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Renewable Energy Credits (RECs) – Issues and Process

By Rich Reis—Some of my recent experiences raised a number of questions about what Renewable Energy Credits (RECs) are and whether they were effective in mitigating global warming.

To minimize our impact on global warming, my local congregation, the Washington Ethical Society, considered a company's proposal to install a solar photovoltaic system. The company would retain system ownership, while the congregation would purchase its solar electricity for 20 years. The price, while higher than other market prices for electricity, would remain fixed during the 20 year contract. The solar-generated electricity would also yield RECs. The company would sell these RECs to partially offset the cost of the system.

I attended an informational meeting on global warming and the environment at the Silver Spring Unitarian Universalist Church. There, a representative from the county's Energy Office urged attendees to use Compact Fluorescent Lamps (CFLs) and to buy RECs to compensate for the global warming gas emissions of the ordinary electrical energy they use.

RECs are a market-based device to allow people and corporations to benefit financially when generating energy from renewable energy sources - sources that do not emit global warming gases, principally carbon-dioxide (CO₂). They also permit others to purchase these credits to offset their energy-intensive activities that produce global warming gases, such as air travel. Thus, RECs are a potential mechanism for reducing global warming.

RECs help address an essential problem in our economy described in Garrett Harden's seminal essay, "The Tragedy of the Commons" (Science magazine, 1968). The problem applies as an individual buying electricity from conventional sources does not pay for its adverse effects. For example, most of the electricity in our area comes from coal. Its mining is very environmentally destructive. When it is burned to generate electricity it produces local pollutants and global warming gases.

One REC is awarded based for each megawatt-hour (MWh or 1000 kWh) of renewable energy generated. The types of renewable energy allowed for these credits include solar, wind, biomass, and geothermal. It does not depend upon the infrastructure needed to generate this electricity. Each REC can be considered equivalent to about 1350 pounds of carbon dioxide (CO₂) not emitted, based upon federal Energy Information Office Reports.

Yet it is important to realize that RECs and carbon offsets are similar, but different. RECs come from electrical generators that emit no or less carbon than traditional generators, whereas carbon offsets can come from other sources. RECs can be used to claim that one's electricity comes from no or low carbon sources.

Maryland Power companies are required to meet renewable portfolio standards per the 2005 law as amended in 2007. Under these laws they must either generate a portion of their electricity from certain renewable sources or purchase RECs from the open market.

The following scenario illustrates the issues of selling and buying RECs and offsets:

In years past, John purchased 10 MWh of electricity from conventional sources. Those power plants emitted 10,000 pounds of carbon dioxide to supply that electricity. As a concerned environmentalist, John has a grid-tied solar electric system installed on his home. The system generates an average 10 MWh of solar electricity per year and allows him to harvest 10 RECs. If each REC sells for \$20 on the open market, each year John sells his 10 RECs for \$200 to partially pay back the cost of his system.

Mary plans to fly from St. Louis to San Francisco to attend a Sierra Club meeting. She uses a tool such as the one on the NativeEnergy web site to learn that her round trip flight will generate the equivalent of 1.395 tons (2790 pounds) of carbon dioxide per passenger - equivalent to about 2 RECs. As a concerned environmentalist, she buys the offset so that she can travel feeling that, on-balance, her trip does not contribute to global warming. Each of four other attendees also buys the same offset; all 5 purchase the equivalent of 10 RECs – the same number that John sold in one year.

What is wrong with this scenario?

The RECs added balanced the RECs removed from the market. Yet the five flights added the equivalent of 13,950 pounds of CO₂ to the global atmosphere. The reality is that John cannot sell RECs and still “earn points” as an environmentalist; he also needs to conserve and use less electricity. Mary should know that her purchase of RECs might not fully offset the extra global warming of her trip.

There are other issues to consider. We can compare the embedded energy of conventional and alternative energy systems. This includes the energy to mine the materials, manufacture the components, and install the system. There may be environmental impacts of alternative energy installation and use. For example, wind generation may harm birds. In the recent book “Heat, How to Stop the Planet from Burning,” author George Monbiot argues that air travel must be avoided to moderate global warming. Although a MWh of energy use avoided is at least as good for the environment as a MWh of alternative energy, RECs are not awarded for conservation. Finally, RECs should be certified by a third-party rater or verified through an audit.

Perhaps the worst example is a plan by California-based Planktos, Inc. to dump iron in the Pacific to generate RECs. As the Friends of the Earth notes, the plan lacks oversight, could harm the ocean, and would probably not work anyway.

Sequestration, another way to avoid carbon release when generating electricity from conventional source costs money. For example, a recent paper (Energy Engineering 2007, Vol. 104, No. 6, p. 15) estimates that carbon capture and sequestration adds about 5.44¢ per kWh to the cost of coal-

generated electricity. To date, geological carbon capture and sequestration has only been tried with two relatively small demonstration projects.

Aside from using RECs, we can lessen the harm from coal and other non-renewable energy sources, by having the government mandate renewable energy portfolios for utilities (as mentioned earlier), regulating mining and electrical generation, taxing carbon, conserving energy, and using tradable carbon permits. These and other possibilities are used locally and around the world to some extent.

RECs do their job when they provide an effective incentive for commercial alternative energy investments. For example, NativeEnergy of Vermont is a privately held energy company. It uses RECs to help finance Native American alternative energy projects, such as the Toksook Bay Alaska Native Village Wind Turbine.

RECs have an important role to play in mitigating global warming, but like any accounting system, we need to be careful not to “cook the books” (and thus cook the planet) and not really reduce global warming gases. This essay is not the final word on this important and multifaceted topic. I look forward to questions and comments.

See following page for information on buying RECs, CO₂ offsets, or Alternative Energy.

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Rich thanks Cindy Pare and Dave O'Leary for reviewing this article and for their many helpful suggestions.

Buying RECs, CO₂ offsets, or Alternative Energy

We can buy Renewable Energy Credits (RECs) or CO₂ offsets from several web sites including:

Clean Currents (www.cleancurrents.com)

Wind Current (www.windcurrent.com)

Sterling Planet (www.stirlingplanet.com)

TerraPass (www.terrapass.com)

Native Energy (www.nativeenergy.com)

One REC is about equal to 1350 pounds (0.675 tons) of CO₂ equivalent offsets.

We may be able to buy alternative energy to be delivered by our local utility through:

Residential and Commercial: Washington Gas Energy Services (www.wges.com)

Residential: Pepco Energy Services

(www.pepcoenergy.com/NaturalGasElectricity/default.aspx) and click on the box

"Looking for our residential Electricity Rates?"

Commercial: Constellation NewEnergy (www.newenergy.com/) and select "Electricity" and "Products" from the top line and then scroll down to information on "ElectricGreen".

A tool to find and purchase RECs can be found at Green-E (www.green-e.org). To find out where to purchase renewable energy select a "Buy Renewable Energy" link on the right side of the page. Government resources are on US Environmental Protection Agency (www.epa.gov/cleanenergy or www.epa.gov/greenpower), the National Renewable Energy Laboratory (www.nrel.gov), the Department of Energy, Green Power Network (www.eere.energy.gov/greenpower), and the Maryland Energy Administration (energy.maryland.gov).

There are also Clean Energy Rewards credits in Montgomery County, MD for buying RECs or green energy through your utility. They are 1¢ / kWh for residential and 1.5¢ for commercial. For more information see: www.montgomerycounty.md/dep and select the link for Clean Energy Rewards, 240-777-7700 Susan Kirby 240-777-7753 or Stan Edwards (chief) There is also a program that provides credits to homeowners and others for energy generation such as using photovoltaic panels.