & Renovations	07-05	\$14,000,000	100,500							6/1/2010	Jun-10		
123	TESC	Lab 1 - 2nd Floor Renovation		\$4,950,000				10/1/2011				12/1/2013			
124	TESC	Lab 1 - 1st Floor Renovation										9/1/2006	Jun-07		
125	TESC	Daniel J Evans Library Modernization - Phase 2	F06007	\$14,323,000	87,000	Exemption	3/16/2007	9/10/2006	3/7/2007		1/28/2008	11/1/2008			

Totals \$1,890,917,802 5,814,433 No. of LEED projects that are certified: 52

Key	Points
LEED Platinum	52+
LEED Gold	39-51
LEED Silver	33-38
LEED Certified	26-32
Projects Dropped or On-Hold	

In design	11
In construction	21
Subst. complete (not yet certified)	16

This project will not seek LEED certification or follow GA QA process

Costs and Savings of LEED on State Building Construction and Operation

The following pages provide information about the total cost of several state-owned LEED buildings, the added costs for LEED, and the cost savings achieved in LEED buildings for energy and water use. In figures 1 – 4, below, each bar represents a particular building. The data for all 52 LEED buildings is not available, but the numbers included in this report provides a good representative sample.

Figure 1 – LEED Buildings – Cost per Square Foot

The figure below shows the building cost per square foot (building only, not including site preparation costs) and the LEED level achieved. The cost of a building is influenced by the type of use, complexity of the building systems, size, choice of materials, time of year bid, and whether the bid was before or after the recent economic downturn.

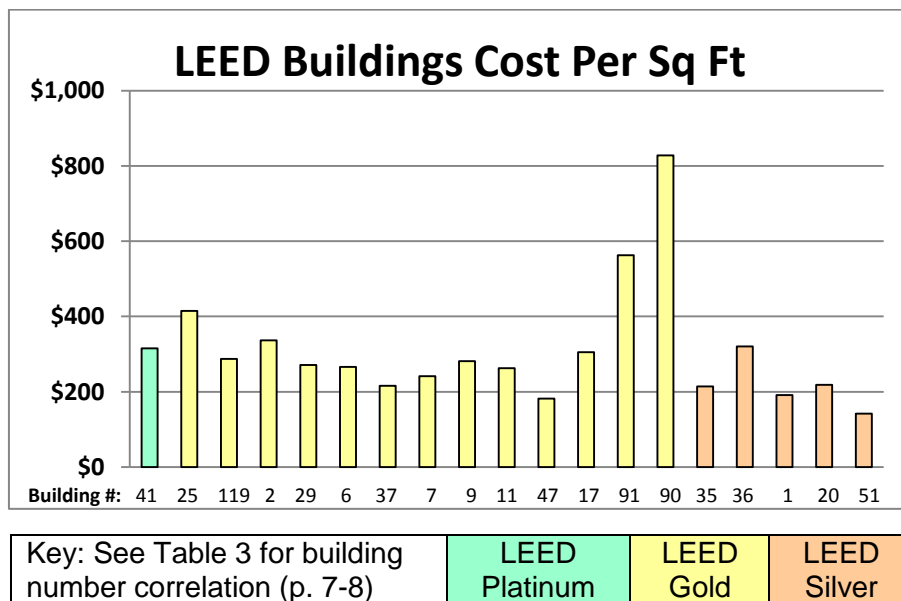


Figure 2 – Percent Added Cost of LEED

The figure below shows these same buildings with an estimate of the added costs for LEED-related elements as a percentage of the overall project costs (consultants and construction). These added costs were estimated by the state project managers, the architect consultant on the project and the contractor. The added costs include:

- LEED-related consultant fees.
- LEED certification fees.
- LEED-related construction costs.

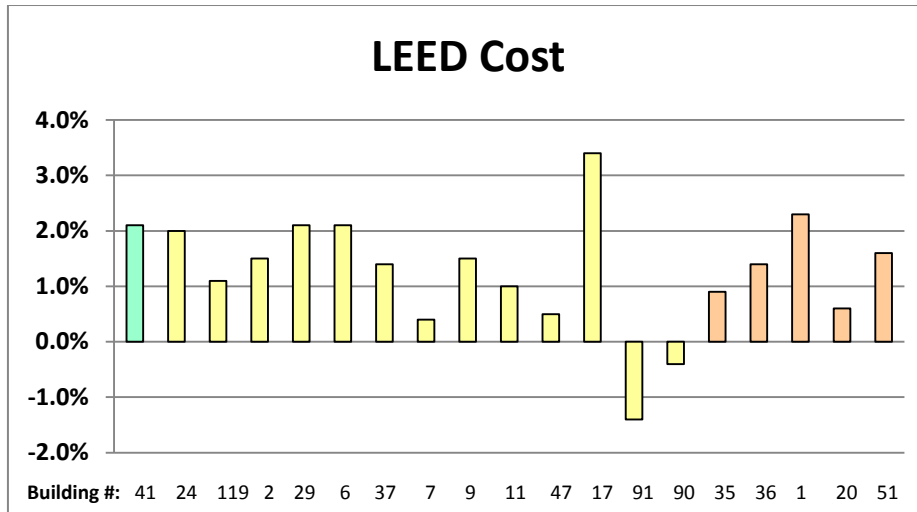
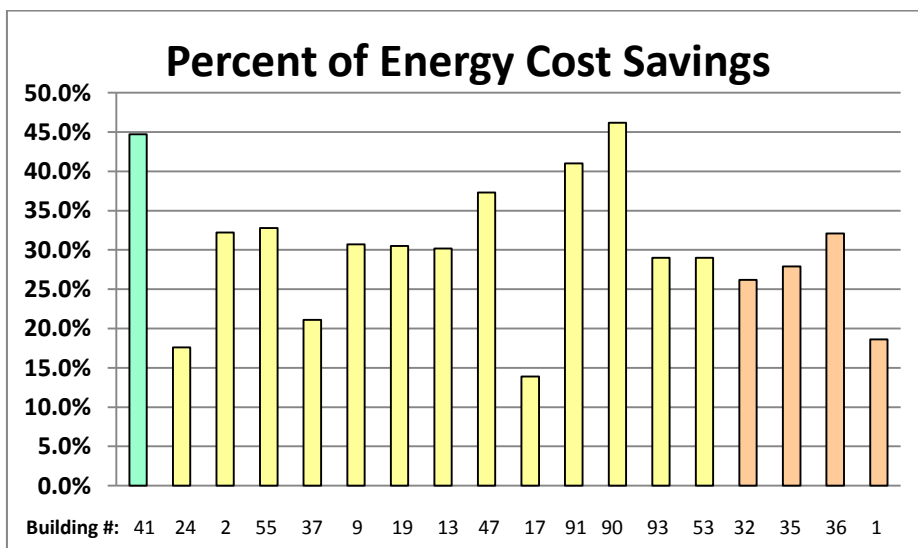


