

# San Juan Islands Energy Plan

*Empowering Our Island Community for a Resilient Future*

December 2014

# ACKNOWLEDGEMENTS

The San Juan Islands Energy Plan was developed by Islands Energy and the San Juan Islands Energy Leadership Team, with input from the San Juan Islands community at large. We greatly appreciate the following individuals for their contributions to this plan.

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# INTRODUCTION

*Our mission is to develop a resilient energy system integrated with a vibrant economy and thriving ecosystem.*

As islanders, we have a strong sense of place – a place where majestic orcas roam the waters, where breathtaking views are commonplace, and where the power and strength of community is boundless. Our geographic remoteness increases our awareness of our vulnerabilities, but also contributes to our resourcefulness. We are aware of climate change and ocean acidification and the need for energy resiliency, and we know we must transform how we generate and use energy. This plan addresses these challenges and charts a course of action.

The San Juan Islands Energy Plan is inspired by and developed by the people of San Juan County. This plan was developed through a series of meetings and community activities. This is not a plan that will sit on a shelf – this is a working, living document that will be implemented by multiple parties and revisited and updated as often as needed. We will hold ourselves accountable for achieving results and will evaluate our progress at the end of each year. We will celebrate our successes and work together to overcome our challenges, and in the process we will become more energy efficient and decrease our carbon footprint. Our hope is that we will leave a legacy for future generations, and provide a model for how it can be done.

## OVERARCHING GOALS

### GOAL 1: ENGAGE THE COMMUNITY AND STUDENTS IN ENERGY ISSUES

- Through engagement, collaboration, and transformation we are committed to cultivating a community-wide energy consciousness that strengthens our island economies and improves quality of life.
- Education, communication, and outreach are integral components to engaging the community and students and implementing an energy efficiency and conservation plan. Education is vital to the acceptance and commitment of changing human behavior towards a sustainable community. For the Islands Energy team, efforts began last spring with the three Energy Fairs.
- Planning is underway to develop and implement a robust K-12 and community outreach and education program for 2015 and beyond. These efforts build on and complement OPALCO's existing community partnership, education and outreach, and communication efforts.

### GOAL 2: REDUCE ENERGY WASTE AND USE ENERGY WISELY

- We recognize that the greenest energy is the energy not used. Reducing our energy use and becoming energy efficient decreases our demand and contributes to our resiliency.
- Energy efficiency is a technological approach to using energy more effectively – requiring less energy to perform the same function. Energy conservation is achieved through behavioral changes, using less energy by choosing different actions. Both are included this plan.
- In 2013, OPALCO completed a Conservation Potential Assessment that shows significant energy efficiency potential in the OPALCO service area. Heat pumps, water heating, and retrofits offer the highest potential. Savings can also be achieved through consumer electronics, lighting, new construction, and energy efficient appliances. Compared to other energy sources, these measures are cost effective, environmentally friendly, and easier to implement.
- Whatever our energy future holds, energy efficiency and conservation will be a significant component.

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### GOAL 3: INCREASE LOCAL RENEWABLE ENERGY GENERATION

- We are actively expanding local renewable energy generation and looking at ways to grow this exponentially.
- The Energy Independence Act establishes a renewable portfolio standard (RPS) with renewable energy targets as a percentage of customer load. The targets increase over time, from 3 percent in 2012 to 9 percent in 2016, to 15 percent in 2020. San Juan County, with only 12,000 customers, is not required to meet the EIA targets. Nevertheless, our overall goal is to increase renewable energy generation by 20 percent over the next ten years.
- Programs underway and being considered include community solar, anaerobic digestion, pumped hydro, and tidal wave energy.

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### GOAL 4: REDUCE CARBON FOOTPRINT

- In San Juan County, the vast majority of our electricity comes from Bonneville Power hydroelectric generation, which is a very low carbon energy source. Most homes use electricity for heating, but about 19 percent of homes are heated with propane.
- Our primary transportation modes have a high carbon output. The vast majority of our automobiles burn fossil fuels and our mass transit system consists of a seasonal tourist bus and our daily ferries. Living on islands, we rely heavily on cars, ferries, boats, and airplanes.
- This plan includes strategies to promote electric vehicle use, reduce transport for food and waste products, and promote local food and goods, which also supports the local economy.

### GUIDING PRINCIPLES

- ✦ **Community:** Engage all communities in developing and making decisions related to the development and implementation of the energy plan, and build a broad-based community support for and ownership of local energy solutions.
- ✦ **Commitment:** Set ambitious energy and carbon reduction targets that make a climate difference, and commit resources necessary to achieve the targets.
- ✦ **Respect:** Respect island community diversity through engagement of all demographics, and respect the natural environment through stewardship and conservation.
- ✦ **Resiliency:** Build local energy resiliency and self-reliance by reducing dependency on energy imports through cultivating energy consciousness, improving efficiency of the energy system and consumption patterns, and increasing deployment of local renewable energy resources.
- ✦ **Prosperity:** Create and nurture a vibrant local economy and creation of green jobs through investments in local clean energy, waste reduction, and energy efficiency.
- ✦ **Equity:** Provide equal access to energy by ensuring affordability of essential energy services, and fair and equal treatment of different segments of our community.
- ✦ **Prudence:** Implement measures and programs that reflect industry best practices and demonstrate financial prudence by ensuring all resources are utilized in an efficient and effective manner.
- ✦ **Innovation:** Utilize technological, social, and regulatory innovations and adapt creatively to arrive at solutions that work in our community and serve as a model for others.
- ✦ **Governance:** Foster long-term governance to ensure participation, transparency, and implementation of the Energy Plan.

