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Green Civil War: Projects vs. Preservation

By THE EDITORS

Environmentalists are more openly at odds over two goals: the preservation of wide open spaces vs. the use of public lands for renewable energy projects.

The boosters of renewable energy development won a victory last week when the Bureau of Land Management announced that 31 proposed projects have been put on the fast track for approval.

But there are battlegrounds like the Mojave Desert in California , where several solar and wind farm proposals were stalled by legislation introduced by Senator Dianne Feinstein to protect a million acres that had earlier been set aside for preservation.

And after conservationists protested a German solar developer's water-intensive project in the Amargosa Valley in Nevada, the company substituted a far more expensive design requiring less water.

In some undeveloped places — like Indian reservations — the megaprojects are seen as attractive: tribes benefit economically, and a wind farm, no matter how much land it requires, might be seen as preferable to a coal plant. But on public lands, how does the federal government balance protection of natural resources with the Obama administration's goal of promoting renewable energy?

- Randy Udall, energy analyst
- Vaclav Smil, professor, University of Manitoba
- Daniel M. Kammen, professor of energy, U.C. Berkeley
- David Roberts, Grist.org
- Ileene Anderson, Center for Biological Diversity
- Winona LaDuke, Honor the Earth Fund

The Trade-Offs

***Randy Udall** is a Colorado-based energy analyst who, he says, has "both a fondness for renewable energy and an appreciation of fossil fuel."*

Are there conflicts between large-scale renewable energy development and land preservation? Sure — but let's keep things in perspective.

You can't develop carbon-free power sources without affecting the land.

When it comes to energy, Americans are spoiled. We insist on consuming our body weight in petroleum each week, but god forbid we see an oil well. Over the last half century, our energy appetites have been supersized. Today, a typical American consumes as much energy as a 66,000 pound primate would, as much energy each day as is found in a lightning bolt.

There are 300 million of us in the oil tribe, so it's not surprising that Western watersheds are dammed for hydropower and Appalachian mountaintops are scalped for coal. In the Rockies, natural gas companies have leased more than 30 million acres of federal land, an area half the size of Colorado. For example, the entire San Juan Basin — an area larger than Maryland and Massachusetts combined—is now devoted to oil and gas production.

The wind and solar potential west of the Mississippi is gargantuan. But today wind provides just 2 percent of U.S. electricity, and solar less than 1 percent. You can't scale these carbon-free power sources up, and link them to urban areas with new power lines, without having impacts.

Those impacts can be minimized by thoughtful siting and technological advances. To reduce water consumption, for example, solar thermal developers can use dry-cooling technologies. Windmills can be integrated into existing farms and ranches, doubling their bottom line. Transmission lines will always be a hurdle, since their opponents will likely say NOPE — "nowhere on Planet Earth."

There will be trade-offs. But global oil production is peaking and if we don't reduce greenhouse gas emissions — now more than 20 tons per American per year — why bother rebuilding New Orleans? Over the next few centuries sea level rise will claim it, much of South Florida, and most of Manhattan.

The False Promise of Alternative Energy

Vaclav Smil *is distinguished professor at the University of Manitoba. He is author of many books, including "Energy in Nature and Society: General Energetics of Complex Systems" and "Energy at the Crossroads." A recent article, "U.S. Energy Policy: The Need for Radical Departures," appeared in a National Academy of Sciences publication.*


Adkins Arboretum
Switch grass for energy: a 'mad scheme'?

The U.S. and Canada, too, are already consuming TWICE as much energy per capita as do other affluent countries. Even when these rates are adjusted for differences in climate, size of the territory and economic structure, America's energy use is still more than 50 percent higher than in France or Germany.

My usual questions: as a result, are the Americans 50 percent richer, healthier, safer or better educated than French or Germans?

Obvious negative answers to all of these point to the key problem with the U.S. energy policy.

It should strive, mightily and in any and all possible ways, to REDUCE per capita energy use rather than keep coming up with new mad schemes to produce more energy — be they the delusions of mass-produced cellulosic ethanol or planting switch grass everywhere or thinking that the country can be repowered by wind and solar in a decade.