Figure 3 – Percent Energy Cost Savings

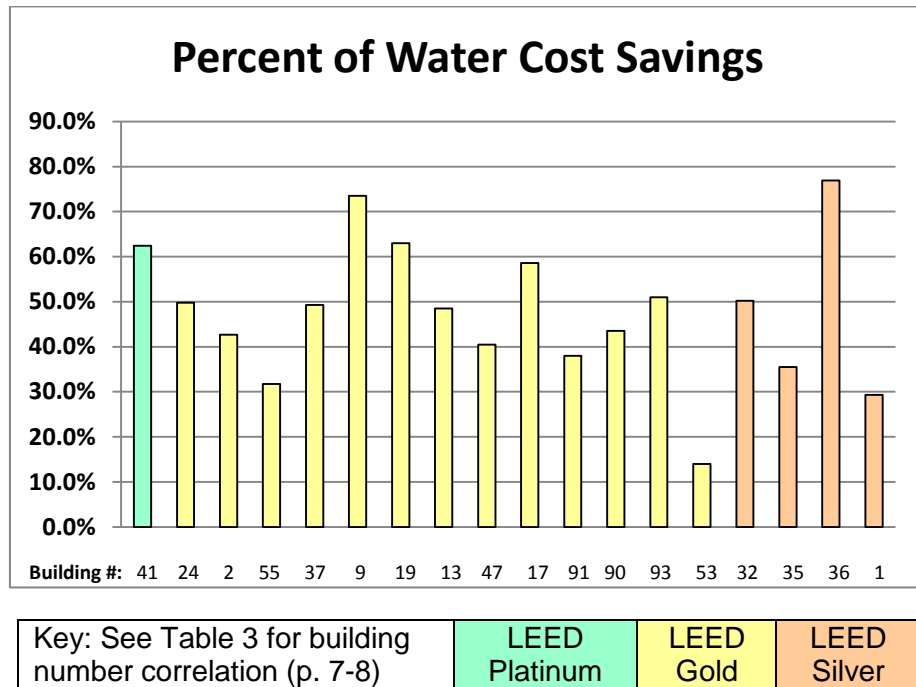
This figure compares the computer modeled “proposed” building energy consumption cost against modeled consumption cost data of a “code” building. This data was extracted from the LEED submittal.



Key: See Table 3 for building number correlation (p. 7-8)	LEED Platinum	LEED Gold	LEED Silver
---	---------------	-----------	-------------

Figure 4 – Percent Water Cost Savings in State LEED Buildings (Interior)

This figure compares interior water usage calculated for a “code” building and the “proposed” building. The interior water consumption is tied to the number of occupants. The numbers used to calculate the code and proposed levels may be quite different from the actual use levels. For instance, if there are more actual occupants than modeled, the water use would be higher but the same percentage of saving would still be realized due to the efficiency of the fixtures.



Payback for LEED

To calculate the payback for added costs of LEED construction, the LEED Quality Assurance process uses the following formula:

$$\frac{((\text{Added Consultant Costs} + \text{Added Construction Costs} + \text{LEED Certification Costs}) - (\text{Utility Incentives}))}{(\text{Annual Savings in Water and Energy})}$$

The costs used should be accurate because they are developed by the state project managers, project architect and the contractor. Sometimes, it is difficult to determine what is a “LEED element” or simply part of good design.

The savings figures are from the energy modeling prepared for the energy life-cycle cost analysis process and LEED. Water savings are based on calculations prepared for LEED.

Table 4 – Cost, Savings and Payback of LEED in State Buildings

Agency	Building Name	Sq ft	Cost (Millions)	% Added Cost	Savings	Payback (Years)
Bellevue College	Science & Technology Bldg.	62,882	\$29.6	2.0%	\$33,774	17.5
Centralia College	New Science Center	69,984	\$24.2	1.5%	\$33,240	10.8
Green River CC	Salish Hall	82,792	\$25.0	0.9%	\$24,288	6.4
Lake Washington Technical College	Allied Health Bldg	83,554	\$24.2	1.4%	\$29,800	11.0
Military Dept., WA State	Washington Youth Academy	18,050	\$4.1	2.3%	\$2,116	43.7
North Seattle CC	Intergraded Services Center	47,500	\$27.4	1.4%	\$6,967	33.2
Peninsula College	Business & Humanities Ctr.	63,221	\$25.1	1.5%	\$17,065	23.6
Skagit Valley College	Science & Heath Building	65,900	\$25.1	2.1%	\$44,920	6.0
Spokane Falls CC	sn-w'ey'-mn (Bus. and Soc)	70,533	\$15.3	0.5%	\$33,167	2.4
Tacoma CC	Early Learning Center	12,962	\$5.7	3.4%	\$2,948	64.9
University of Washington	UW - Clark Hall	30,568	\$19.6	-1.4%	\$14,400	Immediate
University of Washington	UW F&D Jones Playhouse	12,692	\$9.7	-0.4%	\$10,481	Immediate

Studies have shown that in addition to utility cost savings green buildings improve worker productivity and retention. Anecdotal evidence suggests that green buildings reduce the number of worker sick days and lower the risk of “sick-building syndrome” lawsuits because the materials used do not contain or have low levels of volatile organic compounds, such as formaldehyde. These types of savings may be greater than those achieved from lower water and energy use, but are much harder to quantify.

