

MEMORANDUM

August 10, 2017

TO: Board of Directors

FROM: Foster Hildreth

RE: USDA Rural Energy Saving Program (RESP) Loan Application

One of OPALCO's main goals is to assist our members keep their total energy costs down and lower our collective carbon footprint along the way. We are striving to accomplish this in three ways: 1) energy efficiency and conservation, 2) fuel switching away from other forms of energy like gasoline and other carbon-based fuels and 3) preparing our system for cost effective local, renewable energy generation.

Staff is excited for the opportunity to obtain low interest RUS funding to support member energy savings and efficiency through a re-lending program. The RUS RESP loan program will allow us to provide incentives to our membership that will achieve our cooperative goals (above) and help our members to achieve their personal goals of carbon offset, energy efficiency and affordability. In June 2017, staff received an 'Invitation to Proceed with Loan Application' from RUS. Our intent is that the funds of \$5.8M will be used to implement a comprehensive energy savings and renewable re-lending program.

Please note, the implementation plan and actual loan disbursements can be adjusted to suit the annual budgetary goals and the total number of members benefiting from this program. Additionally, the IWP can be adjusted over the loan horizon to accommodate unforeseen challenges, lessons learned, regulatory changes, and feedback from customers.

The RUS application requires: (1) a Board Resolution approving and establishing the energy savings loan program, (2) long range financial forecast (LRFF) and (3) high-level Implementation Work Plan (IWP) for the program. These documents are to be approved by the Board as part of the application packet prior to loan submittal.

See full draft of the IWP and LRFF under separate attachment.

1 – Board Resolution:

See attached resolution action item.

2 – Long Range Financial Forecast:

The LRFF follows the RUS standard Form 325 forecast model which prescribes a format as well as several key assumptions. This forecast is to be used for the RUS loan application process only, as there are several key assumptions prescribed by RUS within the LRFF that differ from the assumptions used in OPALCO's budgeting for operations (i.e. RUS requires the assumption 5.5% interest on future borrowings which dramatically effects TIER targets and General Funds accumulation levels in any given year). These prescribed assumptions result in a LRFF that is highly conservative which allows RUS to gauge a borrower's credit worthiness and anticipated borrowing levels.

Please note that LRFF will also be used in the 4-year Construction Work Plan (CWP) loan application process. Conceptually, OPALCO uses our CWP loan as a Line of Credit during the 4-year period to fund capital projects while also allowing for an additional contingency funding for when planned projects are deferred.

3 - Implementation Work Plan:

The IWP serves as a living document which outlines the overarching program goals and includes a timeline, sources & uses of funds, staffing plan, marketing plan, operations plan, risk analysis, and quality assurance plan.

Once the loan application is submitted, RUS will review the application documents and, if approved, will issue a conditional commitment letter to OPALCO.

Upon review, staff recommends a motion to execute the RESP resolution and approve both the LRFF and IWP.

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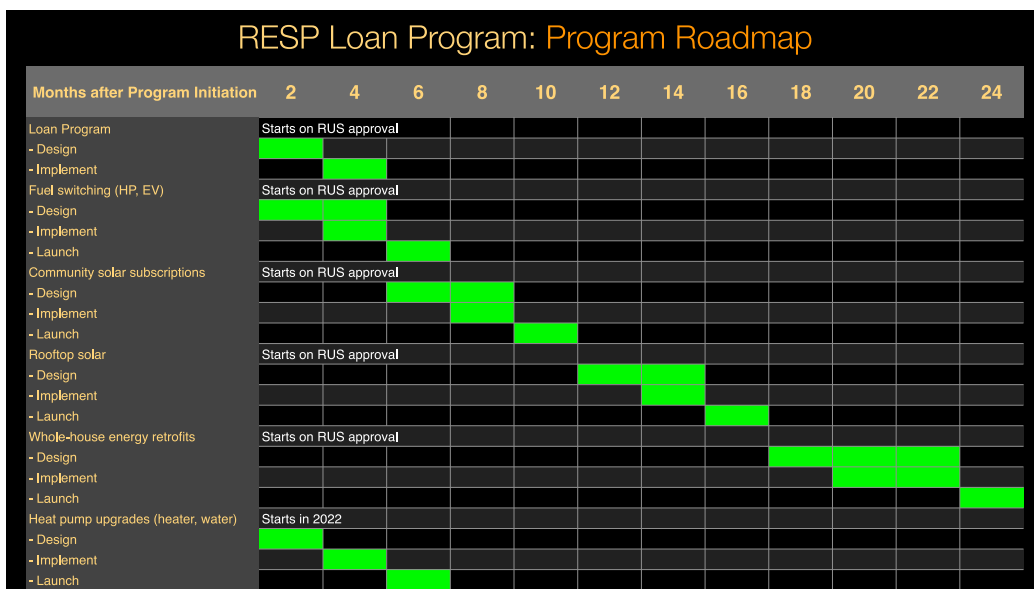
RE: Implementation Work Plan (IWP) Executive Summary

The IWP serves as a living document which outlines the overarching program goals and includes a timeline, staffing plan, marketing plan, operations plan, sources & uses of funds, risk analysis, and quality assurance plan. Please note, the actual loan disbursements can be adjusted to suit the annual budgetary goals and the total number of members benefiting from this program. Additionally, the IWP can be adjusted over the loan horizon to accommodate unforeseen challenges, lessons learned, regulatory changes, and feedback from customers. Please see separate attachment to Board packet for full draft of the implementation work plan and long range financial forecast.

Program Goal & Timing:

By procuring RESP loan funds, OPALCO hopes to provide loans for energy efficiency & savings measures, fuel switching and renewable energy. In this submittal, OPALCO hopes to provide loans to about 10% of OPALCO members, about 1,200 homes and business. This loan program will eliminate the barriers of the upfront cost of energy efficiency retrofits and the challenge of securing credit.

Timeframe:



Staffing:

- OPALCO Energy Savings & Accounting staff

Marketing:

- **Primary targets:** (1) Residential Heating/Fuel Switching, (2) Transportation (EV Charging Stations), (3) Whole House retrofits (4) Community & Residential Solar
- **Promotional Activities:** Bill inserts, Website, Social Media (FB & Twitter), Co-op Stewards, Trade Allies, MS Call Center, promotional events.

Operations:

- OPALCO's RESP loan program will be very similar to the co-op's current energy efficiency and conservation (EE&C) program.
- Loans will be underwritten to ensure reasonable credit worthiness
- Financing will be done utilizing NISC's on-bill financing option
- Interest charged at 2% to cover program operational costs and loan loss reserve (LLR). Please note, the loan program has the flexibility for us to charge 0% to 3% to cover administrative costs.

Schedule & Projections:

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total Loans	Average Loan Amount	Total \$
Whole-house energy retrofits	-	5	10	15	20	25	30	35	30	15	185	\$12,000	\$2,220,000
Fuel switching: heat pumps	15	10	15	20	25	25	25	25	20	-	180	\$5,000	\$900,000
Fuel switching: HP water heaters	15	15	20	25	25	25	25	20	15	-	185	\$1,500	\$277,500
Fuel switching: EV chargers	10	15	20	25	30	35	30	30	25	11	231	\$500	\$115,500
Community solar subscriptions	80	130	-	-	-	-	-	-	-	-	210	\$2,000	\$420,000
Rooftop solar	-	20	15	10	5						50	\$20,000	\$1,000,000
Heat pump upgrades	-	-	-	-	5	10	15	20	25	22	97	\$5,000	\$485,000
HP water heater upgrades	-	-	-	-	5	10	15	20	25	25	100	\$1,500	\$150,000
Total	120	195	80	95	115	130	140	150	140	73	1,238	\$47,500	\$5,568,000

Sources & Uses of Funds:

Source & Use of Funds (in thousands)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Loans to Qualified consumers (\$)	262.5	800.0	535.0	530.0	550.0	545.0	635.0	720.0	657.5	333.0	-	5,568.0
Source of Funds	-	-	-	-	-	-	-	-	-	-	-	-
Special Advance	232.0	-	-	-	-	-	-	-	-	-	-	232.0
Interest from loans	-	3.0	12.0	18.1	24.1	30.3	36.5	43.7	51.8	59.3	63.1	341.9
Total Source of Funds	232.0	3.0	12.0	18.1	24.1	30.3	36.5	43.7	51.8	59.3	63.1	573.9
Use of Funds												
Funding 2% of loans to LLR	(5.3)	(16.0)	(10.7)	(10.6)	(11.0)	(10.9)	(12.7)	(14.4)	(13.2)	(6.7)	-	(111.4)
Program Operational Costs*	(85.0)	(15.0)	(15.0)	(15.0)	(10.0)	(7.5)	(5.0)	(5.0)	(5.0)	(5.0)	(3.0)	(170.5)
Payback of Special Advance	-	-	-	-	-	-	-	-	-	(232.0)	-	(232.0)
Total Use of Funds	(90.3)	(31.0)	(25.7)	(25.6)	(21.0)	(18.4)	(17.7)	(19.4)	(18.2)	(243.7)	(3.0)	(513.9)
Net Source (use) of funds	141.8	(28.0)	(13.7)	(7.5)	3.1	11.9	18.8	24.3	33.7	(184.4)	60.1	60.1

Risk Analysis:

- Loan Loss Reserve has been estimated at 2% of loans, or \$116K in total.
- OPALCO to work with legal counsel to establish appropriate legal standards regarding lending requirements and contactor vs. OPALCO obligations.
- OPALCO is researching and will work with legal counsel to determine the appropriate loan collateral method to use to secure the loans.

Quality Assurance Plan (QAP):

- Contractors and energy auditors will be required to have the appropriate credentials.

Orcas Power & Light Cooperative

Rural Energy Savings Program

Energy Savings Loan Program - Implementation Work Plan

Submitted to USDA's Rural Utility Service

Revised, August 2017

The following Rural Energy Savings Program (RESP) is a high level perspective of the direction Orcas Power & Light Cooperative (OPALCO) intends to follow in order to implement an energy efficiency loan program.

The Implementation Work Plan (IWP) describes the loan program over the loan horizon and can be updated throughout the program to accommodate unforeseen challenges, lessons learned, regulatory changes, and feedback from customers.

I. Executive Summary, Implementation Work Plan

A. Goals and Objectives

OPALCO is a member-owned, non-profit rural electric cooperative utility providing energy services to San Juan County since 1937. Last year we delivered about 200 million kWh to about 11,200 members distributed across 20 islands in San Juan County, Washington.

Providing affordable reliable energy in our marine environment requires a storm-hardened grid composed of a complex mix of submarine, buried and aerial transmission and distribution cables, with 11 substations and hundreds of grid control elements. Our grid is one of the most complex in the nation, given the small rural island service area.

OPALCO's mission is to provide members with safe, reliable, cost effective and environmentally sensitive utility services. OPALCO's energy savings program and objectives for applying for RESP loan funds are in line with this mission. By procuring RESP loan funds, OPALCO hopes to provide loans for energy efficiency & savings measures, fuel switching and renewable energy.

Over ten years, OPALCO hopes to provide loans to about 10% of OPALCO members, about 1,200 homes and business. This loan program will eliminate the barriers of the upfront cost of energy efficiency retrofits and the challenge of securing credit.

Currently, many OPALCO customers seek rebates when they are replacing heating systems or specific appliances. Based on anecdotal feedback from customers and national research, upfront costs and lack

of low-interest credit are the primary reasons residential customers do not seek bundled or whole house retrofits in addition to fuel switching measures and appliance upgrades. As a result, readily available energy efficiency opportunities are lost. The ability to distribute RESP loan funds to OPALCO members will help overcome these barriers and increase energy efficiency and savings at the end user level. This is one of the primary objectives for OPALCO's participation in the RESP program.

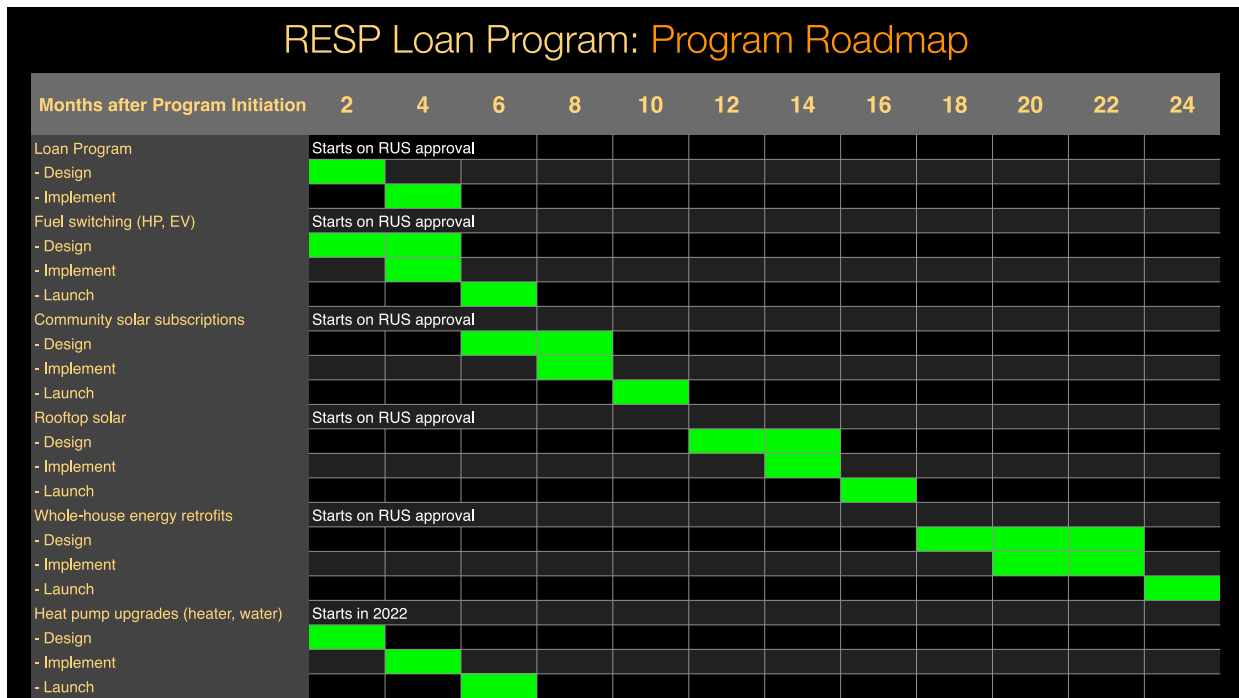
Additionally, participation in the RESP program will help OPALCO meet several operational objectives.

- Meet the requirements of Washington's Initiative 937 (I-937)—a state initiative mandating the use of renewable electricity resources and the acquisition of all cost-effective energy conservation.
- Avoid paying higher wholesale power rates —Tier 2 Rates—that could be triggered if OPALCO's consumption exceeds its allocation of existing low cost hydroelectric generation resources.
- Boost participation in rebate programs, get more multiple measure, whole house retrofits, deeper savings and greater customer satisfaction.
- Supplement BPA and Pacific Northwest Generating Cooperative (PNGC) programs in case of budget shortfalls.
- Reach members that are not primarily electric heat.
- Modifying electric load such that there is a reduction in overall demand.
- Attracting new businesses and creating jobs in rural communities by investing in energy efficiency.
- Encouraging the use of renewable energy fuels for demand side management and reduction of conventional fossil fuel use.
- Reduce TOTAL energy consumption by OPALCO members, for electricity and fossil fuels, through fuel switching programs that replace expensive dirty fossil fuel heating and transportation with cleaner lower cost electric services.

B. Timeframe

The first few months of this project will be a pre-launch, preparatory phase, in which the detailed program design decisions are made and then marketing materials, loan documents and other program information and administrative systems are developed.

Initially, OPALCO is planning to provide loans—using RESP funding—for fuel switching, energy efficiency upgrades, whole house retrofits, and community and rooftop solar. A primary focus for our residential market is to reduce the overall cost of energy, so fuel switching efficiency upgrades will be the initial focus, along with providing low interest loans to stimulate member subscription to our community solar program which is rolling out in 2018. As the residential loan program grows, OPALCO will test other market sectors for the viability of a loan offering, such as small commercial buildings. Given the high level of interest among our membership in renewable energy, as mentioned above, OPALCO will be open to providing loans for residential solar electric systems, as well as for community solar buy-ins. The following timetable is an illustration of how OPALCO will design each program sector, then prepare materials and systems, and then launch. OPALCO may change the tempo or alter the order that sector programs are introduced, but the effort will resemble this timetable.



II. Organizational Background

OPALCO has assembled an experienced team of energy professionals to implement the energy efficiency program. The following table provides a description of each team member’s responsibilities.

OPALCO Staff		
Name	Title	Key Responsibilities
J. Foster Hildreth	General Manager	Oversees project, staff & consultants, craft field implementation concept.
Nancy Loomis	Manager of Finance & Member Services	Primary contact between OPALCO and RUS, oversees consultants, craft field implementation concept, contract review, RUS compliance, general accounting setup
Megan Heinz	Software Specialist	Billing software configuration
Suzanne Olson	Public Relations Administrator	Program marketing, member communications
Lindsay Curtis	Energy Services Coordinator	Assists members with energy efficiency problems and inquires. Tracking and reporting for energy services programs. Provide detailed conservation data.
Travis Neal	Head Accountant	Craft field implementation concept, contract review, RUS compliance, general accounting setup, collections of loans

OPALCO Contractors		
Name	Title	Key Responsibilities
TBD	Utility energy efficiency consultant and implementation contractor	Utility energy efficiency consultant and implementation contractor

III. Marketing Plan

This section of the IWP will focus on the marketing approach OPALCO plans to use for the residential sector and provide a brief description of the approach for the other sectors OPALCO may be targeting in the future.

