

Snohomish County

Energy Smart Loan Program Report: 2012-2014

June 30, 2014





1. Executive Summary.

The Energy Smart Loan Program was established in March of 2012 with Energy Efficiency and Conservation Block Grant (EECBG) funding from the Department of Energy via the American Recovery and Reinvestment Act (ARRA). Through a contracted partnership with Puget Sound Cooperative Credit Union (PSCCU), Snohomish County invested \$644,000 in grant funds with PSCCU to start a low interest loan program for Snohomish County homeowners to make energy efficiency improvements in their homes. The Energy Smart Loan Program has been available to County homeowners for two years (March 2012 to March 2014) at the time the data for this report was compiled.

The Energy Smart Loan Program uses an innovative third-party financing model; a model promoted by the Department of Energy under the EECBG program. Under this financing model, PSCCU administers the lending program and uses its own capital to service loans. Snohomish County's investment of \$644,000 in grant dollars with the PSCCU serves as a "loan loss reserve" and is only used in the event of customer default. The loan loss reserve model has numerous benefits, the primary being that Snohomish County is able to leverage the initial investment of \$644,000 to support approximately \$12 million in loans over about 15-20 years. By comparison, had the County chosen to self-administer the program and use EECBG grant dollars for direct lending, the Energy Smart Loan Program would likely have exhausted funds in the first four months of the program based on current participation rates. Conversely, the program is contracted to operate until 2031, yet it is likely that program lending capacity will reach its cap around 2018 based on current participation rates. The program model is described in more detail in Section 2: Program Background.

The Energy Smart Loan Program has exceeded expectations in terms of project volume, project scope, default rates and energy savings.

Two years into implementation, the Energy Smart Loan Program has:

- Made **360 Energy Smart loans** to homeowners totaling **\$3.7 million**.
- Generated **\$1.8 million in energy efficiency work** completed by Snohomish County contractors.
- Financed an **average project investment of \$10,350**, demonstrating that homeowners have made deep energy efficiency investments; 60% more per project than anticipated at program inception.
- Saved participating Snohomish County homeowners an estimated total of **6 billion British Thermal Units (BTUs) of energy**, enough energy to power:
 - 166 homes for a year¹
 - 23 planet circumnavigations in a 2014 electric Smart Car²
- Saved participating Snohomish County homeowners more than **\$180,000 a year in energy bills**; an average of \$500 per homeowner.
- Not recorded a loan default to date.



Energy Smart Loans

for Snohomish County
Homeowners



The Energy Smart Loan Program's success is attributed first, and foremost, to Snohomish County homeowner participation which has greatly exceeded the original program goals. Aside from homeowner participation, program success is largely a result of the following key factors: 1) The innovative public-private partnership financing model, 2) The expertise and experience of contracted lender Puget Sound Cooperative Credit Union in energy efficiency lending, 3) The support from Snohomish County Public Utility District (PUD), the County's electric utility, in promoting the program, 4) Continued support and participation from industry contractors.

2. Program Background.

Introduction

Using the first two years program data, this report assesses the effectiveness of the Energy Smart Loan Program as an accessible and long-term financing tool for residential energy efficiency. Key components in the evaluation of program success include: number and total value of loans serviced, energy savings to date, local economic impact and contractor utilization, and corresponding environmental benefits.

This section of the report provides more in-depth programmatic information about the loan loss reserve model and how the Energy Smart Loan Program works. Subsequent sections of the report are organized as follows:

- Section 3. Program Outcomes, Assessment, and Forecasted Capacity
- Section 4. Homeowner Benefits
- Section 5. Economic Impact
- Section 6. Environmental Benefits

Section 3 of the report outlines program outcomes and compares the first two years of program results with initial program lending goals, including:

- Total number of projects financed
- Total amount of loans financed
- Total energy savings
- Average loan size
- Number of loans in default
- Forecasted capacity

Section 4 of the report highlights the energy improvement work of program participants to demonstrate the diversity of projects financed through the program, as well as customer experience. A summary of energy efficiency projects by project type is also included, along with summaries of average energy and cost savings among program participants.

Section 5 summarizes the cumulative economic impacts for local and regional contractors in the energy efficiency industry, and how that revenue is distributed across the region.

Section 6 showcases the corresponding environmental benefits of the Energy Smart Loan Program including energy savings, greenhouse gas emissions reductions, and alignment with the County's resource



conservation goals.

How the Program Works

The Energy Smart Loan Program is based on a “loan loss reserve” model. The model guarantees the financial partner, Puget Sound Credit Union (PSCCU), 90% of the value of any defaulted loans – allowing PSCCU to provide below market interest rates on loans for energy improvements as a result of the reduced exposure to losses. Through this innovative program model, PSCCU expends their own capital for lending, while the County’s grant dollars are only spent in the event of customer default. As such, the County is able to leverage the original \$644,000 in grant dollars to support over \$12 million in energy efficiency loans. As of the date of this report, there are no defaulted loans, and therefore the County has not spent any of the \$644,000 in loan loss reserve funds.

Program interest rates are driven both by market conditions and the credit-worthiness of applicants, with rates as low as 4.25% for well qualified borrowers. The program provides flexible loan tenors to finance projects costs from \$1,000 to \$50,000 depending on applicant eligibility. Snohomish County was able to provide the loan loss reserve through Energy Efficiency and Conservation Block Grant (EECBG) funding from the Department of Energy, which was part of the federal American Recovery and Reinvestment Act, sometimes referred to as “the Federal Stimulus”.

