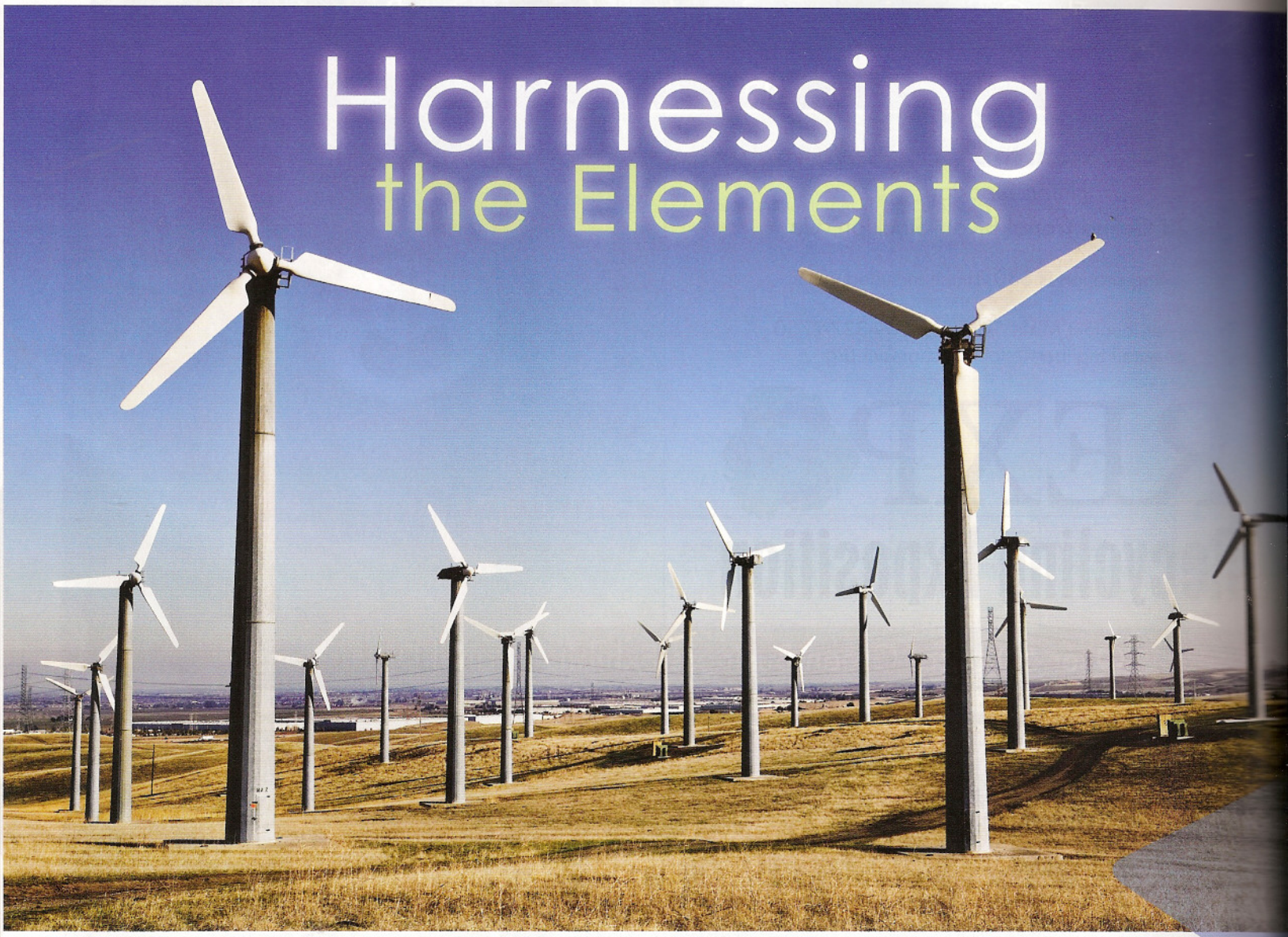
Harnessing the Elements



The San Joaquin region is a vast area, blessed with a supply in plenty of two very valuable renewable energy resources, wind and sun. It's fitting that this area invests in renewable energy sources in a big way. The sizeable concentration of wind turbines that form the Altamont Wind Farm, as well as the 6,720 photovoltaic panels that provide solar power to the DeGroot Water Treatment Plant in Oakdale are emblematic of the powerful technologies that promise to bring cleaner power to Central California.

THE CROP OF THE TWENTY-FIRST CENTURY

Wind is fast being called the crop of the twenty-first century, and twenty years from now, names like Buffalo Ridge, Hagerman, and Altamont Pass will be synonymous with it. These are the places where the largest wind generation is currently taking place. Moreover, if only some of the drivers mentioned in the National Renewable Energy Laboratory's recent "Wind Powering America" report prevail, then there's ample reason to believe that, in the not too distant future, there will be many more such facilities built in those five states that have the most wind potential: Texas, Minnesota, Iowa, Washington, and California.

Being at the mercy of uncertain prices for fossil fuels has certainly stoked interest. Intensifying demand at the consumer level for 'greener' energy solutions is converging with declining wind costs to make harnessing the wind increasingly more attractive. Additionally, the federal Wind Production Tax Credit (PTC), which gives incentives to wind farm developers and operators, has been extended through December 2009. The Obama administration is also signaling its intent to vigorously support renewable energy initiatives.