Determining Costs and Savings of LEED Buildings

Costs

Determining the overall cost of LEED buildings is relatively easy. Project accounting provides the breakdown needed to show demolition costs, site development costs, building costs and consultant fees.

Determining the costs for elements attributable to LEED, on the other hand, is more difficult because of the integrated nature of building design and construction. For example, an atrium in the center of a building that provides natural light and ventilation using the stack effect is difficult to breakout as an added cost. Is the atrium counted as LEED or an architectural feature?

Using LEED strategies in the design of the building causes architects and engineers to work together to create buildings that blur the lines between mechanical systems, lighting systems, and architectural elements. The Quality Assurance process attempts to gather the added costs for LEED consultants, as well as construction elements. These costs are provided by the state project manager, the architect or both. This is documented for each project in Appendix 6 (LEED Building Cost and Performance Data).

Savings – First Cost

Although not typical, first cost savings can be achieved through careful design. For instance:

- The electrical system in a green building can be smaller than one in a conventional building by using shading devices, “cool” roofs, earth berms, more insulation, high-performance, operable windows, and energy-efficient lighting, which incorporates daylight harvesting.
- The heating system can be downsized through the use of a super insulated building envelope, and heat recovery on the exhaust air.
- The water systems can be downsized by using low-flow fixtures, saving money on piping and hook-up fees.

Savings – Operating Costs

When designing a building, simulation models are used to compare the proposed building to a building built to the energy code called the baseline building. This simulation keeps all things constant except for the features that are different between the two buildings.

Constant elements include weather, people loads, operating schedules, and plug loads.

Different features can include insulation levels, window solar heat gain coefficient, mechanical equipment efficiencies, orientation, and outside air quantities.

After at least 10 to 15 months of occupancy, the building simulation model can be updated to show actual operating conditions, including a fit to the actual energy use. Unfortunately, even though LEED provides a point for it, this extra building simulation model is rarely completed because of cost (\$5,000 to \$10,000).

Short of a duplicate baseline building housing the same use and level of occupancy, the building simulation model prepared during the design of the building provides the best available calculation of operational savings. This savings figure is used in calculating the payback for LEED-certified buildings in this report.

The operational savings calculated by the building simulation model represent the savings that are “capable” by the proposed building. Some features of the design will deliver those savings regardless of the operator. Such features include light shelves, building orientation, earth berms, and the envelope (insulation and windows).

However, although a building may be “capable” of a certain level of savings in the model, there are a number of elements that could keep those savings from being realized. These include:

- Improper commissioning of mechanical, electrical and control systems.
- Inadequate training of operation and maintenance staff.
- Inadequate staff available to properly maintain the building operating schedules and mechanical systems.

Some or all of these issues exist in instructional and institutional buildings built by the state.

College and university buildings make up 70 percent of those identified in this report. The other 30 percent are a diverse mix that includes prisons, dormitories, kitchen and dining halls, and more. The unique nature of many of these buildings makes it difficult to determine energy and water savings from actual consumption data. For example, while some college and university buildings include only classrooms and offices, most have space with more specialized uses, such as welding and auto shops, gymnasiums, or performance halls. For many buildings, this varying mix of uses makes it difficult find a “like” building for purposes of comparing consumption data.

In that context, where possible this report compares actual consumption data received from the operators of similar types of buildings. Using year-to-year comparisons of a specific building may be the best way to benchmark. Year-to-year improvements in energy use accomplished through adjustments to the building mechanical and control systems is also a comparison that will be tracked over time and presented in this report.

Enterprise Services will continue to track energy and water use, and will provide feedback to the building operators if the consumption seems abnormally high. The department will also look for particularly efficient buildings and follow-up with those operators to learn how they achieved greater efficiencies.

Department of Corrections Case Study

As described above, measuring savings is difficult without a good comparison. Given the unique nature of many state buildings, good comparisons can be difficult to find. Taking on this challenge, the Department of Corrections prepared an analysis comparing energy and water use at two of its facilities: Airway Heights Correctional Center and Coyote Ridge Correctional Center.

Airway Heights opened in April 1992, before the advent of LEED certification. Coyote Ridge opened in February 2009 as the first-ever LEED Gold prison complex. The prisons are similar in size and population, and both are in Eastern Washington. However, Coyote Ridge consumed 30 percent less energy per square foot than Airway Heights. Potable water and wastewater use at Coyote Ridge were also considerably lower. When using the same rates for energy, water and wastewater, savings were \$978,000 per year. The added cost of building Coyote Ridge to LEED Gold standards was less than 0.5 percent of the design-build budget, and the payback was less than one year.

A PowerPoint presentation prepared for presentation at the WA Energy/Facilities Conference, Leavenworth, in May 2012, which provides more detail, is included as Appendix 2.

Metering Challenges

This is the first biennium with a significant amount of reported consumption data, along with information related to metering. To get accurate consumption data for the LEED buildings, meters are necessary to consistently measure energy and water use throughout the year.

For stand-alone buildings, energy and water metering can be a relatively easy effort. Utility companies install the electric, gas, and water meters, and consumption can be tracked using utility bills. In some situations, a utility company can install pulse outputs to the energy management control system, making instantaneous use readings possible. Trends can be set up to capture monthly consumption data for reporting purposes. The LEED Quality Assurance process includes a spreadsheet template for reporting energy and water use (see appendix 4).