# ENERGY PROGRAM PLAN

## PROGRAM LEADERSHIP AND PARTNERS

The Leadership Team consists of leaders from San Juan County, San Juan Islands Conservation District, Orcas Power and Light Cooperative (OPALCO), Port of Friday Harbor, Town of Friday Harbor, Economic Development Council, schools, businesses, and community land trusts. Each member is named individually in the acknowledgements section above. Implementation of the Energy Plan and facilitation of Islands Energy and the Leadership Team will be coordinated by the San Juan Islands Conservation District, in collaboration with OPALCO.

## COMMUNITY ENGAGEMENT: ISLANDS ENERGY

The first goal of the energy plan is community and student engagement. We have developed a comprehensive program to engage the community in energy efficiency and waste reduction, understanding that the residential sector is the largest energy user and we have the most to gain in reducing home energy use.

In early 2014, OPALCO signed a Memorandum of Understanding with the San Juan Islands Conservation District to accelerate efforts in the community to expand energy conservation, efficiency, and renewable energy use. OPALCO and San Juan Islands Conservation District convened a series of Energy Roundtables to bring together community stakeholders and encourage collaboration. Collectively, the non-profit entities and individuals that are participating in the on-going roundtable meetings are called Islands Energy.

The Islands Energy team has already collaborated to host three well-attended community Energy Fairs focused on energy savings and are working on a number of other exciting conservation, outreach, and education programs, including a Community Solar for Public Schools program with support from the Bonneville Environmental Foundation. The Community Solar program is aimed at increasing local renewable energy generation in schools and for homes and businesses, as well as educating kids about energy efficiency, conservation, and renewable energy production.

## INNOVATION

We are utilizing tried and true techniques, as well as innovative techniques to reach our audiences and achieve results. One of the most innovative components of our work is the underlying community collaboration. The strength of our plan, and the ability to effectively implement it, lies in the collaborative nature of our team. This seems simple to us, and obvious, but we are constantly reminded by others outside of our community how unique this is.

We have brought together our local electric utility, local governments, schools, non-profits, land trusts, ports, businesses, and the community at large to work together towards our end goals. Innovative components of our plan include our Green Home Network and One Stop Shop. The Green Home Network is a collaborative and highly participatory project consisting of island citizens creating a network of energy aware households that then become community leaders. Through outreach and building awareness and excitement in the community, applications will be solicited and the top projects selected to help create home based models for efficiency. The home 'energy makeover' will be filmed and turned into webinars included in an interactive website. An annual Green Home Tour will also be conducted. This program will create a Green Home map, showcase pilot demonstrations, and much more.

The One Stop Shop is another innovative, collaborative and highly participatory idea. Whereas the Green Home Network creates the informational touch point for community members and a web-based network, the One Stop Shop is its tangible counterpart. The One Stop Shop is a physical location, an empty building in the downtown portion of the islands, which for one week will bring together all aspects of energy efficiency practices, weatherization techniques, and renewable energy options with rebates and incentives and energy efficiency products available for purchase, and serve as an informational hub staffed with experts. This will increase comprehension of these techniques as well as increase accessibility for those who are less web-savvy including a large sector of our island community. In addition, we believe the face-to-face engagement will serve to increase the ‘buzz’ around energy efficiency, and will also be just plain fun.

## **POTENTIAL FOR REPLICATION**

One of the benefits of working in a small isolated community is that it serves as a microcosm. We can utilize our community as a pilot. If we can do it here with our limited resources and limited access, we can certainly do it in larger communities with far more opportunities. We will document all of our activities and provide a how-to guidance document for any community that is interested in replicating our successes.

## **LIKELY FUTURE PERFORMANCE**

We are already seeing success and are enthusiastically building on it. Through our Conservation Potential Assessment, we have identified low hanging fruit as well as more difficult but high potential energy savings opportunities. All of the activities are included in our plan. We have short-term and long-term activities planned, with many becoming annual events and programs. Here are a few examples:

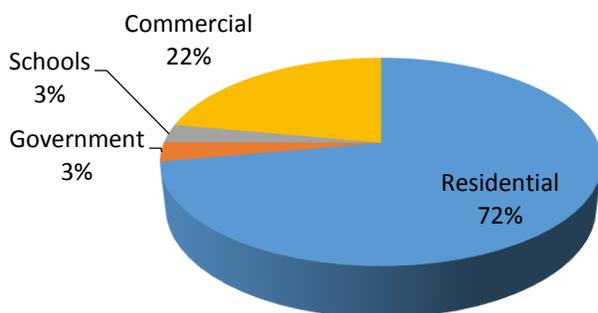
- Our Islands Energy Fairs have taken a life of their own with local businesses seeing first-hand the benefit from increased sales and activities. We anticipate our second annual Fairs in 2015 to double in number of vendors and participants.
- Our Green Home Network will build a community of homeowners that will share information and encourage each other, and their stories will live on our website and be accessible for years to come.
- Our contractor trade school will increase professional capacity in the islands to perform energy audits, build energy efficient homes, and complete weatherization and retrofits.
- Our local utility has already adopted SmartHub, an online tool that tracks daily electricity consumption for each home, business, and municipality.
- Our student engagement and education programs will build awareness and capacity within our community for the next generation to continue our work forward.

# ENERGY PROFILE

## SAN JUAN ISLANDS ENERGY USE 2013

The primary heat source in the San Juan Islands is electricity, followed by wood and propane. This plan addresses electricity and propane reduction in the built environment. The majority of electricity and propane use in the San Juan Islands is in the residential section, at about 72 percent for electricity, and about 60 percent of total BTUs. The commercial sector follows with about 3 percent of the islands electricity use and 18 percent of total BTUs. Schools and government facilities are closely tied at about 3 percent each for electricity use and 2.5 percent for total BTUs.

