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Affordable or economical?

In discussing the pros and cons of various energy alternatives, the issue of cost inevitably and appropriately arises. Renewable energy technologies, most notably wind and solar, are often derided as "too expensive" given the alternatives. About a year ago, I made a comment along those lines on television and received a scathing e-mail from a woman who argued that, since she had photovoltaic panels on her house, it was clearly not too expensive.

Upon some reflection, I realized that there are subtleties in the issues surrounding energy that are often lost in the 30-second sound bite exchange that passes for discourse these days. Central to this discussion is the difference between the terms affordable and economical.

Clearly, home-based photovoltaic systems are affordable as proven by the fact that many of these are showing up around Boise. But make no mistake, they're expensive. For roughly one-third the cost of a new mid-priced sedan, you can have a 1-kilowatt photovoltaic system installed on the roof of your home. And while each installation is different, typical performance of such a system would result in enough electricity to power less than 20 percent of a typical Idaho home. At our current electricity rates, you'd save somewhere between \$100 and \$150 a year, assuming you make no changes in your electrical usage.

Which leads me to the second point: Is it economical? The dictionary definition of "economical" reads: "marked by careful, efficient and prudent use of resources." Often this is interpreted as meaning: Is it the least expensive of the available options? On the surface at least, solar photovoltaic systems for the home fail that test. At \$150 a year avoided cost, the simple payback of the home system is over 50 years, roughly twice the expected life of a PV array. However, this highly simplified analysis doesn't tell the whole story.

Economists will point out that in any market there are elements called externalities. These are economic impacts (positive or negative) that, for whatever reason, are not incorporated into the forces that determine the price paid for a commodity. In the current energy discussion, the price we pay for electricity in Idaho may not reflect the impacts of hydroelectric dams (on, for example, native anadromous fish populations) or the long-term impact of carbon dioxide from coal-burning power plants. These two technologies (hydro and coal) account for well over 80 percent of the electricity used in Idaho. One would argue that if the externalities of energy generation were incorporated into the market, renewable sources would be much less expensive than traditional generation sources.

In addition, free market advocates loudly lament the "government subsidies" provided to renewable energy generators in the form of tax credits and other incentives, such as loan guarantees given to nuclear power plant developers. There are pros and cons in those discussions, but it is important to put these government interventions into perspective.

According to one study (prepared for the Nuclear Energy Institute, a trade organization of the nuclear power industry), the federal government spent \$644 billion (in 2003 dollars, a bit less than the size of the stimulus package) between 1950 and 2006 to support energy development. Nearly three quarters of that support went to the fossil fuel industries (oil, coal and natural gas), while only 6percent went to wind and solar technologies. In this perspective, regulations that impose additional expenses on fossil fuels like a carbon cap and trade plan don't seem all that unfair. We're simply making up for lost time.

The government sees a role for itself in keeping the cost of energy low. Policymakers rightly see this as an important driver for economic development. But this inevitably causes upset when the technology changes. Government programs that have supported oil and coal are not going to help wind and solar. Since no one is going to suggest that these industries pay that money back to the federal government, the only reasonable approach is to level the playing field to give the new disruptive technologies like wind and solar the elbow room to compete.

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