The program structure has several advantages for homeowners, contractors, Snohomish County, and taxpayers:

- 1. Fund Leveraging.** The loan loss reserve model uses a public-private partnership for energy efficiency lending, which helps stretch public dollars farther. It is estimated that more than \$12 million in total loan volume will be made available to homeowners through the \$644,000 federal investment in the loan loss reserve model, which results in a leveraging ratio of almost 20:1.
- 2. Fuel neutrality.** Snohomish County’s program is fuel neutral, meaning that any participating customer can use the loan program irrespective of the customer’s fuel source for home heating. A fuel neutral lending program is beneficial to the customer as they are not only receiving low interest project financing, but are also able to take advantage of local utility rebates which reduce total project costs even further.
- 3. Access to utility rebates and incentives.** The County’s local utilities are excellent partners in supporting the loan program and encouraging Energy Smart Program customers to utilize utility rebates and incentives for energy efficiency measures. Utilizing both the Energy Smart Loan Program’s low interest rates in combination with utility rebates is an extremely cost-effective way to reduce customer project costs, as utility rebates are typically taken off of the total loan amount financed.
- 4. Contractor benefits.** The Program is structured such that project contractors receive the funds directly for all home energy improvements. There is no cost to contractors to participate in the program, which helps to keep their prices attractive to customers. Contractors are also eligible for cash advances depending on the project type and scope, which can be a critical factor as many contractors have had difficulty securing project financing with the recent economic downturn.
- 5. Program Design.** With PSCCU as the program administrator, homeowners and contractors receive the benefit of a primary point of contact. In addition, Snohomish County does not pay PSCCU any program administration fees, which helps keep program costs low for customers. It also allows Snohomish County to offer the Program without having to invest in the staff necessary to underwrite and service loans.



3. Program Outcomes, Assessment, and Forecasted Capacity.

Outcomes

In the first two years since program inception, Snohomish County homeowners have invested in more than 360 energy saving or renewable energy production projects, conserving an estimated 6 billion BTU's of energy. The following list summarizes a few of the projects that homeowners have completed through the Energy Smart Loan Program:

- Replaced 795 windows
- Installed 83 ductless heat pumps
- Installed 16 KW of photovoltaic (solar) power
- Installed 3 geothermal heating and cooling systems

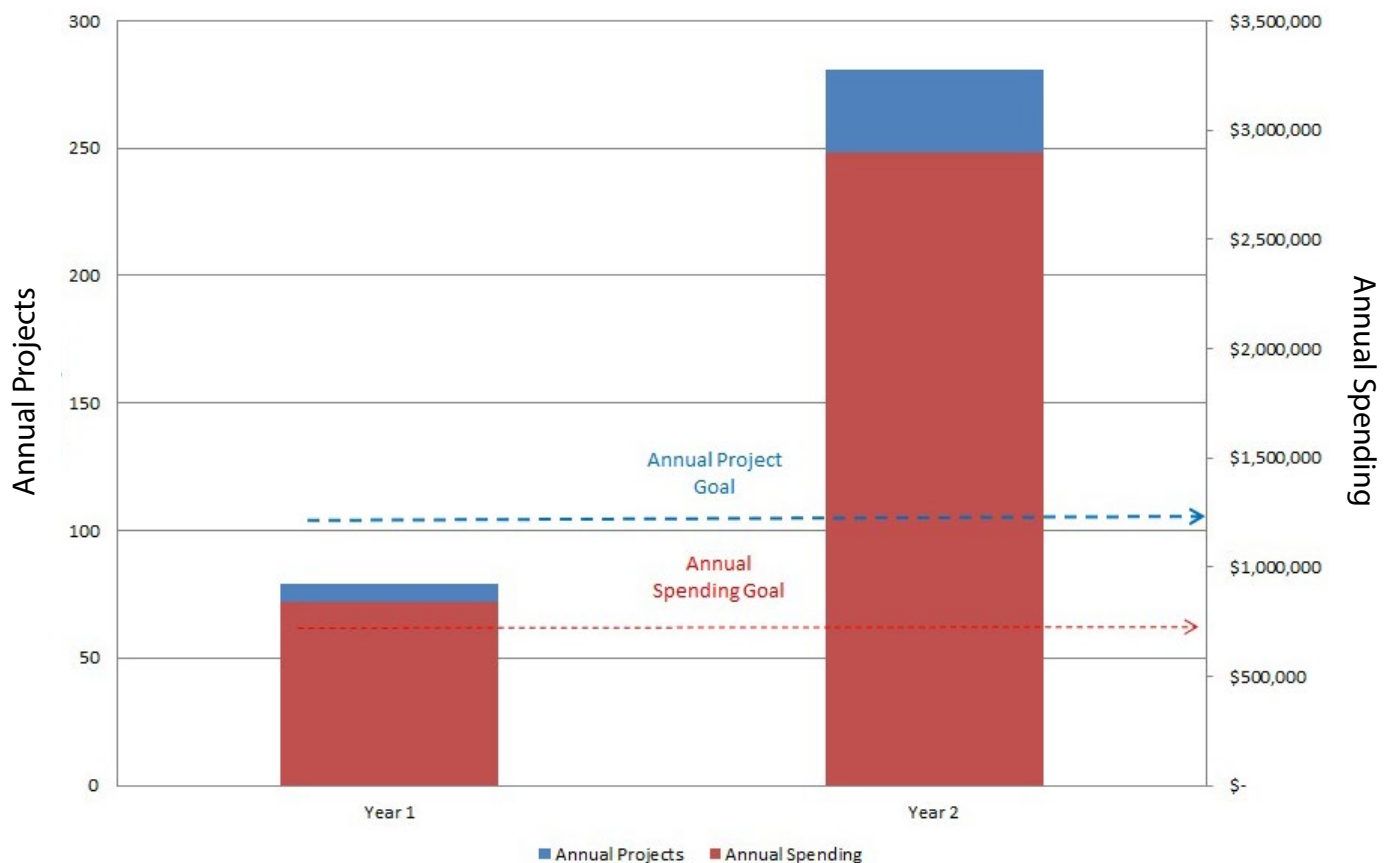


For a complete summary of the different project types completed through the Program, see Graph 4.1.

Assessment

The Program has exceeded expectations in terms of project volume, project scope, default rates and energy savings. In short, program demand is greater than was anticipated, and Snohomish County homeowners are completing more energy saving projects of greater impact than originally projected by this point in the program's lifecycle. Graph 3.1 shows the number of projects and project size in dollars compared with program goals. During program and contract development, the County assumed that the average loan size would be approximately \$6,000 – a figure that was consistent with similar programs already in existence at

3.1: Annual Project Participation and Spending Relative to Program Goals





the time. The County also anticipated an average of 25 projects per quarter or 100 projects per year, with an approximate annual loan portfolio of \$600,000. In reviewing the data shown in Graph 3.1, it is clear that not only are more homeowners participating than originally anticipated, but that those homeowners are also completing energy improvements of greater scope.

