

Environmental Benefits as a Sales Paradigm for the Energy Efficiency Industry

Michael Sherman, Peregrine Energy Group

John Snell, Peregrine Energy Group

ABSTRACT

The advent of electric utility restructuring has brought about increased concerns about the environmental impacts of electricity generation. A competitive commodity market for electricity focused on price as the primary determinant may well stimulate increased fossil-fueled electricity production with accompanying negative environmental impacts.

Against this gloomy possibility, energy efficiency and renewable energy both offer environmental benefits and are clearly attractive to some customers. With varying degrees of success, the renewable energy industry has created a niche market in the electric industry for environmentally acceptable “non-depletable fuel” electricity products and services such as “Green-e”-certified electricity. Renewable energy currently offers environmental benefits in most cases at a premium cost. Theoretically, energy efficiency can offer environmental benefits with cost savings to consumers.

This paper analyzes market and policy mechanisms available to support green electricity offerings and analogous factors affecting energy efficiency as a competitive choice in the restructured electric market. The primary focus is on mechanisms that capture the environmental benefits and relatively low cost of energy efficiency, including strategies for incorporating energy efficiency in “green” power offerings. The paper concludes with specific recommendations for an environmental benefits marketing and policy strategy.

Introduction

The electricity market is moving from regulated, bundled electricity and energy efficiency services to competition. There are real “wins” for customers and society in the continued promotion of energy efficiency, but the competitive market needs to evolve new paradigms and mechanisms to promote those “wins”. There would seem to be a logical intersection between renewable energy and energy efficiency. Renewables produce fewer negative environmental effects than fossil fuels but at a premium price. Energy efficiency, produces environmental benefits and does so at a lower price than fossil fuels. The combination ought to be a powerful one.

A market is evolving for electricity generated from renewable and environmentally less harmful sources. If a similar environmental improvement argument can be developed and promoted for energy efficiency as a complement to increased renewable generation, energy efficiency may become firmly established in the competitive market. This has not happened yet.

Background

Historically, energy efficiency has been sold under a number of justifications, ranging from pure economics (i.e. the least cost generation asset can be the energy not needed because of increases in efficiency and consequent reduction in the need to produce more power, with all the costs entailed with building and operating generation), to protecting our national security. Energy efficiency has not been widely promoted for its environmental benefits. Renewable energy has been marketed largely for its environmental effects and the environmental argument for renewables has been successful. Customers, particularly residential customers, are willing to “invest” in renewable energy products even at a premium cost.

The appeal of renewables has not been lost on lawmakers or regulators. In the restructuring process of several states, structuring the electricity market several states, among them California, Maine, Massachusetts, Connecticut and New Jersey, are actively considering or have mandated renewable portfolio requirements in legislation and/or regulations regarding the competitive market. The portfolio requirements are an issue of some controversy, as Wiser’s research reported below indicates. Proponents of portfolio requirements believe the requirements will serve to increase the total amount of renewable power in the market over time. Green marketers almost uniformly are concerned that portfolio requirements will actually hurt their business because it will be difficult for customers to differentiate among suppliers if everyone is “green” to some extent. Overall, however, it is clear there is a growing market for renewables product where competitive electricity markets have been established.

Certification

Certifying the content of renewables may be one way to preserve the distinction between standard and “more Green” offerings. Certification offers a number of assurances to skeptical consumers. The primary assurance offered by certifying renewables is that the offered electricity is a known quantity and reliably delivers the green produce promised. Branding itself does not provide any security, but third party certification processes behind the brand can do so. The Center for Resource Solutions (CRS), based in San Francisco, has taken the lead in defining and advocating for green energy through their national Green-e certification program. Green-e has four high-priority markets – California, Pennsylvania, New England, and the Pacific Northwest. California started their program in November 1997 and Pennsylvania in July 1998. Green-e advisory committees are currently developing standards for New England and the Pacific Northwest.

Energy efficiency currently does not play a major role in Green-e’s renewable energy packaging. Pennsylvania has an option allowing marketers to substitute “negawatt hours” of energy efficiency temporarily, but only until the renewable electricity supply catches up with expected demand. Over a five-year period, the amount of allowable negawatts would be reduced and eventually eliminated. Although this is a limited inclusion of energy efficiency, so far it is just about the only such effort.

