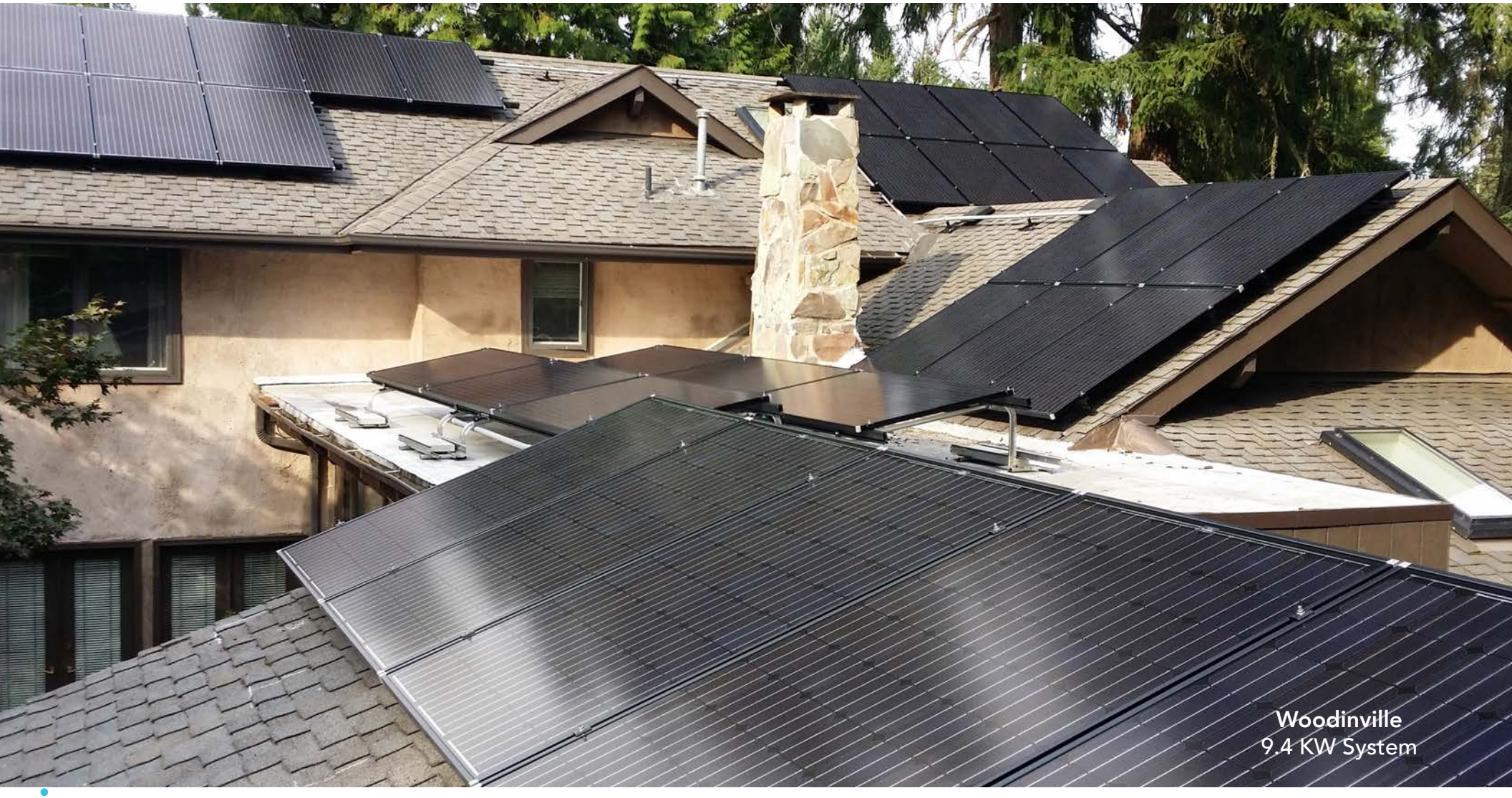
West Seattle Natural Energy, LLC



SOLAR ENERGY INFORMATION 2016

Enumclaw
9.8 KW System using 35 Solar World 280 Watt panels and Enphase Micro-Inverters

Dual Axis Solar Trackers can provide up to 50% or more production than a standard roof or ground mounted system.