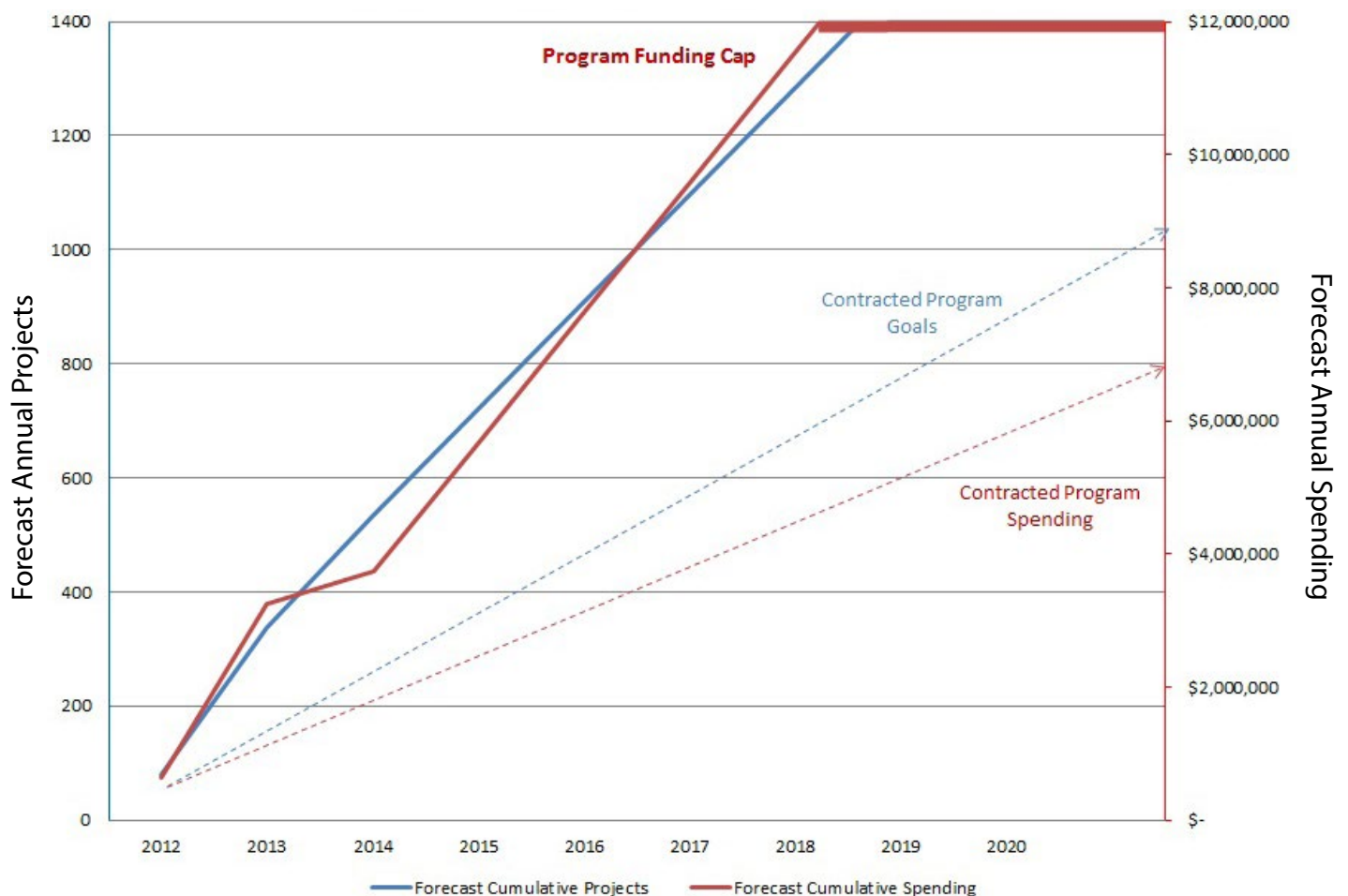
The Energy Smart Loan Program launched in March of 2012, and the program showed consistent and steady growth during the rest of Year 1 with 79 total projects totaling \$841,673. Program growth was strong in Year 2 with a total of 281 projects and \$2.9 million for the year. Fourth quarter data for Year 2 demonstrates continued demand growth, suggesting that the long-term production rate will continue to perform better than initial projections.

Forecasted Capacity

Graph 3.2 below presents original assumptions and forecasted rates on project volume and spending, based upon the adjusted average annual production from March 2012 to March 2014. The increased project volumes along with larger project sizes has an impact on the availability of program funding over time. The original funding source for the Loan Loss Reserve is fixed, which means that the Energy Smart Loan Program will reach program capacity when Loan Loss Reserve funds are at the maximum leverage ratio with respect to the total number of outstanding loans in the program.

The anticipated amount of loans available to the public in the future is also based on the estimated program

3.2: Forecasted Annual Participation and Spending





default rate. In the first two years of the program, there were zero loan defaults of the loans issued during that time period, although most of those loans will have 15 year terms. At the 5% assumed default rate designed for the program, the Loan Loss Reserve allows for a maximum of just over \$12 million in total loans. At current program participation rates, this ceiling will likely be reached in 2018 –13 years earlier than anticipated.

4. Homeowner Benefits.

The motivation for homeowners to participate in the program varies: some homeowners want to reduce their environmental impact; many want to cut energy bill costs by replacing old or failing equipment with an energy efficient model; and others want to increase home comfort through improvements such as window replacements.

The Energy Smart Loan Program has helped finance 360 energy saving and renewable energy projects. Several of those projects are highlighted below with unique stories from homeowners on their experience with program participation.

Geothermal Installation

The original heating in the home was a heating oil boiler that had started to leak. In addition to the leaks, the boiler produced some smoke at start up, and there was some discoloration at the roof line from use. We started to look at other options and arrived at a geothermal heating system. The contractor laid 500 feet of geothermal water line in a horizontal trench and we've been using that stored energy to heat the home, and pre-heat the water in our water heater. We used to spend about \$3,500 a year in heating oil to heat the home, but now we pay about \$300 a year in electricity. We thought we might get a 10 year pay back from the project, but now we think we may exceed that.

I was able to facilitate the whole loan process without even going to the PSCCU office. By sending documents via scanner and talking with staff on the phone, I was able to take care of everything needed. In that respect, the program worked well.