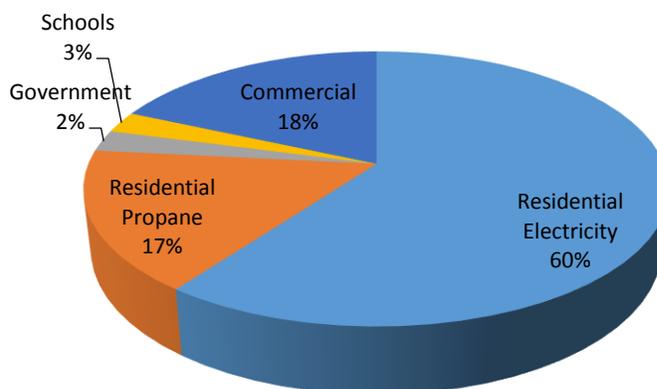
### Total kWh



| Sector       | Total kWh        | % Total        |
|--------------|------------------|----------------|
| Residential  | 154794549        | 72.00%         |
| Government   | 6434493          | 2.99%          |
| Schools      | 6500305          | 3.02%          |
| Commercial   | 47259032         | 21.98%         |
| <b>Total</b> | <b>214988379</b> | <b>100.00%</b> |

| Sector                  | Total MMBtu     | % Total        |
|-------------------------|-----------------|----------------|
| Residential Electricity | 528159          | 60.10%         |
| Residential Propane     | 145187.2        | 16.52%         |
| Government              | 21954.49        | 2.50%          |
| Schools                 | 22179.04        | 2.52%          |
| Commercial              | 161247.8        | 18.35%         |
| <b>Total</b>            | <b>878727.6</b> | <b>100.00%</b> |

### Total Btu



# GOALS AND ACTIONS

## GOAL #1 – ENGAGE THE COMMUNITY AND STUDENTS IN ENERGY ISSUES

### OBJECTIVE 1.A – REACH 50 PERCENT OF STUDENT POPULATION ANNUALLY

#### **STRATEGY 1.A: DEVELOP AND IMPLEMENT K-12 OUTREACH AND EDUCATION PROGRAM**

Our programs for elementary, middle and high schools are focused on energy efficiency, renewable energy, and ecological design.

##### ACTION 1.A.1 – COOL SCHOOL CHALLENGE

Winter 2015 begins with the Cool School Challenge, the students will learn about reducing energy consumption greenhouse gas emissions, and the impact of climate change.

**Action:** Coordinate with teachers on Lopez, Orcas, and San Juan to deliver a month long challenge program.

##### ACTION 1.A.2 – BONNEVILLE ENVIRONMENTAL FOUNDATION ENERGY CURRICULUM

In partnership with Bonneville Environmental Foundation, solar photovoltaic arrays will be installed on each of the four school district buildings through our Solar for Our Schools program. As a part of this program, Bonneville Environmental Foundation will offer teacher training, educational curriculum, and science kits for the students. Activities will include building solar cars, solar cookers and installing data loggers and equipment to monitor the performance of the new solar systems at the schools.

**Action:** Coordinate with teachers on Lopez, Orcas, and San Juan and BEF to encourage and support program.

##### ACTION 1.A.3 – STEM INTERNSHIPS

The STEM Internship program will provide High School students with the opportunity for hands on learning and career exploration in the energy field.

**Action:** Coordinate with local businesses, municipalities, and OPALCO to develop valuable internship opportunities.

##### ACTION 1.A.4 – SUMMER ENERGY CAMP

Summer Energy Camp with local education partners will provide multiple options for learning in partnership with existing programs. For our pilot program the theme will be: “Making electricity.” Students will complete hands on projects that generate electricity.

**Action:** Coordinate with local established organizations to develop summer energy program.

##### ACTION 1.A.5 – OPALCO FIELD TRIPS

OPALCO field trips are a popular and fun way for students to learn about energy.

**Action:** Increase number and frequency of fun and informative OPALCO field trips for all age groups.

**STRATEGY 1.B: DEVELOP AND IMPLEMENT A COMMUNITY OUTREACH AND EDUCATION PROGRAM**

The community program will include a workshop and speaker series, marketing, demonstration projects, Solar Home Tours, Green Home Tours, and annual Energy Fairs. Education and outreach will focus on achievable results.

**ACTION 1.B.1 – SHIFTING PEAK ENERGY USE**

Peak demand or peak load represents the highest point of total customer consumption of electricity within a one-hour period during a month. Peak demand fluctuations may occur at any time. On average, there are two daily peak demand times in San Juan County, usually around 8:30-9:30 AM and again from 6:00-9:00PM. Annual peak demand in San Juan County usually occurs when temperatures are at their lowest and wind speeds are high. A high peak demand can increase electricity costs when it exceeds OPALCO’s peak energy allowance for Bonneville Power pricing.

**Action:** A multi-media outreach program, including text or email alerts, will focus on demand and peak load patterns and will encourage use of water heater timers, programmable thermostats, and in-line surge protectors to reduce peak demand and save money.

**ACTION 1.B.2 – CONTRACTOR TRADE SCHOOL**

Local contractors have identified a need for additional training and have expressed an interest in providing training.

**Action:** Coordinate a series of workshops and trainings for contractors, builders, architects, and students on energy efficiency, weatherization, passive solar techniques, and solar installation in partnership with the Building Performance Center, local experts, and San Juans Economic Development Council.

