

## Resources

**Websites:** There are hundreds, but these will set you in the right direction...

### Clallam County PUD Utility Services Dept.:

*Your Partner in Energy Conservation* delivers energy efficiency and conservation programs, incentives and educational outreach. Visit us at 104 Hooker Road in Carlsborg, [www.clallampud.net](http://www.clallampud.net) or call: (360) 565-3249.

### U.S. DOE: Energy Efficiency & Renewable Energy

These consumer education websites provide a wealth of information on energy efficiency and renewable energy.

[www.energysavers.gov](http://www.energysavers.gov)    [www.energystar.gov](http://www.energystar.gov)

### Solar Washington

This local chapter of the American Solar Energy Society is a non-profit association of PV equipment manufacturers, vendors, professionals, students, and enthusiasts offering solar education outreach. [www.solarwa.org](http://www.solarwa.org)

### American Solar Energy Society

ASES promotes national efforts to increase the use of solar energy, energy efficiency and other sustainable technologies in the U.S. through outreach activities such as their SOLAR TODAY magazine, National Solar Conference and National Solar Tour. [www.ases.org](http://www.ases.org)

### Sunshot Initiative

The Department of Energy's SunShot Initiative is a national collaborative effort to make solar energy cost-competitive with other forms of electricity by 2020.

[www.energy.gov/eere/sunshot](http://www.energy.gov/eere/sunshot)

### Tax Incentives Assistance Project

Sponsored by a coalition of non-profits, government and other energy efficiency organizations, TIAP offers information on federal income tax incentives for energy efficient products and technologies.

[www.energytaxincentives.org](http://www.energytaxincentives.org)

January 2016

# Going Solar in Clallam County



Bringing Energy To Life™

[www.clallampud.net](http://www.clallampud.net)

## Going Solar in Clallam County



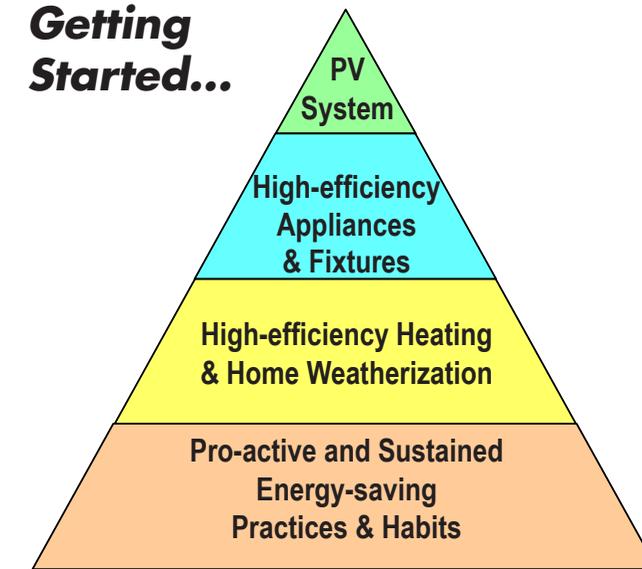
Solar electric systems are safe, pollution free sources of renewable energy. When added to a fully-weatherized, energy efficient home with high-efficiency appliances and energy-conserving occupants, photo voltaic or "PV" systems can help lower your utility bills, reduce your impact on the environment -- and even send production incentive checks to your mailbox.

Energy efficiency and conservation measures are the keys that open the door to cost-effective solar energy production. That's because, on average, it's 100% - 250% cheaper to save a Watt through energy conservation than it is to replace that Watt with solar power. As such, PV systems only make financial sense/cents after air sealing, maximizing insulation, duct-sealing, installing high efficiency appliances, lighting, heating systems, windows, etc.. As your partner in conservation, your PUD offers many energy efficiency incentives, programs and informational materials to lower your utility bill while making your home more comfortable year round.

*"You've got to eat your energy-saving vegetables before you can enjoy your solar energy dessert."*  
PUD Utility Services Advisor

Whether you've just started to consider the possibilities of solar energy production, or whether you're about to take the leap, this guide can help you with *Going Solar in Clallam County*.

## Getting Started...



**Step 1: Make your home as energy efficient as possible** by implementing all feasible energy efficiency measures and regularly practicing energy conservation. This will help to ensure maximum return on your investment. Your PUD offers a variety of programs to assist you in this effort, so please contact us *before* getting started.

**Step 2: Consider your site's sun exposure.** Optimal orientation for PV panels is true South without obstructions. Even minimal shading (e.g., power line shadows) can significantly impact energy production.

**Step 3: Evaluate your roof's condition.** PV systems are designed to last a minimum of 20 - 25 years. So if your roof needs replacing within the next 5 - 10, replace it first. Note: be sure to explore available solar roofing options, i.e., PV systems that are integrated into roofing materials.

**Step 4: Get a site assessment from a certified installer** to ensure that your site can support a PV system.

**Step 5: Obtain bids from several PV installers;** check references. Bids may vary widely. When comparing bids, be sure to compare apples to apples, i.e., systems of the same capacity, composition and warranties.

**Step 6: Select a bid** and request the installer's help in obtaining utility net-metering and production incentives as well as federal tax incentives.

## Terms to Know:

**Photovoltaic (PV):** having the ability to convert the sun's energy to electrical energy (DC).

**PV Cell:** a semiconductor material (similar to computer chips) which absorbs sunlight and converts it to electricity (DC) with an efficiency of 10% - 15%.

