

# SHEILA MITCHELL AND CLAIR MORUD - RESIDENCE

## SOLAR PV

We first considered solar energy more than a decade ago. Our home has high ceilings resulting in space to be heated and cooled disproportionate to the square feet of the home. Furthermore, the kitchen and living space is in the highest part of the home, resulting in an increased need to use the air conditioner in the summer. We hoped to use solar to decrease the carbon footprint of our home, especially the need to run an air conditioner. Our first assessment found that the solar window of our site was not adequate to justify an installation.

In 2014, we removed several large trees to allow space for a garden in our yard. This also expanded the solar window of our roof top, making roof top solar panels a viable option. Our system went online the end of August 2016. In 2018, we removed a large white pine on the southwest corner of our house due to a high risk of damage to the home during wind storms. While we miss the beautiful tree, its removal did increase the afternoon sunshine to our solar panels!

Sheila Mitchell and Clair Morud, owners



## System overview

- Rooftop residential grid tied solar system installed summer of 2016
- 28-module array on south facing roof with screwless mounts on metal roof
- Installed by Let It Shine Energy Services, LLC (John Johanning)
- Electrical upgrade done by Tom Lazorik Electric

## Technical specs

- 8.4 KW system consisting of 28 SolarWorld modules
- Upgraded to 10 KW inverter to allow potential addition of additional roof modules
- Predicted annual energy production: 10.6 mWh maximum
- Observed energy production: Average 7.5 mWh with increase to about 8 mWh due to removal of large white pine that had interfered with afternoon sun

## Financial Incentives

- Focus on Energy incentive: \$2,400
- Residential Energy Tax Credit: \$9,087
- Potential increase in home value: \$10,000 to \$15,000  
(<https://www.wholesolar.com/blog/do-solar-panels-increase-home-value/>)
- Average annual savings \$1,060 (based on 3 years of observed billing data)

## Costs

- Total cost: \$32,690
- Net cost after incentives: \$21,203
- Net Cost breakdown:
  - System cost: \$19,553
  - Electrical Costs: \$1,650 (upgrade meter socket and disconnect panel to 200 amp to meet current electrical code)
  - Net cost per watt: \$2.3

## Installation

- Approximate Time to Complete the Project: 2 months

## Lessons Learned

- Pay attention to roof shading. Expect to decide on tradeoffs in regards to shade tree benefit versus energy production
- Solar energy is cost effective as a long-term investment. Even with a predicted increase in home value, the payoff on investment is 10 years or more.

## Recommendations

- While solar energy has the potential to be a sound investment, it is important to budget for it appropriately.
- Research current tax law prior to deciding. The tax incentive we received was prior to the change in tax laws.
- Insulation upgrades, new windows, and other home efficiency upgrades are at least as valuable as solar energy, both for economic and environmental benefits.
- When considering home roofing projects, it is important to consider potential solar installations before the project is begun.