

Bonney Lake Partnership

Jurisdictions and Geography

The Bonney Lake Shared RCM Partnership consists of three cities and one school district – the City of Bonney Lake, the City of Buckley, the City of Sumner and the Sumner School District. The City of Bonney Lake is the lead. The partners are in close geographic proximity to each other, and all are located in east Pierce County, approximately 15 miles southeast of Tacoma, Washington, in the Puget Sound region.

The partners are Puget Sound Energy (PSE) customers and were able to take advantage of the support offered by the PSE RCM program.

Partnership Details

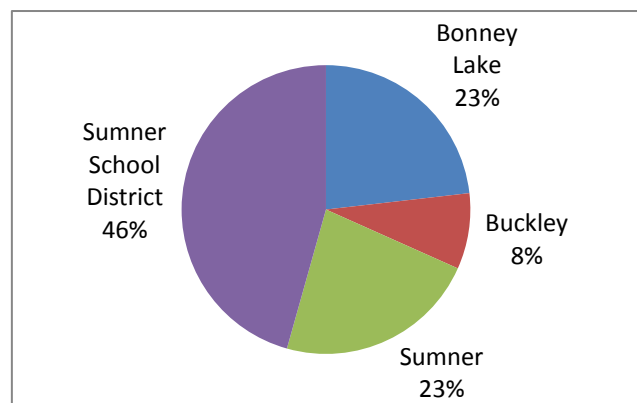
Champions of the program were the Executive Assistant at the City of Bonney Lake, who acted as lead for the partnership, and the Executive Director of Business Services at the Sumner School District, which accounted for about half of the utility expenditures among the partners. These staff made sure the RCM found the right contacts within their organizations, helped establish relationships and set up meetings. These staff members have established influence within their organizations and were successful advocates among the partner organizations.

The only major staff turnover during the program was the departure of the original City of Sumner point person. The overall lead at the City of Bonney Lake left his position, but only after the final report and program were completed.

The school district was the driving force for forming the partnership. Initially, there was hesitation at the school board level, as demonstrated by the board rejecting the program by a vote of three to two. After district staff provided additional information and upon further discussion at a second meeting, the board approved the formation of the program. The pivotal board member who changed their vote from no to yes turned into a supporter after seeing evidence of the potential positive change and savings that could result from the program.

The RCM was housed at the school district because it had the greatest energy use and available office space. Because of this, the school district received more immediate attention to their needs and the RCM became very familiar with school RCM work.

The Shared RCM's time was allocated per 2008 utility expenditures, as shown at right.



Allocation of Shared RCM's Time

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Washington State University Energy Program, March 2013

Program Timeline

Project Milestones	
1/6/2010	Phase 1 application received
2/23/2010	Inter-local agreement adopted
4/1/2010	Commerce contract start date
4/23 – 5/27/2010	RCM position posted and open
6/9/2010	Interviews held
9/1/2010	Shared RCM started work
9/13/2010	Kick-off meeting
9/23/2010	First site technical visit by WSU Energy Program staff
4/30/2012	Commerce contract end date (original/with no-cost extension)

Hiring Process

The Bonney Lake partnership decided in advance to contract out the RCM position to avoid the negative impression it might give if they hired an employee while laying off others during difficult budget times. The partnership published the request for proposals and received three applications from consulting firms. They chose to interview just one company, which they selected – Sound Environmental Consulting. The RCM, an employee of the company, had been employed as an RCM at another school district. He was contracted to the partnership as a full-time employee.

Well-versed in all aspects of the job requirements, the RCM also had a strong background in solid waste reduction, including recycling, composting and waste utility contracts. The RCM was already familiar with the Utility Manager software program so he was ready to dive right in, although he did report delays in getting historical data from PSE.

A side interest of the RCM is electric vehicles. With his experience and knowledge about electric cars, he had hoped to investigate the potential for electric vehicles for the partners.

RCM Accomplishments

Facility Assessments

There are 46 staffed facilities and 156 sites among the four partners. The RCM conducted assessments of most of the 156 sites in the partnership. His observations and recommendations for each site are documented in resource conservation management plans (RCMPs) and facility action plans (FAPs).