Al H.
Snohomish



Solar Panel Installation

We knew we wanted to make improvements to our home when we visited the Everett Home Show, and we also knew that we had a failing electric furnace and monthly electricity bills of over \$600 a month. At the Home Show we heard more information on how incentives and rebates could overlap to provide a faster return on investment for solar panels, and with that information we started putting together our project. We wound up insulating the house, replacing the furnace with an electric heat pump and installing 6.25 kw of solar panels on the roof – all at the same time! We financed the solar panels through the Energy Smart Loan Program, and took care of the other improvements ourselves. We haven't had any electricity charges since we finished, and we think we'll achieve a payback on our investment in 4 to 5 years. It was a complex project, but the results have made me excited about my house and the projects we hope to do next.



Mike W.
Stanwood

Ductless Heat Pump Installation and Other Improvements

We started our project with a kitchen renovation, but were looking for a source of lending to make more of the improvements we wanted. Through the Energy Smart Loan Program we were able to make more improvements and also insulate more of the house, replace windows, and install ductless heat pumps.

Tim S.
Mountlake Terrace



Energy Savings and Energy Cost Savings

Average homeowner energy savings achieved through the program are significant, yet vary considerably depending on the project type. Space heating and renewable energy projects typically result in greater energy savings when compared to window replacement or smaller scale insulation improvements. At the same time, insulation and air sealing projects are typically very cost-effective energy efficiency measures for homeowners. All of the energy savings estimates calculated for this report are based on the "deemed savings



measures” that utilities use when assigning energy savings to common homeowner energy conservation projects. On average, the Energy Smart Loan Program has helped:

- Save each homeowner an average of 5,075 kilowatt hours (kwh) or 17.1 million BTUs

Average energy cost savings per homeowner shown below were calculated by dividing the total energy savings of all program participants by the total number of projects. While this is not a reflection of actual energy savings distribution, it provides a reasonable estimate of average energy savings per program participant to date:

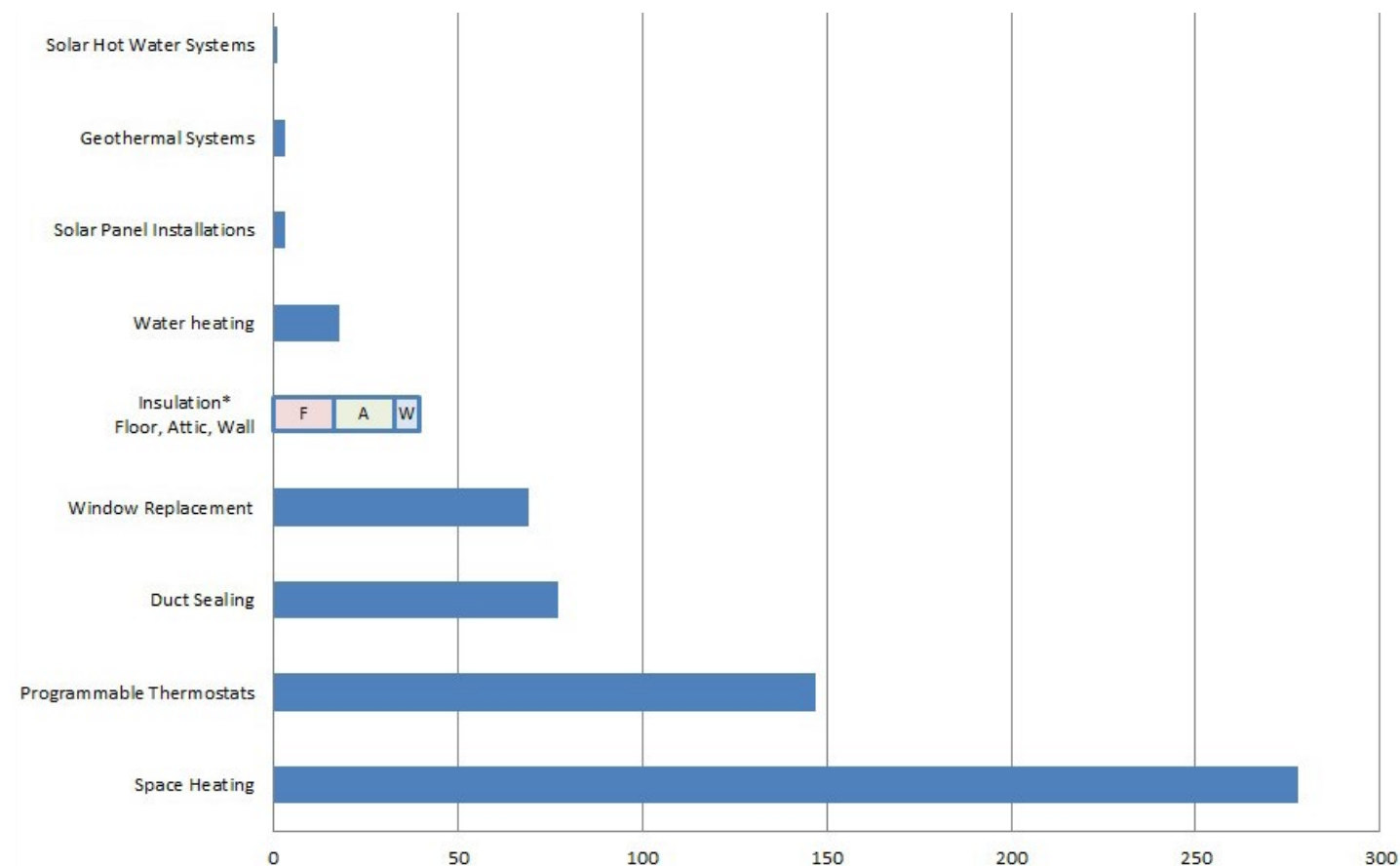
- \$ 182,732: Total Annual Energy Cost Savings for all participants
- \$ 508: Average Annual Energy Cost Savings Per Homeowner

Types of Energy Improvements

Program data shows most homeowners are using Energy Smart Loans to make space heating energy improvements, which also constitutes the largest sector energy savings. However, the average program participant uses their loan funds to make multiple improvements, with insulation, water heating, and window replacement being other common applications of the program. Graph 4.1 presents the distribution of the types of energy improvements made through the program. Duct sealing and the installation of programmable thermostats are clearly a commonly installed measure, but these are also measures that are often implemented as part of a space heating retrofit, which explains their prevalence among the project improvements listed.