A WORD FROM OUR OWNER

There is an old Buddhist saying, "If you light a lamp for someone, it will also brighten your own path." At West Seattle Natural Energy (WSNE), we view our work as a mission that goes beyond a simple profit motive. We truly believe that providing solar energy is a vital part in securing everyone's future.

The results of this principled approach are easily seen in our work. We charge less, because it's not about money. We ensure the highest craftsmanship, because it's not about increasing volume. We have a history of 100% satisfaction, because it's not about customer turnover. We want happy clients that recommend solar energy to their family, friends and neighbors. The WSNE team feels that this is the only path to achieving a long-term embrace of alternative energy.

WSNE has catalogued a wide diversity of installations around the Puget Sound area. We have a proven record of making projects work when other solar companies have told the client that it couldn't be done. We are general contractors with over 30 years of experience, so WSNE can provide innovative solutions that effectively balance aesthetics, functionality and price.

Thank you for your interest in West Seattle Natural Energy and the products and services we provide. Please do not hesitate to contact us with questions.

Keith Hughes

4.2 KW BP System in Woodinville

2.16 KW iTek System in Renton

8.97 KW Solar World System in Ravensdale

5.5 KW Solar World System in West Seattle

7.02 KW Solar World System in Vancouver

8.1 KW Solar World System in West Seattle

Content

6.375 KW System in Sammamish

MAKING SENSE OF SOLAR COSTS

The truth is, it's not much easier to answer, "How much will a solar-electric system cost me?" than it is to answer, "How much will it cost me to build a house?" In either case, the answer has to start with two words - "It depends…" That's because several variables influence the cost of a grid-tied solar-electric (photovoltaic; PV) system. Although there's no pat answer to the price question, the guidelines here will help you estimate your costs, and get you started on your path to energy independence.

How Hungry Is Your Home?

The average American home uses roughly 830 kilowatt hours (KWH) of electricity each month. But basing system costs solely on that number would most likely give you an inaccurate and unhelpful result. Your electrical use may vary wildly, depending on the season, what kind of appliances you use, and your usage habits. So how can you gauge your electrical appetite? For a quick snapshot of your electrical usage, check out your monthly electricity bill. Most bills will include KWH usage figures for the last twelve months; this will give you a good idea of how much electricity your home uses each year.

Energy Efficiency First

Once you've got a handle on your electrical appetite, taking steps to improve the efficiency of your home will be your next best move. This can have a tremendous impact on the cost of the system you install. If you live in an efficiently built, well-insulated home, with modern appliances, compact fluorescent or LED lighting, and high performance windows, you may only be able to reduce your average electricity use by 5 or 10 percent. But if you're on the other end of that spectrum, by implementing efficiency measures you may be able to reduce your use by 40 percent or more, shaving several thousand dollars off the cost of your system. For example, just replacing an older model refrigerator with a modern, more efficient one could reduce your electrical usage by 50 KWH per month. Combine this with household-wide efficiency strategies and you can make a pretty sizeable dent in your system cost.

Location, Location, Location

Where you live also affects your system costs. Less sunny locales will call for larger systems to generate the same amount of electricity that a smaller system in a sunnier spot can produce. In the solar world, sunlight is measured in units called "peak sun hours." Phoenix, Arizona, receives an annual average of 6.5 peak sun hours per day, while Seattle, Washington, only gets 3.8 peak sun hours per day. Besides the number of peak sun hours in your region, average annual temperatures where you live also affect your system size, and its relative cost. In colder regions, you may use lots of electricity for space heating and water heating. In warmer regions, air conditioning can dramatically

amplify your electricity use. Climate and other site-specific variables will also determine your solar-electric system's size and its production. PV panels operate more efficiently in cooler climates and less efficiently in hot ones. Some locations regularly receive morning fog or afternoon thunderstorms. In dry, dusty climates without regular rains to clean the panels, accumulated dust and dirt will reduce the output of the system. All of these variables need to be considered when sizing a system and estimating its annual production.