Data Tracking

As of January 2012, the RCM was tracking 156 sites in the Utility Manager database. The RCM's prior experience enabled him to immediately begin entering data into Utility Manager. Some delays occurred when historical data was not available from the utility.

Data for utilities other than electricity and natural gas was not available in electronic format, so it needed to be entered into the database by hand. The RCM did not maintain these parts of the resource accounting system.

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Reports

The RCMPs for this partnership included energy and resource use guidelines, recommendations for optimal temperatures and setpoints, ventilation rates, recycled materials purchasing, and other ideas applicable to the partners.

While facility assessments were done in a timely manner, the RCM did not produce FAPs at the same time. The FAPs for the main facilities in the partner organizations were created shortly before the end of the grant period.

The workplan for the Sumner School District focused on energy and resource use guidelines. It also included detailed recommendations for the specific rooms and buildings in the district. The Sumner School District adopted the energy and resource use guidelines in April 2011.

The City of Bonney Lake adopted the resource conservation guidelines in September 2011. Guidelines were also drafted for the cities of Sumner and Buckley, yet, as of April 2012, they had not been formally adopted. And while some participants in the Shared RCM partnerships did not adopt RCM guidelines, just having the guidelines can be useful.

Resource Conservation Projects

The RCM focused at first on the low-hanging fruit to reap immediate payback with minimal effort. These projects – highly visible to building users and occupants – depend on behavior changes from the occupants, such as turning lights off in areas that are unoccupied.

Because solid waste is his area of expertise, the RCM first tackled that resource by reviewing contracts with the solid waste utilities and assessing those expenditures to determine if they could be reduced by getting larger waste bins and changing the pick-up schedule or contract details. These changes resulted in savings. Waste management charges to one of the partners were cut almost in half. The RCM also engaged students and teachers in solid waste and compost programs.

Through detailed review of utility bills and the database, the RCM was able to identify dormant water meters, malfunctioning gas meters and erroneous electric bills.

Lighting retrofits were performed at all jurisdictions, usually with utility incentive funding.

Many buildings in the partner organizations underwent multiple retrofits from an energy service company (ESCO), such as lighting retrofits, HVAC upgrades, new equipment, and better controls and occupancy sensors.

Communication Activities

Taking advantage of his home base at the school, the RCM engaged students to help with solid waste and compost issues.

Challenges

Organizational Issues

Some challenges that the Bonney Lake Partnership faced resulted from the large variation in energy use between the partners, and the related challenge of sharing the RCM's time equitably among the partners. The smaller partners may have felt like they received insufficient attention from the RCM. This is due in part to the Sumner School District being the "squeakiest wheel" and having immediate access to the RCM.

The RCM also had greater familiarity with the workings of a school district than with cities, and needed to devote additional time to learn how the city partners functioned in order to make changes.

Construction made it difficult to compare facilities within partner organizations and establish benchmark data.

Reporting Requirements

The RCM completed basic action plans for the main facilities for all the partners, but there was tension around the grant requirement to complete RCMPs and FAPs. The RCM felt that the level of detail of the FAPs did not affect the work he was already doing. He thought that the reports would not lead to greater efficiency, might not be used by facility or management staff, and took too much time to complete. There was some management support of his stance, yet an understanding needed to be reached with Commerce regarding compliance with the grant requirements. This was resolved with the RCM eventually completing the basic FAPs, although at a later date than originally required.

Results

The City of Sumner is the wastewater utility for the City of Bonney Lake. The Sumner wastewater treatment facility experienced a 14.9 percent increase in wastewater flows between 2010 and 2011, which significantly increased energy use in the City of Sumner – electricity use for lift stations and treatment process pumping, and gas use for sludge drying. The City of Bonney Lake contributed much of the increased flows, so it would be expected that their electricity use would increase due to pumping the wastewater to Sumner. However, the City of Bonney Lake had installed variable frequency drives on the domestic water pumping stations, which greatly increased their efficiency.

Three members of the Bonney Lake partnership saved between 3.4 percent and 10.8 percent of their utility costs over the baseline amount. The exception was the City of Sumner, due in part to their increased wastewater load, as seen in electrical use in the table below.