Market Overview

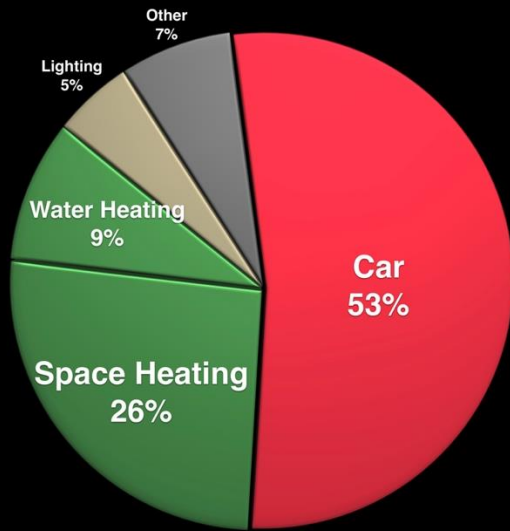
According to the most recently available data from the U.S. Census Bureau for San Juan County, from 2014, the County population is 94.5% ‘White’, 5.9% ‘Hispanic/Latino’ with all other racial/ethnic categories falling <2%.

In OPALCO’s service area, by 2035, most heating and transportation will be electric. That’s because the Return on Investment is compelling. For many of OPALCO’s members, it’s not a question of IF, but WHEN. When is the right time to make the switch to the most efficient forms of electric services and systems? With the RESP loan program, we make the WHEN sooner, by making the acquisition cost (member investment) of new more efficient systems less of a barrier. In so doing, RESP loans will help members save energy, save money and reduce their carbon footprint.

In addition to BPA funded EE&C programs, OPALCO self-funds a rebate program that encourages “fuel switching” from fossil fuel heating and transportation to electric heat pumps and vehicles. Heat pumps and electric vehicles (EVs) are much more efficient than their fossil fuel counterparts, and help OPALCO members reduce their TOTAL energy bill and carbon footprint.

Referring to the figure below, over 80% of energy in OPALCO’s service area is consumed for heating and transportation. This includes electricity, propane, heating oil, and wood for heating, and electricity, gasoline and diesel for transportation (see chart below).

Avg. San Juan County Residential Primary Energy Use



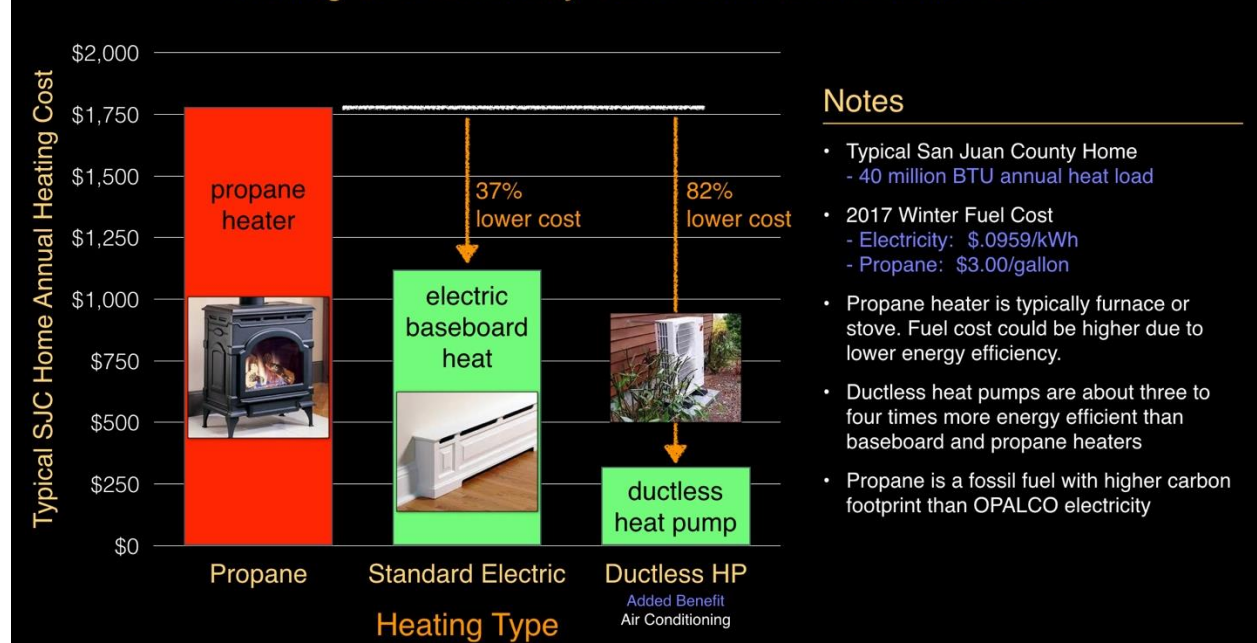
Over 80% of energy used in a typical San Juan County home is for transportation and heating.

In the US, the electrification of transportation and heating is accelerating and in the coming decades, most people will be driving and heating with electricity.

source: Buildings Energy Data Book, DOE, Department of Transportation, OPALCO

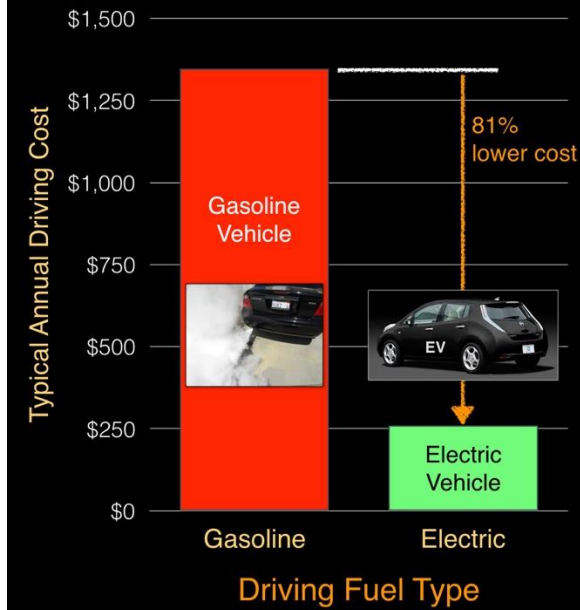
This electrification of heating and transportation program helps members achieve significant reduction in TOTAL energy consumed, and hence cost and carbon footprint. This next chart shows the cost savings for space heating, for a typical 40 million BTU annual heat load.

Heating with Electricity Costs Less than Fossil Fuels



This next chart shows the cost savings for driving, for a typical 10,000 mile per year EV compared to a US average 26 MPG gasoline powered car.

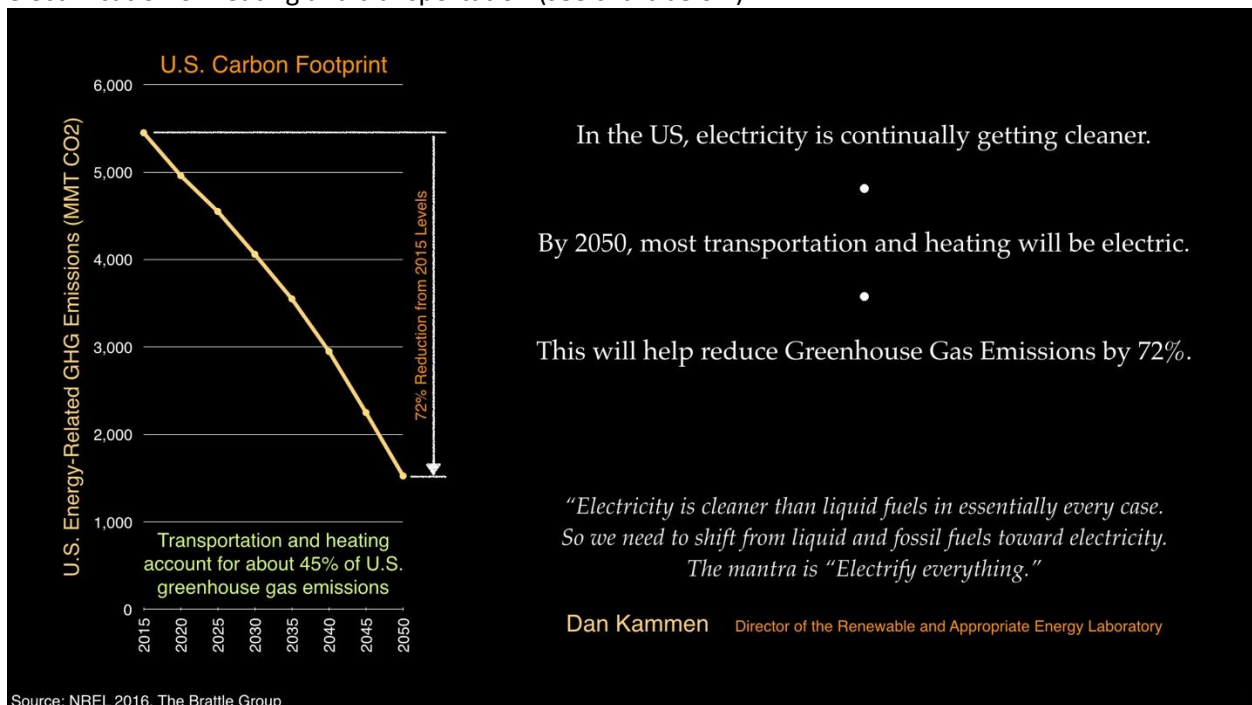
Driving Electric Costs Less than Fossil Fuels



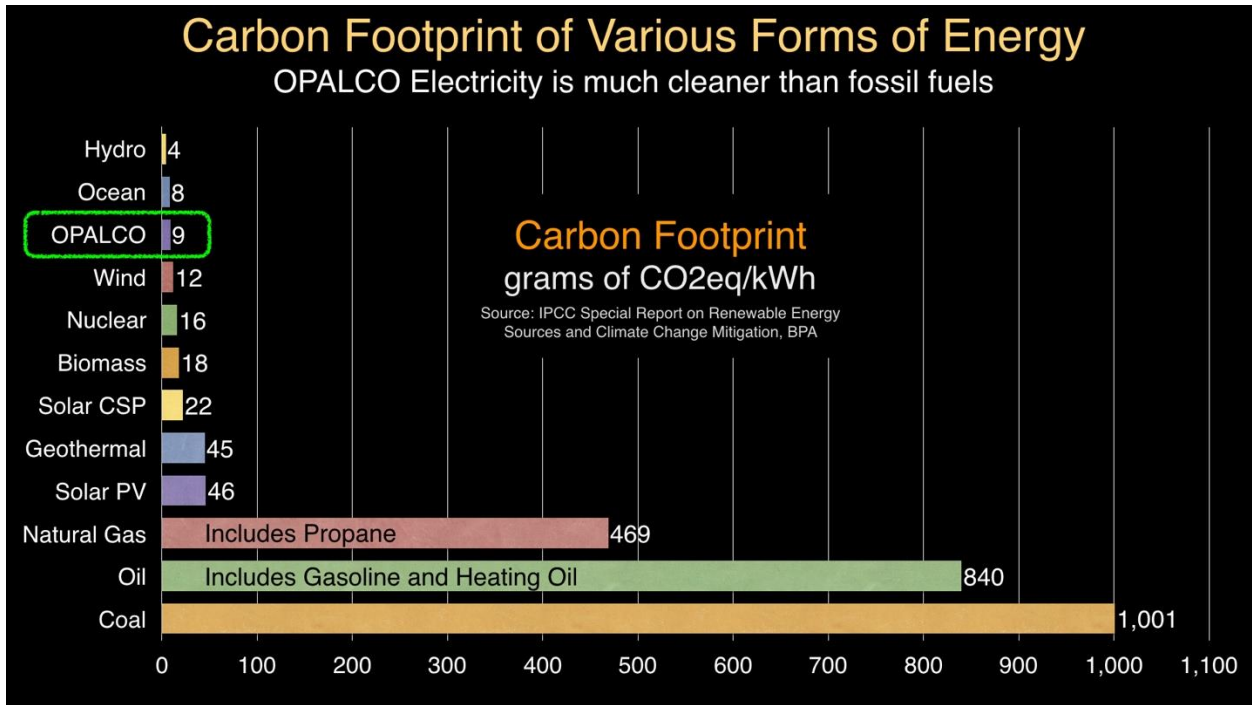
Notes

- Driving 10,000 miles per year
- Typical Vehicle Fuel Consumption
 - Electric Vehicle: 2.4¢/mile (such as Nissan Leaf)
 - Gasoline Car: 13.5¢/mile (US national average 26 MPG)
- 2017 Fuel Cost
 - Electricity: \$.0959/kWh
 - Gasoline: \$3.50/gallon
- Gasoline is a fossil fuel with about 100 times higher carbon footprint than OPALCO electricity
- EV driving range is typically 100 to 250 miles between charges. Most members who drive EVs call it the perfect island car thanks to our shorter daily commutes, low cost of electricity and high cost of gasoline.
- EVs are simpler to maintain with lower annual maintenance costs compared to gasoline cars.

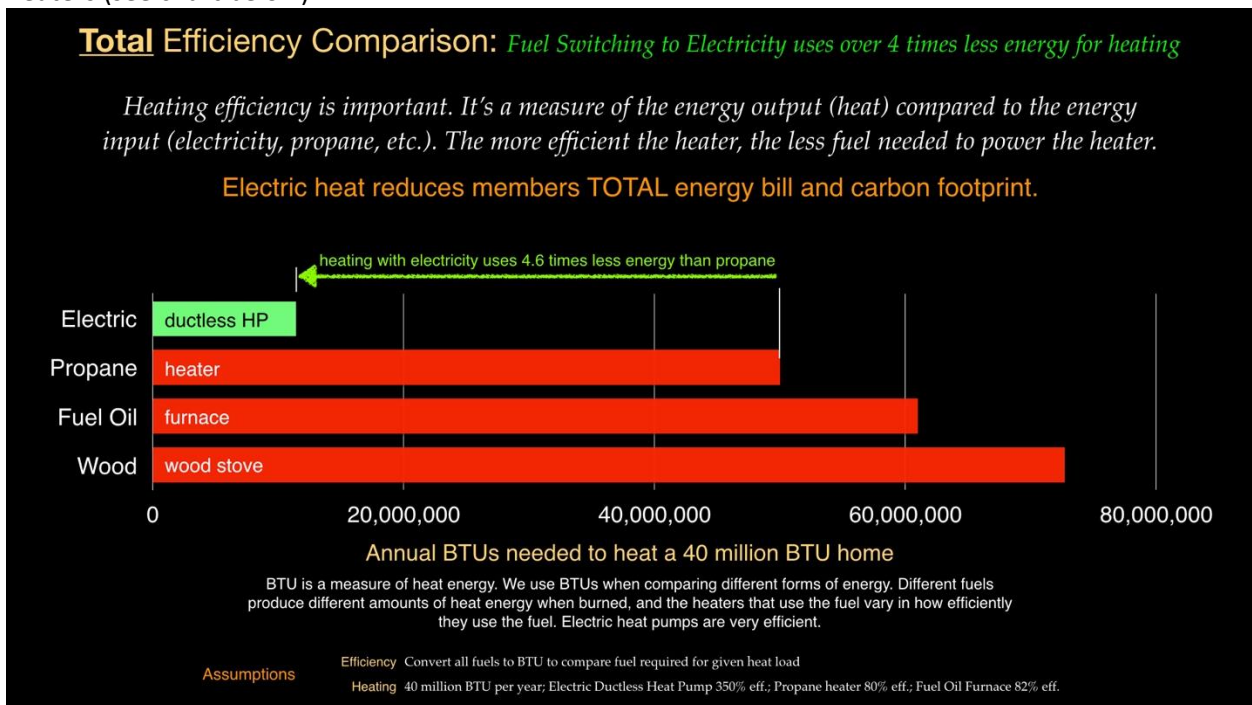
The electrification of heating and transportation is happening across the US. According to estimates from the Brattle Group, US Greenhouse Gas (GHG) Emissions can be reduced by 72% by 2050 due to this electrification of heating and transportation (see chart below).



In the OPALCO service area, when electricity is largely very clean hydro-based, the GHG emissions reductions would be even more significant (see chart below).



These reductions in energy consumption, cost and carbon footprint are possible due to the very efficient nature of heat pumps and EVs. Heat pumps are over four times more efficient than typical fossil fueled heaters (see chart below).



And EVs, similarly, are also over four times more efficient (see chart below).

Total Efficiency Comparison: *Electric Vehicles (EVs) uses over 4 times less energy for driving*

Vehicle efficiency is important. It's a measure of the energy output (miles drive) compared to the energy input (electricity, gasoline.). The more efficient the car, the less fuel needed to drive a given distance.

Electric cars reduce members TOTAL energy bill and carbon footprint.