4.1: What Types of Energy Improvements Are Being Made?

Energy Improvements by Type since Program Inception





5. Economic Impact.

In addition to the energy savings and homeowner benefits realized through the Energy Smart Loan Program, additional economic impacts benefit the Snohomish County community in a variety of ways, including:

- Facilitating property investment and improvement within Snohomish County
- Generating work for local and regional contractors in a variety of trades

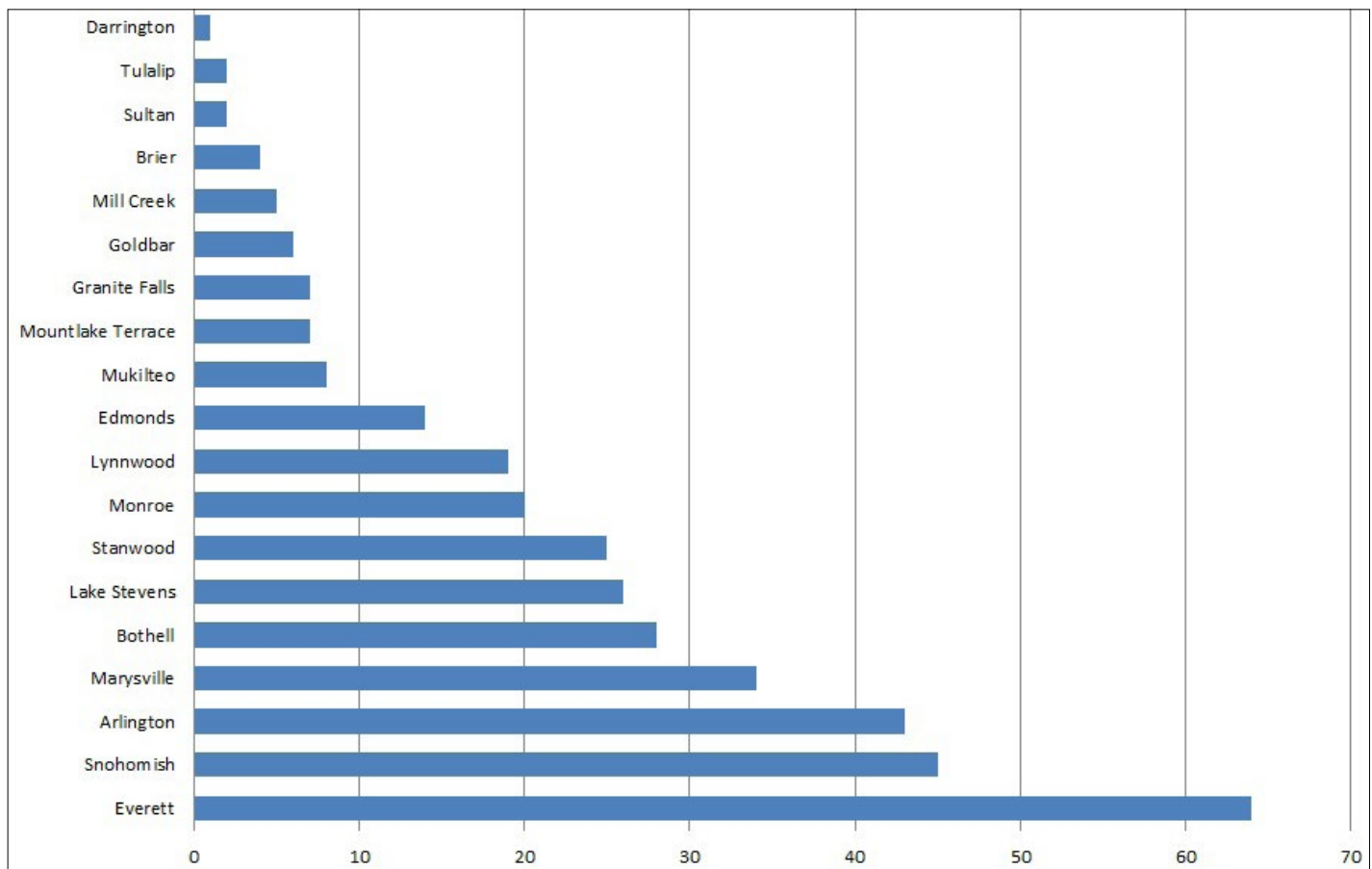
Based on the cumulative value of the factors above, the Energy Smart Loan Program has had a direct economic impact estimated at \$5.9 million during the program's first two years ...³

Facilitating Property Investment in Snohomish County

Program participation is coming from throughout Snohomish County, with pronounced participation in larger cities, along with roughly representative participation from smaller communities. Several mid-size communities have shown participation rates above average for their population sizes; notable among these communities are Snohomish, Arlington and Stanwood. Graph 5.1 shows the distribution of the 360 Energy Smart Loan projects by the location of participating homes.

5.1: Where are the Energy Smart Loan Projects?