A Place in the Sun

Even the sunniest regions won't guarantee you good system performance unless you have unobstructed solar access at your site. This daily access to the sun is called your "solar window." You'll need a location on your rooftop or elsewhere on your property that:

- Ideally faces south, but west-facing arrays make sense in some cases;
- Provides enough space for the number of PV panels needed, possibly including room for expansion;
- Enables the entire array of modules unshaded exposure to the sun between the hours of 9 AM and 3 PM, year-round.

Compromising any of these three conditions can mean having to increase the size of your system, which increases its cost.

A Nibble or a Bite?

One of the best features of solar electricity is its scalability. With a little foresight, you can start small and build your system gradually if that better suits your budget. A starter system can be designed to meet just a portion of your home's daily electricity needs. This is one great benefit of a grid-tied system—the remainder of your electricity can be purchased from your electric utility, just as before. And, if you plan your design for future expansion, adding more modules to your array as your pocketbook allows is relatively simple.

Free Money

Here in Washington State we enjoy a generous incentive to install Solar PV Systems. If you use panels and an inverter system made here in the state, you can save even more. Add to that the Federal tax credits, and low-interest loans from some Credit Unions, and the picture gets brighter still. You can get up-to-date information on financial incentives at the Database of State Incentives for Renewable Energy Web site at www.dsireusa.org.

7 KW Solar World System on Camano Island

8.68 KW Solar World System in West Seattle

System Cost Examples

All Solar PV systems are made up of two basic components: the panel and the inverter. There are many choices for both of these, and here at West Seattle Natural Energy we only use the highest quality products with the best warranties and customer service.

In plain terms, the panel collects the energy and the inverter turns it into usable power for your home. While we are happy to offer different panels and products, we primarily use Solar World panels and Enphase Micro-Inverters because of their superior craftsmanship and long warranties.

We're the only installer to exclusively use Micro-Inverters with our systems. What that means is that instead of one big inverter for the whole system, you have one small inverter for each panel. There are many reasons for this choice; they are more efficient, they allow for expandability, they work better in cloudy and/or shaded situations and they come with real-time monitoring. That way you always know what your system is doing and if anything goes wrong, it can be addressed right away so you loose as little production time as possible.

Solar World System:

Oregon Made Solar World 285 Watt Plus Panels with US Made Enphase M250 Micro-Inverters

These panels are 17% efficient and are backed by a 25-year linear performance guarantee and a 10-year product workmanship warranty. The panels are factory-tested to meet or exceed their name plate power rating. Solar World is one of the most respected solar panel manufacturers in the world and WSNE is proud to be their only Platinum Installer in the state! The frame is also available in black.

Solar World PERC300 System:

Oregon Made Solar World PERC 300 Watt Panels with US Made Enphase S280 Micro-Inverters

This system uses the Industry Leading 22% Efficient PERC panels from Solar World. The panels have a 10-year product workmanhip warranty and a 25-year linear performance warranty. The inverters have a 25-year workmanship warranty. This option is available exclusively though West Seattle Natural Enegy.

Solar World Poly System:

Oregon Made Solar World 260 Watt Polycrystalline Panels with US Made Enphase M250 Micro-Inverters

Solar World Polycrystalline panels have the same great industry-leading warranty as the monocrystalline panels, but historically perform better in low light and partial shading conditions which are common in the Pacific Northwest. At this time we are the only installer offering this panel.

Utility Rates and rebates for non-WA solar systems:

SCL energy rates are currently at .124/KWh and they are giving a production credit of .09. PSE energy rates are currently at .114/KWh and they are giving a production credit of .12. Snohomish County PUD's rate is currently .09/KWh and they are giving a production credit of .15, though they have said this won't be the rate for 2017. Depending on Legislation that will be voted on in 2017, the rates from the utilities may change.

