Rooftop Solar
Frequently Asked Questions (FAQ)

Benton PUD strives to be our customers Trusted Energy Partner. We understand that you might have an interest in "going solar" in fact this is why Benton PUD initiated our Solar Connections program in 2014. Solar photovoltaic (PV) technology is a proven way to generate electricity safely and reliably and with federal and state incentives it can make financial sense for some people. As a community owned electric utility Benton PUD exists for the benefit of all of our customers, including those who are considering investing in their own electrical energy source. To assist customers with making a solar PV purchase decision we have provided the following list of key questions and answers that we believe you should consider. Please contact Benton PUD Solar Connections staff and/or visit Solar Connections to get answers to other questions or concerns you may have prior to and during your communications with solar PV system vendors.

I'm considering installing a solar PV system. Where do I start?

- Do your homework, and get balanced information from several sources. Talk to others who have PV systems. Additional resources we recommend are listed at the end of the FAQs.
- Research and investigate the vendor. We recommend getting cost estimates and quotes from more than one reputable, licensed, bonded and insured solar PV system vendor.
- Read and understand the contract details before you sign any contract. Verify if there are performance guarantees from the vendor regarding system performance over the life of the PV system.
- There are many factors to consider when installing a PV system. The Sections below provide important information related to both Financial and Operational impacts of a PV system.

Financial Information

Many customers interested in rooftop solar are motivated by the potential savings they may receive from incentives and electric bill savings. Electric rates in the Northwest are some of the lowest in the nation thanks to low cost, abundant, clean hydro power. Solar power as currently subsidized at both the state and federal level can be cost effective for some customers, but those subsidies are declining and will expire. Today, the payback period is about 7 years when considering state and federal subsidies, and 33 years without subsidies. There are many financial considerations and assumptions you need to make when evaluating whether to purchase and install a PV system. Please read and understand the following information as you make your decision.

1. **What amount should I use for an average residential bill?**
   - Some solar developers use an average utility-wide residential bill amount in describing the potential savings that may arise from a solar installation. Currently, the average residential monthly bill is $116 for Benton PUD customers.
   - Rather than using a utility-wide residential average, be sure to know *your* average monthly bill. That is the figure you should use. You can use our Smart Hub app to determine your average bill or feel free to contact us at (509) 582-1234 if you need help.

2. **What have been historical electric utility bill increases and what does the future look like?**
   - Be watchful of claims that your PUD electric rates will escalate at 5% per year or higher. Contact us for our latest rate forecasts.
   - While rate forecasts may change due to changing conditions (such as legislative mandates or market conditions), here are some key figures for you to consider:
     - Since 2002, the average annual increase has been 1.55% for Benton PUD customers
     - The July 2018 forecast indicates rate increases over the next five years will likely result in an annualized rate increase similar to the 1.55% noted above.
   - Another factor you should consider is the amount of the monthly base charge shown on your bill. This base charge reflects fixed costs such as customer service and billing, administrative and general, and a minimum level of distribution infrastructure needed to serve a customer. The base charge cannot be avoided by a solar system installation as your household continues to use the electric system at night, on cloudy days, and to sell the excess energy back to the utility. As such, an analysis of cost savings should consider the amount of the monthly base charge which also may increase over time.

3. **What State and Federal Incentives are available?**
   - ***Washington State Incentives***
     - Washington State offers incentives by allowing utilities to take a tax credit
       - Benton PUD administers the State's incentive program for our customers. Benton PUD has no control over the amount of funds set aside by the state.
       - Utilities take a tax credit from the state equal to the amount of incentives paid to customers
     - Customer incentives are available on a first come first serve basis until State funds are depleted. Currently incentives are available at rates of $0.14 to $0.18 per kWh for residential-scale systems of 12 kW or less up to a maximum of $5,000 per system annually. Incentive amounts will scale downward each State fiscal year (July 1 – June 30) until State funds are depleted.
     - Incentives will be paid annually for 8 years from the year of system certification or until the cumulative incentive payments reach 50% of the total system cost.