BTU is a common measure of energy. We use BTUs when comparing different forms of energy such as gasoline and electricity. Different fuels produce different miles per energy consumed, and the cars that use the fuel vary in how efficiently they use the fuel. Electric cars are very efficient.

Assumptions Efficiency Convert all fuels to BTU to compare fuel required for given driving distance
Driving 10,000 miles per year; Electric 4 MPkWh EV; Gasoline 26 MPG car (US national average)

Taken together, the cost savings from switching to efficient electric heating and transportation can help our members save well over \$1,000 per year (see chart below).

OPALCO Electricity: Lowest Cost, Cleanest, Most Sustainable

	Annual Heating Cost	Annual Driving Cost	Low Carbon	Energy Efficiency Programs	Energy Assistance Programs	Member-owned Nonprofit	Local Sustainable Options
OPALCO	\$320 (ductless HP)	\$260 (Nissan Leaf EV)	✓	✓	✓	✓	Solar, Wind, Micro-hydro
Propane	\$1,779		✗	✗	✗	✗	✗
Fuel Oil	\$1,326		✗	✗	✗	✗	✗
Gasoline		\$1,346	✗	✗	✗	✗	✗

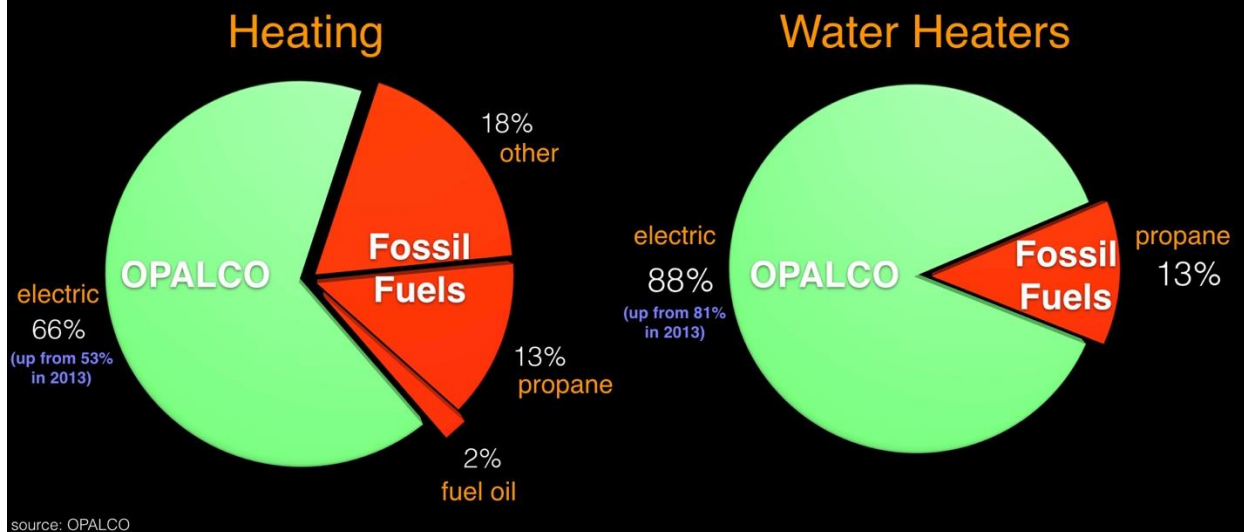
Assumptions Cost Electricity 9.59¢/kWh; Propane \$3/gallon; Fuel Oil \$3 per gallon; Gasoline \$3.50 per gallon
Heating 40 million BTU per year; Electric Ductless Heat Pump 350% eff.; Propane heater 80% eff.; Fuel Oil Furnace 82% eff.
Driving 10,000 miles per year; Electric 4 MPkWh EV; Gasoline 26 MPG car (US national average)

These kinds of cost and emission reductions are important to OPALCO members. Today, members choose to heat with clean low-cost electricity over fossil fuels, as the chart below shows, and market share is increasing, thanks particularly to the cost advantages.

Electricity is the most popular form of heating in San Juan County

2016 Heating Fuels Market Share

More people are converting to electric heating each year



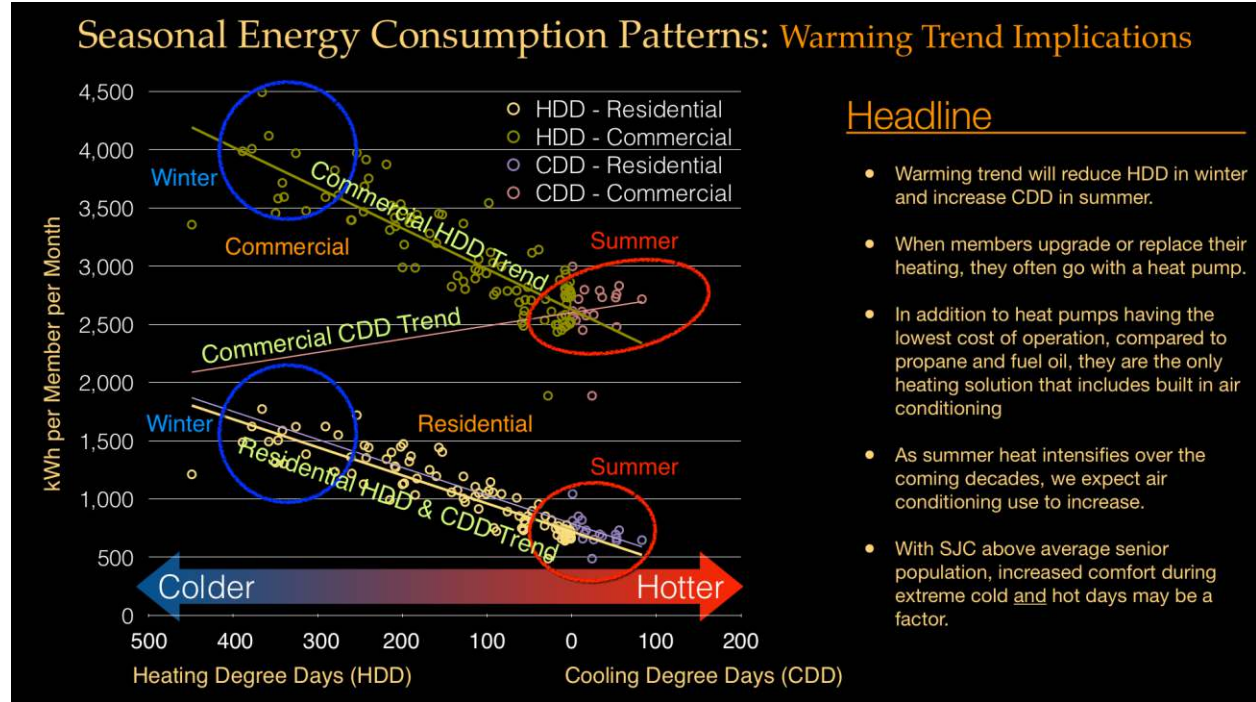
Target Marketing: Heating

A recent market research survey commissioned by OPALCO estimated that 66% of OPALCO's customers heat primarily with electricity (up from 53% in 2013). Electric heat customers are eligible for heat pump and envelope measure rebates from the BPA rebate program that OPALCO administers. The large number of electric heat customers is important because these customers will be able to get a BPA rebate and apply for a loan.

OPALCO will target homes with high space heat costs, whether they are electrically heated or not. Because these customers have high current heat costs, they will see the fastest payback period and will be the most motivated to seek fuel switching upgrades. As the graph above shows, about 66% of homes heat with electric, but only about 12% heat with electric heat pumps. With our given population and based on industry heater failure rate statistics, we expect 200 to 300 members per year who will be looking for a replacement heater. RESP loans will make it easier for them to choose a heat pump. OPALCO will provide heater repair contractors with marketing materials to help customers understand the compelling value proposition of heat pumps. We estimate about 20 to 30 percent of households each year, with failed fossil fuel heaters, will make the switch to heat pumps. In addition, OPALCO will target those members looking to replace a functioning heater with a heat pump that has lower operating cost. We estimate about 20 to 40 households per year will make the switch for lower operating cost.

There is an emerging market for heat pumps. With climate change, summers are gradually warming, with occasional extreme warm days. This will increase the need and desire for air conditioning, a natural side benefit of heat pumps – "Two for the price of one." OPALCO members (many who are retired and attracted to island living) are significantly older than the Washington state average. Seniors are more sensitive to temperature extremes. Heat pumps provide a lower cost way to stay warm in winter and cool in summer. This increased use in air condition is starting to show up in our commercial sector, as businesses try to ensure workers and clients are comfortable in summer months. The chart below shows

the pivot between Heating Degree Days (HDD) and Cooling Degree Days (CDD). The chart shows kWh use rising in winter in relation to higher heating degree days – the colder it is in a given month, the more kWh used by homes and businesses. We are seeing the mirror of this on the CDD side. The warmer it is indicated by increased CDD), the more kWh consumed. As more homes convert to heat pumps, we expect the pattern revealing itself in the commercial sector will start to manifest on the residential side.



Targeting homes with fossil fuel heating provides the most compelling value proposition, with substantial savings in TOTAL energy use, cost and carbon footprint. And the additional revenue for the co-op helps fund electric to electric conversions, which will reduce OPALCO revenues. To summarize, we lead with targeting fossil fuel energy efficiency markets, to strengthen revenue, preparing the co-op for a follow-through with targeting already electric homes that want to become more efficient.

Target Marketing: Transportation

On the transportation side of the market, very few homes have electric vehicles (EVs). So the market potential is largely untapped. This explains why the growth-rate last year in county electric vehicle adoptions was 55%. Our 20 island service area is ideal for EVs thanks to the short daily driving distances, which are well within the range of most EV batteries. And thanks to our very low carbon hydro-based electricity, the net reduction in fossil fuel emissions is one of the best in the country.

OPALCO will target residential members and government fleets. About 85% of OPALCO members are residential. Most have two cars, and at least one of them could be electric. Households that have two cars, where one is electric prefer to drive the EV and that is the first care they use. See the photo below showing an example of one OPALCO member family. We use these success stories in a variety of marketing materials e.g. newsletters, whitepapers, email blasts, social media.

Joe Thoron and Lisl Thomsen of Orcas Island made the move to an all-electric Nissan Leaf with four kids and an exchange student in tow. In their first month after switching from a gas to an electric vehicle, the family logged 1,000 miles on Orcas Island. The family made as many as four round trips a day between home, work and school, plus 4H meetings, sports practice and games, Cascade Lake for crew practice, and weekend activities. Joe has calculated that on gas expense alone, they saved \$100 in the first month. At that rate, their total energy bill will be lower by \$1,200 in a year, plus additional savings in avoided car maintenance and repairs.

“The Leaf is the perfect island car,” said Joe. *“We can get everywhere we need to each day on a single charge, and it’s easy to charge up at home overnight. As much as we drive our kids around, I’m more comfortable knowing I’m not putting out tailpipe emissions.”*



Now let’s look at driving cost in San Juan County. The number of Electric Vehicles (EVs) in the county grew 55% last year.

The next slide shows how much you save driving EVs compared to gasoline vehicles.

Target Marketing: EE&C and Whole-House Retrofits

OPALCO has conducted considerable analysis of the residential energy efficiency opportunity in our service territory. Any home with high winter heating costs, about 22% of households, will be targeted for more efficient heating and whole-house retrofits. It is worth noting that one might expect a higher proportion of electric heated homes would have higher winter heating costs, but many of those homes are empty in the winter months. OPALCO estimates that about 35% of households are seasonal use, generally occupied in summer and “shoulder” seasons, and unoccupied in winter, with thermostats set back to 50 degrees. OPALCO estimates that about 15% of the homes, or about 2,000 of OPALCO’s roughly 13,000 residential members would benefit from a whole-house retrofit.

Not all participants in energy efficiency programs need loans. Loans enable program participation when the participant share of the measure costs is high. The cost of a residential retrofit can range from \$2,000 to \$20,000. Electrically heated homes in OPALCO’s territory will be eligible for BPA rebates, but rebates will likely cover a third or less of the cost of a residential retrofit.

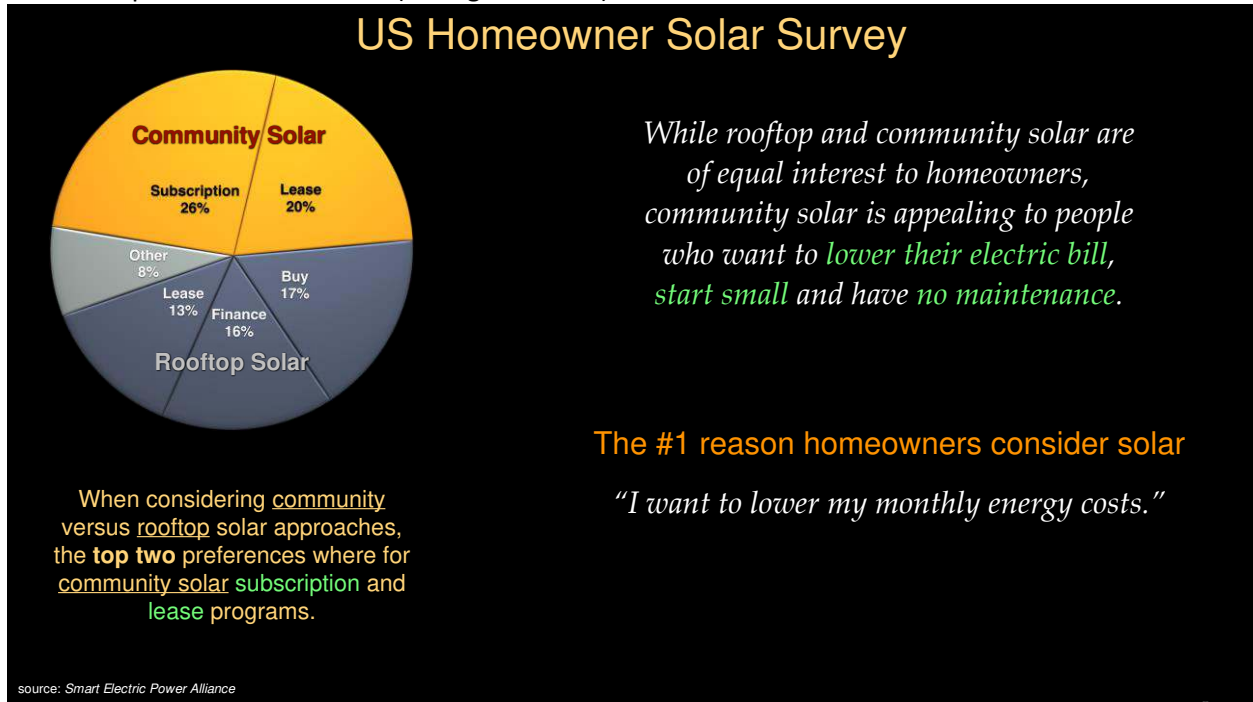
Target Marketing: Community and Rooftop Solar

For several years now, OPALCO has been conducting a variety of member outreach programs, (town hall meetings, newsletter articles, county fairs) and has identified some important member needs related to local renewable energy such as solar. Most members that put up solar on their roofs can afford the \$30,000 typical price tag. But for most members, that upfront cost is too much. Financing is an option, but at typical market interest rates of 6%, that still makes for an expensive proposition for many members. Low interest RESP loans would help make solar accessible for low and middle income members.

In addition, OPALCO is preparing to launch a community solar program. This program helps members cost-effectively subscribe to shares of a community array in smaller portions than would be economically feasible if trying to do it with a rooftop solution. Rooftop solar cost per kW rise sharply for

array sizes below about 4 kW. Community solar is economical in much smaller shares, down to 100 Watts.

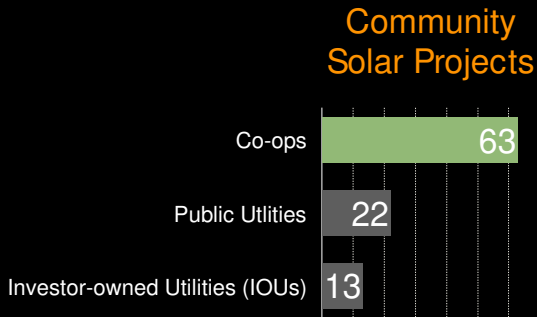
Surveys show that interest in community solar is as strong as or stronger than rooftop solar, especially for subscription or lease models (see figure below).



OPALCO would use RESP loans to help members who wish to finance, do so at interest rates that are a small fraction of typical rooftop solar bank loans.

As the chart below shows, co-ops are leading the way in bring community solar options to homes and business. Coops have 63 community solar programs, almost triple public utilities, and about five times more than investor-owned utilities.