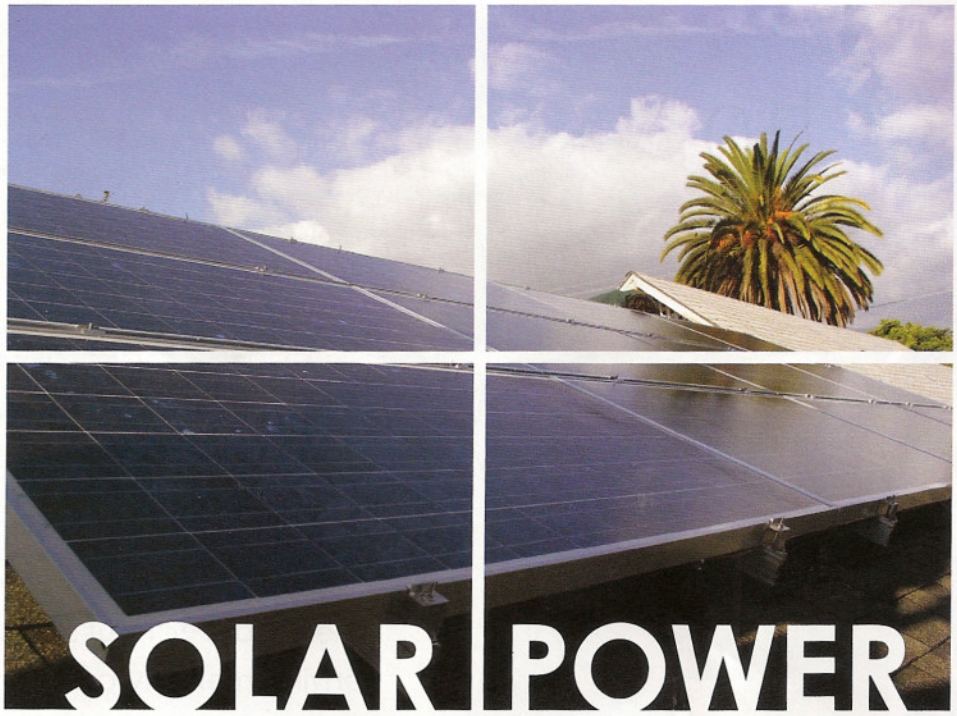
The beneficial environmental effects of wind generation are widely recognized—emissions of carbon dioxide, sulfur dioxide, and nitrogen oxide that would otherwise be released into the atmosphere from non-renewable power sources are reduced. What is less widely talked about are the economic development impacts, the 'ripple effect' that building new wind farms and later maintaining them has on the region. The epicenter of job creation is at the wind farm itself. Construction workers, cement truck drivers, road crews, and maintenance workers are needed during the construction phase, lasting up to two years, as well as in the operational phase (twenty-plus years). Management and administrative personnel are also needed on-site. Off-site, wind farms rely on boom truck operators, gas workers, and blade construction workers, as well as hardware and parts suppliers. Additionally, bankers are needed to finance the construction, as well as subcomponent manufacturers. Land owners profit, while the sites also generate local property tax revenue.

Wind Farm Fast Facts

Both vertical and horizontal wind turbines exist, but the majority in operation are horizontal. A typical horizontal wind turbine is as tall as a 20-story building, with the wingspan of its 3 blades measuring 200 feet across.

With close to 5,000 wind turbines, Altamont Pass Wind Farm has the largest concentration of wind turbines in the world. It has a capacity of 576 megawatts (MW), producing about 125 MW on average, and 1.1 terawatt-hours (TWh) yearly. Each turbine can provide enough electricity for about 300 homes.

Minimizing wildlife loss (bird fatalities) at wind farms continues to be a 'hot button' issue with environmentalists. Wind energy proponents point to new technologies that will reduce the number of turbines needed to produce the same amount of energy. They say that blades on modern turbines rotate more slowly, are more visible, and are situated much higher, so they are not only easier for birds to avoid, but are high enough to avoid sensitive flight zones for many birds.



SOLAR POWER

WHETHER YOU LIKE TO FEEL that you are doing your part to nurture a sustainable environment, or you just like the idea of the balance on your utility bill heading towards zero, this may be the year you want to seriously consider adding solar panels to your home. A maturing solar market has produced seasoned industry professionals with the know-how. Simultaneously, financial incentives are also driving down the cost of this addition.

While there are quite a few companies out there that want to sell you solar installations, buyer beware, says Aram Alexander, owner of Manteca-based Aram Solar.

"Installing a solar system correctly involves lots of engineering," says Alexander. "Customers will want to hire a building contractor who has a track record with many different types of installations." Contractors who also belong to industry associations, such as California Solar Energy Industries Association (CALSEIA) are good choices "since they are most likely interested in keeping abreast of developments and the best practices in the solar industry," he says.

San Joaquin Solar Fact

Did you know? You can take advantage of the California Solar Initiative rebate when you install a solar energy system, and earn yourself a tax credit—more money in your pocket, in addition to the cash you'll save from going solar.

The decision process starts with an evaluation of a year's worth of utility bills, with this electrical usage used as the basis for scaling the size of an installation. "There is a misconception that a large home, by nature of its size, will need a larger installation than a smaller home," says Alexander, "but usage drives the size." Costs for typical installations in the San Joaquin region are running around $40,000 to $50,000, says Jason Hanson, owner of Rancho Cordova-based Sierra Pacific Solar, but a homeowner paying an average of about $100 per month for electricity can get the right-sized system for $15,000.

This is a pivotal year for return on investment, says Alexander. Consumers can still take advantage of the California Solar Initiative rebate, but the ceiling on the federal tax credit, formerly capped at $2,000 (regardless of installation's size), is now gone. Taking these incentives into consideration, an installation will pay for itself in seven to twelve years, Hanson says. "With a no-cost-to-the-buyer, ten-year parts and labor guarantee mandated by the rebate program, what other product installation gives you that kind of coverage?" says Alexander.