- Please see Appendix A for a detailed description of the State program. **Please contact us at (509) 582-1234 for assistance in understanding this program and to see if State incentives are still available.**

- ***Federal Incentives***
  - The federal solar tax credit, officially known as the Solar Investment Tax Credit (ITC), is available until December 31, 2019, for up to 30% of the total system cost. The credit decreases in subsequent years – 26% for tax year 2020 and 22% for tax year 2021 – and expires December 31, 2021. See www.irs.gov, or contact your tax advisor for details.

4. **What are typical PV system installation costs?**
   - The installed system cost in our area is approximately $4,000 per kW (or $4.00 per watt installed) as of June 2018.

5. **How does the energy produced from a PV system lower my electric bill?**
   - Benton PUD's Net Metering program conforms with state requirements. It lets you install a renewable energy system (solar panels or wind turbines) to offset your energy needs. You receive full retail rate credit each month for generation from your system. Excess generation at the end of each bill period is carried over to the next bill period as a credit. On April 30 of each year, any excess generation accumulated from the previous 12 months resets to zero.

6. **What other indirect costs might occur with a solar installation?**
   - ***Maintenance Costs***
     - Costs are variable and can be anything from a simple cleaning to replacing parts that include inverters which are used to connect the panels to the grid.
   - ***Property Taxes***
     - A PV System may increase the taxable value of your home and raise your property taxes
   - ***Insurance***
     - A PV system may increase your homeowners insurance
   - ***Selling your house***
     - As you make your decision to install a PV system, keep in mind the average person moves about every 5-7 years
     - Check your solar contract to understand the terms and conditions related to a transfer of a leased solar system to a new home buyer. In some contracts, there may be requirements that must be satisfied prior to transfer.
   - ***PV System removal during reroof***
     - Replacing your roof in the next few years would require an additional expense of removing and reinstalling your solar system.

Operational Information

In addition to financial implications of a PV system, there are many operational factors to consider. Please read and understand the following information as you make your decision.

7. **What types of maintenance come with a PV system?**
    - As noted in the financial section, maintenance will include periodic cleaning of your PV system as well as the potential to replace components that fail.

8. **How long can I expect a PV system to last?**
    - Typical manufacture warranties are 25 year performance and 10-15 year equipment warranty for the panels. Inverters are typically warrantied for 5-10 years.
    - Labor warranties vary by vendor and may cover workmanship defects typically up to one year but can extend for up to ten years.
    - Be careful of vendor claims that the life of the system will exceed the warranty term. Use your judgement.

9. **What can I expect for power production from my solar PV system installation?**
    - The location and orientation to the sun of a PV system will significantly impact the amount of electricity generated. Typically, rooftops facing south have a much greater production capacity than other roofs.
    - Solar panels produce energy when the sun shines. They do not produce energy during the evening and produce less energy during the winter and on cloudy days. The average capacity factor (a percentage calculated by dividing the actual electricity output by the maximum possible output for a solar installation) in Benton PUD's service territory for rooftop PV systems is 15-18% in the early years of operation
    - The production of a PV system degrades (declines) as the system ages. Panels lose about 0.5% of production capability each year.

10. **Will PV systems keep the power on in my home during a power outage?**
    - Most grid-tied solar PV energy systems <u>will not</u> power your home during a power outage. There are two primary reasons that ordinary grid-tied solar will not work during a power outage:
        - Solar power output from PV systems varies directly with sunlight levels. The electronics (inverter) that controls a grid-tied solar electric system adjusts the power output independent of a customer's constantly varying electrical loads in order to maximize solar energy production. A customer with a grid–tied solar PV system relies on importing/exporting some amount of power from/to the utility in order to make up the difference between solar energy production and the energy consumed by their own electrical loads.

- The inverter(s) associated with a grid-tied solar PV system must be Underwriters Laboratories (UL) listed with a safety feature that prevents feeding power back into the grid during an electric utility power outage. This ensures utility personnel responding to repair lines and equipment during power outages are not at risk of electric shock hazards caused by back feed of power from a customer's electrical generation equipment. Solar PV systems with UL 1741 listed inverters cannot operate independently from the power grid.