Solar World Plus + Enphase M250

5.7 KW system using 285 watt panels
Estimated annual production = 6800 KWh

System Cost (20 Panels)	$19,900
Federal Tax Credit (30%)	($5,960)
Production Credit	($612)
($.09 x 6800 KWh)	
Energy Savings	($840)
($.124 x 6800 KWh)	
System Cost after Rebates	**$12,488**

Yearly Savings Until 2020: $1,452

7.28 KW Solar World System in Bellevue

Many other options are available, let us help find the right one for you

These cost estimates are based on an average electic bill of $125 a month with Seattle City Light, and a production credit of .09/KWh

6 KW Solar World System in West Seattle

Solar World PERC + Enphase S280

6.0 KW system using 300 watt PERC panels
Estimated annual production = 7500 KWh

System Cost (20 Panels)	$21,500
Federal Tax Credit (30%)	($6,450)
Production Credit	($675)
($.09x 7500 KWh)	
Energy Savings	($930)
($.124 x 7500 KWh)	
System Cost after Rebates	**$13,445**

Yearly Savings Until 2020: $1,605

SW Poly + Enphase M250

5 KW system using 260 watt panels
Estimated annual production = 6500 KWh

System Cost (20 Panels)	$19,400
Federal Tax Credit (30%)	($5,820)
Production Credit	($585)
($.09 x 6500 KWh)	
Energy Savings	($800)
($.124 x 6500 KWh)	
System Cost after Rebates	**$12,195**

Yearly Savings Until 2020: $1,385

7.8 KW Solar Awning in West Seattle
The system uses SW Protect Clear Panels

Snohomish Co PUD customers get an added $300 per installed KW as a cash rebate, up to $2,000.

Renewable Energy Incentives

4.8 KW iTek System in Lake Stevens

Federal Renewable Energy Investment Tax Credit

(P.L. 110-343; IR Code 25 D)

- This bill extends the 30% Federal Income Tax Credit for residential and commercial renewable energy projects through 2016.
- Removes the maximum payment limit for the tax credit.
- Allows commercial installations an accelerated 5-year depreciation schedule.
- Includes Solar PV, Solar Hot Water and Small Wind Energy Systems. (< 100KW)
- Tax Credits can be carried over to successive years, and apply to AMT Liabilities.

Washington State SB 5882

Section 400 - Sales Tax Exemption

- Extends the 100% Sales Tax Exemption for renewable energy systems through 2018 for Solar PV and Wind Energy Systems.
- Minimum system size is 1kw and maximum is 10kw. Systems over 10KW have to pay sales tax, but can apply for a 75% refund from the state.

Section 500 - Production Incentive Payments for residential customers Effective through 2020.

- Base rate for Solar PV Systems is $.15 per kilowatt hour.
- This solar rate can be increased by purchasing components made in Washington State:
  - $.36 per kilowatt hour for systems using Washington Made panels and standard inverter
  - $.54 per kilowatt hour for systems using both Washington Made Panels and Inverter System
- Maximum annual payment increased to $5000

Final rates for the incentive payments are dependent on legislation to be voted on next year, 2017. They may or may not go down, for now all our proposals will use the current utility rates.
SCL = .09, PSE = .12, SnoPud = .15.

Snohomish County PUD Solar Express Program!!

- $300 per rated KW for Solar PV Systems, up to $2000 for residential installations
- $500 per installation for Solar Hot Water Systems
- For full details, visit their web site at www.snopud.com

Washington State SB 5136

- Homeowner's Associations may not deny your request to install solar panels on your home!

3.84 KW Solar World System in Des Moines

16.32 KW Solar World System on Orcas Island

11.18 KW Solar World System on Bertchi School in Seattle
First Living Building Challenge Certified project in Washington State

25.2 KW Flat Roof Solar World System on Church of the Redeemer in Kenmore

6.3 KW Flat Roof Solar World System in Fall City

Solar Trackers

Want more production? Consider a Dual Axis Tracker!

For people living on a larger piece of property, you have the option of installing your solar panels on a tracking unit.