Scope of the Investigation

Peregrine Energy Group, working for the Northeast Energy Efficiency Council, is performing this investigation under a grant from the United States Department of Energy. The intention is to identify whether energy efficiency has potential as a factor in the developing competitive market for electricity from renewable sources, to identify the market successes and barriers, and to recommend strategies that competitive marketplace can use to foster an energy efficiency – renewables connection.

The primary methods of investigation include:

- Review of state portfolio requirements;
- Review of competitive renewables offerings;
- Interviews of key competitive renewables suppliers on current market conditions and their intentions;
- Interviews with Energy Services companies
- Review of comparative pricing in competitive markets between renewables and “standard” fuel mixes
- Testing the acceptability of potential recommendations to promote energy efficiency-renewables offerings in the competitive market with both electricity suppliers and energy services companies (ESCOs).

At this writing, the study is still in progress. Results from this investigation are still preliminary and will be published in a report to DOE later in the year. While it is still early to say much, it is clear that renewable energy suppliers are not rushing to provide products with an energy efficiency component. For the most part these suppliers are still concerned with making certain there is adequate capacity for the demand they are generating. They are not yet looking at the other side of the equation. Renewables marketers focusing on retail sales are also very much concerned with the effects of renewables portfolios on their customer base. ESCOs appear to be focused on marketing their traditional services, but there is at least a little interest in “looking” at linkages to renewables supply as a promotional link. In sum, not much has happened, and not too much attention in the competitive market is yet focused on this issue.

Marketers Perspective on Public Policies Affecting the Renewables Market

Lawrence Berkeley Laboratory (Wiser, 1999) conducted a survey of 12 renewable power marketers (all the renewables retail marketers they could locate), to query them about their perspectives on public policies that would promote a viable renewables market. Two of the critical concerns expressed by marketers were the need for:

- A “solid foundation of supportive market rules and facilitation”;
- Shopping credits robust enough to stimulate customer switching to any type of competitive supplier, not only green suppliers

So far, renewable electricity is mainly a premium product. In most cases competitively offered renewable electricity is priced higher than other products. Exceptions include California, which provides a credit to bring renewable power to the same or a lower

price than standard offerings. Also, The non-profit Energy Cooperative Association of Pennsylvania (ECAP), which began offering a 100% renewables product at the same price as standard offer service: 5.65 cents/kWh in February 2000.. A local for-profit energy supplier supplies the power to ECAP. About 800 customers or 10% of the cooperative's customer membership currently purchase renewable power (Green Power Network, 2000).

Potential Benefits of Energy Efficiency as a Commodity in a Competitive Energy Marketplace

Energy efficiency has a number of potential benefits to consider as a commodity in an open electric market to consider.

- Low environmental impact: reduction of atmospheric pollutants through reduced generation
- Low cost: a recent report by the Massachusetts Department of Energy Resources reports an average cost of approximately \$.04/kWh saved for Demand Side Management programs in all sectors (DOER, 2000). DSM savings may be more expensive than market-based conservation because DSM should promote technologies, services and measures that are not fully accepted in the market, requiring greater promotion efforts and expensive evaluation. By comparison, Hanger estimates 50% renewable product to cost \$0.539 per kWh, and 100% renewable at \$0.68 per kWh (Hanger 2000).
- Load following, or peak shaving. Many energy efficiency measures are targeted to maximize on-peak savings. These measures are especially important in markets such as California and the Midwest, in which summertime peak-hour prices exploded in 1999.
- Load dampening: overall reductions in electric loads, including peak and off-peak savings. These efforts can reduce the need for new baseload power. Even with removed or reduced regulation of generation siting, locating new capacity is frequently contentious and time-consuming which increase costs and delay capacity availability.
- High job creation: in Massachusetts alone the energy efficiency work force is estimated at 20,000 full time jobs (Gromer 1992)
- Solid delivery infrastructure: More than 20 years of energy efficiency activities have resulted in a mature industry with established standards and a record of reliable performance.