However, most state buildings are located on a campus. Often, there is only one or two meters for the entire campus, so there is no way to measure consumption for an individual building. To complicate this further, a central plant may provide steam to the individual buildings without any metering. A campus central plant may also provide domestic hot water and chilled water to the buildings.

Given these challenges, Enterprise Services will often request that a metering plan be prepared and submitted at the construction documents phase of the design. The department uses a metering plan template for each state LEED project (see Appendix 8). This helps ensure that design teams include meters in all LEED projects.

Installing meters in all buildings is difficult to accomplish for a variety of reasons, including:

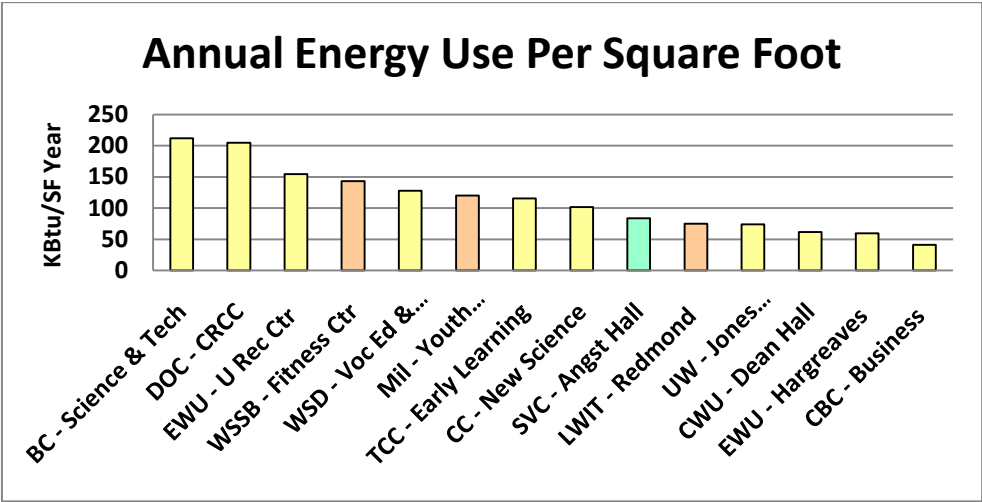
- Inadequate funding to get meters installed at the end of the project.
- Meters were installed, but were not fully programmed into the Energy Management Control System.
- Meters were installed, but are not maintained and functioning properly, resulting in lost data.
- Some meters are installed for electrical and water, but not heating because of the complexities and expense of measuring steam.

Facility operators are doing their best to report with data that is metered, or prorated, based on square footage or other strategies.

A Metering and Measurement Report template was developed to help operators document and report challenges with measuring energy and water use in state LEED buildings. This is the first year using this report (see appendix 5).

Actual Energy Use Reports Summary

Figure 5 – Energy Use Comparison of State LEED Projects – The types of facilities that reported energy use varied widely, from prisons to a child-care center.



Grouping similar types of buildings provides a better comparison of energy use. The next two figures make comparisons of community college science buildings (figure 6) and of college and university classroom/office buildings (figure 7).

Figure 6 – Energy Use Comparison in Community College Science Buildings

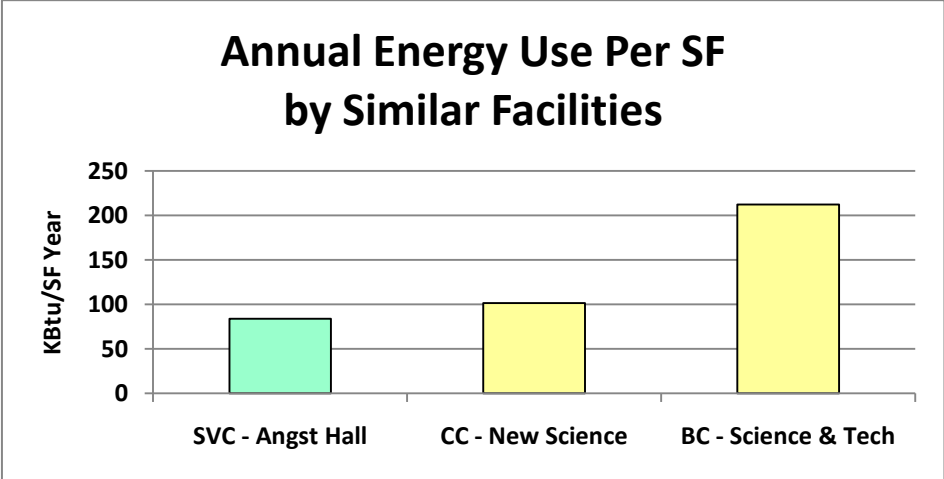
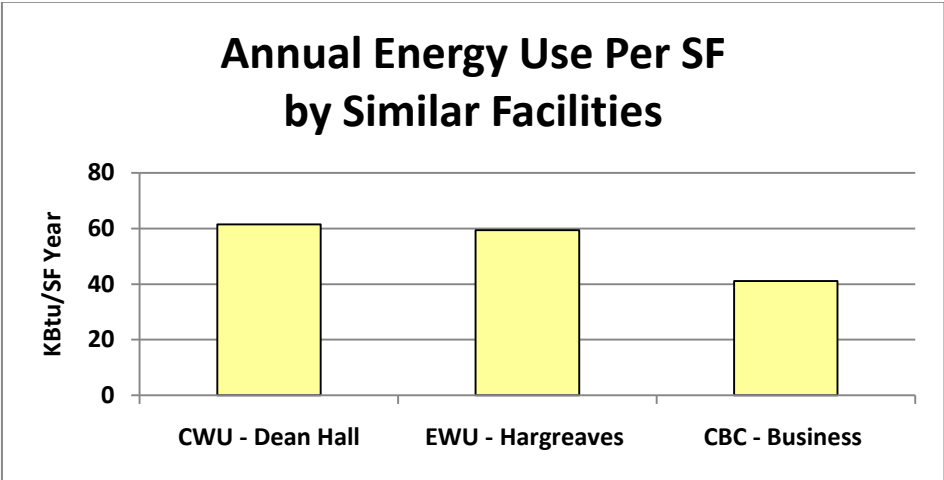


Figure 7 – College and University Classroom/Office Buildings



The above comparisons do not include differences in hours of use, plug loads, and climate, so they might not reflect the most efficient buildings. However, the comparisons do provide useful information that can target further evaluation.