Dual Axis trackers follow the sun from East to West using electronic sensors and motor or actuator dries. When it's cloudy out, the tracker will fix on the brightest part of the sky, capturing the most sunlight available. At night it returns to the morning sunrise postion, ready to start tracking when the sun rises again.

Tracking can increase your array's power production from 40% - 80% depending on the season and location. They can track nearly 270 degrees and will adjust from 5 to 75 degrees in elevation tilt.

They can be installed close-set to the ground (2' from the ground at the bottom) or up higher on a pole so you can drive a mower or tractor under it.

You can have a few as 12 panels or as many as 40 depending on the brand of tracker. The pole is embedded in a concrete base, engineered for the soil conditions in your area. They automatically tilt flat in heavy winds, so there is no worry about damage from the storms we can get here in the fall and winter.

4.05 KW Solar World System in Poulsbo

6.48 KW Solar World System in Enumclaw

9.8 KW Solar World System in Enumclaw

9.77 KW LG System in Shelton

4.68 KW Silicon Energy System in Maple Valley

16.2 KW Solar World System in Duvall

2.64 KW BP System on Camano Island

Custom Mounted Systems

No roof space? Too many trees? No problem!

2.58 Evergreen System on Trinity Lutheran College in Everett

Sometimes, there isn't enough roof on a client's roof for the solar system they want and need. Sometimes their house is surrounded by tall trees that can't be removed. Sometimes they just don't want to have to get up on the roof for maintanence. So now what?

Here at West Seattle Natural Energy we are not only licensed electricians, but general contractors too. So if building a structure to put your panels on is what's needed - bring it on. We have quite a few custom systems, from patio covers to ground-mounted A-Frames - even a entry way to a greenhouse on a parking garage! We absolutely love a challenge, especially if we get to put on our creative thinking hats.

5.07 KW Silicon Energy System in Seattle

2.76 KW BP System in Everett

1.68 KW REC System in Clinton

3.0 KW LG System in Spanaway

5 Interesting Facts: Solar in Seattle

Fact #1
Rain, sleet and snow will not damage solar panels.

Solar panels last longer in Seattle than they do in the desert. Climates with excessive heat and sun actually degrade the panels faster than cool climates. The life expectancy of a solar panel in Seattle is 50 years, as opposed to 30 years in Palm Springs or Phoenix.


5.94 KW Solar World System in Des Moines

Fact #2
Solar prices are as low as they're likely to ever go.

Federal, State and Local rebates and tax incentives are in effect to reward early adopters of renewable energy. Manufacturers are selling panels at or below cost to jumpstart the market, so prices won't be dropping too much lower anytime soon. Today's prices are 50% lower than they were two years ago. On top of that, West Seattle Natural Energy has an exclusive additional cash rebate from our local electric union, IBEW #46.

On the other hand, gas and electric utility bills are likely to get higher every year.


4.05 KW iTek System in Sandpoint

Fact #3
Solar panels make a statement.

We believe that solar panels make a great visual statement about how the owners feel about energy efficiency, conservation and the reduction of carbon emissions. West Seattle Natural Energy specializes in gorgeous, integrated, custom installations that maximize efficiency by capturing the most possible UV light.

7.68 KW Solar World System in Poulsbo

Fact #5

Rain or Shine -- Solar Panels Work Just Fine

Ultraviolet Light (UV) that powers a solar panel is different than Visible Light. UV levels are nearly the same on a cloudy day as they are on a sunny one. Seattle is a great solar city because, on average, the days are longer here than they are down South. Expect higher kWh production during the summer with a dip during the peak of winter.

Fact #4

While Location is Everything, We Have Options For Everything Else

A solar-equipped house that is surrounded by hills, trees and buildings will enjoy significantly less performance than one with an unobstructed south facing view. West Seattle Natural Energy has a variety of options -- including rotating panels and small wind energy systems -- that can help homeowners with challenging locations.

