

How Can We Maintain Energy Conservation Programs In the Brave New World of Electricity Deregulation?

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Deregulation of the electric industry poses environmental threats as well as opportunities. This industry is now a major source of air pollution in the U.S., i.e., acid rain producing SO_x and NO_x emissions and greenhouse gas emissions in the form of carbon dioxide from burning fossil fuels. Hence, there is more at stake than finding cheap power.

Energy engineers and professionals need to realize that saving dollars is not the same thing as conserving energy. We have a moral obligation to identify strategies to keep our energy conservation and efficiency programs alive and well in a deregulated electric market.

We also need to join the larger debate and insist on policies which will provide the proper incentives and conditions to encourage efficiency, as well as clean "green" power generation, in order to protect the environment and serve the public interest.

Does the epidemic popularity of sport utility vehicles mean that the energy crisis is over? Or just that the appeal of superfluous consumer goods conquers all? How easily we forget the social and environmental consequences of our actions and life-styles!

In 1990, the United States sent troops to the Middle East to fight for oil. While that war cost billions and produced many casualties (in addition to U.S. and allied casualties, over 100,000 Iraqis died), it is only a dim memory for most of us as we race to the next oil war in our "sport uses," not-so-mini "mini-vans" and all variety of gas-guzzlers and petro-pigs. Average U.S. vehicle fuel efficiency is declining while we still import over half the oil we consume.

Meanwhile, just last year the international scientific community (through the Intergovernmental Panel on Climate Change) concluded that global warming has begun and that the impact of global climate change could be severe if unchecked. The release of carbon dioxide from burning fossil fuels is foremost among the causes of climate change. Energy conservation and improvements in energy efficiency are essential to mitigate climate change and its effects on ecosystems, agriculture, public health, storm intensity and sea levels.

But the big energy story for energy engineers and professionals is the deregulation or restructuring of the electric industry. While the general public is mostly in the dark about this revolution, our mailboxes are overflowing with brochures describing seminars and training sessions which promise to teach us how to play the deregulation game and get the lowest electricity prices for our companies, campuses or clients. We are encouraged to view deregulation in an environmental vacuum, i.e., as a natural extension of our cost-saving work in the energy management field. But there is a big difference between saving energy and saving dollars.

Unlike the deregulation of other industries, deregulating the electric industry could have huge environmental consequences. Electric generation consumes vast amounts of primary fuels and is responsible for the lion's share of our air pollution and greenhouse gas emissions.

Unless we—as a society—get the rules right (and insist on clean power production and continued efficiency improvements), electric deregulation could result in increased reliance on dirty coal plants and increased energy consumption, waste and pollution.

As energy professionals, we have a moral obligation to view electric industry deregulation or restructuring in a context of social responsibility and environmental stewardship. There is more at stake than finding the cheapest commodity price.

THE PROCESS OF DEREGULATION

To date, the electric industry primarily consists of electric utility companies which operate monopolies. They own electric power generation plants as well as the distribution systems. In this regulated system, if you want to buy power, with few exceptions you must buy from these

companies. Restructuring plans will break up these monopolies and allow other power producers an increased opportunity to generate power. "Retail competition," where allowed, will permit new companies to sell power directly to customers.

In recent years, while electric generation and distribution was fully regulated, significant environmental progress had been made by requiring the electric utilities to actively promote energy efficiency. In addition to home energy audits and weatherization programs, utility companies developed incentive programs to encourage efficiency improvements and were rewarded for saving energy as well as selling it. As deregulation approaches, these valuable programs have been dismantled and discontinued.

A case in point is the 1997 deal struck between New York Governor George Pataki's administration and the utility Consolidated Edison. The agreement provides almost no funding for energy efficiency. In 1993, while a fully regulated utility, Con Ed invested \$125 million to promote efficiency. As per the negotiated settlement, Con Ed's energy efficiency investments would be just \$15 million in 1998, dropping off to \$6 million annually after that. That's a 95% reduction in efficiency spending. The deal also did nothing to bring Con Ed's dirty coal-burning plants into compliance with the more stringent standards required of newer plants.

Thus, from an environmental perspective, we are going in the wrong direction fast. This trend is also exemplified by the proliferation of electricity contracts which incorporate rate structures which significantly discount increased energy use. These lock in customers while providing incentives for energy waste, destroying the economics of energy conservation measures and projects. The State University of New York at Buffalo's own nationally recognized campus energy conservation program, like many other conservation programs across the country, may be threatened by this kind of "declining block" rate structure.