And only by reducing per capita energy use will we protect the environment in the long run because every expanded energy conversion has its environmental costs: there are only shades of gray, no real green. Think where that steel for wind towers and the plastics for turbine blades come from: not from renewable materials. Similarly, think of all of those minerals needed for

photovoltaic cells and car batteries: high-grade silicon and lithium and gallium and selenium and the energy needed to produce them.

What America needs is a rational use of less energy rather than the continued waste of more energy.

The Rooftop Approach Isn't Enough

Daniel M. Kammen *is the Class of 1935 Distinguished Professor of Energy at the University of California, Berkeley. He is the founding director of the Renewable and Appropriate Energy Laboratory.*

Recent attention to two "conflicts" over renewable energy projects in desert areas — ostensibly between environmentalists seeking conservation of desert areas and other environmentalists seeking the development of clean energy resources (solar and wind power) — is both avoidable, and largely unnecessary.

Aggressive conservation is not enough. We need a new energy grid.

The reason for this "conflict" is that we have suddenly discovered the need and the opportunity for large increases in low-carbon energy are both not as simple as tiling rooftops with solar, and putting wind energy farms in out-of-sight, out-of-mind locations.

Indeed, the need for water for energy projects (already a significant problem and environmental impact of coal, oil, gas and nuclear power plants today), and the impacts on biodiversity, our "viewscape" (for both new energy projects and for power lines), pose challenges that require thought and planning to minimize or to avoid.

That, precisely, is where our new excitement over clean energy needs to both learn lessons from the (often painful) history of conventional energy projects, and to create a new clean energy "systems science." We need both an economics and ethos for a sustainable energy future that values ourselves and the planet differently than we have done in the past.

This is not that difficult. One lesson is already widely in academic and policy discussion: the cheapest form of energy — in both economic and environmental terms — is that we do not need. By making energy efficiency and smart end-use management the norm for all energy providers and users (through programs that encourage and require aggressive use of efficiency, for example) we can cut the need for new energy projects. Innovative financing, such as the Property Assessed Clean Energy mechanism my team and I helped to develop in Berkeley, Calif., that has now spread to over 10 states, received White House support, and a place in current energy and climate legislation.

Second, planning is vital. The aggressive deployment of energy efficiency begins the process, but we must build out a new, clean energy generation infrastructure. The start is to integrate the planning around new energy supply technologies (solar, wind, hydropower, geothermal, ocean energy, etc.) with the land and water requirements these technologies require, with the needed new grid infrastructure.

Contrary to the "battle" over green and not-so-green clean energy efforts, my laboratory has partnered with the Nature Conservancy of California to examine the ways to maximize clean energy generation and minimize environmental impact for a greatly expanded solar and wind energy future in California's deserts. Using a modeling tool called Switch, we are finding that by explicitly incorporating least cost, least carbon emission, and least environmental impact criteria into plans for our energy future, we can avoid many of these potential conflicts.

This sounds easy, but our history has been quite the opposite. It has proved remarkably difficult to integrate short- and long-term planning, let alone to do so while meeting economic and other goals. A price on greenhouse gas emissions would make this task far easier, but so too will be needed constraints based on least water and biodiversity impacts. We can do this, but planning tools like Switch will need to be made widely available, and commercial developers will need a set of rewards and prohibitions that make this interdisciplinary planning the norm, not the exception.

Unnecessary Gigantism

David Roberts *is a senior writer for Grist.org.*

Many folks are conflicted over the seeming clash between conserving America's remaining wild landscapes and expanding clean energy supplies. What to do?

To begin with, it seems prudent to postpone the conflict as long as possible, by making every effort to satisfy new energy demand with low-carbon resources on land that's already developed. Senator Feinstein has gestured in that direction, but neither California or any other state has ever offered serious, sustained support to what's loosely called distributed energy — energy generated, stored and managed at the local level.

In a new model, solar panels would be over every parking lot, brownfield, warehouse and residential roof.

The U.S. power industry has always had a fondness for gigantism: huge plants, remotely located, generating electricity that's sold cheaply and used profligately. Wind farms on the Plains and solar plants in the Southwest desert, connected to cities by expensive new transmission lines, fit

the familiar model. Regulations provide incentives for this development, which utilities know how to manage, and which politicians understand.

