

# *Richmond Solar Farm - Group Net Metering*

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## **Overview**

One man's approach to net metering reduces his neighborhood's carbon footprint and serves as a sound financial investment. Jeff Forward is a Richmond based energy consultant and energy committee leader who was looking for a financial investment that would not only provide a reasonable rate of return, but also be consistent with his values. This personal mission turned into a group net metering project, with a solar system producing electricity for his home as well as three neighboring households.

## **OUTCOMES**

In 2011, Mr. Forward sought an investment vehicle that would provide a reasonable rate of return. Middle-aged, and middle-income, he and his wife did not seem to have many options. While he and his wife were in their peak earning years, they were ineligible for most tax deductions because their kids were grown and their mortgage was paid off. Over the years they had built up some savings, but until this opportunity came along, they weren't sure where to invest. After considering their options, and wanting to invest in something tangible, which would contribute to solving some of our nation's problems, he and his wife chose to invest in solar.

Forward's home appeared an attractive site for solar. It is an old farmstead with plenty of unproductive, open space and it happens to have a transmission line in the backyard. To begin the project, he penciled out the costs of installing a residential system; however, the set up numbers didn't quite add up in his favor. Being conscious of energy consumption, he had already done a lot to reduce his home's energy use. So, a typical 4 Kilowatt residential system would produce more electricity than his home needed. And after some research, he also figured out that the tax incentives for solar favored commercial installations.



Forward was in a unique position to undertake this project. With years of professional expertise as an energy consultant, he had an understanding of how he might make it work. Since his energy consultant firm is an out-of-home business, Forward looked into making his solar project commercial, instead of residential. He decided he could do this if he formed a group with his neighbors, built a larger system and received an income by "selling" them the solar credits from that systems

output. This change of approach allowed him to take advantage of federal tax incentives and provided him with an excellent return on investment.

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Forward engaged his neighbors and easily got three neighboring households onboard. In fact, Forward could have potentially advertised for group members anywhere within his utility's service territory—the distance from the array isn't a restriction.

They installed a 13 kW system on eight ground-mounted poles. The system is producing about 15,000 Kilowatt-hours each year. While Forward provided the total upfront investment, his neighbors pay him the solar credit that is attributed to their electric bills. His neighbors aren't necessarily saving money in this 'group net metering' agreement, but the project hasn't cost them anything either. Their main incentive for being involved in a project like this is that their energy is coming from a local, renewable source.

***How the money worked:*** The installed cost of the 13 kW solar system was \$85,000. Forward got a 30% federal tax credit of about \$25,000. Since this was a business expense, he was able to depreciate 85% of the cost of the system, which he deducted from his income. This resulted in \$20,000 of tax savings. He also received a \$10,000 Vermont Small Wind and Solar incentive making the net cost of the system about \$30,000. The system produces 15,000 kWh per year and the utility pays \$.20/kWh for the production including a solar adder of \$.03/kWh which translates to \$3,000 per year. The bottom line is that Forward is receiving a 10% return on his net investment per year.

Some of the biggest challenges have been paperwork related. Filing for the tax benefits was fairly complicated and required a savvy tax accountant to make sure everything was done correctly. Billing was also an unexpected challenge. Forward assumed that the solar credit would simply be a line item on each group member's bill, and that group members would just pay him that credit. As it turned out, the utility companies have not yet standardized how to account for group net-metered solar credits on their bills. As such, it is difficult to get an accurate account of how much money has been credited to each household in the group. The Public Service Board is currently working on net metering billing standards so hopefully the billing issues will be resolved shortly for others who might want to go down this road.

Despite the challenges of the project, Forward considers this group net metering project successful. For his family, it has been a good investment. And Forward hopes that projects like his will help lay the groundwork that will encourage many more people to consider solar group net metering projects.

### ***KEYS TO SUCCESS***

- Solar PV is as much about tax incentives as it is about energy. Do your research. There are a variety of tax incentives, both from state and federal government sources. They can involve a lot of documentation, and meeting strict deadlines, so knowing in advance what these incentive programs require is important.
- Solar is a good investment and getting better all the time. The cost of panels, one of the biggest costs of a system has come down by 50% over the last year alone.
- Group net metering provides an opportunity for small investors to invest in something they believe in while still providing an attractive rate of return.