Overview of the Enterprise Services LEED Quality Assurance (QA) Process

The Enterprise Services LEED Quality Assurance process was developed with the help of the original Affected Agencies Committee (see appendix 8). The process provides Enterprise Services with a minimum level of information to track the progress of a project through design and construction. The process allows for “verifying activities necessary for certification to at least the LEED silver standard for major facilities.” (From RCW 39.35D.060 (1)(a)) It also helps ensure that proper metering is installed for energy and water consumption reporting by requiring a metering plan be submitted during the construction documents phase. It gives state project managers the information to make sure their project is on track to achieve at least LEED Silver.

The quality assurance process is made up of easy-to-complete templates and specific LEED documents. Dissemination through the department’s Green Building web page and education provided to state project managers has integrated the process into the design and construction process.

The LEED Quality Assurance process requires the following:

- **At Schematic Design:** A half-page template with basic project size and cost information, and main contacts. A LEED checklist is also submitted.
- **At Design Development:** An updated LEED checklist and a two- to four-page description of how the project will meet the goals set in the LEED checklist, especially for energy and water efficiency goals.
- A new step may be offered at design development in the quality assurance process to extend the use of an energy service company (ESCO) for major projects. This can benefit an agency by having the ESCO complete the energy evaluation as part of the project design. Projects can benefit from additional

cost-effective measures identified and larger utility incentives. This was done as a pilot on a state office building on the Capitol Campus with good success.

- **At Construction Documents:** An updated LEED checklist and an updated two- to four- page strategies summary of how the project will meet the LEED goals set in the checklist. A metering plan is also submitted. A metering plan template is provided.
- **At Post-Construction:** Project cost data is collected. Added or saved costs related to LEED separated by consultant costs and construction costs are available from the final invoice. The added or saved construction costs are sometimes difficult to determine because of the integrated nature of green building design. Some features can easily be estimated, such as solar panels or a bike rack. Others can be more difficult, such as use of operable windows and skylights, features which may be added to the design for other reasons. This data is collected from the state project manager and project architect.

The savings data and other performance data are collected by “mining” the LEED submittal. This is accomplished using the LEED Building Cost and Performance template (appendix 6). This can be completed by the State Project Manager and/or the Architect. Using the LEED submittal documents provides access to all the energy and water savings calculations, construction waste management data, and other metrics.

Enterprise Services has established contacts at each of the agencies and universities. These contacts are used to disseminate information regarding the quality assurance process and to coordinate reporting to department.

In addition, case studies will be developed for each project. A state LEED Project Case Study gallery is included in this report in appendix 2 and will be displayed on the department’s website at: www.ga.wa.gov/eas/green.

Enterprise Services LEED QA and Data Collection Process Goes On-Line

In 2011, the Joint Legislative Audit and Review Committee (JLARC) completed a statutorily required performance review of the high performance green building program. JLARC identified the lack of complete and timely reporting by state agencies and institutions as a serious limitation on any evaluation of the program. To help address this issue, Enterprise Services is developing an online process for agencies to use in submitting project information. Each of the steps in the quality assurance process described above will have a similar step in the online process. Features will include:

- All project submittal data will reside in one location and will be easily sorted, accessed, etc.
- Some reports and tracking spreadsheets will update continuously as new data comes in.
- Some reports and tracking spreadsheets will be open to public review for viewing at any time.
- Data will be available for development of biennial reports and custom reports.

- Data will be available to provide for feedback to participants regarding building performance.
- Reminders will be sent to the four listed project team members when project teams miss a quality assurance submittal due date.
- All templates will be available for download and complete plans and reports for upload (metering plan, post-construction LEED building cost and performance data and case study template).
- Users will be able to update project schedules and team member data as appropriate.
- Annual energy and water consumption reports will also be available to building operators (review previous submittals, spreadsheet templates to download, completed data to upload).
- Biennial Agency Sustainable Building Report will be available to appropriate capital building/facility staff (review previous reports, templates to download, completed report to upload).

The online quality assurance process will provide up-to-date summaries about green building efforts in the state. It will make the development of reports much easier and more complete.

Training Is Important For A Successful Program

Education is important to the success of the entire implementation effort. Training related to LEED is an ongoing effort for project managers. Periodic training is provided to state project managers regarding LEED and the quality assurance process.

Contractors are critical to the success of LEED projects. While architects are selected based on their knowledge of LEED and qualifications, contractors are selected based on their bid, but not necessarily on their knowledge of LEED. To meet this challenge, it was determined that the state could require the successful contractor to either have experience with LEED or be required to participate in a free training.

Enterprise Services partnered with the Department of Ecology and the Cascadia Regional Green Building Council to develop the Build-It LEED toolkit, a training program geared for contractors. The toolkit consists of a two-hour presentation, and an interactive Excel workbook and notebook. The department's Green Building advisor provides the Build-It LEED training to contractors. Over the past two years, the advisor has given several free trainings to contractors, project managers and owners' representatives. Many contractors are now proficient with LEED, so Build-It-LEED training requests are less and less frequent.