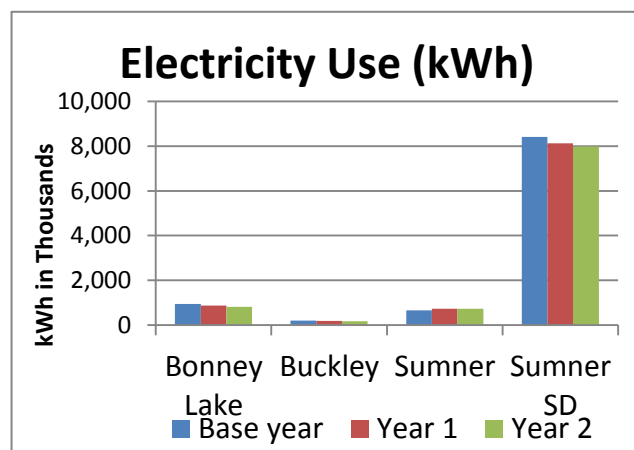
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Changes in Energy Consumption for the Bonney Lake Partnership					
	Bonney Lake	Buckley	Sumner	Sumner SD	Totals
Electricity Use (Kwh)					
Base year	939,160	201,980	660,746	8,408,604	10,210,490
Year 1	876,655	184,468	732,024	8,129,536	9,922,683
Year 2	810,445	180,341	730,176	7,974,806	9,695,768
<i>Cumulative change</i>	<i>-191,220</i>	<i>-39,151</i>	<i>140,708</i>	<i>-712,866</i>	<i>-802,529</i>
% Change Year 1	-6.7%	-8.7%	10.8%	-3.3%	-2.8%
% Change Year 2	-13.7%	-10.7%	10.5%	-5.2%	-5.0%
<i>Cumulative 2-yr % change</i>	<i>-20.4%</i>	<i>-19.4%</i>	<i>21.3%</i>	<i>-8.5%</i>	<i>-7.9%</i>
Natural Gas Use (therms)					
Base year	18,007		4,383	261,605	283,995
Year 1	19,233		5,075	248,918	273,226
Year 2	19,263		6,124	238,328	263,715
<i>Cumulative change</i>	<i>2,482</i>		<i>2,433</i>	<i>-35,964</i>	<i>-31,049</i>
% Change Year 1	6.8%		15.8%	-4.8%	-3.8%
% Change Year 2	7.0%		39.7%	-8.9%	-7.1%
<i>Cumulative 2-yr % change</i>	<i>13.8%</i>		<i>55.5%</i>	<i>-13.7%</i>	<i>-10.9%</i>
Energy Use (Mbtu)					
Base year	5,005		2,693	54,851	62,549
Year 1	4,914		3,005	52,630	60,549
Year 2	4,692		3,104	51,042	58,838
<i>Cumulative change</i>	<i>-404</i>		<i>723</i>	<i>-6,030</i>	<i>-5,711</i>
% Change Year 1	-1.8%		11.6%	0.0%	-3.2%
% Change Year 2	-6.3%		15.3%	-6.9%	-5.9%
<i>Cumulative 2-yr % change</i>	<i>-8.1%</i>		<i>26.8%</i>	<i>-11.0%</i>	<i>-9.1%</i>
# of facilities included	7	6	13	3	29

The above numbers are from Utility Manager database, comparing the baseline year (7/1/2009 through 6/30/2010) with the following two years. The difference in use or cost of year one compared to the baseline plus the difference in use or cost of year two compared to the baseline. Facilities included are the primary non-water utility sites with complete data. Excluded are new construction, facilities taken offline, and others with major changes or added floor space.

As shown in the chart at right, electricity use decreased during both years for all partners except the City of Sumner. Not included in the data are buildings undergoing reconstruction



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during the RCM program. It should be noted that new and reconstructed buildings in the Sumner School District used more energy per square foot of conditioned space because they were brighter and warmer, yet they all showed significant decreases the second year. There were similar issues at the new justice center at the City of Bonney Lake.

Due to the nature of utility rates, savings in electricity or gas use do not always equate to dollar savings. There is more sporadic data for gas. According to a PSE summary report, the program saved 6.9 percent in electricity and gas the first year, and 2.3 percent the second year, for a total of 9.2 percent decrease in energy use. This result beats the overall estimated savings predicted in the PSE RCM Grant Agreement of 6.3 percent over two years.