**ACTION 1.B.3 – COMMUNITY SPEAKER AND FILM SERIES**

The speaker series will provide information on climate change and efforts to move toward a climate resilient community, as well as films on energy efficiency and conservation.

**Action:** Coordinate speaker and film series on all four ferry-served islands.

**ACTION 1.B.4 ISLANDS ENERGY FAIRS**

In spring of 2015, the popular Energy Fairs and Solar Home Tours will return in an expanded format to provide extra resources and draw additional participants.

**Action:** Convene Islands Energy group to coordinate fairs.

**ACTION 1.B.5 ISLANDS ENERGY CHALLENGE**

The annual inter-island Energy Challenge will foster fun, friendly competition that helps raise awareness of energy consumption, and will help create a community movement towards energy resiliency. Individuals, families, and neighborhoods will be recognized for their energy efficiency efforts.

**Action:** Coordinate Islands Energy Challenge for 2015.

#### ACTION 1.B.6 – ONE STOP SHOP

Learning about energy efficiency best practices, weatherization techniques, renewable energy options, and rebates and incentives can seem daunting. Providing all of this information in one location would simplify the energy savings challenge.

**Action:** Create a one-week Islands Energy Store in town or village centers in collaboration with existing businesses, Opportunity Council, and local partners.

#### ACTION 1.B.7 – PHANTOM LOAD REDUCTION

A phantom load is electricity being used by an electronic device that is plugged in but turned off. There are several of these electronic devices in almost every home. Examples of electronic devices that waste energy and cost money when not in use are DVRs, televisions, computers, printers, stereos, dishwashers, and so on. Plugging these devices into a smart power strip can reduce this load.

**Action:** A Smart Power Strip campaign will include advertising for reduced cost smart power strips and an education and outreach campaign about phantom loads.

## GOAL #2 – REDUCE ENERGY WASTE AND USE ENERGY WISELY

### OBJECTIVE 2.A -INCREASE RESIDENTIAL ENERGY EFFICIENCY AND CONSERVATION 20 PERCENT ANNUALLY

#### **STRATEGY 2.A(A): ENCOURAGE ENERGY EFFICIENCY AND CONSERVATION THROUGH INCENTIVES AND TECHNICAL ASSISTANCE**

##### ACTION 2.A.1 – HOME ENERGY EFFICIENCY PROGRAM

**Action:** OPALCO, SJICD, Opportunity Council, Community Land Trusts, Family Resource Centers, and local retailers will partner to provide low cost energy efficient appliances, weatherization materials, and retrofit technical assistance. Components of the program will include:

- Home Energy Audits. Low cost audits will be provided with numerous options to save energy, as depicted in the Energy Pyramid. High energy users who have not taken advantage of existing programs will be targeted.
- OPALCO Rebate Program. OPALCO offers Residential Rebates for appliances, heat pumps, and weatherization through Bonneville Power Administration’s Energy Efficiency Program. Rebates are available for existing homes for installing or upgrading insulation, air sealing with weather stripping and caulking, replacing old windows and sealing leaky duct work. The program promotes the purchase and installation of high-efficiency equipment by providing customers with financial incentives to offset the higher purchase costs of energy-efficient equipment.
- Bulk Purchase Program. Heat pump water heaters use electricity to move heat from one place to another instead of generating heat directly. Therefore, they can be two to three times more energy efficient than conventional electric resistance water heaters. A bulk purchase program and reduced installation cost will be provided in combination with a community workshop.
- Retail Partnership. Local Hardware stores will partner with OPALCO and trade allies to provide reduced cost efficiency lighting and weatherization materials through coupons, bulk purchase pricing, and rebates. Free technical consultation and workshops will also be provided.
- Community workshops will be offered in coordination with local hardware stores to provide instruction on do-it-yourself solar, weatherization, and home energy performance.

##### ACTION 2.A.2 – GREEN HOME NETWORK

**Action:** Launch the Green Home Network. This will include low cost energy audits and technical assistance, as well as a small grant program. We will solicit applications and select the top projects to fund. We will video the projects in progress for our interactive Green Home Network website, and conduct an annual Green Home Tour of their project. We will create a network of energy aware households that become community leaders. This program will:

- Conduct Green Open House Tours
- Create a Green Map
- Showcase pilot and demonstration projects
- Promote Home Energy Labelling in collaboration with local realtors
- Develop a website that provides:
  - How to videos
  - Video tours of green houses.
  - Product review
  - Forum to ask questions and get answers from other homeowners

### ACTION 2.A.3 – GREEN BUSINESS NETWORK

The Green Business Network will recognize business owners for their efforts to create a Green place of work. The program will provide low cost energy audits, technical assistance, and an incentive based program in coordination with the Chamber of Commerce. OPALCO will continue partnership with Clearesult to deliver Energy Smart Grocer and other Commercial retrofit incentive programs.

**Action:** Partner with OPALCO and Chambers of Commerce to coordinate program.

### ACTION 2.A.4 – MARIJUANA GROW OPERATIONS

With the recent legalization of marijuana grow operations in Washington State, San Juan County is facing a unique challenge. Grow operations within the county will utilize a significant amount of electricity.

**Action:** Work with the growers to encourage high efficiency systems and promote off-setting of increased electricity use with contributions to Community Solar installations.

## **STRATEGY 2.A(B): ENCOURAGE ENERGY EFFICIENCY AND CONSERVATION THROUGH POLICY AND PERMITTING CHANGES**

### ACTION 2.A.5 – OPALCO'S TIERED RATE STRUCTURE

OPALCO has conducted an in-depth study on utilizing price signals to reduce energy use and reward efficiency. This plan supports OPALCO's 10-year tiered rate structure that will include time of use and pricing.