*Resources:* <http://www.dsireusa.org/> Summary of federal, state and utility incentives

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## **The Incentives, Deductions, and Planning Resources**

The [Section 1603 Grant Program](#)—through the Recovery Act of the Department of Treasury—gives commercial projects direct payment, in lieu of tax credit “for a portion of the cost of installing specified energy property used in a trade or business or for the production of income”. This is a commercial specific grant program. And the funds are not dispersed until after the project is completed. Forward received \$25,000 for his project through this program. Unfortunately this program was discontinued in 2011. However, solar PV projects are still eligible for a 30% tax credit. This credit can be carried forward for multiple years if the amount exceeds your tax liability.

Commercial renewable energy investments can be depreciated at an accelerated rate using the [Modified Accelerated Cost Recovery System \(MACRS\)](#). Although solar panels have an expected useful life of 25 years or longer, the IRS allows businesses to depreciate them over a five-year timeline. The base cost of the system is reduced by half the tax credit or 15%. Then the remaining 85% of cost of the system cost can be depreciated over five years and deducted from business earnings.

Since Forward’s consulting business, Forward Thinking Consultants, LLC, earns less than \$1 million per year, he is allowed to deduct the entire allowed amount, 85% of the cost of the system, in one year using a [Section 179 depreciation deduction](#). It is important to talk with your tax advisor before going too far in the planning process for a commercial renewable energy investment in order to understand exactly what tax benefits might apply.

In Vermont, you can apply through the [Vermont Small Scale Renewable Energy Incentive Program](#) to receive additional funding for a small-scale solar project. There is a host of opportunities here for a variety of small-scale renewable energy projects. Forward received just under \$10, 000 from this incentive program based on the size of his system.

Forward suggests checking out [pvwatts.com](http://pvwatts.com) to help in the planning of a project. It can estimate how much electricity will be produced over the course of a year for a specific location, which will help determine the return on investment to see if it is financially viable. In Forward’s case, it estimated he would produce 15,000 kWh per year at his site, with his set-up; which has proved to be almost exactly correct.



**Richmond Solar Farm**

Jeff Forward  
 Forward Thinking Consultants, LLC  
 REV Conference  
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**Who I am and how I got here**

- Renewable Energy Consultant
- Rocky hillside farm with lots of open space
- 33 kVa distribution line in back yard
- Could I make the numbers work for me?
- If so, can I help others do the same thing?

**Group Net Metering**

- Established in 1997 for farm methane projects
- Allowed farms to use multiple meters to offset production from digester
- Legislature expanded concept to commercial and groups of residential customers
- Since I use little electricity, I decided to do a group system

**Technical Details**

- 13.6 kW Solar PV System
- Two 7 kW Fronius Inverters
- Eight poles with eight 215 watt panels @
- Fixed mount with one axis adjustment
- Produces 15,000 kWh per year
- Four households in group

**Cost and Incentives**

- \$85,000 including trenching and inverter room
- 30% Federal Tax Credit
  - available until 2016
  - Section 1603 Treasury Grant (no longer available)
- Eligible for MACRS depreciation on 85%
  - Section 179 deduction
- Vermont Small Wind and Solar Incentive

**Math**

Installed Cost of System	\$85,000
30% Federal Tax Credit	-\$25,000
MACRS Depreciation on 85% of Cost	-\$20,000
Vermont Small Wind and Solar	-\$10,000
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Net Cost of System	\$30,000

More Math

kWh Production per year	15,000
Retail rate per kWh	\$.17
Solar Adder	+ \$.03
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Net Metered Credit:	\$.20
Revenue is 15,000 x \$.20 =	\$3,000
\$30,000 / \$3,000 =	10% ROI

Lessons Learned

- Get multiple quotes and check references on installer
- Solar investment is more about taxes and less about energy
- Billing is a hassle
  - Solar credit is not transparent on bills
  - Hopefully PSB will fix
- Solar is more affordable than ever

Policy Conclusions

- There is a lot of marginal land where solar fits
- There are a lot of middle income people with \$ to invest
- Group net metering creates opportunity
- Tax deductions are key to ROI
- More smaller installations are good for the grid
- We should be doing this everywhere we can

For More Information

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