Electric Co-ops Are Leading The Way

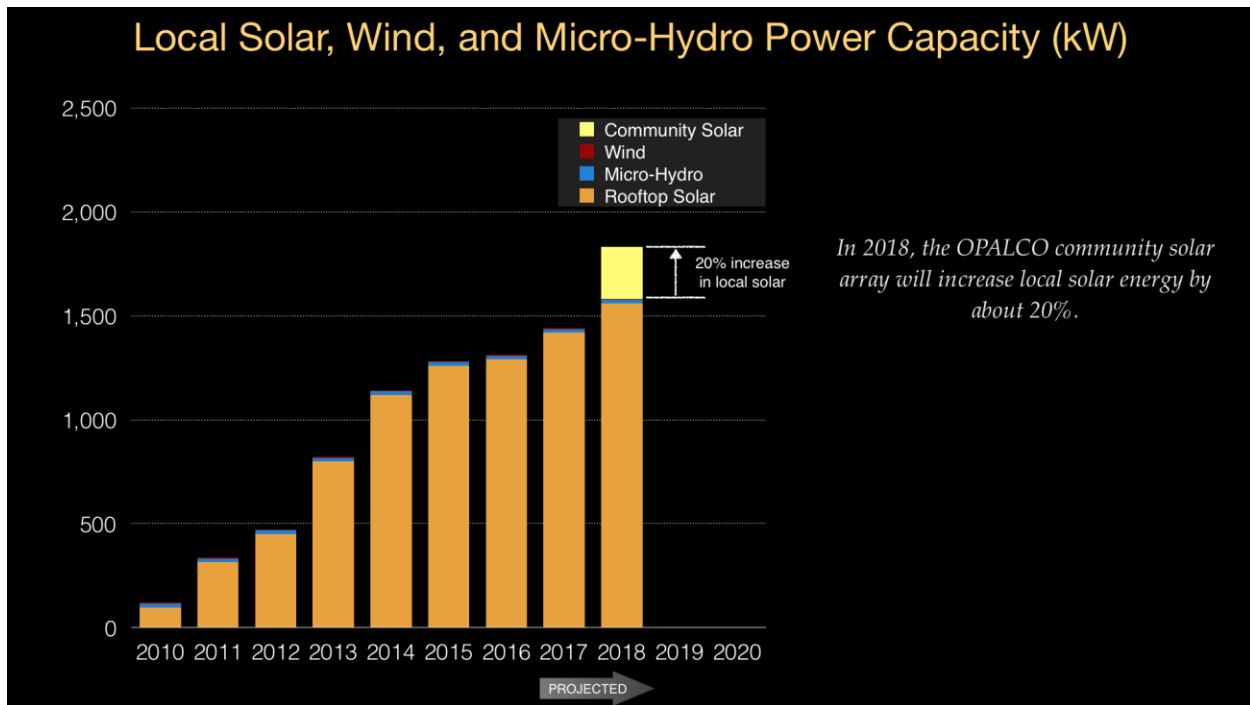


Electric co-ops such as OPALCO were formed to serve rural communities, providing member-owned nonprofit services that help the community prosper.

source: Smart Electric Power Alliance

Target customers for the **solar loan program** will be identified and marketed to through our ongoing efforts surrounding our community solar project, which will be constructed in 2018. For residential systems, OPALCO will target customers that have already completed a whole house energy efficiency upgrade or customers that are willing to undergo an upgrade. Ensuring that homes are as energy efficient as possible will allow OPALCO members to buy a smaller, less expensive solar array that can still meet a substantial portion of a home's energy needs.

We expect the array to be about 300 kW, and emphasizing a mix that serves the small to medium size subscription, as well as low-income households, we expect to have about 1,500 subscriptions, with about 60% of those choosing to finance, taking advantage of low interest RESP-powered loans. This program will increase local renewable energy in the service area a substantial 20%, accelerating the development of local resilient energy options.



Target Marketing: Summary

The “Return on Investment” is clear. How do we make it as easy as possible for OPALCO members to make that investment, to reap the returns? As mentioned above, the RESP program will help us accelerate the electrification trend by helping reduce the upfront cost associated with purchase and installation of heat pumps and EV chargers, for example. RESP helps OPALCO reduce barriers to entry for whole-house retrofits and solar projects too.

The homes that are good candidates for residential retrofits usually have above average energy bills. OPALCO will target these homes by:

- Screening calls from members inquiring about energy efficiency
- Routing high bill complaint calls from OPALCO’s customer service representatives to program staff
- Sending direct mail to customers that have higher than average electric space heat use
- Following up the direct mail with a phone call

OPALCO has been offering energy efficiency programs for over a decade, so members have learned to rely on our energy efficiency expertise and programs. We direct a healthy volume of energy efficiency inquiries to OPALCO’s offices or their resident energy efficiency expert. Due to this familiarity, OPALCO has assumed a low cost of customer acquisition for the sake of this program with no additional staff, and minimal additional marketing required.

Broad Promotional Activities

OPALCO already engages in several promotional activities to market BPA rebates to residential and small commercial customers. These activities are aimed broadly, to all OPALCO members. OPALCO will screen those that respond to find likely candidates for loans. Broad promotional activities currently include:

- **Bill inserts:** Bill inserts is the primary channel OPALCO uses to inform customers about energy efficiency opportunities. OPALCO will use inserts to promote the energy efficiency loan programs several times—including an announcement about the launch of each sector’s program, success stories with early participants, and information about the benefits of bundled, whole house retrofits (rather than piecemeal upgrades).
- **Website:** OPALCO also publishes extensive information about all energy efficiency rebate programs offered at <https://energysavings.opalco.com>. OPALCO will create a new webpage dedicated to the energy efficiency loan programs offered—including FAQs, loan documents and terms, and an overview of how and why to participate in the loan program.
- **Social Media:** OPALCO is active on Facebook and Twitter to help get our message out to perhaps a younger demographic that do not prefer to receive paper bill inserts.
- **Co-op Stewards Programs:** OPALCO has very engaged supportive members, interested in growing energy options that help improve reliability, affordability, low carbon footprint, and local energy resilience. Many of these members participate in the Co-op’s Stewards program, which provides Stewards with focused information on timely topics. We find that Stewards then share that information with friends and social circles, providing an early adopter approach to new innovations brought forth by the co-op.
- **Trade allies:** OPALCO maintains a list of energy efficiency contractors that currently serve the service area. Trade allies are an excellent sales force for rebates and other program offerings—such as an energy savings program—because the contractors and OPALCO both benefit when OPALCO members pursue energy efficiency. Lindsay Curtis, OPALCO’s Energy Services Coordinator, has strong ties to the energy services contractors in OPALCO’s service area. Ms. Curtis will personally inform trade allies about the loan programs, be available to answer contractor’s questions, and provide contractors with OPALCO marketing materials about the loan program.
- **Member Services Call Center:** OPALCO’s Member Services team addresses calls from members with high bill complaints. The Member Services team sees these interactions as an opportunity to motivate members to learn about and pursue energy efficiency solutions. Currently, the Member Services team provides high bill complaint callers with information about BPA rebates—and in some cases, OPALCO’s contract energy auditor, will visit the member’s home or business to investigate the cause of high bills. Once OPALCO launches the energy efficiency loan programs Members Services will begin promoting the loan program as another approach, in conjunction with BPA rebates, to solving high bills without compromising comfort.
- **Program Launch Promotional Events:** OPALCO will organize promotional events for the launch of each consumer category loan program to help spread the word about the program. OPALCO may invite members of the local press to these events to capture earned media coverage of the program.

IV. Operations Plan

A. Activities and Investments

From an operational perspective, OPALCO’s RESP loan program will be very similar to the co-op’s current energy efficiency and conservation (EE&C) program. The RESP loan program will solve a key limitation of our current efficiency programs – the barrier to entry due to high up-front costs of many EE&C projects – e.g. cost of heat pump, cost of weatherization, insulation, new appliances, whole house energy retrofits, etc.

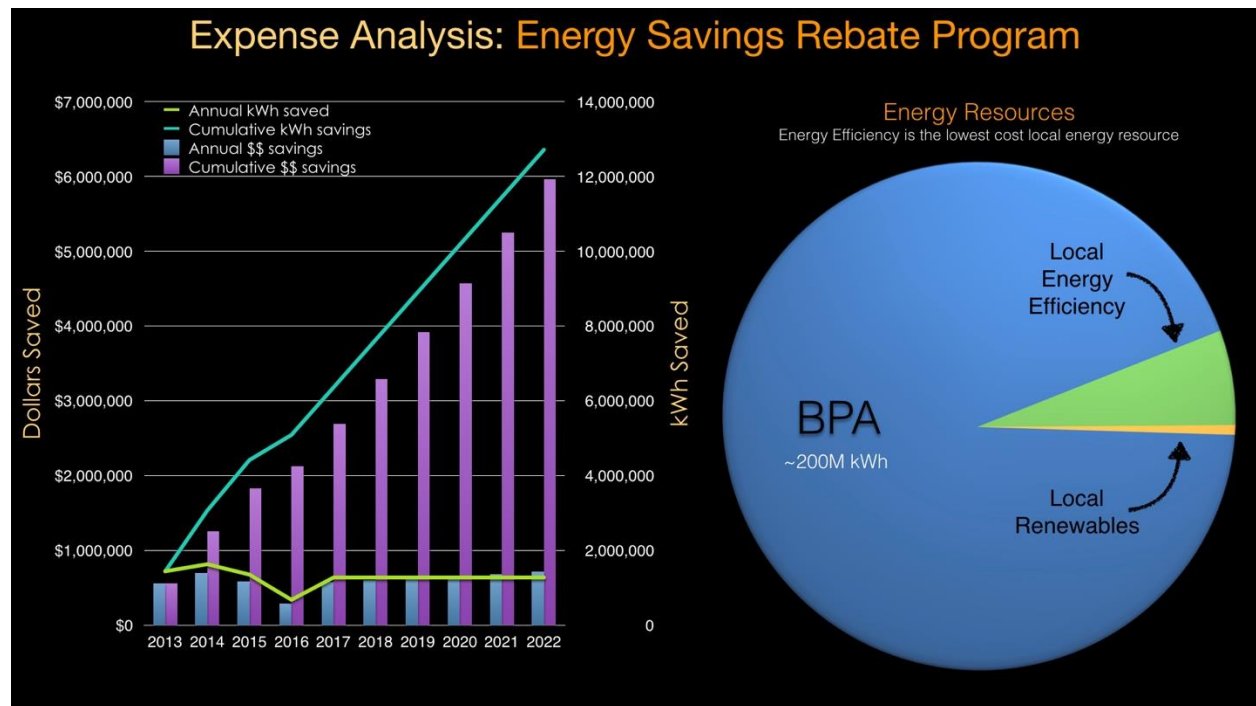
How OPALCO Currently Operates Energy Efficiency Programs:

As mentioned earlier, OPALCO has been operating energy efficiency programs for many years. Over the past decade, with significant support from BPA, we have significantly expanded the EE&C program, and often outperform our peers in rebate dollars issues and kWh savings achieved.

As a BPA customer utility, OPALCO offers the full suite of BPA rebates for energy efficiency measures listed in the [BPA Implementation Manual](#). OPALCO follows all rules and reporting requirements set forth by BPA in order to receive payment for eligible energy efficiency measures.

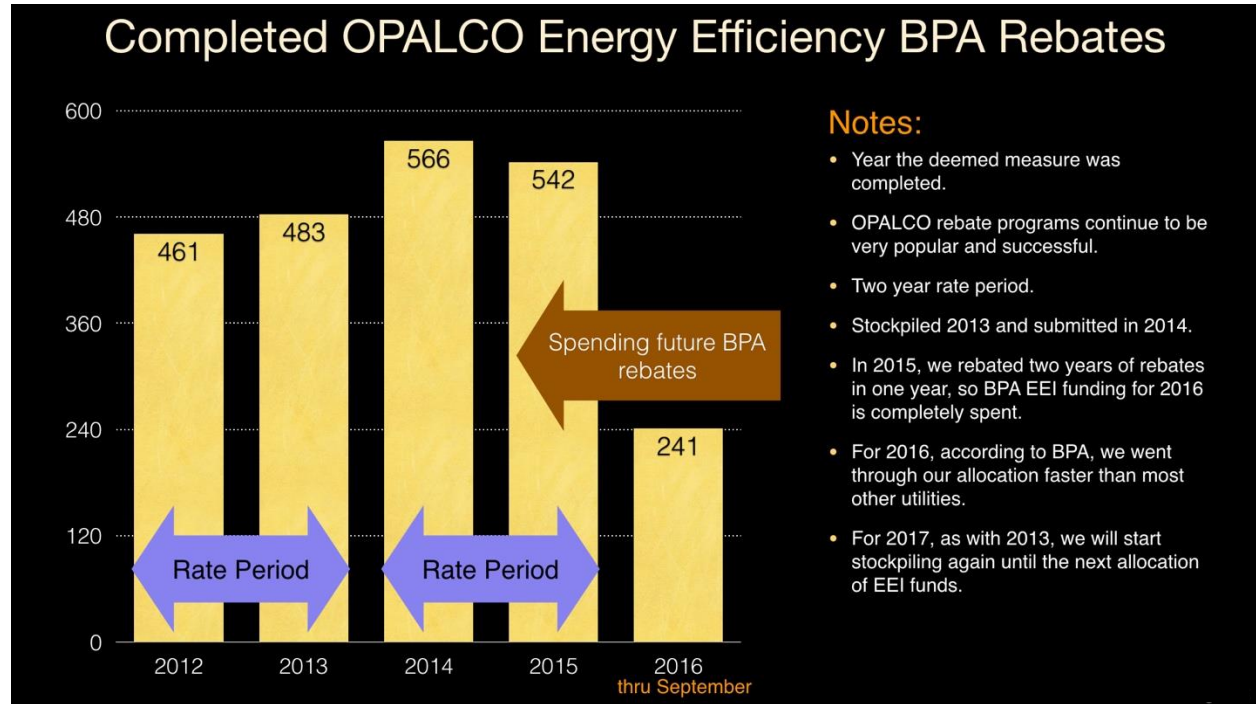
OPALCO conforms to EE&C measures that are recommended by the Regional Technical Forum (RTF) and accepted by BPA. The RTF is independent from BPA and makes recommendations based on the cost-effectiveness and estimated energy savings of proposed measures. OPALCO will use RTF cost effectiveness guidelines for the residential, commercial, and agricultural activities covered in the RESP program.

The chart below shows recent and projected current EE&C program savings of cost and kWh, as well as the cumulative portion energy efficiency represents of our total energy resources, including BPA and local renewables.

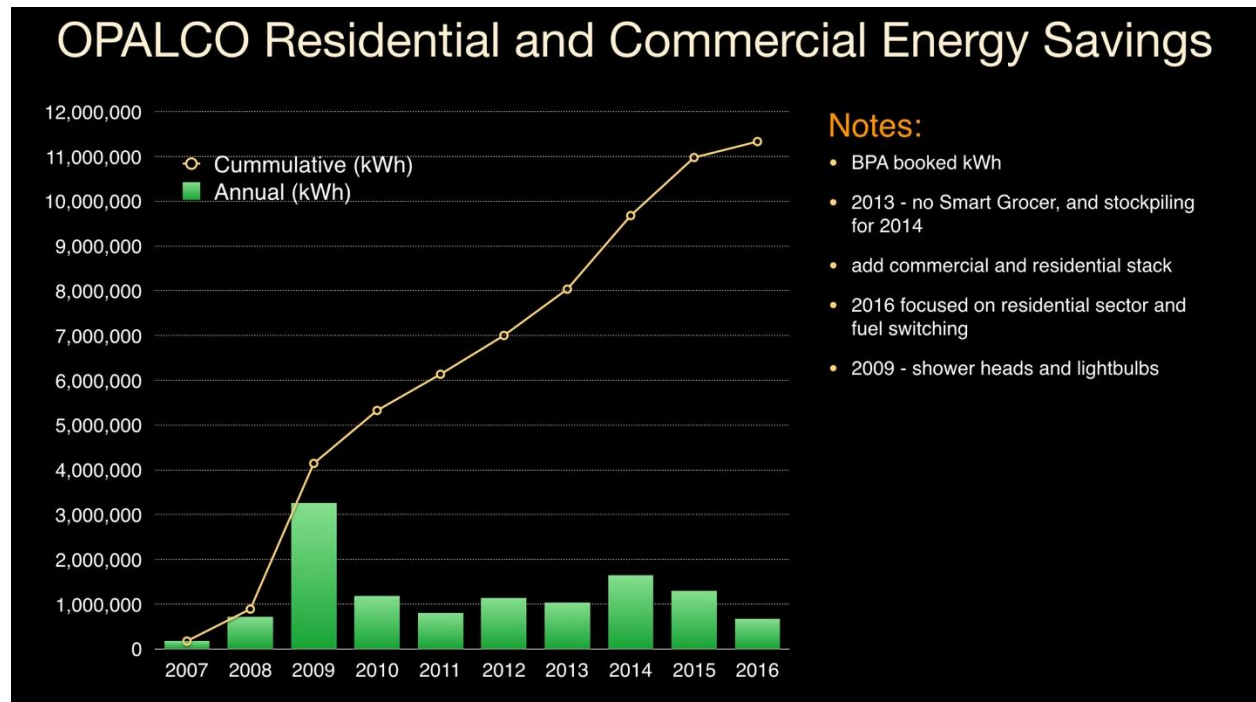


The chart below shows a steady flow of rebates since 2012. OPALCO tends to outperform our peers in use of EEI funds, to the point that we have arranged for transfer of unused funds from other Northwest

co-ops to meet unbudgeted excess demand for rebates. OPALCO has also recently begun self-funding rebates aimed at accelerating fuel switching from fossil fuel heating and transportation to electric.

