

## DESIGNING AN ENERGY

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We tend to think of energy policy as a matter of right and wrong, truth and righteousness, just as we do with all environmental issues. In the energy debate, the two sides are fossil fuel versus alternative energy advocates.

Suppose instead we approached the energy problem the way Frederick Law Olmsted, father of landscape architecture and planner of New York's Central Park, approached the design of city parks. Unlike many environmental debaters today, Olmsted did not see parks and cities, trees and people, as right vs. wrong, nature vs. people, forests vs. cities. He saw vegetation as an essential resource in cities – a resource that could play medical, social and psychological roles for people.

He saw vegetation as a palette. He thought, for instance, that southern California's natural shrublands are too restricted a palette with its pale flowers and dull green leaves. He proposed introducing brighter blossoming plants from other regions into parks and other vistas, once again viewing landscape for people as design.

Suppose we asked Olmsted to develop an energy policy. What is out there as a “palette” of technologies? The palette is of two kinds – means of production and form of energy.

Vice President Richard Cheney sees the palette as one color: fossil-fuel-running automobiles and big fossil fuel plants making electricity, 1950s style. Recently he said, “The reality is that fossil fuels provide virtually 100 percent of our transportation needs and an overwhelming share of our electricity requirements. For years down the road, this will continue to be true.” Only after that, he said, could “alternative fuels” become “a great deal more plentiful than they are today.” But the energy palette is broader. Means of production are colored with solar, wind and microturbines, as well as large fossil fuel and hydroelectric plants. With this mixture, you can interchange forms of energy: Electricity can make equivalents of natural gas, and natural gas can run power plants, cars and microturbines and make electricity.

For example, California solar-energy company, PowerLight, signed a contract this week to install 190 kilowatts of solar electric generation at the Green Point Manufacturing and Design Center in downtown Brooklyn that will be up and running by end of summer. AstroPower of California is producing solar electric units to go on new track houses built by Shea Homes in San Diego. Solar is here, now, and online faster than big, centralized fossil or nuclear power plants that take years to establish.

On April 22, New York Governor Pataki announced a unique public/private partnership with the Long Island Power Authority and Fala direct marketing companies to develop the nation's largest customer owned solar electric facility – 1.5 megawatts – creating a 19 percent savings for Fala's energy bill. This installation is sited quickly and easily on roofs of three buildings owned by Fala – not unsightly, not polluting.

State Department of Environmental Conservation Commissioner Erin M. Crotty said, “solar, wind and fuel cell technology, are becoming increasingly important in New York's strategy to meet the growing demand for power while protecting public health and our environment.” Fala President and CEO, Jeffrey Jurick, said their choice of solar was a commitment to “important quality of life issues.”

Wind energy is farther ahead. Cost per kilowatt-hour is competitive with fossil fuels. Modern wind machines are hi-tech computer-operated devices not possible before the silicon age. Wind energy abounds. Estimates suggest that Texas, South Dakota, and North Dakota could meet electricity needs of the entire country. Wind machines can function in farmland with cattle grazing and crops growing, providing additional farm income.

Microturbines – jet engines on the ground using natural gas, produce electricity and provide another alternative, also up and running quickly.

What's new about these alternatives is that they produce electricity on site, where it is needed, and clean power with no spiking fuel costs. Solar and turbines can peak at time of peak demand, reducing grid load, improving reliability, and reducing customer costs – since peak power is the most expensive power.

So it's not years away; it's here today and it's viable in the marketplace. Some initial brush strokes already mark the energy canvas.

With a broad palette, energy generation and form become local choices affecting how you plan your backyard and your neighborhood. Your town could opt for housing developments whose homes face south; whose roofs are solar electrical generators; whose automobile fuel is made by wind or sunlight or comes out of the ground; whose vegetation includes deciduous trees on the south side, providing shade in the summer and exposing windows to warming sunlight in winter.

Nationally, different regions offer different advantages and could have different designs. The sun-drenched Southwest, land of tan deserts, black volcanoes, ruddy sandstones – California, Arizona, New Mexico, Nevada and Utah – offers large open spaces that we might paint dense with solar electric panels, some making electricity, some making portable gasoline-like fuels.

From North Dakota south to Texas, we can dot farm and grazing lands with wind machines scattered among crops and forage, providing extra income for farmers.

East of the Mississippi, among the green forests and lush flowers, we might opt for a more dispersed design-an intricate colored matrix: wind in scattered farmlands and dense urban areas with solar electric rooftops and microturbines.

Across the country, where we as a people choose, we could paint in fossil- fuel plants.

If there is an energy palette, who's to decide what energy landscape we paint? Should it be one person – the vice president? Other human experience suggests that just sets us up for failure. Bridge building, a simpler thing than a national energy policy, would seem to have a single design option for any site-just one way to make a bridge. But the engineering expert, Henry Petroski, points out there are many ways to build bridges- many materials and many designs. Bridges that work best result from a design process, beginning with a design competition. A panel of experts selects a number of “winners”. These winning designs are opened to public comment, and the public votes on the design it likes best, and that bridge is built. Bridge building becomes part of a democratic process. The result is more beautiful and pleasing bridges that tend to function better.

So it must be with energy.

Our energy palette gives us options. Options allow local choice; choice allows many players. Energy generation and form become part of democracy in action, not the decision of a federal government set on pushing one kind of technology.

We can create an integrated system that meets human needs, reduces pollution, responds quickly and provides for innovative development for increased future demands. This approach offers better national energy security.

What's the best mix of these technologies? Perhaps we need an Olmsted of energy to help us up the path where we can view the energy landscape, see the design options and, as a democratic nation, choose a design that best meets our environmental, technological and human needs.

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