Building Operator Interview (Proposed)

Green buildings are often a mixture of systems that respond to natural forces, such as daylight and natural convection, and mechanical HVAC systems and artificial light. These buildings have operating strategies that change based on time of day and time of year. Systems can be automated and designed for occupant involvement. As a

result, it is important that building operators and occupants understand these systems and the strategies to preserve comfort and maximize efficiency. Visits to some of the early state LEED projects have shown that green buildings are not always operated optimally. This can lead to higher energy use and uncomfortable occupants.

In an effort to improve building performance and occupant comfort, Enterprise Services is proposing that it perform a building operator interview after the building has been occupied for two to four months. The interview would include the following:

- Review of building operations manuals (if developed).
- Review of case study to understand green features of the building.
- Interview with building operator to determine if they are familiar with the green features and strategies for operation.
- Review the schedules and strategies incorporated into the building automation system with the building operator to determine their knowledge of the system.
- Enterprise Services would develop a summary report for the building operator. It would include appropriate recommendations for improvement. An electronic copy of the report would be kept by the department.

This effort will require additional funding to conduct and facilitate reporting.

Post-Occupancy Evaluation (Proposed)

Enterprise Services has collaborated with the Washington State University Extension Energy Program to develop a post-occupancy evaluation (POE) process, as described on page 15 of the 2010 Green Building Report. The evaluation process takes into account the design and operation of buildings as they related to occupant performance.

The process would be a valuable tool for Enterprise Services to evaluate the effectiveness of the green building effort and to share these experiences throughout the state. The reports developed from the evaluation of each state LEED building would provide energy and water savings information, maintenance-related impacts and occupancy survey results. These reports would be posted as case studies on the Enterprise Services green building web site.

The POE process would be implemented between 10 to 15 months after occupancy. Performing the POE before 12 months would help to identify issues prior to the end of the warranty period.

Rules

The Attorney General's Office has determined that rules are not currently needed for implementation of RCW 39.35D. Enterprise Services has developed guidelines for tracking projects through its LEED Quality Assurance process and uses this tool to make sure proper attention is given to LEED issues throughout the project design and construction.

Green Building Metrics

One of the challenges of measuring the benefits of green building is developing metrics to track and report. The important attributes, where this data is found in the LEED process and Enterprise Services LEED QA process, are described below.

Building Square Footage & Cost

Building square footage and cost, along with building type and use are important elements to consider when comparing buildings. The added cost related to LEED is also important in determining the cost-effectiveness of LEED buildings. Building cost per square foot allows for comparing buildings of different size in a common unit of measure. This data is available in the LEED Project Summary. State project managers can also retrieve the data from project invoicing information.

High-performance green buildings help the state achieve a number of goals, including:

- Energy efficiency and reduced reliance on imported energy.
- Water efficiency to stretch resources.
- Reduced stormwater runoff into streams, rivers, lakes and Puget Sound.
- Reduced reliance on the automobile, which lessens traffic congestion and the carbon footprint.
- Reduced construction waste going to landfills.
- Increased use of recycled materials.
- Use of Washington-made products and materials.
- Protection of forests and habitat.
- Improved worker and occupant health and productivity.

Energy Efficiency and Renewable Energy Production

Energy efficiency and local production of renewable energy provides multiple benefits by:

- Lowering operating costs.
- Reducing emissions from energy sources (mostly electric and gas) which lower greenhouse gas impacts.
- Improves local economy (energy dollars saved and earned may stay local).
- Reduces energy imports.

Applicable LEED Credits:

- EAc1 – Optimize Energy Performance (percent energy cost savings, percent energy.
 - Btu savings, kWh & therms, or other fuels/year).
- EAc2 – On-Site Renewable Energy (kWh and/or Btu/year).

Water Efficiency

Water efficiency is important as we face shortages. Efficient use of water can also provide these benefits:

- Lower operating costs.
- Improved water availability for other uses.
- Greater capability of existing supply infrastructure to serve expanding customer base.
- Reduced need for expansion of waste water treatment facilities.

Applicable LEED Credits:

- WEc1 – Water Efficient Landscaping (percent water savings and gallons).
- WEc2 – Innovative Wastewater Technologies (0 or 1 point).
- WEc3 – Water Use Reduction (percent water savings and gallons).

Stormwater Management

In an effort to clean up streams, rivers, lakes and Puget Sound, Washington is aggressive on management of stormwater. This is critical to protect salmon and other fish habitat, and helps serve as another measurement of the overall health of the environment.

Applicable LEED credits:

- SSc6 – Stormwater Design (0, 1 or 2 points).

Alternative Transportation Sources

The urban areas of Washington suffer from traffic congestion. Transit options can ease this burden and improve air quality by reducing emissions from vehicles. The use of bicycles can also help reduce vehicle traffic and cut emissions while improving the health of building occupants. Walking access to services such as restaurants, banks, stores, etc., also improves building occupant health and reduces congestion.

Applicable LEED credits:

- SSc2 – Development Density & Community Connectivity (0 or 1 point).
- SSc4.1 – Public Transportation Access (0 or 1 point).
- SSc4.2 – Bicycle Storage & Changing Rooms (0 or 1 point).

Construction Waste Recycling

Nationwide, over 40 percent of the waste going to landfills is from construction waste. Recycling of this waste can:

- Extend the life of landfills.
- Provide a source of other materials and products.
- Reduce the impacts of extraction of raw materials.

Applicable LEED credits:

- MRc2 – Construction Waste Management (percent recycled and tons).