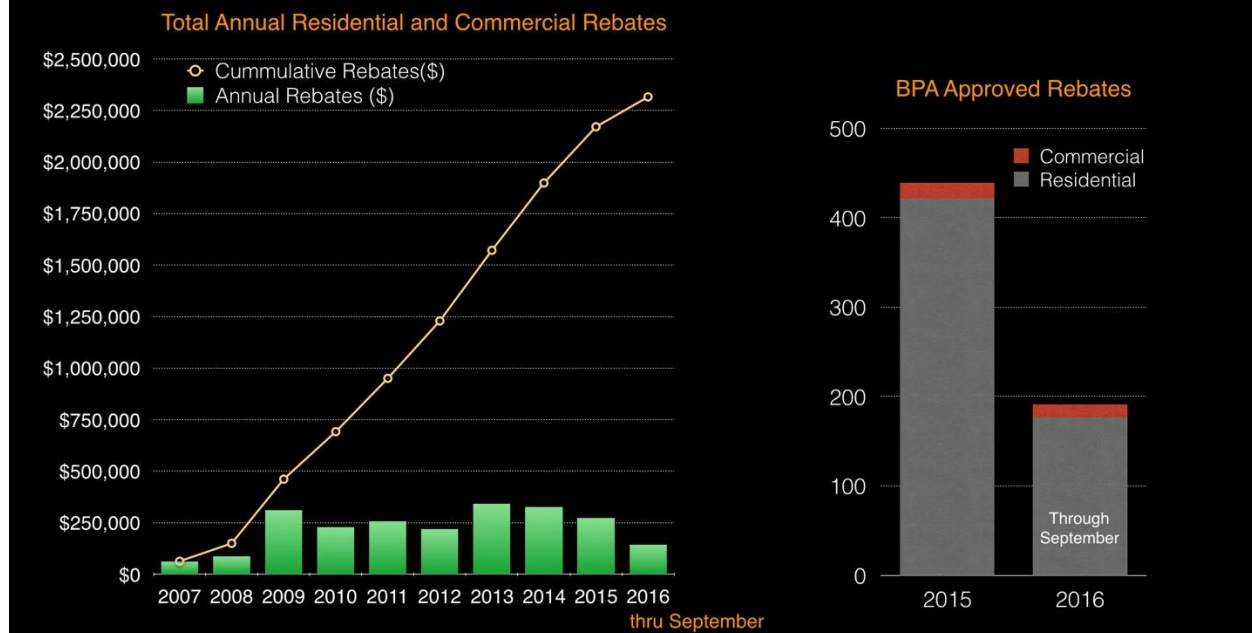


The chart below shows the annual first year and cumulative energy savings of our EE&C program, since 2007.



The chart below shows the annual and cumulative rebates issued to OPALCO members, since 2007.

OPALCO Residential and Commercial BPA Rebates



In order to implement residential and commercial energy efficiency programs—while also complying with BPA rebate and reporting requirements—OPALCO follows this general work flow:

- Market the rebate programs (see more on page 4 under Marketing Plan to learn about current marketing channels).
- Answer phone calls and emails from customers
- Process rebate applications, verify application requirements are met, and troubleshoot incomplete applications
- Conduct site visits on any measures requiring installation
- Handle all customer satisfaction issues
- Enter data into OPALCO’s tracking software and create payment request
- Mail rebate checks with thank you letter
- Input rebates into BPA invoice for Customer Portal submittal
- Receive BPA invoice report and update tracking tool
- Ensure rebates are aligned with OPALCO’s budget
- Oversee low-income program and process paperwork for BPA invoice
- Provide reports to OPALCO management

Adding RESP Loan Offer to OPALCO’s Current Energy Efficiency Program:

OPALCO members that implement residential retrofit measures in the rebate program typically implement a single measure when multiple measures would yield a greater benefit. This “whole house” energy retrofit approach can be much more efficient to implement and produce sizeable savings, but with a larger upfront cost. The RESP program allows us to offer members a very low interest loan to dramatically reduce the upfront costs, spreading them out over the life of the loan, thus reducing the barriers to entry.

OPALCO will offer energy efficiency loans using a nearly identical program structure as is used to administer the BPA rebates—with the addition of RUS-tailored reporting tools, pre-retrofit audits, and a more advanced quality assurance plan to meet the requirements of the RESP program. Because over 85% of OPALCO customers are residential and more than half of OPALCO’s conservation potential is in the residential sector, the main emphasis will be on promoting whole house upgrades.

The energy efficiency measures financed in this program are nearly all changes to the building’s structure or building energy systems which then become an integral part of the property. These measures typically last 15 years or more, longer than the RESP maximum loan term, which is 10 years.

OPALCO plans to offer the program to customers regardless of their fuel source for space heating. As mentioned earlier, an analysis conducted by OPALCO showed that over 66% of customers use electricity for a substantial portion of their heating needs. Much of current installed electric heating is via standard electric baseboard style heaters. Heat pumps can substantially reduce those home’s heating energy consumption, and thus cost. About 34% of homes and businesses heat with fossil fuels. OPALCO will aggressively market the RESP loans to those members, to replace their fossil fuel heaters with heat pumps. This has the dual benefit of reducing TOTAL energy consumption (fossil fuels) and energy bills. OPALCO will require an energy audit and require that the benefits of the project exceed the costs.

Nearly all of the measures identified for the residential loan program reduce the energy use associated with space heating. OPALCO and BPA are winter-peaking, so these measures will reduce peak energy use. The Northwest electric system is not as peak constrained as other areas of the country but peak demand pricing signals are ramping up. OPALCO will, over the span of the RESP program, install load control devices and take steps to reduce peak demand.

OPALCO expects to find an occasional building in which certain measures cannot be installed without some kind of pre-retrofit improvement. An example would be a home where attic insulation was needed but could not be installed because of a leaky roof. OPALCO’s current program does not pay for pre-retrofit improvements. In such cases, OPALCO works with non-profit partners such as the San Juan Island Conservation District and The Opportunity Council to help low-income participants pay for pre-retrofit improvements.

Key energy efficiency measures for the **residential** EE&C loan program will include:

- Home energy audit
- Electric water heater replacement
- Replacement of outdated appliances with Energy Star appliances
- Insulation
- Duct Sealing
- Heat pump installation
- Heat pump water heater installation
- LED lighting
- Window replacement
- EV charging stations
- Load control devices Demand Response Units (DRUs) added to existing or new electric systems, including water heaters, EV chargers, and hot tubs

Key activities for the **small commercial** energy efficiency loan program may include:

- Commercial lighting
- Motor replacements
- Variable frequency drive installation
- Refrigeration
- All of the residential EE&C measures

Key activities for the **solar** loan program may include:

- Grid-tied rooftop solar installation
- Community solar subscription

Washington State recently approved a Renewable Energy Jobs bill that increases production credit incentives. These new incentives are significant, begin in 2018, and decline each year thereafter. To take advantage of this front-loading of incentives, OPALCO will use RESP loans to help interested members take advantage of the higher 2018 incentives, as soon as possible.

B. Schedule and Projections

The table below shows OPALCO’s 10-year projections for the use of RESP funds. This projection assumes an early focus on loans going to whole house retrofits, fuel switching to heat pumps, heat pump water heaters, EVs, community solar subscriptions, rooftop solar subscriptions, and later upgrades of standard electric homes to heat pumps for heating and water heaters, with each of these being rolled out in an orderly fashion as described in section I-B above. OPALCO staff expects that OPALCO members will find the RESP financing attractive and that demand will be strong.

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total Loans	Average Loan Amount	Total \$
Whole-house energy retrofits	-	5	10	15	20	25	30	35	30	15	185	\$12,000	\$2,220,000
Fuel switching: heat pumps	15	10	15	20	25	25	25	25	20	-	180	\$5,000	\$900,000
Fuel switching: HP water heaters	15	15	20	25	25	25	25	20	15	-	185	\$1,500	\$277,500
Fuel switching: EV chargers	10	15	20	25	30	35	30	30	25	11	231	\$500	\$115,500
Community solar subscriptions	80	130	-	-	-	-	-	-	-	-	210	\$2,000	\$420,000
Rooftop solar	-	20	15	10	5						50	\$20,000	\$1,000,000
Heat pump upgrades	-	-	-	-	5	10	15	20	25	22	97	\$5,000	\$485,000
HP water heater upgrades	-	-	-	-	5	10	15	20	25	25	100	\$1,500	\$150,000
Total	120	195	80	95	115	130	140	150	140	73	1,238	\$47,500	\$5,568,000

C. Staffing Plan

OPALCO's staffing plan for the administration of RESP loan funds will mirror the current staffing plan used for the administration of BPA rebates.

OPALCO currently maintains a list of building performance contractors that provide a range of BPA-eligible rebates—from lighting to HVAC installation to insulation to whole house retrofits to energy efficient new construction.

OPALCO does not direct or manage these contractors. OPALCO does provide contractors with training and tools to ensure all contractors are following prescribed processes and documentation requirements for reimbursement and auditing by BPA. At a high level, BPA requirements involve the contractor creating an invoice showing that (a) measure requirements have been met (e.g., manufacturer, model number, type, size and quantity of equipment or product installed/used), (b) the order/purchase date and (c) cost.

OPALCO's Member Services team direct members to a list of all contractors operating in OPALCO territory that are in good standing with the co-op. Members are responsible for contacting contractors, arranging bids, and selecting between bids. OPALCO does not recommend one contractor over another—but because many OPALCO members live in rural areas Member Services does advise members about what contractors are closest to them geographically to reduce travel costs.

Heat pump systems must be certified through a BPA program called Performance Tested Comfort Systems (PTCS). If members have a heat pump system installed and do not use a contractor that is PTCS-certified, then the member will need to hire another PTCS-certified contractor to do a PTCS-certification of the system. Again, because of the added costs, OPALCO does encourage customers to use PTCS-certified contractors if they are installing heat pump systems.

Lastly, if contractors repeatedly fail to prepare and submit paperwork correctly or if a series of OPALCO members report poor quality jobs—contractors may be removed from the list of contractors that OPALCO provides to members.

D. Loan Process Plan

OPALCO plans to use On-Bill Financing (OBF) as the repayment method for the EE loans. There are many decisions that need to be made in order to set up an OBF loan process. These decisions will be a major factor in the outcome of OPALCO's loan program.

The most fundamental decision is whether to partner with a financial institution (FI). This can be costly, but there are advantages:

- The FI would be the lender and would have responsibility for compliance with consumer lending laws and all back office loan portfolio management, functions with which they already have experience, so that OPALCO does not have to take on and build capacities to perform these functions.

- On-Bill Repayment can still be used, so the program participant will be sending loan payments to the utility as they pay their monthly electric bill. This should help keep the default rate low.
- OPALCO would still be the borrower from and with RUS, so the credit risk RUS takes is the OPALCO credit risk. OPALCO could share in the credit risk of the residential EE loans with the FI partner.

OPALCO is currently weighing the costs and benefits of administering the loans internally through the finance department versus working with a third party financial institution. OPALCO may also engage an energy efficiency finance expert if questions arise along the way about financial regulations. OPALCO's attorney has also been engaged in determining what state regulations will apply to OPALCO's loan program.

A recent Lawrence Berkley National Laboratory (LBNL) study that reviewed 30 existing OBF programs suggests that utility service disconnection does not result in lower default rates¹: "In comparing existing on-bill programs, we found that programs allowing utility service disconnection tend to have slightly higher average participant default rates (1.69% for programs that allow disconnection, 1.05% for those that don't). However, there are many other program characteristics, program design factors and attributes of a program's target consumer segment that contribute to default rates. ...All on-bill programs reviewed in this report have experienced low default rates."

Although final design of the loan issuing process is still under review, OPALCO will likely use utility bill repayment history at the primary underwriting criteria for the program. Again, according to the LBNL review of 30 current OBF programs, this form of underwriting is not likely to produce higher default rates than if OPALCO were to use traditional underwriting criteria. From the report: "Existing on-bill programs did not yield an obvious association between a program's underwriting criteria and participant default rates, suggesting that a range of underwriting approaches—including those that rely primarily on utility bill repayment history—may be effective in identifying creditworthy applicants. However, the choice of underwriting criteria is an important design issue for program administrators because it appears to significantly influence on-bill program application approval rates. The one program that relies on traditional underwriting criteria rejects at about eight times as many applications compared to the median rejection rate of on-bill loan programs that rely primarily on utility bill repayment history."

Another important consideration is how the loan repayments will be integrated into the billing software. OPALCO uses National Information Solutions Cooperative (NISC) billing software provider and will be working with them to help set-up on-bill repayment of EE loans. NISC is experienced at offering their utility customers OBF features to facilitate on-bill repayment of loans. OPALCO began to engage NISC in the summer of 2017 to begin customizing their billing software to meet the needs of the RESP loan program. NISC billing software allows members to not only pay their bills, but also offers members graphs conveying usage information, budget gauges, and direct access to rebates and other energy efficiency programs offered by the co-op. NISC currently serves approximately 300 energy providers with the SmartHub service and reports a 28 – 30% adoption rate of the SmartHub platform, meaning that around a third of end use customers are using the SmartHub application. SmartHub, which is

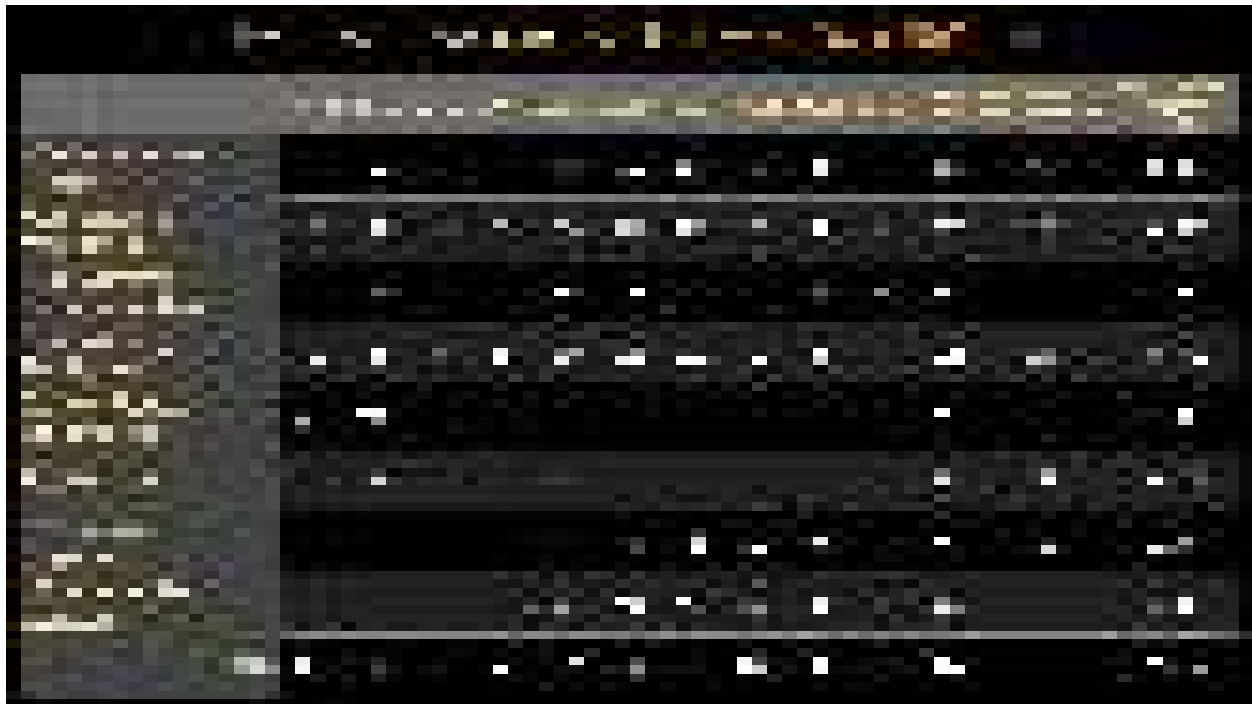
¹ State and Local Energy Efficiency Action Network. (2014). *Financing Energy Improvements on Utility Bills: Market Updates and Key Program Design Considerations for Policymakers and Administrators*. Prepared by: Mark Zimring, Greg Leventis, Merrian Borgeson, Peter Thompson, Ian Hoffman and Charles Goldman of Lawrence Berkeley National Laboratory.

compatible with Android and iOS, is heavily used by younger members and customers—with over 60% of visits to SmartHub from those under the age of 35. Although 85% of users report that bill pay is why they log into SmartHub, many users also view their usage information and other tools offered by the platform. While the average time spent on the site with a first time visitor is approximately 3 minutes, when users return they spend over 7 minutes on the site on average. This suggests that users are more likely to explore other features offered by SmartHub after mastering bill pay.

One issue to work out with NISC is the handling of prepayments. Borrowers must be able to prepay without penalty, and must be assured that this prepayment will reduce the principal owed and not be applied as a credit to the overall electric bill. OPALCO will then be able to document that the prepayments were used to repay RUS, or, if approved by RUS, redeployed into the loan program.

E. BTU Savings over the Life of the Program

A survey of recent studies on energy savings programs, their investment and resulting savings achievements, combined with OPALCO's own EE&C program results, allow us to estimate potential savings for the RESP loan programs outlined in section IV B, above. The chart below shows nominal annual BTU reduction per loan and 10 year total BTU savings for each program.



