

David's Solar Testimonial

We decided to purchase solar panels for our own solar power even though we already were using Green Mountain as a 100% renewable power provider. Here's why. First, as more people transition to carbon-free power, the demand for renewable power will go up, and we wanted to—in our small way—contribute to the supply. Second, burning power that's generated in West Texas, for example, means the power has to be transmitted hundreds of miles to reach us, and that is inefficient because of the power loss over transmission lines. Third, our solar-generated power will essentially be free after 10 years when the panels will have paid for themselves, so over the long term (say 20 years or more), the power from our panels will be half price. Fourth, eventually we could upgrade our system with new technology that would allow our panels (and a battery backup) to provide us power even when the grid goes down.

The trigger point came when Solar United Neighbors (SUN) launched a solar co-operative to sign up a group of solar power purchasers. The co-op pools the sales opportunities and issues a Request For a Proposal to the solar power providers as a single large scale purchase. That gives the providers an incentive to discount prices. There is absolutely no commitment to buy a system for joining the co-op. You can even get a quote for your own system, and there is still no commitment. So we joined the co-op along with many others.

Once the co-op is "closed", then the search for a provider begins. The co-op members themselves jointly work and agree on a single provider. I chose not to participate because I was confident the co-op would choose a proper provider, but any co-op member can participate and is encouraged to do so. Our co-op eventually decided on Longhorn Solar as our provider. Incidentally, Longhorn is also on the list of Oncor approved installers.

Both SUN and Longhorn freely answered a "ton" of questions I had about a solar system. Here are some of the answers I got. Yes, Oncor offers a rebate for solar but their allocation was already exhausted for 2020. The allocation is re-issued every year (so far) and probably will be available in 2021. Also, to qualify, the installer has to be on the Oncor approved list, and the rebate has to be applied for by the installer. But here was a catch. There's a federal tax refund incentive for solar installations, and it's 27% for 2020. But that falls to 22% for 2021 and further declines after that. So now was a good time for us to buy in.

Yes, the system will pay for itself in about 10 years depending on the system and location. No, the panels don't degrade significantly over a lifetime of 20 years or more. Yes, Green Mountain offers a net-metering plan—meaning the surplus power your system generates will "turn" your meter "backwards". In other words, Green Mountain will buy the power you put back on the grid when you're not using it. This is known as a "grid-tied" system.

Yes, you can add battery storage to your system for use during non-solar hours. But they are expensive, about \$1000 per kWh, and will require additional power management equipment. Our long-term average of power usage is about 1 kWh, so we'd need at least 10 kWhs to make it through the night, or about \$10,000 worth of batteries. The power they store and then provide back will not pay for themselves for a long time. Yes, they are getting cheaper, some day will be much more affordable, and we can add them to our system then.

Yes, you can install the panels “tilted” toward the south for optimum exposure. I was thinking of our east facing roof and how to give it better solar exposure. The problem for tilt-racking is the tilted panels start to shade the panels next to them, and spreading them out takes up too much room. Plus, again, the added expense, \$150, did prove to be cost-effective, meaning the extra power generation would not pay for the added expense.

Yes, the panels can stand up to a hailstorm and high winds (except, of course, a tornado in which case it probably wouldn’t matter).

For some of our friends considering solar but having little roof exposure, yes, you can ground mount your solar panel array in another convenient location.

Being members of the co-op, Longhorn presented us with a proposal for a 5 kW system, and after removing the battery from it, and eliminating the financing, the price was about \$13,000, not including the federal tax credit which comes to about \$2700. Initially, their proposal including financing which made it more expensive, but basically allows the panels to pay their own way (on the average, the solar power varies from season to season). I discussed financing with Longhorn, and they made several suggestions for alternative, creative financing. In the meantime, I asked about financing at our credit union. They offered in decreasing interest rates: home improvement loans, second mortgage financing, personal credit accounts, and asset-backed loans. In the end, since we always have a small balance in our savings account, we decided to only finance half of the purchase with an asset-backed loan with a less than 4% interest rate.