**Action:** Continue to monitor tiered rate structure and provide input on effectiveness.

### ACTION 2.A.6 – POLICIES AND PERMITTING

Energy policies and streamlined permitting can provide incentives and reduce barriers for energy retrofitting of older and historic buildings, adopting best practices for new building construction, installing renewable energy, and encouraging retrofits and remodels.

**Action:** Participate in state working groups to improve policies and work with the county to encourage code incentives.

### ACTION 2.A.7 – ON-BILL FINANCING

High upfront costs continue to be one of the significant barriers to energy retrofits and installations. On-bill financing can provide a simplified process to address the financial barrier to investments in energy efficiency.

**Action:** Work with local financial institutions to provide on-bill financing for energy retrofits and installations in partnership with OPALCO.

**STRATEGY 2.B: DEVELOP AND IMPLEMENT ENERGY SAVING FACILITIES AND OPERATIONS PLANS**

**ACTION 2.B.1 – COUNTY BUILDINGS AND OPERATIONS**

The county is committed to reducing energy waste in all municipal buildings and facilities and is exploring the most cost efficient methods to achieve this goal.

**Action:** Conduct a space analysis to inform a capital campus improvement plan and determine feasibility of consolidating departments into one energy efficient building. Conduct an energy audit on buildings not being considered for consolidation and implement recommendations.

**ACTION 2.B.2 – TOWN OF FRIDAY HARBOR**

The town has recently completed an energy audit and is seeking funding to implement energy efficiency measures.

**Action:** Install insulation, LEDs or T-8, heat pumps, lighting sensors, and wastewater treatment plant mixing controls.

**ACTION 2.B.3 – SCHOOL BUILDINGS AND OPERATIONS**

The schools are actively working to reduce energy waste in all buildings and facilities.

**Action:** Seek funding through levies, grants, and low cost loans to implement energy saving plans that includes insulation, heat pumps, and lighting.

**ACTION 2.B.4 – PORT BUILDINGS AND OPERATIONS**

The ports are committed to reducing energy waste in all port buildings and facilities.

**Action:** Conduct energy audits and develop capital facilities plan to include energy efficiency and conservation goals and actions. Seek grant and low cost funding opportunities to implement plans.

## GOAL #3 – INCREASE LOCAL RENEWABLE ENERGY GENERATION

### OBJECTIVE 3.A – INCREASE RENEWABLE ENERGY PORTFOLIO 5 PERCENT ANNUALLY

#### **STRATEGY 3.A(A): PROMOTE LARGE-SCALE RENEWABLE ENERGY FACILITIES**

##### ACTION 3.A.1 – COMMUNITY SOLAR PROGRAM

San Juan Islands receives approximately 240 days of sunshine each year, making it an ideal location for passive solar and solar photovoltaic investment. This year the Islands Energy team launched the first Community Solar project in the San Juans in collaboration with the local school districts and OPALCO, with installation anticipated for early 2015. A second and larger Community Solar project is planned to launch in spring of 2015 that will include virtual net metering.

**Action:** Complete and implement plan for 2015 Community Solar project.

##### ACTION 3.A.2 – LOCAL PUMPED HYDRO FEASIBILITY STUDY

The variation in elevation between Mountain Lake and Cascade Lake on Orcas Island in combination with a solar array provides for an ideal power generating system that can smooth out daily and seasonal variations. This could supply up to 10 percent of San Juan County's total power. A man-made system with greater elevation gain has the potential to supply even more power.

**Action:** Complete a feasibility study to evaluate a pumped hydro system with existing or man-made reservoirs.

##### ACTION 3.A.3 – LOCAL TIDAL-KINETIC FEASIBILITY STUDY

Offshore wave energy converters use the motion of waves to generate electricity. This technology operates in water depths greater than 50m and is typically installed 2-10km from the coast. One machine is rated at 750kW and will provide sufficient power to meet the annual electricity demand of approximately 500 homes.

**Action:** Conduct a feasibility study to evaluate tidal-kinetic technology.

##### ACTION 3.A.4 – UTILITY SCALE WIND FEASIBILITY STUDY

Economic costs of wind generation are decreasing and although most of the county is considered a Class 2 wind resource area, there are areas where wind could provide an excellent winter energy source.

**Action:** Conduct a feasibility study to evaluate the costs and benefits of a utility scale wind installation.

##### ACTION 3.A.5 – BIOMASS CONVERSION FEASIBILITY STUDY

**Action:** Conduct a feasibility study to evaluate the costs and benefits of gasification and incineration technology.

#### **STRATEGY 3.A(B): PROMOTE MUNICIPAL AND RESIDENTIAL RENEWABLE ENERGY GENERATION**

##### ACTION 3.A.6 – MEMBER OWNED RENEWABLE ENERGY PROGRAM

OPALCO's Member Owned Renewable Energy (MORE) program currently has more than 160 members generating renewable energy tied to OPALCO's grid. OPALCO members can also participate in the MORE program by buying green power blocks on their monthly bill that go toward supporting local, member-owned renewable energy generation such as solar, wind and micro-hydro power.

**Action:** Increase the number of MORE contributors through incentives and outreach to support the growth of this program and seek sustainable funding for incentives.

## GOAL #4 – REDUCE CARBON FOOTPRINT

### OBJECTIVE 4.A – DECREASE CARBON EMISSIONS 5 PERCENT ANNUALLY

#### **STRATEGY 4.A: GAIN COMPREHENSIVE UNDERSTANDING OF CARBON EMISSIONS**

##### ACTION 4.A.1 – CARBON EMISSION PROFILE

Completing a comprehensive carbon emission profile for the county will help us to target actions.