Table 5 – Construction Waste Recycling

Agency	Building Name	Location	Tons	% Recycled
Bellevue College	Science & Technology Bldg.	Bellevue	1,149.7	98.0%
Centralia College	New Science Center	Centralia	311.7	96.5%
Corrections, Dept. of	Coyote Ridge Corrections Facility	Connell	6,206.4	96.2%
Everett CC	Undergraduate Education Center	Everett	963.5	97.1%
Green River CC	Salish Hall	Auburn	353.0	98.8%
Lake Washington Technical College	Allied Health Bldg	Kirkland	702.0	91.0%
Military Dept., WA State	Washington Youth Academy	Bremerton	71.2	95.0%
North Seattle CC	Intergraded Services Center	Seattle	200.7	95.7%
Peninsula College	Business & Humanities Center	Port Angeles	315.0	84.0%
Skagit Valley College	Science & Heath Building	Mount Vernon	749.1	97.1%
South Puget Sound CC	Natural Sciences Complex, SPSCC	Olympia	418.3	96.3%
Spokane Falls CC	sn-w'ey'-mn (Business and Social Science)	Spokane	1,600.9	90.5%
Tacoma CC	Early Learning Center	Tacoma	250.0	99.7%
University of Washington	UW - Clark Hall	Seattle	192.3	94.1%
University of Washington	UW Floyd and Delores Jones Playhouse	Seattle	129.6	95.8%
University of Washington	UWT - William W. Philip Hall	Seattle	114.6	96.9%
Yakima Valley CC	Grandview Library	Yakima	872.2	66.5%

Use of Recycled Content Materials

Purchase of recycled content materials reduces the demands for “virgin” supplies. This reduces environmental impacts and creates local jobs by closing the recycle loop.

Applicable LEED credits:

- MRc4 – Recycled Content Materials (percent recycled content materials and cost).

Table 6 – Recycled Content Materials

Agency/University	Building Name	Location	Recycled Content Materials Cost	% Total Materials Cost*
Skagit Valley College	Science & Heath Building	Mount Vernon	\$1,039,282	23.8%
Bellevue College	Science & Technology Bldg.	Bellevue	\$1,146,427	21.2%
Centralia College	New Science Center	Centralia	\$1,589,364	29.7%
Corrections, Dept. of	Coyote Ridge Corrections Facility	Connell	\$6,033,972	33.1%
North Seattle CC	Intergraded Services Center	Seattle	\$721,935	24.5%
Peninsula College	Business & Humanities Center	Port Angeles	\$1,160,642	22.0%
Washington School for the Deaf	Vocational Education & Support Bldg.	Vancouver	\$447,264	25.1%
South Puget Sound CC	Natural Sciences Complex	Olympia	\$588,485	10.4%
Spokane Falls CC	sn-w'ey'-mn (Business and Social Science)	Spokane	\$638,788	18.2%
Tacoma CC	Early Learning Center	Tacoma	\$67,223	13.5%
University of Washington	UW Floyd and Delores Jones Playhouse	Seattle	\$157,647	46.2%
Everett CC	Undergraduate Education Center	Everett	\$873,977	18.3%
Green River CC	Salish Hall	Auburn	\$1,767,439	34.9%
Lake Washington Technical College	Allied Health Bldg	Kirkland	\$1,869,817	41.6%
Military Dept., WA State	Washington Youth Academy	Bremerton	\$35,280	4.5%

*Percent of materials cost (in Divisions 2-10, does not include plumbing, electrical or HVAC equipment).

Use of Regional Materials

The use of regional materials (within 500 miles of job site) can create the following benefits:

- Create and retain local jobs.
- Keep money in the local economy.
- Reduce the trade imbalance.
- Reduce emissions from transportation of materials and products.

This is the only LEED metric that demonstrates the use of Washington materials (RCW 39.35D.090: Use of local building materials and products). If a project did not use enough to meet the 10 percent threshold, it was not reported.

Applicable LEED credits:

- MRc5 – Regional Materials (percent regional materials and cost).

Table 7 – Regional Materials

Agency/University	Building Name	Location	Regional Materials Cost	% Total Materials Cost*
Skagit Valley College	Science & Heath Building	Mount Vernon	\$1,090,424	25.0%
Bellevue College	Science & Technology Bldg.	Bellevue	\$626,985	11.6%
Centralia College	New Science Center	Centralia	\$2,932,638	54.8%
Corrections, Dept. of	Coyote Ridge Corrections Facility	Connell	\$8,901,376	74.1%
North Seattle CC	Intergraded Services Center	Seattle	\$0	0.0%
Peninsula College	Business & Humanities Center	Port Angeles	\$923,568	17.0%
Washington School for the Deaf	Vocational Education & Support Bldg.	Vancouver	\$459,730	26.4%
South Puget Sound CC	Natural Sciences Complex	Olympia	\$417,899	35.0%
Spokane Falls CC	sn-w'ey'-mn (Business and Social Science)	Spokane	\$791,412	62.3%
Tacoma CC	Early Learning Center	Tacoma	\$162,562	32.7%
University of Washington	UW Floyd and Delores Jones Playhouse	Seattle	\$0	0.0%
Everett CC	Undergraduate Education Center	Everett	\$1,262,504	26.4%
Green River Com College	Salish Hall	Auburn	\$760,690	15.0%
Lake WA Technical College	Allied Health Bldg	Kirkland	\$1,106,017	22.8%
Military Dept., WA State	Washington Youth Academy	Bremerton	\$290,758	51.7%

*Percent of materials cost (in Divisions 2-10, does not include plumbing, electrical or HVAC equipment).

Protect Forests by Supporting Sustainable Forestry

The purchase of certified wood ensures that the lumber is harvested in a sustainable way and the wood has the chain of custody documentation to prove it. Sustainable forestry practices protect wildlife habitat, streams, rivers and lakes, and guards against excessive soil erosion. This helps protect the natural environment for future generations.

Applicable LEED credits:

- MRc7 – Certified Wood (0 or 1 point).
- Washington also recognizes wood from Washington that complies with the Forest and Fish Law as sustainable forestry.
- Other third party certified wood also is recognized by WA as meeting the intent of this LEED credit.

Good Indoor Air Quality

Good indoor air quality is a key to a healthy work environment, contributing to better worker productivity and reduced sick leave. Factors that can contribute to poor indoor air quality include:

- Dust in the ductwork and equipment from construction.
- Toxic fumes from construction practices absorbed into ceiling tile and carpet.
- Outgassing of materials with toxic fumes (volatile organic compounds).
- Outgassing of copiers and other equipment or activities in the building.

