

ENERGY EFFICIENCY IS THE BEST RENEWABLE

By Rick Phelps

“What’s the best renewable?”

I’ve been asked that question countless times over my career in the field and my answer remains constant: energy efficiency. Invariably, the response to my answer is something like “no, we mean the real stuff — not those funny looking light bulbs.” Discussion follows and, while energy efficiency will likely never result in photo ops in front of a shiny saved kilowatt-hour, maybe the questioner will gain a better appreciation of where energy efficiency fits into the energy mix.

Energy efficiency is not a true renewable as it’s not possible to “scale it up” and make more of it. However, efficiency does reduce the overall amount of energy consumed. In that sense, efficiency is as much of a source as solar, wind, biomass or other renewables. Estimates for remaining non-transportation energy efficiency potential vary, but are in the range of 20-30% or more. As wind and solar now contribute about 2% of the country’s energy mix, maximizing energy efficiency to capture that potential 20-30% savings should play an important part in our energy future.

Energy efficiency has three distinct advantages over traditional renewables. It’s easier, it costs less, and it has minimal environmental impact.

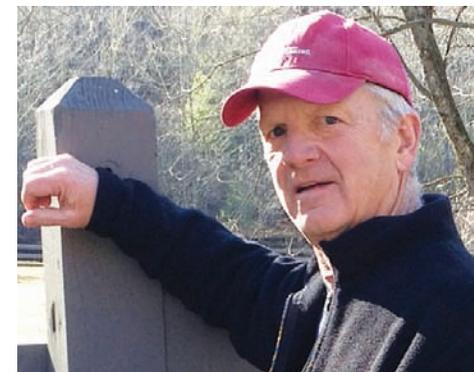
The primary reason efficiency is easier is that little is required. Instead, existing structures or processes have to be improved with existing technologies. Efficiency measures can be as simple as replacing lighting and thermostat controls — the so-called “low hanging fruit” — to as complex as replacing motors, controllers and fuel sources in an industrial process. Implementation is constrained by funding sources and the rate of return of efficiency retrofits, but current policies address this through ratepayer or customer funded cash rebates or tax credits. In any case, efficiency projects are easy compared to the design, financing and permitting challenges of traditional renewable projects such as wind, solar, biomass or geothermal.

Comparing the cost of efficiency and renewables is more complex given the different technologies and capital requirements. The best common denominator may be cost per kilowatt-hour. While not perfect, kilowatt-hour comparisons highlight relative cost differentials and help in understanding the order of magnitude differences between efficiency and renewables. A recent report by the Edison Foundation’s Institute for Energy Efficiency estimated the utility-funded cost per kilowatt-hour

of energy efficiency programs at about 3.2¢. The report points out, however, that the costs of energy efficiency will undoubtedly rise as the proportion of “low hanging fruit” shrinks.

This 3.2¢ per kilowatt-hour compares to about 7¢ for the best performing wind farms and 12¢-30¢ for solar net of utility incentives and Federal tax credits, according to recent online summaries from the Natural Resources Defense Council (NRDC). Those kilowatt-hour costs for wind and solar are predicted to fall with improving technologies and cost reductions. Consequently, renewables will continue to be more competitive energy sources, subject to the political and economic vagaries of utility incentives and tax credits, but compared to efficiency, renewables will still be more costly.

The environmental impacts of renewables versus efficiency are straightforward. Efficiency projects have no requirement for land, while renewables projects do. Renewables demand for acreage is significant and The Nature Conservancy coined the term “energy sprawl” to describe this reality. Residents of the Eastern Sierra need look no further than the proposed LADWP project near Manzanar (see story p. 3) or the expansion of the geothermal plant



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in Mammoth Lakes to see the environmental impacts of renewable projects. Reading the comments about these projects brings to mind a favorite saying of one of my good friends: “Renewable projects are like heaven — everybody wants to go there, but no one wants to die.”

When discussing energy sprawl the extreme arguments make the headlines. To some the question is a distraction and the conclusion is that it doesn’t matter at all compared to the perils of climate change. Others argue — with the support of many numbers and analyses — that energy sprawl is devastating and the country will never have enough land required for a renewable future. Clearly there is no winning argument, but the land intensity of renewable projects is a reality. Perhaps the best perspective comes from the NRDC in summary comments about wind and solar: “Siting decisions must always be made extremely carefully, with impacts mitigated and operations conducted in an environmentally responsible manner.”

These comments about the implementation, cost and environmental concerns about renewables are not arguments against renewables, but rather reasons why energy efficiency should come first.

For example, the principle of energy efficiency first is common practice when designing a solar photovoltaic project for residential use. The home is audited and then, if possible, energy retrofits completed before the installation of a right-sized solar system. This audit/sizing sequence reduces the system cost and increases the return on investment to the homeowner, as well as conserving solar resources by not overbuilding.

Energy efficiency is the necessary first step and for every kilowatt-hour saved, a kilowatt-hour does not have to be generated by renewable or fossil sources. Small steps mean something whether it’s replacing incandescent lighting with compact fluorescents, caulking your windows or using a programmable thermostat. The more kilowatt-hours saved, the more likely it is that an elected official will seek a photo op with a saved kilowatt-hour.

Rick Phelps is Executive Director of the High Sierra Energy Foundation. The views expressed in this column are those of the author and not necessarily those of his employer.

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