**Action:** Complete carbon emission profile for the county.

#### **STRATEGY 4.B: ENCOURAGE ALTERNATIVE TRANSPORTATION USE THROUGH INFRASTRUCTURE, POLICY, AND INCENTIVES**

##### ACTION 4.B.1 – INSTALL EV CHARGING STATIONS IN STRATEGIC LOCATIONS

Increasing EV infrastructure will encourage EV use in the islands. Innovative solar charging stations and solar net metering will be encouraged in EV upgrades. Consider EV charging stations at ferry terminals, airports, and marinas.

**Action:** Identify and apply for EV charging station grant funding.

##### ACTION 4.B.2 – MUNICIPAL TRANSPORTATION OPTIONS

**Action:** Encourage EV policy in municipal vehicle replacement plans

##### ACTION 4.B.3 – RIDE SHARING

**Action:** Initiate an internet based ride-sharing program.

### OBJECTIVE 4.C – CONVERT 10 PERCENT OF LOW INCOME HOUSING FROM PROPANE TO HEAT PUMPS

#### **STRATEGY 4.C: ADDRESS LOW INCOME HEATING NEEDS**

##### ACTION 4.C.1 – AFFORDABLE HOUSING HEATING PROGRAM

This program will seek funding to convert low income housing units from propane to heat pumps for space heating and water heating, working in partnership with Homes for Islanders, Home Trust, and the Washington State Housing Trust Fund.

**Action:** Coordinate with local and state partners to develop Affordable Housing Heating Program.

**STRATEGY 4.D(A): UTILIZE WASTE AS A RESOURCE**

**ACTION 4.D.1 – ANAEROBIC DIGESTER FEASIBILITY STUDY**

Evaluate the economic feasibility of conversion of waste materials including food, treated sewage, noxious weeds, wood, and other agricultural wastes to electricity for use by our electric utility, as well as the cost savings of removing these materials from the waste stream.

**Action:** Complete a feasibility study and business plan to use anaerobic digestion to reduce solid wastes and produce renewable energy.

**ACTION 4.D.2 – REUSE, REPURPOSE, RECYCLE PROGRAM**

Reduce material throughput and lengthen the life of consumable products.

**Action:** Collaborate with Solid Waste Alternative Project on Lopez and Orcas Exchange to promote reuse, repurpose, recycle. Incorporate reuse, repurpose, recycle concept in energy outreach, education activities, such as the annual Energy Fairs. Work with solid waste facilities and hardware stores to develop a re-build center that does deconstruction as well as offer sales of reuse materials.

**STRATEGY 4.D(B): REDUCE CARBON THROUGH LOCAL AGRICULTURE**

**ACTION 4.D.3 – EAT LOCAL AND EAT YOUR VEGIES**

Eating local means generally eating fresher and organic foods, which is healthier and reduces carbon emissions from transportation. Eating more vegetables and less meat is also a healthier diet for our bodies and our planet. If we feed plants to animals, and then eat the animals, we use more resources and produce more greenhouse gases than if we simply eat the plants. Beef, in particular, has the highest environmental cost of most food, with lamb coming in second. Pork and poultry have better scores and vegetables generally have the lowest.

**Action:** Provide information through outreach and education efforts about the environmental cost of food and promote healthy balanced diets rich in plant foods.

**ACTION 4.D.4 – INTEGRATE CARBON FARMING IN FARM PLANNING PROCESS**

Include carbon farm plans in natural resource planning to promote no and low till farming, use of biochar, and mob grazing of livestock to promote carbon sequestration.

**Action:** Develop carbon farming technical document and integrate in existing planning process.

# IMPLEMENTATION STRATEGY

| Goals·Objectives·Strategies·Actions |   | Implementers          | Estimated Cost | Funding Need  | Timeline |    |    |    |    |    |    |    |  |
|-------------------------------------|---|-----------------------|----------------|---------------|----------|----|----|----|----|----|----|----|--|
|                                     |   |                       |                |               | Q1       | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |  |
| <b>Goal 1.0</b>                     | <b>Engage the Community and Students in Energy Issues</b>                     |                       |                |               |          |    |    |    |    |    |    |    |  |
| <b>Objective 1.A</b>                | <i>Reach 50% of student population annually</i>                               |                       |                |               |          |    |    |    |    |    |    |    |  |
| <b>Strategy 1.A(a)</b>              | <i>Develop and implement an education and outreach strategy for K-12</i>      |                       |                |               |          |    |    |    |    |    |    |    |  |
| <b>Action 1.A.1</b>                 | Cool School Challenge   | <b>SJICD</b>          | <b>12,000</b>  | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 1.A.2</b>                 | BEF Energy Curriculum   | <b>BEF</b>            | <b>10,000</b>  | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 1.A.3</b>                 | STEM Internships  | <b>SJICD</b>          | <b>5,000</b>   | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 1.A.4</b>                 | Summer Energy Camp  | <b>SJICD</b>          | <b>2,500</b>   | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 1.A.4</b>                 | OPALCO Field Trips  | <b>OPALCO</b>         | <b>1,000</b>   | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Objective 1.B</b>                | <i>Reach 20% of adult population annually</i>                                 |                       |                |               |          |    |    |    |    |    |    |    |  |
| <b>Strategy 1.B(a)</b>              | <i>Develop and implement an education and outreach strategy for community</i> |                       |                |               |          |    |    |    |    |    |    |    |  |
| <b>Action 1.B.1</b>                 | Peak Load Reduction   | <b>OPALCO</b>         | <b>10,000</b>  | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 1.B.2</b>                 | Contractor Trade School   | <b>SJICD</b>          | <b>5,000</b>   | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 1.B.3</b>                 | Community Speaker and Film Series   | <b>SJICD</b>          | <b>5,000</b>   | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 1.B.4</b>                 | Islands Energy Fairs  | <b>Islands Energy</b> | <b>12,000</b>  | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 1.B.5</b>                 | Islands Energy Challenge  | <b>Islands Energy</b> | <b>7,500</b>   | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 1.B.6</b>                 | One Stop Shop   | <b>Islands Energy</b> | <b>15,000</b>  | <b>10,000</b> |          |    |    |    |    |    |    |    |  |
| <b>Action 1.B.7</b>                 | Phantom Load Reduction  | <b>SJICD</b>          | <b>5,000</b>   | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Subtotal</b>                     |   |                       | <b>90,000</b>  | <b>10,000</b> |          |    |    |    |    |    |    |    |  |