Applicable LEED credits:

- EQc3 – Construction IAQ Management Plan (0, 1 or 2 points).
- EQc4 – Low-Emitting Materials (0, 1, 2, 3 or 4 points).
- EQc5 – Indoor Chemical & Pollutant Source Control (0 or 1 point).

Access to Natural Light

Access to daylight has been shown to improve worker and student performance. It provides a connection with natural light, which enhances colors and overall visibility. Having access to views can also improve occupant satisfaction and help with worker retention.

Applicable LEED Credits:

- EQc8 - Daylight and Views (0, 1 or 2 points).

Use of Energy Star in Reporting Actual Energy and Water Use

Complete energy and water usage was received from 18 LEED projects. The reporting forms are found in appendix 4. The reporting forms used by Enterprise Services are comprehensive and provide base data about the building size, use, high-energy using equipment, etc., so it is necessary to get this form completed at least once for each project. In response to E2SSB 5854, the department is actively assisting agencies to establish Energy Star Portfolio Manager accounts for all buildings larger than 10,000 square feet. This is an opportunity for the Enterprise Services Green Building Program to use this mechanism to collect the energy and water consumption data and will reduce the efforts taken by the facility operators. Over the next two years, Enterprise Services will refine this process and work with facility management staff to work towards using the Portfolio Manager for energy and water reporting.

Agency/University Sustainable Building Reports Summary

Agencies and universities are required to provide biennial reports to Enterprise Services to show their progress related to their Green Building efforts. The department developed a template that is used by the agencies and universities to report green building activities, provide general comments, discuss training efforts, suggest improvements, and provide a discussion about their metering efforts and plans. These reports are found in appendix 3.

Exemption Declarations

The exemption declaration process was developed as a means for state organizations with projects to opt out of the LEED Silver certification process. Agencies are given three choices:

1. Pursue a LEED certification at a lower level.
2. Follow through with the Enterprise Services LEED QA process reports.
3. Do nothing more.

Ten out of 125 projects have submitted an Exemption Declaration. Enterprise Services' green building advisor works with those agencies to determine possible solutions that would support pursuit of LEED Silver certification, recognizing that the agencies make the final choice. Enterprise Services does not approve exemptions, but includes them in this report (appendix 7). Each agency is responsible for its own exemptions.

Recommendations for Improvement

Enterprise Services (formerly as General Administration) has coordinated implementation of ESSB 5509 for more than seven years. In consultation with affected agencies and universities, the department has developed processes for tracking LEED projects. The following is a combination of feedback from agencies about the issues concerning implementation of the law and knowledge of the state design and construction process.

Issue: Energy efficiency will continue to be a major priority in meeting sustainability standards set by the state. To achieve improved efficiency, it is imperative that cost-effective and energy-efficient systems identified in the energy life-cycle cost analysis process be considered in the design. However, capital budget funding can be a challenge. Renewable energy systems also contribute to better efficiency, but currently may not be as cost-effective.

Recommendation A: Provide capital funds to supplement projects to increase energy efficiency. Enterprise Services could assist with implementation of an incentive program through review of proposals as part of the energy life-cycle cost analysis process. The analysis encourages energy efficiency by evaluating the total cost of ownership of several competing design alternatives. The intent is to help build cost-effective public facilities.

Recommendation B: Establish a requirement that one-half of one percent of the maximum allowable construction cost be used for renewable energy systems, as defined by LEED.

Discussion: The most cost-effective time to implement energy efficiency measures in the life of a building is at the time of design. An incentive applied to a project based on the energy life-cycle cost analysis report could fund additional energy efficiency that may have been outside the original budget. More consistent funding of renewable energy projects would help contribute to a more stable renewable energy market, creating more experienced designers and installers. This will not only stimulate more green jobs, but enhance competition. As renewable energy technology lowers in price, Washington will be poised to respond to the demand for these systems. Renewable energy systems installed on state projects are also critical to achieving the carbon reduction goals set by E2SHB 2815, which the Legislature enacted in 2008.

Issue: For smaller projects, the administrative cost to seek LEED certification is a much higher percentage of the total project cost than for larger projects. As a result, some of the smaller projects must opt for an exemption from the process or cut program from the project.

Recommendation: Provide additional capital funding to cover the administrative costs for LEED certification funding for smaller projects (between 5,000 and 10,000 square feet). Since many LEED documentation costs are nearly the same as for much larger projects, the costs for consultant fees related to LEED documentation preparation can be a burden to the smaller projects. The additional funds would result

in smaller projects that don't have to compromise design and construction to implement LEED, thus reaping the benefits.

Issue: There is no current funding for the Enterprise Services Green Building Program. This makes it difficult to support the state's LEED Building efforts through guidance, reporting, and feedback.

Recommendation: Provide funding for Enterprise Services efforts to support state LEED projects. This would include an increased level of effort for Building Operator Interviews, Post Occupancy Evaluation, and provide feedback to the design and project management professionals. This kind of involvement can lead to better design and improved energy efficiency in LEED buildings, thus saving operating funds.

Issue: Metering is needed to track energy and water use to determine savings.

Recommendation: Provide additional funding earmarked for metering to capital projects in new and major renovation projects.

Appendices

1. State LEED Project Case Study Gallery
2. DOC Case Study – Airway Heights CC VS Coyote Ridge CC
3. Agency and University Reports
4. Energy and Water Savings Reporting Spreadsheet
5. Metering and Measurement Reports
6. LEED Building Cost & Performance Data
7. Exemption Declarations (2009-2011)
(See the 2010 Report for earlier Exemption Declarations)
8. Enterprise Services LEED Quality Assurance Process Instructions and Forms