V. Financial Plan

A. Sources and Use of Funding:

OPALCO intends to use the Special Advance funding of 4% (\$232k) to cover initial and ongoing program implementation costs that are not initially covered by loan interest. These costs are estimated in the table below.

RESP Source & Use of Funds	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Loans to Qualified consumers (\$)	262.5	800.0	535.0	530.0	550.0	545.0	635.0	720.0	657.5	333.0	-	5,568.0
Source of Funds	-	-	-	-	-	-	-	-	-	-	-	-
Special Advance	232.0	-	-	-	-	-	-	-	-	-	-	232.0
Interest from loans	-	3.0	12.0	18.1	24.1	30.3	36.5	43.7	51.8	59.3	63.1	341.9
Total Source of Funds	232.0	3.0	12.0	18.1	24.1	30.3	36.5	43.7	51.8	59.3	63.1	573.9
Use of Funds												
Funding 2% of loans to LLR	(5.3)	(16.0)	(10.7)	(10.6)	(11.0)	(10.9)	(12.7)	(14.4)	(13.2)	(6.7)	-	(111.4)
Program Operational Costs*	(85.0)	(15.0)	(15.0)	(15.0)	(10.0)	(7.5)	(5.0)	(5.0)	(5.0)	(5.0)	(3.0)	(170.5)
Payback of Special Advance	-	-	-	-	-	-	-	-	-	(232.0)	-	(232.0)
Total Use of Funds	(90.3)	(31.0)	(25.7)	(25.6)	(21.0)	(18.4)	(17.7)	(19.4)	(18.2)	(243.7)	(3.0)	(513.9)
Net Source (use) of funds	141.8	(28.0)	(13.7)	(7.5)	3.1	11.9	18.8	24.3	33.7	(184.4)	60.1	60.1

*First year program operational costs are estimated at: additional staff time & marketing (\$25k), legal review (\$30k), consulting fees (\$30k). Ongoing program costs include administration and marketing.

Any interest collected in excess of operational costs and funding the LLR will be reinvested into the OPALCO Energy Savings Loan Program to fund additional loans.

Possible grants and other funding sources that may be pursued over the life of the program to supplement funding include:

- BPA energy efficiency rebates – to fund EE&C programs
- WA Clean Energy Fund Grant – to fund demand reduction and local renewable energy programs
- DoE Pacific Northwest National Lab – to fund energy program analytics
- Bonneville Environmental Foundation (BEF) – to fund community solar programs
- The Solar Market Pathways via DOE’s SunShot Initiative – to fund solar programs
- Federal Residential Renewable Energy Tax Credit – to fund local renewable energy programs

OPALCO has proven able to attract alternative funding and will continue to seek alternative funds that can supplement the RESP loan funds.

B. Aggregate cost-effectiveness forecast:

Cost-effectiveness to OPALCO is assured because OPALCO intends to approve only deemed measures for electric energy efficiency. These deemed measures are continually updated through an elaborate process overseen by the Regional Technical Forum which involves experts from around the Northwest, including BPA and the Northwest Power and Conservation Council.

The cost-effectiveness to the borrower is illustrated by the following tables, showing what a typical residential loan might look like.

**Typical Residential Loan
\$10,000 Project, 10-Year Term, \$1500 Rebate**

	1%	2%	3%
Annual Loan Payment	\$898	\$945	\$995
Energy Savings	\$1,209	\$1,209	\$1,209
Net	\$311	\$264	\$214

**Typical Residential Loan
\$10,000 Project, 10-Year Term, \$0 Rebate**

	1%	2%	3%
Annual Loan Payment	\$1,056	\$1,115	\$1,175
Energy Savings	\$1,209	\$1,209	\$1,209
Net	\$153	\$94	\$34

C. Loan loss reserves:

OPALCO’s finance team has determined that the loan loss reserves may be initially established using a portion of the RESP special advance funds. A nominal interest rate of 2% will be charged on loans to OPALCO members as a means of funding the remaining required loan loss reserve while also covering ongoing program expenses such as marketing, related contactor costs and staff overtime.

D. Expected loan delinquency and default rates:

OPALCO has reviewed multiple research studies to corroborate evidence regarding a reasonable estimate for loan delinquency and default. According to a 2016 report by the American Council for an Energy Efficient Economy (ACEEE)—most on-bill financing (OBF) programs see default rates of less than 2%.² A 2015 article published by the National Conference of State Legislatures (NCSL) regarding On-bill financing for cost-free energy efficiency improvements cited delinquency rates for on-bill financing typically below 3%.³ Finally, a May 2014 research study published the State and Local Energy Efficiency Action Network cites that the average lifetime default rate for 15 different residential on-bill programs is 1.5% percent (ranging from zero percent to three percent).⁴

OPALCO will also work with members, especially residential members, to develop upgrade packages that are bill neutral (cost savings from energy efficiency improvements can meet or exceed loan repayments) to further prevent loan default.

VI. Risk Analysis

² American Council for an Energy Efficient Economy. April, 2012. On-bill Financing for Energy Efficiency Improvements. http://www.aceee.org/files/pdf/toolkit/OBF_toolkit.pdf

³ National Conference of State Legislatures. April, 2014. ON-BILL FINANCING: COST-FREE ENERGY EFFICIENCY IMPROVEMENTS. <http://www.ncsl.org/research/energy/on-bill-financing-cost-free-energy-efficiency-improvements.aspx>

⁴ State and Local Energy Efficiency Action Network. (2014). Financing Energy Improvements on Utility Bills: Market Updates and Key Program Design Considerations for Policymakers and Administrators. Prepared by: Mark Zimring, Greg Leventis, Merrian Borgeson, Peter Thompson, Ian Hoffman and Charles Goldman of Lawrence Berkeley National Laboratory. https://www4.eere.energy.gov/seeaction/system/files/documents/onbill_financing.pdf

As stated above, multiple research documents cited in earlier sections of this work plan indicate that on-bill financing programs typically have very low default rates. Therefore the financial risk to OPALCO is very low. OPALCO will assume that roughly 2% of program participants default on their loans. OPALCO will use a portion of RESP special advance funds to establish a loan loss reserve (LLR) account and use a portion of the loan interest rates to build and maintain an appropriate level as loans are made.

OPALCO is currently working with an attorney to establish legal standards for the program that clearly establish that OPALCO is not responsible for worksite injuries sustained by contractors. (Contractors must be bonded and insured in order to participate in the program.) OPALCO is also working to develop legal documents establishing that contractors—not OPALCO—are solely responsible for defective work.

Preliminary research suggests that it is not legal to attach debt to an electric meter in Washington State—or turn off electricity service for non-payment. OPALCO is continuing to review this issue in more detail, but at this time is prepared to run the program without this form of loan collateral.

Quality Assurance Plan (QAP)

This Quality Assurance Plan takes a high-level perspective on OPALCO's plans for administering energy savings loans. More detailed QA procedures are already in place for the rebates OPALCO offers for residential and commercial building retrofit measures, and are described in the [Energy Efficiency Implementation Manual](#) that is updated semi-annually by BPA. OPALCO will pay attention to communications from BPA and from RUS and update QA practices accordingly.

I. Qualifications of personnel evaluating EE program activities

OPALCO's Energy Services Specialist will serve as the QA Lead for this program, and will lead the monitoring and evaluation of OPALCO's EE program activities.

II. Determination of savings

According to the [US DOE's Uniform Methods Project](#): "Because whole-building retrofits involve the installation of multiple measures, the estimation of the total savings requires a comprehensive method for capturing the combined effect of the installed measures. The general method recommended for this type of program is a kind of consumption data analysis that has traditionally been referred to as a billing analysis—the **analysis of consumption data from utility billing records**. This method, which we will refer to as consumption data analysis in this section, is consistent with the recommended International Performance Measurement and Verification Protocol (IPMVP) Option C, Whole Facility."

OPALCO plans to analyze consumption data from utility billing records in order to evaluate program energy savings.

For those members fuel switching from fossil fuels to electric, electric load will go up slightly, but fossil fuel consumption will go down much more. The net savings can be estimated based on type of heater or car being replaced, and historic usage data.

III. Use of energy audits on building envelope investments

Energy audits will be performed to assess all building envelope efficiency opportunities.

IV. Auditor credentials

Initially these audits will be done by OPALCO's QA Lead and the contract energy auditor, who is BPI certified. As the program grows OPALCO may contract with another BPI-certified auditor.

V. Follow-up audits

OPALCO's QA Lead, plans to initially conduct a visual audit of every single home and business that receives RESP loan funding for an energy efficiency upgrade. Follow-up audits will be conducted

immediately after the upgrade is completed so that contractors can fix possible mistakes prior to receiving payment for the work.

The primary purpose of these audits is ensuring that high quality work is done—but they are also an opportunity to educate and build relationships with participating contractors. The test out audit will provide an opportunity for positive feedback as well as negative feedback.

If the residential program grows quickly, OPALCO may contract with another BPI-certified inspector. OPALCO already has established relationships with two contractors that offer BPI home testing in the service territory. As the program grows, OPALCO may not be able to do an audit for each participating home or business and may conduct a post-audit on a portion of these buildings. The portion will always be at least 10% and will always be conducted within one month of completion of the retrofit project.

Prior to program launch, OPALCO will develop a quality assurance/quality control (QA/QC) scoring rubric so that he evaluates each job in roughly the same manner and offers feedback in a standardized, structured way to contractors.

VI. Credentialed design and installation

OPALCO already has a robust roster of weatherization contractors available to perform whole house upgrades—as well as system upgrades. All contractors serving OPALCO members must have bond and liability insurance and meet other credentials described by the [Washington State Department of Labor and Industries](#).

VII. System performance testing

OPALCO currently requires—as part the Bonneville Power Administration (BPA) energy efficiency rebate rules—that heat pump systems be PTCS-certified. This policy will also be a part of the RESP loan program. If members have a heat pump system installed and do not use a contractor that is PTCS-certified, then the member will need to hire another PCTS-certified contractor to do a PTCS-certification of the system. OPALCO also requires that air sealing is installed by a BPI-certified contractor in order to be eligible for BPA rebate dollars. Any other type of system upgrade will be performance tested to ensure it meets design parameters, if such a test is available and appropriate.

VIII. Management of independent contractors

OPALCO will closely monitor the work of contractors, as described above. Before the launch of the RESP loan program, OPALCO's QA Lead, in consultation with other OPALCO staff and with feedback from the contractor community—will develop a set of corrective action policies for participating contractors. If OPALCO discovers sub-standard work or customer service practices—the issues will be documented and communicated with the contractors. A corrective action plan will be created. Contractors will have the opportunity to get back in good standing with the program by following the corrective action plan. If contractors do not follow the plan—or require corrective action three times—they will be removed from the program.



August 17, 2017

Washington 9 San Juan
Rural Energy Saving Program (RESP) Application

Statement of Underlying Assumptions for 10-Year Financial Forecast

Orcas Power & Light Cooperative (Orcas P&L) has developed its financial forecast, now presented to RUS in support of its Rural Energy Saving Program (RESP) application, based on certain planning documents developed earlier as well as assumptions described in this document. {Please note that resulting figures in the long range financial forecast differ from OPALCO's internal budget documents as, for the sake of this forecast, many assumptions are prescribed by RUS and it is necessary to merge various account groupings in certain cases within the forecast.}

A. **Load Estimates** Projections of kWh used in this financial forecast are based upon the 2017 - 2029 Load Forecast Study (LFS) dated July 2017, which will be approved by Orcas P&L's board on August 17, 2017.

- 1) **Residential** - number of members increases from 13,084 (year-end 2016) or 13,025 (average for 2016) to 14,184 (year-end 2026).

- kWh sales based upon 881 kWh per member per year in 2016 increasing to 924 kWh per month in 2026.
- 2) **Small Commercial**- number of members increases from 2,074 (year-end 2016) or 2,061 (average for 2016) to 2,174 (year-end 2026).

- kWh sales based upon 2,288 kWh per member per year in 2016 increasing to 2,276 kWh per month in 2026.
- 3) **Losses**- projected at 6.5% for future years, compared with an average of 6.42% for years 2014 – 2016.
- 4) **Own System Use**- projected to be held flat at 450,000 kWh for period 2017 – 2026.

B. **Operating Revenue** A retail rate increase was taken most recently effective for the January 2017 billing period, based upon revisions to the energy rate component (with no change in the Facility Rate for all customers, other than Pumps). This rate increase will increase overall revenues by approximately 5%. Revenue for all rate classes are based upon the 2017 budget which recognized this rate increase, with the exception of Public Street & Highway Lighting which was adjusted to more closely reflect anticipated revenues.

The following retail rates were used by member classification:

- 1) Residential- \$.142489 per kWh for 2017 compared with \$.133547 per kWh in 2016. The rates in 2017 are reflected in all future years (2017 – 2026) to determine the extent of needed rate increase above these rates.
- 2) Small Commercial - \$.124515 per kWh for 2017 compared with \$.118629 per kWh in 2016. The rates in 2017 are reflected in all future years (2017 – 2026) to determine the extent of needed rate increase above these rates.
- 3) Public Street & Highway - \$2.32146 per kWh for 2017 compared with \$.82894 per kWh in 2016. The change in the rate between years represents a correction in the tracking and usage profiles of the 6 accounts in the consumer group. The rates in 2017 are reflected in all future years (2017 – 2026) to determine the extent of needed rate increase above these rates.
- 4) Other Operating Revenue - \$594,807 in 2017, compared with \$256,808 in 2014, \$244,007 in 2015, and \$94,218 in 2016. The 2017 budget is utilized to calculate values for all future years along with an additional item not recognized in the budget; i.e. RESP interest paid by OPALCO customers over a ten year period (2.0% interest). Note that 2016 was an outlier, lower than other historical years due to lower collection of disconnect & other fees. The increase in 2017 relates to an increase Green Power Interconnect charges which is anticipated to continue in future years. It should be noted that “Other Operating Revenues” amounts were impacted historically by BPA exchange amounts.

C. Plant Additions

Orcas P&L's most recent four year work plan covers the period 2017-2020, and was approved by the board on December 15, 2016 and is currently under environmental review before final approval by Rodney Peach, RUS GFR. At this time, approved loan funds from three previously approved loans are available for: 1) “AM8” - distribution projects; 2) “AN8” loans - smart grid/fiber facilities which are underway; 3) “AP8” - Lopez-San Juan submarine cable replacement project as well as smaller transmission projects, i.e. Decatur switchyard and several submarine terminal replacements.

- a) Project costs used in the forecast have been reflected prior to deductions for contributions, which are reflected separately. OPALCO's line extension policy collects 100% of the cost of new member connections.
- b) Unusual projects over the 2017 - 2026 forecast period include:
 - 1) Lopez-San Juan 69 kV submarine cable replacement, 2.9 miles, (code 1001), \$15 million of which \$8.925 million remain during 2017-2018 (balance incurred prior to this).
 - 2) Energy Storage System (.5 mW, 2.0 mWh) at Decatur Substation (code 518), total cost \$2.2 million of which \$1.0 million is to be funded from a Washington State Dept. of Commerce (DOC) grant.
 - 3) Smart Grid, fiber-microwave, infrastructure (code 706-3), estimated original total cost \$22,866,000, of which \$6.9 million has been spent prior to this forecast period. {Suggest indicating to what extent total remaining costs for this activity will be incurred during the period 2017-2026. The forecast reflects \$1.7 million}.
- c) General plant requirements are based upon the 2017 budget.

- d) OPALCO began reflecting “Allowance for Funds used during Construction” in December 2014 due to the extended duration required for completion of larger projects. At this time, however, OPALCO is reflecting this as an “Interest Charged to Construction – Credit”, which is reflected in the Statement of Operations “above” the operating line, rather than as a direct reduction of “Long-term interest” expense. In order to recognize this credit in the forecast, it is reflected as a reduction of “A&G & Other” expenses as well as part of plant additions.
- e) Plant retirements are based upon 4.0% of plant additions in 2017, 6% plus an additional \$750,000 for the old Lopez-San Juan submarine cable in 2018, and 10% for subsequent forecast years. This is in line with the amounts of new plant being constructed relative to plant improvements being completed in future years.

D. Operating Expenses-

- 1) Wholesale Power Cost - the current BPA contract extends thru Sept. 30, 2028 and includes a tiered rate structure that guarantees a certain amount of (mostly) hydro power up to a measured ceiling of demand (called “high-water” mark). When loads grow beyond that high-water mark, BPA will purchase power at market rates to meet additional demand. OPALCO is currently operating under BPA’s 2016 Power Rate Schedules and General Rate Schedule Provisions. The proposed BPA wholesale rates are projected to increase: 9% in 2017, 5.2% in 2018, 3.1% in 2019, 2.6% in 2020, 1.3% in 2021, and 4.0% annually thereafter in the forecast.
- 2) Operations & Maintenance Expense - used 2017 budget projected costs for years 2017 - 2021, with an approximate 4.0% trending escalation thereafter.
- 3) Depreciation Expense - used budget projections for 2017 and subsequently estimated to be 3.0% of plant values for years 2018 - 2026. (Actual 2016 was 3.0%)
- 4) Administrative & General and Other Expense - used 2017 budget projections for years 2017 – 2021, with an approximate 4.0% trending escalation thereafter. Note that this expense category was adjusted from 2017 budget projections to address: a) credits for “Interest Charged to Construction – Credit”; b) Rural Energy Saving Program (RESP) implementation expenses.
- 5) Member Accounting, Service, and Sales Expense - used 2017 budget projections for years 2017 - 2021, with an approximate 4.0% trending escalation thereafter.
- 6) Tax Expense - used 2017 budget projections for years 2017 - 2021, with an approximate 4.0% trending escalation thereafter.