In general, facilities where there is some documentation that energy efficiency measures were taken showed a reduction in electricity use. For example:

- A new condensing gas furnace installed at the Bonney Lake City Hall in February 2011 and new air economizers installed in December 2010 contribute to a 23 percent decrease in electricity use.
- Sumner City Hall installed a new server room air conditioner and adjusted HVAC setpoints and overnight setback temperatures, which reduced electricity use by about 7.7 percent.

The table below provides a sample of electricity savings for these facilities, with notes on some of the measures implemented.

Sample of Electricity Savings for the Bonney Lake Partnership						
	Base Year	June	June	Base to	2011 to	Measures Implemented
	6/1/2010	2011	2012			
Electricity (kWh)						
Bonney Lake City Hall	102,383	80,820	62,274	-21.1%	-22.9%	Dec 10: Reduce computer room AC loads through outside air economizers Feb 11: Install condensing gas furnace
Bonney Lake Public Safety	592,618	550,891	513,521	-7.0%	-6.8%	Fall 11: Install occupancy sensors April 11: EECBG lighting retrofit
Bonney Lake Senior Center	115,212	113,099	111,111	-1.8%	-1.8%	Feb 11: Lighting retrofit
Buckley Museum	22,240	19,184	17,692	-13.7%	-7.8%	April 2011: Thermostat reprogrammed for setback during unoccupied periods, staff instructed how to activate heat for events
Buckley Youth Center	26,704	27,042	23,245	1.3%	-14.0%	April 2011: Exterior lighting cut back to only nighttime use, thermostat reprogrammed for standard operating hours and night setback
Sumner City Hall	367,448	354,646	339,603	-3.5%	-4.2%	Jan 2011: Server room AC replaced, heat supply cut off Dec 2010: HVAC setpoints and overnight setback adjusted
SSD – Emerald Hills Elementary	518,028	498,797	460,365	-3.7%	-7.7%	Sep 2011: Lighting retrofit halfway complete

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The substantiated energy and cost savings in the table below were reported in the closeout report to the Department of Commerce.

Substantiated Energy & Cost Savings							
Years that savings were counted (month and year): September 2010 through April 2012 (20 months) Baseline year ending June 20, 2010 (billing data is not yet available for all of May and June 2012)							
Partner Entity	Electricity (kWh)	Electricity \$ Saved	Natural Gas (therms)	Natural Gas \$ Saved	Solid Waste \$ Saved	Billing Error Refunds	Total \$ Saved
Bonney Lake	629,760	\$63,512	(1807)	(\$1944)			\$61,568
Buckley	318,933	\$114,898	8536	\$13,545			\$128,443
Sumner	(323,647)	(\$29,113)	(8204)	(\$8678)			(\$37,791)
Sumner School District	2,843,983	\$198,681	51,339	\$57,447	\$35,337	\$12,407	\$303,872
Totals	3,469,029	\$347,978	49,864	\$60,370	\$35,337	\$12,407	\$456,092

Looking Ahead

It appears that the school board has been satisfied with the success of the Shared RCM program. The cities of Bonney Lake and Buckley also appeared satisfied, although they had less involvement due to capacity differences. Although the current liaison at the City of Sumner is supportive of RCM programs, his experience with the shared partnership led to the decision not to continue.

As of March 2013, the Shared RCM continues to work with Sumner School District, Buckley and Bonney Lake. He is training a school district facilities staff person to take over RCM duties at the school district when he leaves.

In Buckley, the operating guidelines that the RCM wrote will continue to be used to educate people about energy efficient measures.

During a walkthrough of a 1980s-era elementary school in Bonney Lake, Shared RCM Jay Donnaway heard the urinals flushing as he approached the restrooms even though nobody was using the facilities. When the school was built, the urinals were programmed to flush automatically every few minutes all day, all night, all year!

To remedy this, Jay worked with school staff to program the flushing mechanism so it is in sync with the school schedule and doesn't keep flushing when the building is unoccupied.

Jay calculated that the urinals were flushing unnecessarily for 5,610 hours per year, wasting 201,960 gallons per year. In addition to eliminating unnecessary wear on the equipment, the school district now has an extra \$1,162 per year to spend on more important things.

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