I worked with Longhorn on our proposal. We had several turbine attic and other vents on our roof, especially our south facing roof, the most important. I asked if it would be worthwhile to move or remove the turbine vents, and that was not cost-effective. I discovered that there are very low profile vents that would fit under the panels and asked about that. Their expert got back to me and said he didn’t like the idea of exhausting the hot, attic air onto the panels, both for durability and for production (power goes down with temperature).

I actually learned how to model a solar system in one of the classes in my Master’s program at UNT. Using guesstimates for the shading of the trees to our west, and other measurements, I modeled our system with the free software from NREL. It turns out that I was using a cousin of the software Longhorn was using. And my model confirmed closely the data Longhorn provided in their proposal, including a 10 year payback. However I did find that the more panels I could get on the south face instead of the east face, the better the annual power generation became. Initially, we had 8 panels on the east side and 8 on the south side. Eventually, Longhorn worked out a plan to arrange the panels around the vents that allowed 10 panels on the south side.

With all of that considered, we finally committed to their proposal and made a down payment. We also started our application for financing. Longhorn gave us timeline for the installation and warned us that there would be a lengthy wait, a couple of months, for the required permitting to be approved. They also wanted to come on site (again) to confirm the roof structure and location of our electrical meter and associated breaker box. Surprisingly, the installation itself would only take a day.

We were not the first to join the co-op nor the last. As we and more members joined and committed to a contract, the overall pricing of systems dropped. Longhorn had set up “tiers” of pricing, and as each

tier filled up, the pricing moved down to the next tier. The pricing had already dropped once before we signed, and it dropped again at least once after we signed.

While we waited for the paperwork to be completed, I called Green Mountain to confirm that they would offer us net-metering. They were very helpful, and basically said to just let them know when our installation was activated, and they would switch our plans seamlessly. One point of confusion though was the pricing of the net-metering plan. On all electricity bills, there is line item charge for Oncor's "delivery" of the power. This is a fixed cost, and so for smaller bills, it's a bigger percentage of the total bill. For some reason that I didn't really go into, Green Mountain's net-metering plan includes Oncor's delivery charge as part of their per kWh charge. However fortunately for us Texans (unlike some states), Green Mountain pays exactly the same per kWh charge for the output power you return to the grid as they do for the power you actually consume. I think it came to around 15c/kWh for us which might seem high (relatively speaking), but remember, it includes Oncor's delivery charge in it.

With the process started, we were asked to e-sign a "tariff agreement" with Oncor relating I suppose to the net-metering arrangement. The Longhorn crew came by once to check on roof again and meter. And the months passed, waiting for the permit and all the agreements to be worked out. Longhorn contacted us several times to reassure us that things were progressing fine. Finally, we got a date for the installation that we could agree to. The crew would arrive at 8 a.m. and be finished that day. They did arrive first thing in the morning, and immediately set to work. Of course, there was some drilling and banging on the roof, but it wasn't bothersome. They handed the panels up to those on the roof by hand. They connected the inverter ***without*** turning off the power! They were finished before 2 p.m., and demonstrated the system by turning it on for me.

We couldn't leave it on until the city came for a final inspection. That finality came a couple of weeks later, and Longhorn came and met the inspector and our installation passed. Our system was on and working! I called Green Mountain and they switched us right away. Longhorn soon after sent me a link to the SolarEdge web site where I created an account and logged. The web pages allow me to monitor our solar power generation and review the daily results.

So far we've generated 1200 kWhs since September 18th earning about \$180 or almost half our normal power bill. The weather in October includes more cloudy days, still we've generated a high of 24 kWhs with a low of 2.5 kWhs on a cloudy day in October. They've told me there's really no maintenance required except an occasional rinsing off of accumulated dust and even that is not necessary.