| Goals·Objectives·Strategies·Actions |   | Implementers          | Estimated Cost | Funding Need  | Timeline |    |    |    |    |    |    |    |  |
|-------------------------------------|---|-----------------------|----------------|---------------|----------|----|----|----|----|----|----|----|--|
|                                     |   |                       |                |               | Q1       | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |  |
| <b>Goal 2.0</b>                     | <b>Increase Efficiency and Use Energy Wisely</b>                                    |                       |                |               |          |    |    |    |    |    |    |    |  |
| <b>Objective 2.A</b>                | <i>Increase residential EE&amp;C 20% annually</i>                                   |                       |                |               |          |    |    |    |    |    |    |    |  |
| <b>Strategy 2.A(a)</b>              | <i>Encourage EE&amp;C through incentives, rebates, and technical assistance.</i>    |                       |                |               |          |    |    |    |    |    |    |    |  |
| <b>Action 2.A.1</b>                 | Home Energy Efficiency Program  | <b>Islands Energy</b> | <b>25,000</b>  | <b>10,000</b> |          |    |    |    |    |    |    |    |  |
| <b>Action 2.A.2</b>                 | Green Home Network  | <b>Islands Energy</b> | <b>40,000</b>  | <b>20,000</b> |          |    |    |    |    |    |    |    |  |
| <b>Action 2.A.3</b>                 | Green Business Network  | <b>Islands Energy</b> | <b>2,500</b>   | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 2.A.4</b>                 | Marijuana Grow Operations   | <b>SJICD</b>          | <b>1,000</b>   | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Strategy 2.A(b)</b>              | <i>Increase EE&amp;C 10% annually through policy and permitting changes.</i>        |                       |                |               |          |    |    |    |    |    |    |    |  |
| <b>Action 2.A.5</b>                 | OPALCO's Tiered Rate Structure  | <b>OPALCO</b>         | <b>500</b>     | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 2.A.6</b>                 | Policies and Permitting   | <b>SJICD</b>          | <b>7,500</b>   | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Action 2.A.7</b>                 | On-Bill Financing   | <b>OPALCO</b>         | <b>5,000</b>   | <b>0</b>      |          |    |    |    |    |    |    |    |  |
| <b>Objective 2.B</b>                | <i>Increase municipal EE&amp;C 20% annually</i>                                     |                       |                |               |          |    |    |    |    |    |    |    |  |
| <b>Strategy 2.B(a)</b>              | <i>Develop and implement energy savings capital facilities and operations plans</i> |                       |                |               |          |    |    |    |    |    |    |    |  |
| <b>Action 2.B.1</b>                 | County buildings and operations   | <b>County</b>         | <b>TBD</b>     | <b>TBD</b>    |          |    |    |    |    |    |    |    |  |
| <b>Action 2.B.2</b>                 | Town of Friday Harbor   | <b>Town</b>           | <b>TBD</b>     | <b>TBD</b>    |          |    |    |    |    |    |    |    |  |
| <b>Action 2.B.3</b>                 | School buildings and operations   | <b>Schools</b>        | <b>TBD</b>     | <b>TBD</b>    |          |    |    |    |    |    |    |    |  |
| <b>Action 2.B.4</b>                 | Port buildings and operations   | <b>Ports</b>          | <b>TBD</b>     | <b>TBD</b>    |          |    |    |    |    |    |    |    |  |
| <b>Subtotal</b>                     |   |                       | <b>81,500</b>  | <b>30,000</b> |          |    |    |    |    |    |    |    |  |