E. Non-Operating Items

Non-Operating Margins Interest are tied to interest rates and available general funds levels, as determined in the 2017 budget. The budgeted non-operating margins for 2017-2021 are also reflected. OPALCO has an RUS cushion of credit balance of \$1,701,107 at year-end 2016, which is reduced to \$1.501 M during 2017 and subsequently maintained at that level throughout the remaining forecast period (without being increased or decreased). The 5.0% yield on cushion of credit funds are automatically calculated by the forecast, separate and apart from other non-operating cash margins.

F. Rural Energy Savings Program (RESP)

Total loan funds of \$5.8 million are being requested by OPALCO for financing from RUS. Of this amount, \$5,568,000 is requested for capital funding projects for OPALCO members including heat pump upgrades/replacements, heat pump water heater upgrades/replacements, SMART water heaters, whole house retro-fits, community/residential solar and electric vehicle

charging stations. The remaining \$232,000 requested from RUS would cover initial program implementation costs (estimated at 4%). The financial forecast models RESP costs in the following manner:

- 1) Capital outlays are reflected in “G – Plant”, along with loan funds from RUS financed at 0% interest for a ten year period. Advances from RUS are reflected as “Debt – Other” with level principal payments beginning the year following when loan funds are advanced.
- 2) Initial implementation costs over the first several years are estimated at ~4% of project costs, or \$232,000, at which point the cumulative loan interest will fund operational costs. Loan draws to OPALCO are financed by RUS at 0% interest and repaid in the 10th year with a balloon payment (beyond the forecast period). These costs which are reflected as an “A&G & Other” expense, are reflected on the balance sheet as a ‘negative’ “Other Uses of General Funds” in 2018 when financed by RUS. When repaid in 2028, they will be shown as a ‘positive’ “Other Uses of General Funds”.
- 3) An interest rate of 2.0% will be charged OPALCO members for these RESP loans. The interest component of these loans is reflected as “Other Electric Revenues” on sheet “F- Rev”.
- 4) The repayment of the principal component of RESP loans to OPALCO members is reflected as ‘positive’ “Other Proceeds – Other”, which increases ‘cash’ and decreases ‘other assets’.

G. Capital Credits

Orcas P&L maintains a 25 year rotation cycle for its capital credit retirements within this forecast. It should be noted, however, that with increasingly larger amounts involved in the later part of this forecast, this becomes financially more difficult. Evaluation may be required in future years to reconsider whether a 25 year rotation can be continued when faced with these increasingly larger amounts. Capital credit projected to be retired ranged from a low of \$540,955 in 2017, to a high of \$1,487,158 in 2025 (with an average of \$1,082,224 over the next 10 year period).

H. Financing Assumptions-

Orcas P&L’s prior three FFB guaranteed loans, i.e. “AM8”, “AN8”, and “AP8” were provided for the following: a) “AM8” - financed distribution and AMI facilities in the 2013-2017 work plan but did not finance the transmission facilities and smart grid components identified in this work plan; b) “AN8” - financed the smart grid and fiber components identified in the work plan; c) “AP8” - financed Lopez-San Juan submarine cable replacement project as well as smaller transmission projects. To the extent that loan funds have been advanced to date from these loans, actual interest rates are reflected in the forecast. It should be noted that current FFB long-term fixed interest rates (which are not subject to repricing) for these three loans range from 5.95% to 2.35%. The weighted average FFB interest rate for existing advances from these three loans is 3.42%.

- 1) General funds- a minimum level of 5% of Total Utility Plant (TUP) was maintained during 2017-18, 6% during 2019, 7% during 2020, and 4% thereafter, below which new borrowing was assumed.
- 2) Existing “AM8”, “AN8” and “AP8” unadvanced loan funds are reflected in the forecast as “Prior Guaranteed” on sheet “G – Plant”. As of January 1, 2017, the extent of unadvanced loan funds from these loans were respectively: \$2,678,000, \$20,746,000, and \$10,658,000. It is expected that the “AM8” will be fully advanced prior to its November 1, 2017

termination date. It is expected that no additional “AN8” loan funds will be required prior to its Nov. 1, 2017 termination date. It is expected that the “AP8” loan will be fully advanced by 2018 (with advances of \$6 million in 2017 and \$4,658,000 in 2018). Actual interest rates through December 2016 for the “AM8”, “AN8” and “AP8” loans were reflected in the forecast, but advances in future years for these loans are based upon 5.5% (as prescribed by RUS).

H. TIER, DSC, Equity Ratios

1) TIER - a TIER control of 1.3 was used in years 2017-2026, below which necessary rate increases were reflected. Cumulative retail rate increases totaling 29.05% are required through 2026, based upon an assumed FFB interest rate of 5.5% in the base case forecast (as prescribed by RUS).

2) Equity- declines from its 2016 value of 46.82% to a low of 36.21% in 2026. This is driven by the need for new loan funds in future years, which increases the amount of debt from \$40.2 million at year-end 2016 to a level of \$66.1 million at year-end 2020 and decreasing to \$63.8M at year-end 2026, as well as by maintaining the 25 year cycle for retirement of capital credits, which increase in later forecast years.

Sensitivity Financial Forecast: In addition to the base case financial forecast (which utilized the “medium” growth case from the 2017 - 2029 Load Forecast), a sensitivity forecast has been analyzed utilizing the “low” growth case in the 2017 - 2029 Load Forecast, which is 5% less than the “medium” case. Total kWh purchases under the “medium” and “low” growth cases are as follows:

	(million kWh Purchases)									
	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
Base Case	217.7	219.3	220.9	222.6	224.2	225.8	227.4	229.0	230.6	232.2
Sensitivity	206.8	208.3	209.9	211.4	213.0	214.5	216.0	217.5	219.1	220.6

The impact of these lower projected kWh sales are as follows: Cumulative retail rate increases of 34.16% over the period 2017 through 2026 (rather than 29.05% in the base case). An initial increase in retail rates occurs in the year 2018 in the amount of 2.06%, rather than 3.22% in 2019 in the base case. Equity decreases from a level of 46.82% in 2016 to a low of 34.86% in 2026.

Orcas Power & Light Cooperative

WA 9 San Juan

Base Case for Loan Application- 1.3 TIER in all forecast year; 5% general funds level in 2017 & 2018, escalated to 6% in 2019, 7% in 2020 and reduced to 4% thereafter; 5.5% interest rate on new FFB debt, maintains 25 year cycle for retirement of capital credits; AP8 loan fully drawn in 2018. Load projections based upon updated Load Forecast study dated July 2017; utilizes information in 2017 Budget including rate increase to be taken in January 2017; includes RESP program financial forecast.

Foster Hildreth, Nancy Loomis, Travis Neal, Russell Guerry, Howard Barnes
August 17, 2017

FINANCIAL FORECAST RUS FORM 325A- RATIOS

	FINANCIAL FORECAST				RUS FORM 325A- RATIOS						
	LAST YEAR	FUTURE YEARS									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1. EQUITY RATIO (WITH ADD. REV.) (%)	46.82	44.36	40.93	39.36	36.97	37.06	37.23	37.36	36.94	36.30	36.21
2a. DEBT SERVICE COVERAGE (WITH ADD. REV.)	3.36	3.32	2.42	2.18	2.07	1.99	1.95	1.92	1.91	1.88	1.85
2b. OPERATING DSC (including op. margins + G&T & lender CCs paid)		3.24	2.35	2.13	2.02	1.95	1.92	1.89	1.87	1.85	1.82
3a. TIMES INTEREST EARNED RATIO (WITH ADD. REV.)	3.24	2.85	1.52	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
3b. OPERATING TIER (including op. margins + G&T & lender CCs paid)		2.73	1.42	1.22	1.24	1.25	1.25	1.25	1.25	1.25	1.25
4. AVERAGE REVENUE PER KWH SOLD (CENTS)	12.94	13.77	13.77	14.23	14.92	15.44	15.87	16.31	16.79	17.32	17.87
5. INCREASE IN AVERAGE REVENUE PER KWH SOLD (%)		6.39	0.01	3.30	4.84	3.54	2.77	2.75	2.96	3.18	3.15
6. TOTAL UTILITY PLANT PER KWH SOLD (CENTS)	60.80	65.32	68.58	70.48	73.92	75.44	77.01	78.60	80.27	82.01	83.76
7. NET GENERAL FUNDS TO TOTAL UTILITY PLANT (%)	3.31	2.35	4.14	5.19	6.87	5.94	5.00	3.98	3.99	3.99	3.99
8. ACCUM. PROV. FOR DEP. & AMORT. TO T.U.P. (%)	37.73	35.97	35.99	37.31	37.67	39.29	40.86	42.39	43.86	45.26	46.65
9. OPERATIONS & MAINTENANCE EXP. PER CONSUMER (\$)	331.48	362.70	376.52	396.46	415.26	435.58	449.58	464.05	479.02	494.50	510.51
10. ADMIN. & GEN. EXPENSE PER CONSUMER (\$)	161.69	167.61	200.83	210.42	219.72	229.85	237.93	245.52	253.50	261.90	270.41
11. PLANT REVENUE RATIO	6.83	6.80	7.32	7.28	7.21	7.04	7.04	7.04	7.02	6.98	6.95
12. RATE OF RETURN ON RATE BASE (WITH ADD. REV.) (%)		5.31	3.26	3.15	3.39	3.62	3.55	3.48	3.45	3.49	3.53
13. RATE BASE = 104% OF NET UTILITY PLANT		88,361,615	93,421,789	94,723,298	99,502,345	99,628,610	99,772,753	99,909,383	100,135,132	100,441,653	100,678,479
14. INCREASE OVER PRESENT RETAIL RATES REQUIRED (%)		0.00	0.00	3.22	8.11	11.86	14.89	17.98	21.40	25.18	29.05
15. MODIFIED DSC (FOR RUS USE)		3.30	2.40	2.16	2.05	1.97	1.94	1.91	1.89	1.87	1.84
16. MODIFIED TIER (NET OF G&T & OTHER CAP. CREDITS)		2.82	1.49	1.27	1.28	1.28	1.28	1.28	1.28	1.28	1.28

FINANCIAL FORECAST RUS FORM 325B - PRO FORMA BALANCE SHEET

	FINANCIAL FORECAST				RUS FORM 325B - PRO FORMA BALANCE SHEET						
	LAST YEAR	FUTURE YEARS									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1. ASSETS AND OTHER DEBITS											
a. TOTAL UTILITY PLANT	118,139,667	132,684,947	140,331,577	145,284,977	153,492,077	157,786,377	162,213,377	166,754,177	171,497,777	176,442,277	181,459,427
b. ACCUM. PROVISION FOR DEPREC. & AMORT.	44,569,745	47,721,856	50,502,933	54,204,883	57,816,745	61,989,636	66,278,038	70,687,463	75,213,996	79,863,764	84,653,197
c. NET UTILITY PLANT	73,569,922	84,963,091	89,828,644	91,080,094	95,675,332	95,796,741	95,935,339	96,066,714	96,283,781	96,578,513	96,806,230
d. NET GENERAL FUNDS	3,914,996	3,119,475	5,806,363	7,538,138	10,549,723	9,371,324	8,116,860	6,639,154	6,841,914	7,041,101	7,236,866
e. GENERAL FUNDS EXCLUDABLE ITEMS	558,274	558,274	558,274	558,274	558,274	558,274	558,274	558,274	558,274	558,274	558,274
f. OTHER ASSETS AND DEBITS	5,850,604	5,886,683	5,923,333	5,933,733	5,864,133	5,741,033	5,564,933	5,333,833	5,048,233	4,699,133	4,278,033
g. TOTAL ASSETS AND OTHER DEBITS	83,893,796	94,527,522	102,116,614	105,110,240	112,647,462	111,467,372	110,175,407	108,597,975	108,732,202	108,877,021	108,879,403
2. LIABILITIES AND OTHER CREDITS											
a. TOTAL MARGINS AND EQUITIES	39,277,115	41,932,599	41,794,428	41,371,005	41,643,593	41,314,958	41,019,169	40,568,660	40,163,288	39,523,011	39,424,833
b. LONG TERM DEBT - RUS											
(1). LONG TERM DEBT - 2% & 5%	0	0	0	0	0	0	0	0	0	0	0
(2). LONG TERM DEBT - 5%, MUNI & TREASURY	56,655	29,461	2,266	0	0	0	0	0	0	0	0
(3). LONG TERM DEBT - GUARANTEE	33,913,325	41,865,908	49,279,253	52,084,715	59,087,282	58,039,337	56,887,050	55,671,711	56,095,416	56,751,485	56,866,244
(4). LESS CUSHION OF CREDIT	1,701,107	1,501,107	1,501,107	1,501,107	1,501,107	1,501,107	1,501,107	1,501,107	1,501,107	1,501,107	1,501,107
(5). TOTAL LONG TERM DEBT -RUS	32,268,873	40,394,262	47,780,412	50,583,608	57,586,175	56,538,230	55,385,943	54,170,604	54,594,309	55,250,378	55,365,137
c. LONG TERM DEBT - OTHER	9,055,103	8,907,957	9,017,068	9,630,922	9,892,988	10,089,479	10,245,590	10,334,007	10,449,900	10,578,926	10,564,728
d. CURRENT PORTION OF LONG TERM DEBT	1,092,587	931,238	1,010,951	1,218,366	1,381,455	1,546,176	1,701,721	1,815,910	1,941,982	2,088,491	2,088,491
e. LONG TERM DEBT - TOTAL	40,231,389	48,370,980	55,786,529	58,996,164	66,097,709	65,081,533	63,929,811	62,688,700	63,102,227	63,740,813	63,841,374
f. OTHER LIABILITIES AND CREDITS	4,385,292	4,223,943	4,535,656	4,743,071	4,906,160	5,070,881	5,226,426	5,340,615	5,466,687	5,613,196	5,613,196
g. TOTAL LIABILITIES AND OTHER CREDITS	83,893,796	94,527,523	102,116,614	105,110,240	112,647,462	111,467,372	110,175,407	108,597,975	108,732,202	108,877,021	108,879,403

FINANCIAL FORECAST

RUS FORM 325C - STATEMENT OF OPERATIONS

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1. ACCRUAL BASIS										
a (1). ADDITIONAL REVENUE REQUIREMENTS FOR TIER/EQUITY	0	0	933,701	2,369,512	3,488,268	4,411,781	5,368,915	6,434,771	7,626,849	8,859,653
(2). OPER. REV. & PATRON. CAP. - PRESENT RATES	28,570,204	28,778,878	28,990,528	29,208,256	29,423,002	29,637,694	29,852,616	30,067,470	30,283,317	30,500,099
b. COST OF POWER	9,051,311	9,596,250	9,962,595	10,299,861	10,513,178	11,010,697	11,534,687	12,078,711	12,649,978	13,248,921
c. OPER. REV. LESS COST OF POWER	19,518,893	19,182,628	19,961,634	21,277,907	22,398,092	23,038,779	23,686,844	24,423,529	25,260,188	26,110,831
d. OPERATIONS & MAINTENANCE EXPENSE	5,543,533	5,799,914	6,154,678	6,496,253	6,866,419	7,141,076	7,426,719	7,723,788	8,032,739	8,354,049
e. CONSUMER ACCOUNTS AND SALES EXPENSE	1,695,736	1,744,465	1,844,012	1,940,268	2,052,693	2,134,801	2,220,193	2,309,000	2,401,360	2,497,415
f. ADM. & GEN. & OTHER DEDUCTIONS EXPENSE	2,561,709	3,093,545	3,266,614	3,437,313	3,623,289	3,779,207	3,929,335	4,087,473	4,254,364	4,424,912
g. DEPRECIATION AND AMORTIZATION EXPENSE	3,801,831	4,209,947	4,358,549	4,604,762	4,733,591	4,866,401	5,002,625	5,144,933	5,293,268	5,443,783
h. TAX EXPENSE	1,220,252	1,285,844	1,355,143	1,431,060	1,511,317	1,571,770	1,634,640	1,700,026	1,768,027	1,838,748
i. INTEREST EXPENSE	1,724,785	2,156,460	2,447,497	2,726,883	2,900,133	2,849,934	2,794,401	2,782,846	2,822,938	2,854,857
j. TOTAL COST OF ELECTRIC SERVICE	25,599,158	27,886,426	29,389,089	30,936,400	32,200,620	33,353,885	34,542,600	35,826,777	37,222,675	38,662,685
k. PATRONAGE CAPITAL & OPERATING MARGINS	2,971,046	892,452	535,140	641,368	710,650	695,590	678,930	675,464	687,491	697,067
l. NON-OPERATING MARGINS	160,591	162,421	134,307	111,895	94,588	94,588	94,588	94,588	94,588	94,588
m. G&T AND OTHER CAPITAL CREDITS (CFC CTC's)	64,802	64,802	64,802	64,802	64,802	64,802	64,802	64,802	64,802	64,802
n. TOTAL ACCRUAL MARGINS	3,196,439	1,119,675	734,249	818,065	870,040	854,980	838,320	834,854	846,881	856,457
2. CASH BASIS										
a. CASH FROM OPERATIONS BEFORE DEBT SERVICE	8,658,254	7,421,281	7,475,494	8,084,908	8,438,962	8,506,514	8,570,545	8,697,831	8,898,286	9,090,296
b. TOTAL DEBT SERVICE	2,624,543	3,087,698	3,458,449	3,945,248	4,281,587	4,396,110	4,496,122	4,598,756	4,764,920	4,943,349
c. CASH MARGINS AFTER DEBT SERVICE	6,033,711	4,333,583	4,017,046	4,139,660	4,157,375	4,110,403	4,074,423	4,099,075	4,133,366	4,146,947