Why is energy efficiency not a popular renewables offering feature? The obvious apparent attraction of energy efficiency as an alternative to buying power in a competitive market is that it supports the system by decreasing loads, aids in deferring the development of new capacity, which is no less contentious in most states than under regulation. There would appear to be substantial societal benefit to developing a robust competitive energy efficiency service in a competitive environment. There would appear also to be a natural societal intersection between the goals of increasing renewable energy and energy efficiency, but the picture is somewhat more complex than this simple analysis would have it.

First, although there are significant benefits to a competitive energy efficiency “negawatt” type market, energy efficiency has a number of potential drawbacks to consider as a commodity in an open electric market to consider.

- Customer resistance to purchasing energy and energy efficiency from the same source. Power marketers report reluctance by buyers to buy energy and efficiency services from the same supplier. A large part of this resistance seems to stem from customer concerns that there is no economic benefit in buying them together. Customers think they can do as well or better buying each separately at need. It is not clear, however, how wide or deep the resistance to combined energy efficiency and electricity purchase is. Different types of customers may have very different attitudes influenced by their understandings of the commodity electricity market, the energy efficiency market, their own capabilities for assessing and addressing their energy efficiency needs, and so on.
- Measurement and verification: m&v requires significant time and increase product costs (typically adding 10-20% of installed measure cost in the ESCO market). Renewable suppliers do not have a track record in this type of activity and lack customer confidence. Alliances between ESCOs and renewable suppliers, which could address this question have yet to happen and may be practical only in limited instances. ESCOs and renewable suppliers often have somewhat different primary target markets. ESCOs most often target large commercial customers. Renewable suppliers are more focused on residences and some small businesses.
- KWh reductions reduce the total potential revenue stream: in a competitive market, compensating profit-making goods and services are essential to offset commodity electricity sales reductions. The question for suppliers then becomes how they can capture that lost revenue.
- Site-specific issues such as equipment ownership, changes in facility use, equipment removal and customer or supplier non-performance. More applicable perhaps to commercial and industrial customers than residential customers, these changes do have the potential to significantly affect the value of installed efficiency and need to be considered by any supplier or ESCO venturing into the territory.
- The retail electric market has been slow to develop in general. Part of what we see as “resistance” to offering renewable supply and energy efficiency may be more appropriately attributed to insufficient time for new strategies to be developed or pursued.

Other Variables of Concern

Some other variables that concern the renewables market also concern an energy efficiency market. These variables include:

- Availability
- Reliability
- Valuing energy efficiency options in renewables packages
- Size of deals
- Timing of deals

A particular concern with respect to delivering energy efficiency as a commodity is whether it is delivered at the customer’s site or elsewhere in the system. Site-specific energy efficiency is understandable and controllable for the customer. Energy efficiency derived at

some other point in a supplier's system and provided to the customer is far less understandable, controllable and preferable from the customer point of view (Brown 2000).

Competitive suppliers make their profits on power they sell. Power they don't sell is a loss, unless they can sell it to another customer, or the sales reductions come during expensive peak periods. Interruptible electricity arrangements and inducements for commercial and industrial customers to shift loads off-peak have been features of the electric landscape for years, along with Time of Use pricing plans. These strategies require customers to have a great deal of control over their electric use and generally require customers to have demand metering and/or other types of advanced metering, which is still a rarity among electricity customers. Generally this means larger commercial and industrial customers who are willing to make the necessary investments in metering and control equipment to take advantage of those opportunities. These customers also are not the typical purchasers of renewable electricity. The desire of suppliers to have more control over the shape of their loads will undoubtedly influence efforts to increase the number of advanced meters over the next decade, and metering equipment costs are coming down. In just a few years residences and small businesses equipped with advanced metering and control equipment may become much more common. Cheaper metering and control technologies may become a very positive force in the renewables-energy efficiency intersection, providing very low cost monitoring, verification and control.