ENERGY CONSERVATION PROGRAM AT RISK?

In the fall of 1994, the Niagara Mohawk Power Corporation (NiMo) began discussions with SUNY Buffalo about a multi-year custom electric contract for one of the university's campuses. With the marketplace becoming more competitive, NiMo didn't want to lose SUNY Buffalo and its 200 million kilowatt hour per year load as a customer. By spring of

1996, UB had signed a three year contract with NiMo under the New York State SC-11 tariff.

While this NiMo contract reduces SUNY Buffalo electricity costs, it does have some troubling features which are emblematic of the "brave new world" of electricity deregulation. First, specific rate or price information is defined as a "trade secret" and hence is confidential. For a public institution, confidential contracts raise interesting questions, i.e. doesn't the public have a right to know? What about the tradition and expectation of openness and public accountability?

The second troubling feature of the NiMo contract is that it contains a "marginal rate" structure which charges different rates for different blocks of power. For example, while the campus' baseload requirements are met by electricity costing, say, an average of 7 cents a kilowatt hour, the remaining power used by the campus is purchased at a much lower price.

SUNY Buffalo's previous contracts with NiMo allowed the university to save energy at the baseload price, thus encouraging conservation. But this contract does not. Energy conservation savings accrue at the lower rate, undermining the cost-effectiveness of energy projects - thus making them less likely to happen.

If "marginal" or "declining block" rate structures undermine conservation and efficiency, are they environmentally and socially responsible? Should NiMo have proposed this rate structure? Should the university have accepted it? Should the New York State Public Service Commission have allowed it? While prudence compelled the university to seek lower costs, could another approach have yielded energy cost savings while preserving incentives for continued energy saving?

A recent independent study by the Colorado-based Results Center concluded that SUNY Buffalo's energy conservation program has saved the University in excess of \$60 million since its inception in the late seventies. Fortunately, SUNY Buffalo is still actively pursuing energy conservation improvements through an award-winning project with CES/Way International, an energy service company based in Houston, Texas.

But electric deregulation has put the future of our energy conservation program in question. Energy conservation efforts around the country face the same threat. We are not served by secret energy contracts or by rate structures that make kilowatt hours at the margin too cheap to save.

STRATEGIES FOR ENERGY USERS

What can energy users do to keep energy conservation and efficiency alive at their facilities while still benefiting from the promised cost savings of electric deregulation? A number of strategies can be employed, such as:

- ADDRESS ELECTRIC DEREGULATION HEAD-ON BY DEVELOPING A PURCHASING POLICY THAT COMMITS YOUR BUSINESS OR ORGANIZATION TO ENERGY CONSERVATION, EFFICIENCY AND ENVIRONMENTAL PROTECTION. (See addendum below for an example.)
- INCLUDE ENERGY SERVICES IN YOUR POWER PURCHASE SO THAT YOUR POWER SUPPLIER IS OBLIGED TO ASSIST YOUR FACILITY IN ACHIEVING LOAD REDUCTION AND ENERGY CONSERVATION. ESCOs with experience in energy efficiency are becoming increasingly interested in moving into the power sales field. Count on these companies, and power producers competing with them, to put together packages of electricity sales and efficiency services. The goal of this approach is least-cost energy over the long run, not just lowest commodity price
- BID POWER CONTRACTS WITH SPECIFICATIONS WHICH CALL FOR RATE STRUCTURES WHICH WILL NOT UNDERMINE THE ECONOMICS OF POTENTIAL ENERGY CONSERVATION AND EFFICIENCY PROJECTS. One strategy for protecting the economics of potential energy conservation projects is to avoid marginal rate structures entirely. A competitively bid flat rate structure could provide excellent pricing and cost savings while maintaining incentives for energy savings (which can produce additional cost savings).
- USE LIFE CYCLE COST/BENEFIT ANALYSIS TO EVALUATE ENERGY CONSERVATION AND EFFICIENCY PROJECTS. This method will demonstrate the true value of projects and provide justification for embarking on projects with longer paybacks (which we are likely to see as energy prices drop or marginal rate structures are employed).
- MAKE EFFICIENT DESIGN AND CONSTRUCTION OF NEW BUILDING AND FACILITIES A PRIORITY. This becomes more important when lower rates and marginal rate structures make it a lot harder to undertake retrofits.