FINANCIAL FORECAST

RUS FORM 325D - GENERAL FUNDS SUMMARY

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1. SOURCES OF GENERAL FUNDS										
a. NET GENERAL FUNDS BEGINNING OF YEAR	3,914,996	3,119,475	5,806,363	7,538,138	10,549,723	9,371,324	8,116,860	6,639,154	6,841,914	7,041,101
b. CASH MARGINS AFTER DEBT SERVICE	6,033,711	4,333,583	4,017,046	4,139,660	4,157,375	4,110,403	4,074,423	4,099,075	4,133,366	4,146,947
c. OTHER PROCEEDS	28,723	28,152	54,402	134,402	187,902	240,902	295,902	350,402	413,902	485,902
d. SALE OF EXCLUDABLE ITEMS	0	0	0	0	0	0	0	0	0	0
e. REIMBURSEMENT FROM PRIORITY LOAN FUNDS	1,000,000	500,000	0	0	0	0	0	0	0	0
f. REIMBURSEMENT FROM SPECIAL LOANS (NON-PRIORITY)	0	0	0	0	0	0	0	0	0	0
g. USES OF CUSHION OF CREDIT ACCOUNT	200,000	0	0	0	0	0	0	0	0	0
2. TOTAL GENERAL FUNDS AVAILABLE	11,177,430	7,981,209	9,877,810	11,812,200	14,894,999	13,722,629	12,487,185	11,088,630	11,389,181	11,673,950
3. PROPOSED USE OF GENERAL FUNDS										
a. PURCHASE OF EXCLUDABLE ITEMS	0	0	0	0	0	0	0	0	0	0
b. CAPITAL CREDIT RETIREMENTS	540,955	1,257,846	1,157,672	545,477	1,198,675	1,150,769	1,288,830	1,240,225	1,487,158	954,636
c. GENERAL FUNDS INVESTED IN PLANT	7,517,000	1,149,000	1,182,000	717,000	4,325,000	4,455,000	4,559,201	3,006,492	2,860,922	3,482,448
d. OTHER USES OF GENERAL FUNDS	0	(232,000)	0	0	0	0	0	0	0	0
e. ADDITIONS TO CUSHION OF CREDIT ACCOUNT	0	0	0	0	0	0	0	0	0	0
f. ADDITIONAL PRINCIPAL PAYMENTS	0	0	0	0	0	0	0	0	0	0
4. TOTAL PROPOSED USES OF GENERAL FUNDS	8,057,955	2,174,846	2,339,672	1,262,477	5,523,675	5,605,769	5,848,031	4,246,717	4,348,080	4,437,084
5. NET GENERAL FUNDS - END OF YEAR	3,119,475	5,806,363	7,538,138	10,549,723	9,371,324	8,116,860	6,639,154	6,841,914	7,041,101	7,236,866

Orcas Power & Light Cooperative

WA 9 San Juan

Sensitivity Case for Loan Application - all assumptions in Base Case forecast have been utilized with the exception of 5% lower kWh purchases for the years 2017 – 2026

Foster Hildreth, Nancy Loomis, Travis Neal, Russell Guerry, Howard Barnes
August 17, 2017

FINANCIAL FORECAST RUS FORM 325A- RATIOS

LAST YEAR	FUTURE YEARS										
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1. EQUITY RATIO (WITH ADD. REV.) (%)	46.82	43.50	39.84	38.28	35.94	36.03	36.18	35.96	35.56	34.94	34.86
2a. DEBT SERVICE COVERAGE (WITH ADD. REV.)	3.36	2.92	2.27	2.18	2.07	1.99	1.95	1.92	1.90	1.87	1.84
2b. OPERATING DSC (including op. margins + G&T & lender CCs paid)		2.84	2.20	2.13	2.02	1.95	1.92	1.88	1.87	1.84	1.81
3a. TIMES INTEREST EARNED RATIO (WITH ADD. REV.)	3.24	2.24	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
3b. OPERATING TIER (including op. margins + G&T & lender CCs paid)		2.12	1.20	1.22	1.24	1.25	1.25	1.25	1.25	1.25	1.25
4. AVERAGE REVENUE PER KWH SOLD (CENTS)	12.94	13.70	13.99	14.71	15.42	15.98	16.42	16.88	17.40	17.95	18.51
5. INCREASE IN AVERAGE REVENUE PER KWH SOLD (%)		5.85	2.12	5.10	4.89	3.58	2.75	2.85	3.04	3.16	3.13
6. TOTAL UTILITY PLANT PER KWH SOLD (CENTS)	60.80	68.76	72.19	74.20	77.82	79.42	81.07	82.75	84.51	86.34	88.18
7. NET GENERAL FUNDS TO TOTAL UTILITY PLANT (%)	3.31	1.94	3.41	4.49	6.21	5.29	4.37	3.99	3.99	3.99	3.99
8. ACCUM. PROV. FOR DEP. & AMORT. TO T.U.P. (%)	37.73	35.97	35.99	37.31	37.67	39.29	40.86	42.39	43.86	45.26	46.65
9. OPERATIONS & MAINTENANCE EXP. PER CONSUMER (\$)	331.48	362.70	376.52	396.46	415.26	435.58	449.58	464.05	479.02	494.50	510.51
10. ADMIN. & GEN. EXPENSE PER CONSUMER (\$)	161.69	167.61	200.83	210.42	219.72	229.85	237.93	245.52	253.50	261.90	270.41
11. PLANT REVENUE RATIO	6.83	7.18	7.50	7.28	7.21	7.04	7.04	7.03	7.00	6.97	6.93
12. RATE OF RETURN ON RATE BASE (WITH ADD. REV.) (%)		4.13	2.76	3.15	3.39	3.62	3.55	3.51	3.53	3.57	3.60
13. RATE BASE = 104% OF NET UTILITY PLANT		88,361,615	93,421,789	94,723,298	99,502,345	99,628,610	99,772,753	99,909,383	100,135,132	100,441,653	100,678,479
14. INCREASE OVER PRESENT RETAIL RATES REQUIRED (%)		0.00	2.06	7.14	12.25	16.18	19.30	22.62	26.27	30.17	34.16
15. MODIFIED DSC (FOR RUS USE)		2.90	2.25	2.16	2.05	1.97	1.94	1.90	1.88	1.86	1.83
16. MODIFIED TIER (NET OF G&T & OTHER CAP. CREDITS)		2.21	1.27	1.27	1.28	1.28	1.28	1.28	1.28	1.28	1.28

FINANCIAL FORECAST RUS FORM 325B - PRO FORMA BALANCE SHEET

LAST YEAR	FUTURE YEARS										
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1. ASSETS AND OTHER DEBITS											
a. TOTAL UTILITY PLANT	118,139,667	132,684,947	140,331,577	145,284,977	153,492,077	157,786,377	162,213,377	166,754,177	171,497,777	176,442,277	181,459,427
b. ACCUM. PROVISION FOR DEPREC. & AMORT.	44,569,745	47,721,856	50,502,933	54,204,883	57,816,745	61,989,636	66,278,038	70,687,463	75,213,996	79,863,764	84,653,197
c. NET UTILITY PLANT	73,569,922	84,963,091	89,828,644	91,080,094	95,675,332	95,796,741	95,935,339	96,066,714	96,283,781	96,578,513	96,806,230
d. NET GENERAL FUNDS	3,914,996	2,570,345	4,784,496	6,516,272	9,527,856	8,349,457	7,094,993	6,647,584	6,841,705	7,041,012	7,236,828
e. GENERAL FUNDS EXCLUDABLE ITEMS	558,274	558,274	558,274	558,274	558,274	558,274	558,274	558,274	558,274	558,274	558,274
f. OTHER ASSETS AND DEBITS	5,850,604	5,886,683	5,923,333	5,933,733	5,864,133	5,741,033	5,564,933	5,333,833	5,048,233	4,699,133	4,278,033
g. TOTAL ASSETS AND OTHER DEBITS	83,893,796	93,978,392	101,094,747	104,088,373	111,625,595	110,445,505	109,153,540	108,606,405	108,731,993	108,876,931	108,879,365
2. LIABILITIES AND OTHER CREDITS											
a. TOTAL MARGINS AND EQUITIES	39,277,115	40,882,362	40,271,454	39,848,032	40,120,619	39,791,984	39,496,195	39,054,116	38,665,397	38,041,456	37,959,329
b. LONG TERM DEBT - RUS											
(1). LONG TERM DEBT - 2% & 5%	0	0	0	0	0	0	0	0	0	0	0
(2). LONG TERM DEBT - 5%, MUNI & TREASURY	56,655	29,461	2,266	0	0	0	0	0	0	0	0
(3). LONG TERM DEBT - GUARANTEE	33,913,325	41,865,908	49,279,253	52,084,715	59,087,282	58,039,337	56,887,050	56,693,578	57,091,991	57,731,844	57,830,603
(4). LESS CUSHION OF CREDIT	1,701,107	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
(5). TOTAL LONG TERM DEBT -RUS	32,268,873	40,895,369	48,281,519	51,084,715	58,087,282	57,039,337	55,887,050	55,693,578	56,091,991	56,731,844	56,830,603
c. LONG TERM DEBT - OTHER	9,055,103	8,907,957	9,017,068	9,630,922	9,892,988	10,089,479	10,245,590	10,334,007	10,449,900	10,578,926	10,564,728
d. CURRENT PORTION OF LONG TERM DEBT	1,092,587	931,238	1,010,951	1,218,366	1,381,455	1,546,176	1,701,721	1,815,910	1,947,360	2,099,941	2,099,941
e. LONG TERM DEBT - TOTAL	40,231,389	48,872,087	56,287,636	59,497,271	66,598,816	65,582,640	64,430,918	64,211,674	64,594,532	65,210,829	65,295,390
f. OTHER LIABILITIES AND CREDITS	4,385,292	4,223,943	4,535,656	4,743,071	4,906,160	5,070,881	5,226,426	5,340,615	5,472,065	5,624,646	5,624,646
f. TOTAL LIABILITIES AND OTHER CREDITS	83,893,796	93,978,393	101,094,747	104,088,373	111,625,595	110,445,505	109,153,540	108,606,405	108,731,993	108,876,931	108,879,365

FINANCIAL FORECAST

RUS FORM 325C - STATEMENT OF OPERATIONS

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1. ACCRUAL BASIS										
a (1). ADDITIONAL REVENUE REQUIREMENTS FOR TIER/EQUITY	0	561,398	1,960,664	3,390,757	4,509,993	5,419,774	6,398,382	7,483,807	8,657,091	9,869,859
(2). OPER. REV. & PATRON. CAP. - PRESENT RATES	27,067,406	27,264,927	27,465,424	27,671,998	27,875,590	28,079,128	28,282,898	28,486,598	28,691,292	28,896,921
b. COST OF POWER	8,598,750	9,116,434	9,464,454	9,784,848	9,987,491	10,460,124	10,957,903	11,474,716	12,017,407	12,586,389
c. OPER. REV. LESS COST OF POWER	18,468,656	18,709,891	19,961,634	21,277,907	22,398,092	23,038,779	23,723,376	24,495,689	25,330,976	26,180,391
d. OPERATIONS & MAINTENANCE EXPENSE	5,543,533	5,799,914	6,154,678	6,496,253	6,866,419	7,141,076	7,426,719	7,723,788	8,032,739	8,354,049
e. CONSUMER ACCOUNTS AND SALES EXPENSE	1,695,736	1,744,465	1,844,012	1,940,268	2,052,693	2,134,801	2,220,193	2,309,000	2,401,360	2,497,415
f. ADM. & GEN. & OTHER DEDUCTIONS EXPENSE	2,561,709	3,093,545	3,266,614	3,437,313	3,623,289	3,779,207	3,929,335	4,087,473	4,254,364	4,424,912
g. DEPRECIATION AND AMORTIZATION EXPENSE	3,801,831	4,209,947	4,358,549	4,604,762	4,733,591	4,866,401	5,002,625	5,144,933	5,293,268	5,443,783
h. TAX EXPENSE	1,220,252	1,285,844	1,355,143	1,431,060	1,511,317	1,571,770	1,634,640	1,700,026	1,768,027	1,838,748
i. INTEREST EXPENSE	1,724,785	2,156,460	2,447,497	2,726,883	2,900,133	2,849,934	2,822,502	2,838,353	2,877,390	2,908,364
j. TOTAL COST OF ELECTRIC SERVICE	25,146,596	27,406,610	28,890,948	30,421,387	31,674,933	32,803,312	33,993,919	35,278,289	36,644,556	38,053,661
k. PATRONAGE CAPITAL & OPERATING MARGINS	1,920,810	419,715	535,140	641,368	710,650	695,590	687,361	692,116	703,827	713,119
l. NON-OPERATING MARGINS	160,591	162,421	134,307	111,895	94,588	94,588	94,588	94,588	94,588	94,588
m. G&T AND OTHER CAPITAL CREDITS (CFC CTC's)	64,802	64,802	64,802	64,802	64,802	64,802	64,802	64,802	64,802	64,802
n. TOTAL ACCRUAL MARGINS	2,146,202	646,938	734,249	818,065	870,040	854,980	846,751	851,506	863,217	872,509
2. CASH BASIS										
a. CASH FROM OPERATIONS BEFORE DEBT SERVICE	7,608,017	6,948,544	7,475,494	8,084,908	8,438,962	8,506,514	8,607,077	8,769,990	8,969,074	9,159,855
b. TOTAL DEBT SERVICE	2,624,543	3,087,698	3,458,449	3,945,248	4,281,587	4,396,110	4,524,224	4,654,263	4,824,749	5,008,306
c. CASH MARGINS AFTER DEBT SERVICE	4,983,474	3,860,846	4,017,046	4,139,660	4,157,375	4,110,403	4,082,853	4,115,727	4,144,324	4,151,549

FINANCIAL FORECAST

RUS FORM 325D - GENERAL FUNDS SUMMARY

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1. SOURCES OF GENERAL FUNDS										
a. NET GENERAL FUNDS BEGINNING OF YEAR	3,914,996	2,570,345	4,784,496	6,516,272	9,527,856	8,349,457	7,094,993	6,647,584	6,841,705	7,041,012
b. CASH MARGINS AFTER DEBT SERVICE	4,983,474	3,860,846	4,017,046	4,139,660	4,157,375	4,110,403	4,082,853	4,115,727	4,144,324	4,151,549
c. OTHER PROCEEDS	28,723	28,152	54,402	134,402	187,902	240,902	295,902	350,402	413,902	485,902
d. SALE OF EXCLUDABLE ITEMS	0	0	0	0	0	0	0	0	0	0
e. REIMBURSEMENT FROM PRIORITY LOAN FUNDS	1,000,000	500,000	0	0	0	0	0	0	0	0
f. REIMBURSEMENT FROM SPECIAL LOANS (NON-PRIORITY)	0	0	0	0	0	0	0	0	0	0
g. USES OF CUSHION OF CREDIT ACCOUNT	701,107	0	0	0	0	0	0	0	0	0
2. TOTAL GENERAL FUNDS AVAILABLE	10,628,300	6,959,342	8,855,944	10,790,333	13,873,132	12,700,762	11,473,748	11,113,713	11,399,931	11,678,462
3. PROPOSED USE OF GENERAL FUNDS										
a. PURCHASE OF EXCLUDABLE ITEMS	0	0	0	0	0	0	0	0	0	0
b. CAPITAL CREDIT RETIREMENTS	540,955	1,257,846	1,157,672	545,477	1,198,675	1,150,769	1,288,830	1,240,225	1,487,158	954,636
c. GENERAL FUNDS INVESTED IN PLANT	7,517,000	1,149,000	1,182,000	717,000	4,325,000	4,455,000	3,537,334	3,031,783	2,871,761	3,486,998
d. OTHER USES OF GENERAL FUNDS	0	(232,000)	0	0	0	0	0	0	0	0
e. ADDITIONS TO CUSHION OF CREDIT ACCOUNT	0	0	0	0	0	0	0	0	0	0
f. ADDITIONAL PRINCIPAL PAYMENTS	0	0	0	0	0	0	0	0	0	0
4. TOTAL PROPOSED USES OF GENERAL FUNDS	8,057,955	2,174,846	2,339,672	1,262,477	5,523,675	5,605,769	4,826,164	4,272,008	4,358,919	4,441,634
5. NET GENERAL FUNDS - END OF YEAR	2,570,345	4,784,496	6,516,272	9,527,856	8,349,457	7,094,993	6,647,584	6,841,705	7,041,012	7,236,828