Yet the land and water problems facing solar plants should be a reminder that all large new industrial projects impose social costs. Perhaps it's time to take distributed energy seriously.

What would a new model look like? Solar panels over every parking lot, brownfield, warehouse, and residential roof. Small-scale wind turbines on every bridge, microhydro in every stream and river, advanced geothermal in every back yard, waste heat capture on every industrial plant. Batteries that store power to be used or sold when it's worth most. An IT-infused grid that can manage complexity; devices that display real-time use and price information; variable power pricing. Every building sealed and weatherized, every appliance and electric car net-connected.

In such a system, it's not just energy that's distributed, it's social and economic power. The result is more democratic and resilient (though such benefits rarely find their way into conventional price comparisons). If "consumers" become producers, managers, and innovators, perhaps the desert tortoise and the world can be saved.

A Conflict Over Means, Not Ends

***Ileene Anderson**, a biologist based in Southern California, is the public lands desert director of the Center for Biological Diversity.*

There is no dispute that we need to transition off of fossil fuels. But renewable energy projects can be even more land-intensive than the fossil fuel projects they replace. Our challenge comes in siting renewable energy projects in areas that will provide the most energy while causing the least environmental damage. Fortunately, these goals are not mutually exclusive.

There is land available for energy development, but a free-for-all attitude needlessly causes conflicts.

First and foremost, the best path for renewable energy development likely is not the utility-centric model but one of distributed energy. The best place for solar panels is not wildlands in the desert but rooftops and parking lots in our cities. But even if we accept that industrial-scale projects are the way to go, we need not sacrifice our wildlands and wildlife habitats to do so.

In the arid regions of California where I work, literally hundreds of thousands of acres of abandoned agricultural fields, areas where soils have been poisoned by salt build-up or abandoned for lack of water, lay fallow. Reusing these lands for wind or solar farms is just the new wave of farming.

Similarly, to the degree any public lands should be made available for energy development, numerous parcels where wildlife habitat and other ecological values have long-since been compromised by roads, mining and other impacts exist.

Unfortunately, the default for some energy companies has not been to seek out the lands where renewable energy projects would have the least environmental impact; instead we have seen a permitting free-for-all where endangered species habitat and wildlife corridors have been largely ignored. As such, to the degree there has been tension between renewable energy development and land protection, it has largely been the result of a failure of planning, not an irreconcilable conflict.

A Boon for Reservations

***Winona LaDuke**, who lives on the White Earth Reservation, is program director of the Honor the Earth Fund and is founding director of White Earth Land Recovery Project.*

Native people have born the brunt of America's energy addictions and policy, whether it is the coal strip mines or the uranium mines. Today, if equipped with the right set of opportunities and training, Native people will be key to the just and green transition to a renewable and sustainable energy economy. Out with the old ways of digging, pumping and contaminating.

Tribal communities must be forward-thinking, looking to the next energy economy and its potential.

This transition requires more than capital. Technical skills and a set of training programs must be available for wind, solar and other renewable energies, and tribal communities must be forward-thinking, looking to the next energy economy and its potential.

Indeed tribal communities have vast potential. Our tribal lands hold over 535 billion kilowatt hours-per-year of wind power generation potential and 17,000 billion kilowatt hours/year of solar electricity generation potential (approximately 4.5 times total U.S. annual generation).

This transition won't take place overnight and can begin small or large. Reservations of all sizes are already launching into this transition. The small White Earth reservation is looking to install small-scale wind, while larger reservations like the Navajo Nation and Sisseton-Wahpeton are looking into large-scale wind and solar power.

The future is green and ready for Native America to transition. Companies such as Sacred Power in Albuquerque, N.M., are already servicing the Southwest in solar photovoltaic training and installations. Further north, Henry Red Cloud's Lakota Solar Enterprises is changing the way frigid reservations are heated through his uniquely designed solar heating panels.

The opportunities are endless and Native America is ready to take it on. Being the windiest and hottest lands in the United States, tribal reservations are rich in wind and solar power potential. The time for transition is now and the need is great.