A Competitive Energy Efficiency Paradigm

This paradigm is at this moment more a set of assumptions, questions and speculations than a tested, grounded proposal. At this moment, the Northeast Energy Efficiency Council is conducting a study to try to further scope the shape and details of this paradigm as well as surveying practitioners in competitive electricity and energy services for their reactions to the overall notion and details. This is a work in an early stage of progress. Initial features of the paradigm are:

- Energy efficiency can be promoted for its environmental benefits as a competitive service in theory at least with as much force and effect as the environmental marketing strategy promoting renewables;
- Energy efficiency can be combined with renewable offerings both as an interim compensation for inadequate supply or as a long-term component of supply as the competitive electricity market develops;
- Suppliers can provide energy efficiency services through their own organizations or through contractual arrangements provided there are sufficient mechanisms to assure performance and to protect customers;
- A key question is whether energy efficiency benefits can be effectively "deemed" by suppliers on their own, or whether third party certification, such as is developing in the renewables world is needed;
- Where Systems Benefits Charges exist and fund energy efficiency programs through regulated utilities, state agencies or other mechanisms such as the Vermont Energy Efficiency Utility, do those efforts depress the need or interest for competitively offered services, or is there room for both?

- Advanced metering, especially two-way metering, will likely provide the low cost solutions for m&v and control needs.

Conclusion and Recommendations

Is there a viable future for combining renewables and energy efficiency in the competitive marketplace? Recommendations are still highly speculative because there is yet little experience to demonstrate which strategies, if any, are viable in the emerging competitive markets. The intersection of renewable energy supply and energy efficiency in a competitive market would appear to be a logical place to maximize the strengths and benefits of each. The early signs are that in practice the combination of these environmentally desirable strategies is not inevitable and may be a strategy of only limited value without its adoption by marketers, customers, and perhaps government.

Our very early reading of the situation suggests there are some strategies that may prove effective. Perhaps the most important of these is the inclusion of energy efficiency within the environmental message that is used to promote renewable electricity. As noted above there are a lot of “green” benefits that can be attributed to energy efficiency activities. These environmental externalities were often not assigned monetary values in regulated DSM programs, but the reasons for not doing so were more related to issues of law and regulation than the question of whether environmental effects were realized. A renewables marketer could promote a good deal of customer interest by clearly demonstrating how energy efficiency adds value and perhaps lowers total cost to renewables consumers.

An obvious reason for power suppliers to promote energy efficiency is that current renewable supply is inadequate to meet demand. The situation will be exacerbated as more states implement renewables portfolio requirements. As modest as they are (1% in Massachusetts in 2003, or approximately 110 MW), portfolio requirements will cause a massive increase in demand for renewable supply. Including energy efficiency as a renewable component may be undertaken as the best way out of a difficult situation, but if successful, it can be marketed positively. But whether it would persist beyond the need for short-term solutions will be a result of both marketer enthusiastic adoption and customer positive experience. Making such efforts successful will require time and commitment by suppliers and perhaps some help from the parties who are promoting green energy.

A lower visibility issue, but an equally important one is whether customers can be persuaded to buy energy and efficiency from the same source, or from allied sources. It is not clear that marketers have done studies confirming this reluctance for residential and small commercial customers. If such studies have not been done, they are needed. Customer acceptance is a key variable without which any efforts at combined products/services will fail. But the question that is not answered yet is “how hard will it actually be to persuade customers to buy in the first place?”

The final question is whether there is a pure market solution possible, or is some intervention at some level of government required to kick-start or provide some on-going support? State and Federal tax credits were used in the 1970’s for homeowners installing solar and/or energy efficiency measures in their homes but there is not much evidence that these credits were effective on the energy efficiency front – they did support the nascent solar industry for a time. A state or national policy might be devised to link shared tax incentives

to the renewable-energy efficiency model. This approach would be strengthened by introducing a 3rd party verification that did not exist in the 1970's, and therefore a higher level of confidence in society's return on the investment. Monitoring and verification protocols would have to be simple and effective to avoid diluting any cost savings achieved, and suppliers would have to accept some oversight and regulation, but these things do not have to be onerous if the benefits significantly exceed the requirements.

In the end, we believe that as with other areas of competitive market activity, a "mixed" approach of coordinated market and governmental action will be the most effective path for promoting the combination of renewable energy and energy efficiency.

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