The (3) main types:

- **Monocrystalline Cell:** cut from a single silicon crystal, the most expensive to produce, offering the greatest efficiency. Rigid, and usually encased in metal-framed glass.
- **Polycrystalline Cell:** cut from a silicon block consisting of many crystals. Less efficient and less expensive than monocrystalline cells, usually encased in metal-framed glass.
- **Amorphous Cell:** created by placing a thin film of non-crystalline silicon onto a variety of surfaces, even flexible ones. This least efficient and least costly PV cell type suffers from declining power output during the first few months after installation, eventually stabilizing. Be sure that price quotes for this panel type are *post-stabilization*.

**PV Panel:** multiple PV cells linked together, framed. Most are warranted to produce energy at 80% of their original output when their warranty expires.

**PV Array/System:** multiple interconnected PV panels. Rooftop arrays are most common, but arrays can also be mounted on poles, verandas, the ground, etc.

**DC Disconnect:** a manual safety device used to cut-off power generated by the PV system during maintenance.

**DC/AC Inverter:** converts the PV array's power to AC.

**AC Disconnect:** a safety device, often incorporated into inverters, which isolates the inverter from the grid. This device is required for all grid-tied systems within the PUD's service area.

**Bidirectional Meter:** displays: 1) PUD energy delivered *to* your premises; and 2) energy *from* your premises received by your PUD, indicating net energy usage. Required for your PUD's Net-metering Program.

**Production Meter:** measures the energy generated by your PV system. Required for PUD production incentive programs.

## Costs, Credits & Incentives



### PV System Costs

PV system costs vary due to factors including PV panel type, production capacity, inverter capacity, labor, permit fees, racking, wiring, etc.. In Clallam County, the average PV system is 5 - 6 kiloWatts (kW). At time of print, installation costs in the region average \$5,250/kW, or \$26,250 - \$31,500 for a 5 - 6 kW system. Production and tax incentives reduce the financial impact of installing a PV system.

### Credits & Incentives (details: [www.clallampud.net](http://www.clallampud.net))

**Net-metering:** Once you've entered into a Net-Metering Agreement with your PUD, unneeded electricity generated by your PV system will flow into the electric grid. Your bidirectional meter (*required under this program*) will register excess energy received by the grid, resulting in an energy balance (*in kilowatt hours*) on your next billing statement.

**INSPIRED Program:** Through 2020, Clallam County PUD customers residing in WA with approved solar, wind and/or biomass energy production systems may receive incentives ranging from \$0.12 - \$0.54 per kilowatt hour (up to \$5,000 annually), depending on the system type and state of manufacture.

**Washington State Sales Tax Exemption:** Until June 30, 2018, PV systems less than 10 kW in size are exempt from Washington State sales tax.

**Federal Tax Credit:** a one-time 30% federal tax credit for residential PV systems is available through 2016.

## Frequently Asked Questions



### 1) Does "Solar" really work on the Peninsula?

Yes! Because our long summer days compensate for our cloudy winters, the Peninsula averages 3.5 hours of full sun per day -- or about 70% of Southern California's solar potential. In fact, the Peninsula has one of the highest percentages of PV systems per capita in the country.

### 2) How much roof space does a PV system need?

It's roughly a 1:10 ratio; i.e., it takes about 100 ft<sup>2</sup> of roof area to install a 1,000 watt (1 kW) PV system.

### 3) I don't have a south-facing roof. Am I out of luck?

Pole and/or ground-mounted PV systems may be an option for you, though these systems are more expensive due to additional labor and materials costs.

### 4) What's involved in a site assessment?

A certified PV installer will: 1) inspect your site to assess its orientation and solar potential; 2) inspect your home's electrical system to identify how to best install the system; and 3) answer all your questions.

### 5) How big a PV system do I need?

If your goal is to significantly offset energy costs while minimizing your PV investment, then first review your past utility bills to identify your annual energy usage; use our Residential Appliances Energy Usage Guide to itemize costs. Then, make your home as energy efficient as possible and practice energy conservation 24/7. In so doing, your PV system won't need to be as large.

### 6) How much energy will my PV system produce?

On the Peninsula, every 1 kW of PV panels generates about 1,000 - 1,200 kilowatt hours (kWh) per year.

### 7) Do grid-tied PV systems need maintenance?

Since a standard PV system is comprised of PV panels that have a sturdy tempered glass surface (naturally sheds water and dust) mounted 4" - 8" above the roof to prevent debris from building up underneath, they're nearly maintenance free. However, PV systems with solar trackers that optimize energy production have a motor that requires maintenance.

### 8) Will my system provide power during an outage?

A PV system's DC/AC inverter has a built-in safety to shut down the system if a power outage occurs, preventing the system from sending energy into the grid and endangering crews working to restore power.

### 9) Should I invest in batteries for my PV system?

If you'd like a back-up power source during outages, an efficient generator will likely serve you better than a battery bank. As most of our power outages occur during winter storms when days are short, PV systems produce little power to recharge a battery bank. Battery power is short-lived and extremely limited.

### 10) What's "Passive" Solar?

Designing buildings such that windows, walls, floors &/or roof store and distribute the sun's heat in winter and minimize it in the summer.