Number of Energy Smart Loan Projects by Project Location

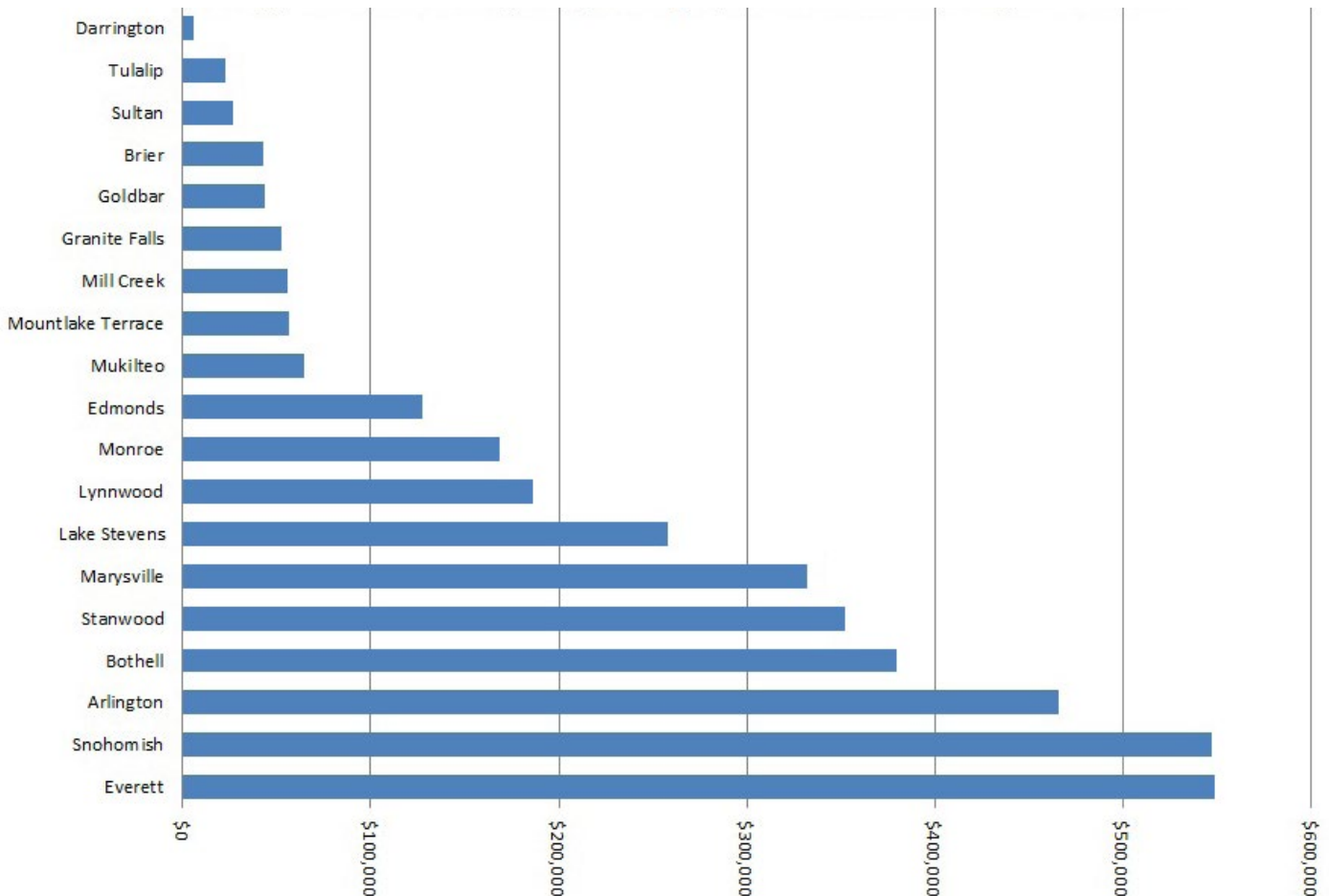




Graph 5.2 below shows homeowner investment by project location. The totals shown in the chart below are a reflection of total homeowner investment, including funds that the homeowner contributed to the project outside of PSCCU lending. In total, homeowners in Snohomish County have invested more than \$3.6 million in energy efficiency improvements to their properties during the first two years of program activity.

5.2: Where is Homeowner Investment Going?

Energy Smart Loan Homeowner Project Spending by Project Location

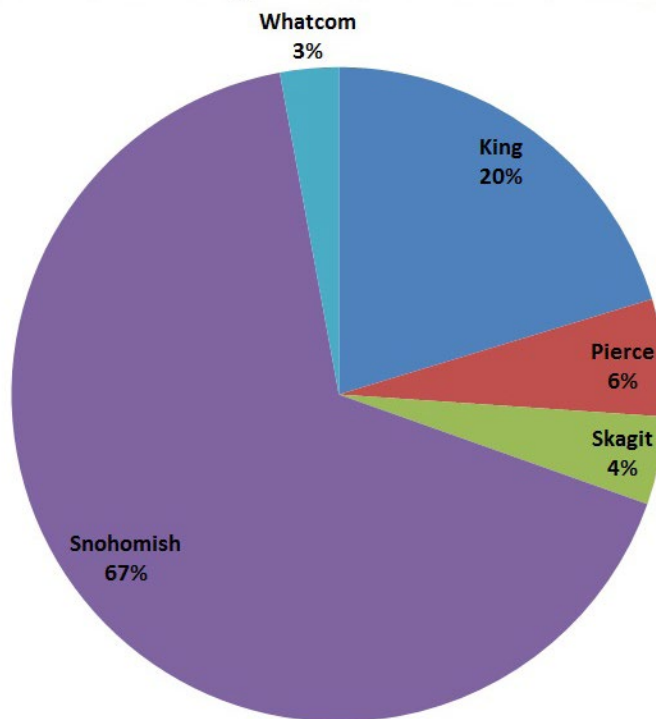


Contract Work for Local and Regional Contractors

While the Energy Smart Loan program does not require homeowners to use Snohomish County contractors, Snohomish County contractors comprise a significant portion of participation. In fact, Snohomish County contractors represent 67% of the total contractor pool, and have earned about half (>\$1.8 million) of all contract spending (See Graphs 5.3 & 5.4). Graph 5.3 shows Snohomish County contractors as a proportion of the total contractor pool, and Graph 5.4 shows contractor earnings as a proportion of total possible contract earnings.