*The greenest energy is the energy not used.*

| Goals·Objectives·Strategies·Actions |  | Implementers  | Estimated Cost | Funding Need   | Timeline |    |    |    |    |    |    |    |  |
|-------------------------------------|--|---------------|----------------|----------------|----------|----|----|----|----|----|----|----|--|
|                                     |  |               |                |                | Q1       | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |  |
| <b>Goal 3.0</b>                     | <b>Increase Renewable Energy</b>                                     |               |                |                |          |    |    |    |    |    |    |    |  |
| <b>Objective 3.A</b>                | <i>Increase renewable energy portfolio 5% annually</i>               |               |                |                |          |    |    |    |    |    |    |    |  |
| <b>Strategy 3.A(a)</b>              | <i>Promote large-scale renewable energy facilities</i>               |               |                |                |          |    |    |    |    |    |    |    |  |
| <b>Action 3.A.1</b>                 | Community Solar Program  | <b>SJICD</b>  | <b>TBD</b>     | <b>TBD</b>     |          |    |    |    |    |    |    |    |  |
| <b>Action 3.A.2</b>                 | Local Pumped Hydro Feasibility Study                                 | <b>OPALCO</b> | <b>50,000</b>  | <b>50,000</b>  |          |    |    |    |    |    |    |    |  |
| <b>Action 3.A.3</b>                 | Local Tidal-Kinetic Feasibility Study                                | <b>OPALCO</b> | <b>100,000</b> | <b>100,000</b> |          |    |    |    |    |    |    |    |  |
| <b>Action 3.A.4</b>                 | Utility Scale Wind Feasibility Study                                 | <b>OPALCO</b> | <b>50,000</b>  | <b>50,000</b>  |          |    |    |    |    |    |    |    |  |
| <b>Action 3.A.5</b>                 | Biomass Conversion Feasibility Study                                 | <b>SJICD</b>  | <b>40,000</b>  | <b>40,000</b>  |          |    |    |    |    |    |    |    |  |
| <b>Strategy 3.A(b)</b>              | <i>Promote municipal and residential renewable energy generation</i> |               |                |                |          |    |    |    |    |    |    |    |  |
| <b>Action 3.A.6</b>                 | MORE Support and Outreach  | <b>SJICD</b>  | <b>20,000</b>  | <b>0</b>       |          |    |    |    |    |    |    |    |  |
| <b>Subtotal</b>                     |  |               | <b>260,000</b> | <b>240,000</b> |          |    |    |    |    |    |    |    |  |



*The San Juan Islands community is committed to increasing locally generated renewable energy.*

| Goals·Objectives·Strategies·Actions |   | Implementers             | Estimated Cost | Funding Need   | Timeline |    |    |    |    |    |    |    |  |
|-------------------------------------|---|--------------------------|----------------|----------------|----------|----|----|----|----|----|----|----|--|
|                                     |   |                          |                |                | Q1       | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |  |
| <b>Goal 4.0</b>                     | <b>Reduce Carbon Footprint</b>  |                          |                |                |          |    |    |    |    |    |    |    |  |
| <b>Objective 4.A</b>                | <i>Decrease carbon emissions 5% annually</i>                                      |                          |                |                |          |    |    |    |    |    |    |    |  |
| <b>Strategy 4.A</b>                 | <i>Gain comprehensive understanding of carbon emissions</i>                       |                          |                |                |          |    |    |    |    |    |    |    |  |
| <b>Action 4.A.1</b>                 | Complete carbon emission profile  | <b>SJICD</b>             | <b>5,000</b>   | <b>0</b>       |          |    |    |    |    |    |    |    |  |
| <b>Strategy 4.B</b>                 | <i>Encourage alternative transportation use through infrastructure and policy</i> |                          |                |                |          |    |    |    |    |    |    |    |  |
| <b>Action 4.B.1</b>                 | Install EV Charging Stations  | <b>SJICD</b>             | <b>10,000</b>  | <b>0</b>       |          |    |    |    |    |    |    |    |  |
| <b>Action 4.B.2</b>                 | Municipal Transportation Options  | <b>SJICD</b>             | <b>2,500</b>   | <b>0</b>       |          |    |    |    |    |    |    |    |  |
| <b>Action 4.B.3</b>                 | Ride Sharing  | <b>SJICD</b>             | <b>2,500</b>   | <b>0</b>       |          |    |    |    |    |    |    |    |  |
| <b>Objective 4.C</b>                | <i>Convert 10% of low income housing from propane to heat pumps</i>               |                          |                |                |          |    |    |    |    |    |    |    |  |
| <b>Strategy 4.C</b>                 | <i>Address Low Income Heating Needs</i>   |                          |                |                |          |    |    |    |    |    |    |    |  |
| <b>Action 4.C.1</b>                 | Affordable Housing Heating Program  | <b>SJICD</b>             | <b>100,000</b> | <b>80,000</b>  |          |    |    |    |    |    |    |    |  |
| <b>Objective 4.D</b>                | <i>Reduce transportation of waste and food 5% annually.</i>                       |                          |                |                |          |    |    |    |    |    |    |    |  |
| <b>Strategy 4.D(a)</b>              | <i>Utilize waste as a resource</i>  |                          |                |                |          |    |    |    |    |    |    |    |  |
| <b>Action 4.D.1</b>                 | Anaerobic Digester Feasibility Program  | <b>SJICD</b>             | <b>TBD</b>     | <b>TBD</b>     |          |    |    |    |    |    |    |    |  |
| <b>Action 4.D.2</b>                 | Reuse, Repurpose, Recycle program   | <b>Transfer Stations</b> | <b>TBD</b>     | <b>TBD</b>     |          |    |    |    |    |    |    |    |  |
| <b>Strategy 4.D(b)</b>              | <i>Reduce Carbon through Local Agriculture</i>                                    |                          |                |                |          |    |    |    |    |    |    |    |  |
| <b>Action 4.D.3</b>                 | Eat Local and Eat Your Veggies  | <b>SJICD</b>             | <b>1,000</b>   | <b>0</b>       |          |    |    |    |    |    |    |    |  |
| <b>Action 4.D.4</b>                 | Integrate Carbon Farming Planning Process   | <b>SJICD</b>             | <b>10,000</b>  | <b>0</b>       |          |    |    |    |    |    |    |    |  |
| <b>Subtotal</b>                     |   |                          | <b>111,000</b> | <b>80,000</b>  |          |    |    |    |    |    |    |    |  |
| <b>Total</b>                        |   |                          | <b>542,500</b> | <b>360,000</b> |          |    |    |    |    |    |    |    |  |