- To power your home during an electric utility outage requires the addition of large battery banks along with more advanced inverters and electrical switching equipment which increases the cost of the solar PV system substantially. While there are solar PV inverters that can produce limited amounts of power without batteries and independent of the power grid, they can only do this when the sun is shining.

11. Are there safety implications for PV system installations?

- Solar panels on a building can present challenges to firefighters. One challenge is that solar panels present an energized electrical source on the roof that is not easily shut down. Another challenge is that panels can inhibit firefighters from performing vertical ventilation, both by limiting the space where the roof can be vented and potentially restricting safe access to specific vent points on the roof.
- A critical task prior to fighting building fires is to shut down the utilities, including the electrical utilities to remove the electrical shock hazard. Having confidence that the electrical power is shut down is important for all firefighters. The problem with a solar installation is that the power shutoff process may not be obvious or simple, thereby reducing the confidence needed for a successful and safe fire attack.
- While it is possible to open the electric circuits that connect the solar PV system AC power output to the building's electrical service this does not "de-energize" the solar panels themselves when they are exposed to sunlight. Covering the panels with something that will completely block the sunlight is the only way to stop generating the DC voltage associated with solar PV systems.
- Consult with your solar PV system design professional to be sure you understand all of the options for helping manage electrical hazards and other risks.

12. Will my Homeowners Association allow a solar PV system installation?

- Check with your homeowners association (HOA) before installing your system. While HOAs can't prohibit installations, they can implement rules about system placement and other requirements. Washington State Law RCW 64.38.055 governs resident and HOA responsibilities regarding solar energy system installations.

13. Will a solar PV system void my roof warranty?

- Your roof warranty may be voided with a PV system installation
- Consider the current condition of your roof before installing a solar system as you may need to replace your roof in the next few years which would require an additional expense of removing and reinstalling your solar system.

Additional Resources

- WSU Energy Program Renewable Energy System Incentive Program
- Solar Washington – Solar information specific to Washington State; Consumer Questions to ask to determine if a solar project and contractor are right for you.
- National Renewable Energy Laboratory PVWatts® Calculator
- U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy Homeowner's Guide to Going Solar
- Federal Trade Commission – Solar power for your home
- Interstate Renewable Energy Council – Consumer Protection Checklist
- Engineering.com – What is the Lifespan of a Solar Panel?

Appendix A

Washington State Incentives

- Customer production incentives are available for eligible solar PV energy systems certified through the Washington State University (WSU) Renewable Energy System Incentive Program. Incentives range from $0.14 to $0.18 per kWh for residential-scale systems of 12 kWdc or less up to a maximum annual incentive of $5,000 per system. There are also commercial-scale and community solar project incentives.
- Incentives per kWh for new systems will decrease according to the year the system is certified. No new systems will be certified after June 30, 2022
- Benton PUD voluntarily administers the state-funded incentive program for our customers individual systems annually for 8 years from the year of system certification or until the cumulative incentive payments reach 50% of the total system cost.
- Washington State law RCW 82.16.165 requires Benton PUD to suspend incentive payments for new systems when we reach annual incentive payments totaling $1.8M, which is 1.5% of our 2014 calendar year power sales.
    - If current statewide participation levels continue, incentives per kWh for new systems may soon no longer be available. Some estimates indicate the state incentive pool will be exhausted as early as first quarter 2019.
- The WSU Energy Incentive Program will be suspended when the total of all Renewable Energy Systems incentives in the State of Washington reaches the $110 million cap. As of July 2018 the estimated committed state incentives were at $75M. With the current pace of new customer solar PV installations, the incentives cap may soon be met and no funding will be available for new solar PV installations.
- **Customers are not guaranteed to receive Washington State Incentives until their solar PV energy system is certified by WSU. At some point in the near future all available incentives will be committed. Anyone considering building a new system today should factor in the risk of potentially not receiving Washington State incentives. Please use your best judgement when considering the purchase of a new solar PV system and do what works best for you.**
    - Without Washington State incentives, the payback for a new solar PV system is significantly extended from 7 years to about 22 years assuming you still qualify for federal incentives. Without Washington State and Federal subsidies the payback period for a new solar PV system is about 33 years.