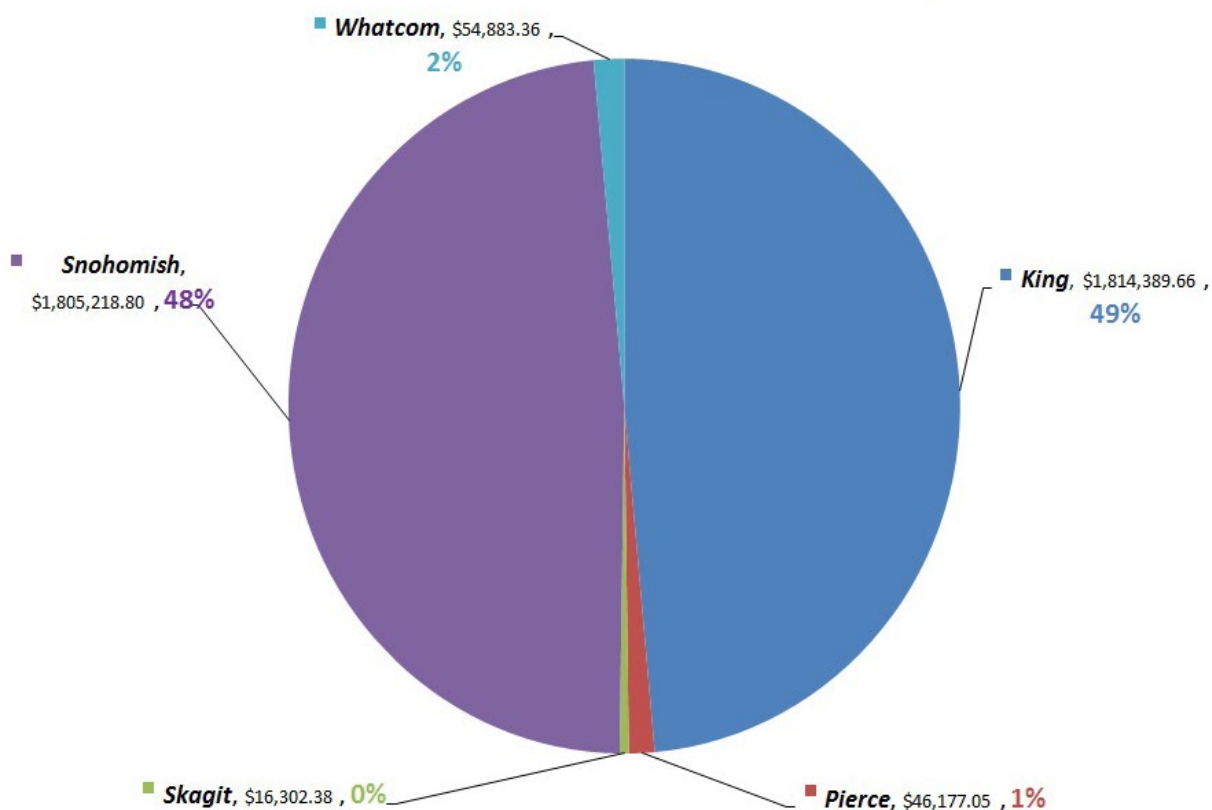
5.3: Where are Energy Smart Contractors Coming From?

Contractors and Project Contract Distribution by Project Location



5.4: Where is Project Contract Revenue Going?

Contract Value Distribution by Contractor Country of Origin

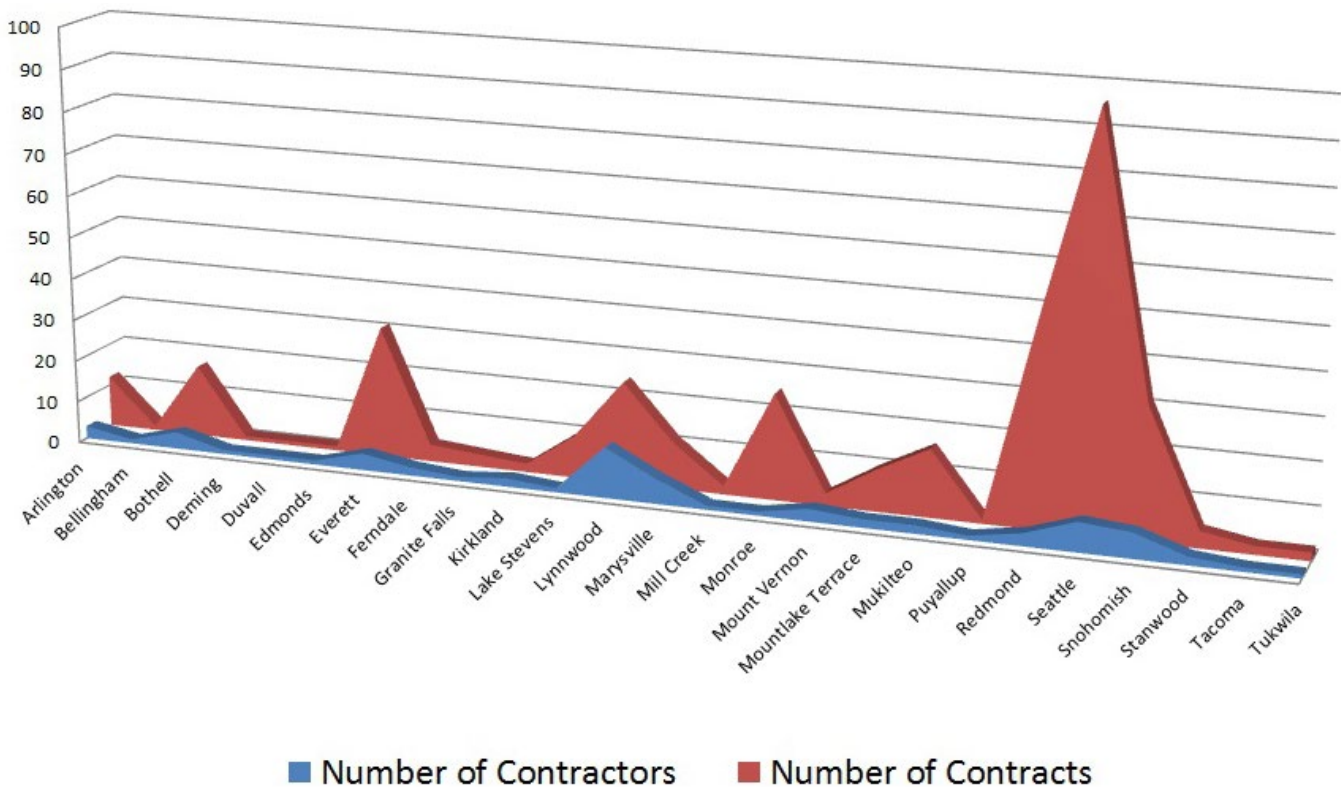




The distribution of contractors participating in the Energy Smart Loan Program is dispersed throughout Snohomish County and the greater north Puget Sound area. Chart 5.5 below shows the distribution of contractors and number of contracts earned by the contractors' originating City.

5.5: How are Project Contracts Distributed Across the Region?