11.69 KW Solar World System in Rainier

Client Testimonials

Robert Affleck

"West Seattle Natural Energy Installed A 24 Panel Solar System on our home in the spring of 2011. The system has been working to expectations since it was installed and we are very pleased with the post installation support from West Seattle Natural Energy. I found them to be professional, timely, and willing to go the extra step to insure the customer was satisfied. In example, due to some aesthetic concerns, I requested a change to the original plans and had the panel tilt angel reduced to match my roofs pitch. West Seattle Natural Energy worked with me in the regard and made the change with minimal additional cost or time delay.

I would recommend West Seattle Natural Energy to any friends or neighbors who are interested in an alternative energy install."

John Mann, West Seattle

"West Seattle Natural Energy provided excellent service in the installation of our PV system. From the accurate and honest information regarding the various options available on the market to their very competitive quote to the high quality professional installation. Doing business with them was a very satisfying experience which we are reminded of every time the sun shines."

John Edison

"West Seattle Natural Energy installed a solar electric system to power our house on Camano Island. They completed the project on budget and on time. It has been up and running for several months; our last electric bill was two dollars. I have no complaints and I would highly recommend West Seattle Natural Energy."

Bill Knospe, Orcas Island

"You were fantastic to work with, always did exactly what you said you would do, and are helping to squire the thing through the state system to completion when you have already been paid. That you staged the work so far from Seattle flawlessly and completed the installation in a little over three days still seems a tribute to your intelligence, planning and hard work."

Morgan Michaels, Shoreline

"West Seattle Natural Energy was a excellent partner to work with. They completed my 5.7kw solar install on-time and budget. I wouldn't hesitate to recommend them to anyone for any project."

Forrest Jones, Des Moines

"I have found West Seattle Natural Energy to be knowledgeable in all aspects of Photovoltaic and have exceeded my expectations. WSNE installed 3.8 KW of PV panels on my roof under a tight deadline, and responded quickly with information as needed. They have followed up and made sure that all parts of the installation were satisfactory. I am very pleased with the work that was performed and would be proud to recommend them to anyone interested in going to Photovoltaic and other forms of Alternative Energy for their home or facility."

Kim Rochat

"I first became aware of West Seattle Natural Energy at the November 2010 Everett Home Show. Keith Hughes gave a compelling presentation on new solar technologies and incentives. I visited their booth to learn more about microinverters and internet-based system monitoring.

I requested a quote and site evaluation from WSNE which was promptly provided. Keith spent several hours on-site with us to go over different options and costs and walk though the proposed system design.

I requested quotes from other vendors, but they declined to quote on the Washington-made internet-monitored (Tigo Energy) system Keith had proposed, saying they "didn't even know if it was possible". It was clear to me that WSNE was more up-to-date with PV technology and offered more innovative solutions than the other vendors, as well as a longer warranty on the installation work. We signed a contract with WNSE for a 4.8kW system the end of November, 2010.

...The installation crew was punctual, friendly, self supporting, and professional. The job site was always tidy and household disruption was minimized. They took great pride in their workmanship and were eager to discuss the finer points of the installation. I was impressed with the quality of the materials they were using and robustness of the installation.

...Their office manager, Amy submitted all the paperwork for the various incentives, and all were approved. The system has been working flawlessly since installation and has been producing the power that WSNE estimated.

If you would like additional information, you can e-mail me at krochat@gmail.com.

Happy Clients ready to talk:

Daryl Connell, 6.75 KW System. 425-401-9634 or drayconn@comcast.net
Chris Warner, 8.48 KW System. 206-947-3022 or westseattlechris@gmail.com
Chris Cochran, 1.08 KW System. 206-228-2624 or chrispcochran@yahoo.com
Kim Rochat, Camano Island, 360-572-4027 or krochat@gmail.com
Robert Affleck, West Seattle, 206-679-6513
Forrest Jones, Des Moines, 206-356-2484

Mark Hammarlund, Seattle

"West Seattle Natural Energy installed a 35 panel aray on our roof. They furnished all the permits for Seattle City Light as well sa the Envoy Monitoring System. The workers performed the job exactly as promised in a timely fashion, with great care for customer satisfaction regarding details. A neat and tidy installation done expertly."

West Seattle Natural Energy, LLC
"Saving the Planet, One Home at a Time"

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