



Issue Brief – February 2010

Topic: Getting started and going solar

Harnessing the sun

Sunlight. Directly or indirectly, it is the source of all energy on Earth. Plants use sunlight energy for photosynthesis, turning carbon dioxide and water into glucose, or sugar, the basic unit of energy for all living things. Fossil fuels are the product of the decomposition, over millions of years, of organisms built on this energy. These fuels power most everything in our lives. They also represent the conversion of a clean, renewable energy source – sunlight – into one that pollutes and is in limited supply. So in an age where we need energy to power far more than our own bodies, how do we use the sun in an efficient and sustainable way?

Enter solar photovoltaics (or solar PV for short), the process by which panels of silicon cells take solar radiation and convert it to electricity. Far more versatile than the solar thermal technology used to heat water, photovoltaics generate electricity that can power an entire home or office. Though solar power is hardly a new revelation, today's conditions are such that it is worth a second look. The technology is efficient, and the financial incentives are greater than ever. That said, what does this mean for you?

“Every situation is different,” says Jon Vaden, project director with the Napa Valley Solar Partnership. Vaden is organizing an effort to educate Napa residents and businesses about the practical aspects of going solar. He says people have different reasons for wanting to make the transition, but from a purely financial standpoint, he uses a simple rule of thumb: if your monthly electric bill is \$100-150 or more, solar may very well save you money.

The larger your energy bill, the greater the incentive to go solar. This is due to the tiered rate structure used by PG&E. A certain number of kW-hours are permitted each month at a relatively inexpensive baseline rate. Any kW-hours used above that number are subject to higher rates. At Tier 2 usage levels, rates are more than double the baseline rate. This is where lots of dollars can be saved.

Commercial customers are not subject to the same tiered structure, however. Instead rates are based on on-peak, partial-peak, and off-peak hours, the parameters for which change with the seasons. This distinction means it can make financial sense for a business to go 100% solar, according to Gopal Shanker, energy consultant with Recolte Energy. For Shanker, it's not a matter of if alternative energy like solar will become the norm, but when. “We are in the early stages of an energy transition from fossil fuels to

alternative energy,” he says. This is the reality, regardless of debates over carbon emissions and climate change. Fossil fuels are non-renewable, and their depletion will demand that energy evolve.

Though solar has been a viable alternative energy option for some time, it is only recently that government has aligned itself with science. Current incentives include a %30 federal tax credit and rebates through the California Solar Initiative. Even with this support, it still ultimately rests on the consumer to determine the pace and quality of the energy transition. There is tremendous potential for improved technology and production, says Shanker, resulting in lower costs. If these advancements are to happen now, however, there must be greater consumer demand.

To be a candidate for solar power, you must satisfy a few simple prerequisites. You must be a property owner with space for the installation of photovoltaic panels. To maximize sun exposure, this space is typically on a south-facing roof. Preferably that roof has a remaining life of 15 years or more. With these conditions met, the attention can turn to procuring the right equipment and financing its upfront costs. Often this is where people feel overwhelmed.

Now programs like Vaden’s are offering unprecedented guidance. The Napa Valley Solar Partnership has compiled a short list of solar vendors who have been prescreened to ensure that they operate in the best interest of the consumer. The list also offers the names of local energy consultants and potential lenders. Because of the availability of this information, it has never been easier to go solar.

The concept of solar is simple: get rid of the middleman (fossil fuels), and take energy straight from the source (the sun). In a world built on fossil fuels since the Industrial Revolution, the barriers to switching to alternative energy are numerous. Shanker likens the situation to Newton’s law of inertia – without an outside force acting upon us, we will choose to maintain the status quo. But these outside forces are beginning to pile up, among them ever-increasing utility rates, estimated at 6.7% annually.

It also seems feasible for some of this force to come from within. The science is proven, and information is readily available. In this transition to alternative energy, will consumers take the initiative, helping to accelerate innovation and drive costs down while minimizing further environmental degradation? It would seem prudent, and besides, solar energy is no novel concept. Plants have been living on it for several billion years.