Contractors and Project Contract Distribution by Project Location



Contractor support and utilization of the County's Energy Smart Loan Program is robust for a variety of reasons. There is no cost for contractors to participate in the Energy Smart Loan Program which benefits both the contractor and the customer, as the contractor does not have program fees to pass along to the customer as an added 'soft cost'. Contractors also recognize that the low-interest rate and accessible financing mechanism enables customers to purchase higher quality and higher performance equipment. In some cases, higher performance equipment can have increased upfront costs but typically saves the customer money over the life of the product when compared to a less energy efficient alternative. As such, energy efficiency improvements are a good match for this type of financing program because they produce ongoing energy savings that coincide with ongoing loan payments.

It's important in the HVAC industry to have financing available for customers to finance their equipment upgrades or new installations. The Energy Smart loan Program allows customers to access financing without adding to your overhead, or having "soft-costs" that have to be shared with customers.

Part of the conversation with customers who are considering projects is the energy savings that higher-efficiency equipment will provide, and the longevity of those savings. Customers from all backgrounds are interested in energy savings, but the "first cost" of the equipment can be surprising to customers who haven't shopped the hvac market in a while. The loan program is helping some customers space their equipment payments over time in pace with long-term energy savings, and access higher-efficiency equipment than they might have otherwise been able to purchase.

Ron, Mukilteo contractor

6. Environmental Benefits.

Not only does the Energy Smart Loan Program help County homeowners save energy through efficiencies, but it also supports Snohomish County's goals to conserve energy, water and other natural resources, and reduce greenhouse gas emissions.

Energy Savings

Energy efficiency is one of the most cost-effective ways to meet future challenges in energy demand, high energy prices, energy security and independence, air pollution, and global climate change. In fact, the Sixth Northwest Conservation and Electric Power Plan produced by the Northwest Conservation Council found "enough conservation to be available and cost-effective to meet 85 percent of the region's load growth for the next 20 years"⁴. Moreover, the Plan emphasizes that conservation through energy efficiency is the primary focus of the Power Plan's actions for the next five years, maintaining that "improved efficiency will help delay investments in more expensive and less clean forms of electricity until the direction and form of future climate change legislation becomes clearer, and alternative low-carbon energy technologies become cost-effective"⁴.

The Energy Smart Loan Program has achieved 6 billion BTUs in annual energy savings to date. That is A LOT of Energy! If the program continues at its current pace, **cumulative energy savings by 2018 are projected to be more than 18 billion BTU's**. That's enough to:

- Power 501 houses for a year¹
- Light 45,443 60 watt equivalent Cree LED light bulbs⁵
- Keep 3,443 refrigerators running for one year straight⁶
- Power the Seattle Monorail for nearly nine years⁷

Greenhouse Gas Reductions

The impact of the program also extends to greenhouse gas emission reductions. Executive Order 07-48 calls for a 20% reduction in greenhouse gases produced by the Snohomish County community from a 2000 baseline by the year 2020. Snohomish County's greenhouse gas emissions have already been reduced by approximately 13% since 2006 as a result of fuel mix changes made by Snohomish County Public Utility District.

Energy savings result in a direct reduction of community greenhouse gas emissions, and the Energy Smart Loan Program

The Energy Smart Loan Program has saved **6 billion BTUs** to date.
That is A LOT of Energy!

Enough energy to....



Circumnavigate the Planet 23 times in a 2014 electric Smart Car!!²



Power 166 houses for a year¹.



Keep 1,1148 refrigerators running for one year straight⁶.



Power the Seattle Monorail for nearly 3 years⁷.



contributes towards measurable reductions in greenhouse gas emissions. Using the Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator, it is estimated that **the Energy Smart Loan Program has reduced greenhouse gas emissions by 990 metric tons of CO2 equivalent to date.** The Program is **projected to reduce emissions by a total of 2,968 metric tons of CO2 equivalent by the time funding is exhausted**, which comprises .06% of the total community greenhouse gas emissions measured in 2006.

Avoiding 2,968 metric tons of CO2 equivalent emissions through the Energy Smart Program is the same as:

- Removing 625 cars from the road for one year⁸
- Diverting 152 garbage trucks full of recyclables from a landfill⁸
- The carbon sequestration provided by 2,433 acres of forest⁸

7. Conclusion.

In its first two years since inception, the Energy Smart Loan Program has proven to be a valuable and important asset for Snohomish County. Through public-private partnership and the Program's innovative loan loss reserve financing model, this Program has leveraged an initial \$644,000 investment to achieve 6 billion BTUs in homeowner energy savings and a local economic impact of \$5.9 million. Snohomish County will continue to work with its program partners to support the continued success of this Program, and ensure that this low interest financing option for home energy improvements is available to County homeowners for many years to come. The County is also looking at opportunities to use this program financing model for new program areas, such as water quality and expanded program markets, such as commercial and industrial.



Endnotes

- ¹ Calculated based on 2012 Energy Information Administration (EIA) data that the average annual electricity consumption for a U.S. residential utility customer was 10,837 kWh. EIA Website: <http://www.eia.gov/tools/faqs/faq.cfm?id=97&t=3>
- ² Calculations assume that the 2014 Smart car gets 3.17 miles per kwh, and that it is 25,000 miles to circumnavigate the planet. Smart mileage: <http://www.fueleconomy.gov/feg/evsbs.shtml>. Circumnavigation mileage: http://imagine.gsfc.nasa.gov/docs/ask_astro/answers/970401c.html
- ³ Direct Economic Impact measured by total project investment in the county and the total revenue earned by county companies through the Energy Smart Loan Program.
- ⁴ Sixth Northwest Conservation and Electric Power Plan. <http://www.nwcouncil.org/media/6284/SixthPowerPlan.pdf>
- ⁵ Cree 60 watt equivalent light bulbs consume 13.5 watts per hour.
- ⁶ The average modern refrigerator consumes 180 watts per hour. <http://energyusecalculator.com/electricityrefrigerator.htm>
- ⁷ The Seattle Monorail consumed 625,720 kwh of electricity in 2012. <http://www.wsdot.wa.gov/publications/manuals/fulltext/m0000/TransitSummary/SeattleCenterMonorail.pdf>
- ⁸ EPA Greenhouse Gas Calculator. <http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results>