Generally, it is cheaper to do it right in the first place than to go back and retrofit.

Additionally, energy users will have to decide how long to make their electric power contracts. Given the market uncertainty which now exists, energy users might want to consider only short term contracts. In many states, energy users will also have to decide whether or not to buy clean “green” power or, by implication, dirty power (based on the emissions profiles of power suppliers). On the issue of confidentiality, I would recommend that public institutions and agencies decide to avoid confidential contracts for reasons of public accountability.

How effective will the above strategies be in maintaining a conservation program in the quickly approaching “brave new world” of deregulation? It all depends on the shape of the new world. With deregulation, the devil is in the details. Options and possibilities for energy users will be a function of the restructuring plans formulated for each state. From this simple observation follows the obligation of energy professionals to get involved in the public policy debate.

JOINING THE DEBATE, GETTING THE RULES RIGHT

Unless deregulation is done properly, the electric revolution now underway will be a disaster. We could see much more energy waste and more reliance on dirty coal. The net result could be more air pollution, more acid rain and increased levels of greenhouse gases and eventual global warming.

It’s time for energy professionals to venture out into the realm of energy policy-making and join advocates of clean energy and environmental sustainability in calling for electric industry restructuring consistent with the following rules or principles:

- PUBLIC PARTICIPATION. Restructuring should be accomplished democratically with maximum public participation. Public involvement and scrutiny are essential. Restructuring should not be driven by special interests and accomplished behind closed doors.
- EQUITABLE DISTRIBUTION OF BENEFITS TO ALL CLASSES OF CUSTOMERS (not just price breaks for the largest customers).

- ESTABLISHMENT OF UNIVERSAL SYSTEMS BENEFIT FUNDS TO PROMOTE EFFICIENCY, THE DEVELOPMENT OF NON-POLLUTING RENEWABLE RESOURCES AND PROVIDE ESSENTIAL SERVICES FOR THE ELDERLY AND POOR. These funds would be generated by a non-by-passable wire charge of a fraction of a cent per kWh assessed to all electricity users.
- A "RENEWABLE PORTFOLIO REQUIREMENT" WHICH REQUIRES ALL ENERGY MARKETERS TO INVEST IN OR DERIVE SOME PORTION OF THEIR POWER FROM NON-POLLUTING RENEWABLE RESOURCES. This requirement would be minimal at first and increase over time to promote investment in solar, wind and other forms of non-polluting, renewable energy technology.
- A BAN ON "DECLINING BLOCK" OR "MARGINAL" RATE STRUCTURES WHICH DISCOUNT ENERGY WASTE AND DISCOURAGE ENERGY EFFICIENCY. Rate structures of this type were rejected years ago as environmentally-un-sound but they are now making a comeback. They should be rejected again as irresponsible.
- STRINGENT CLEAN AIR STANDARDS THAT APPLY TO ALL POWER PRODUCERS. This may be accomplished through federal legislation, though state restructuring plans could discourage increased or continued reliance on dirty coal-burning plants. Without an "even playing field" vis-à-vis emissions, dirty plants which are cheap to operate may see more action, thus spewing increased levels of acid rain and greenhouse gas emissions across state and national boundaries.
- FULL DISCLOSURE TO PROSPECTIVE CUSTOMERS OF POWER GENERATION EMISSION PROFILES BY ALL ENERGY MARKETERS. This information will make it possible for buyers to make their purchases based on environmental responsibility.
- SAFE OPERATION OF NUCLEAR PLANTS OR SHUT THESE PLANTS DOWN. The operation of nuclear power plants in a competitive environment may lead operators to cut corners on safety. This is completely unacceptable. A program to increase monitoring and inspection of nuclear power plant operation must be implemented if nuclear power plants are going to continue operation in a "deregulated" environment.

- FAIR SHARING OF UTILITY STRANDED COSTS. The general public should not bear the full brunt of utility bad investments. Moreover, if ratepayers or taxpayers are forced to cover all stranded costs for uneconomical power plants, they may be in effect subsidizing future operation of these plants, to the disadvantage of newer, cleaner sources of energy including wind power.
- RECOVERY OF STRANDED COSTS THROUGH VOLUMETRIC CHARGES TIED TO KILOWATT HOUR CONSUMPTION OF ELECTRICITY, AND NOT BY FIXED CHARGE. The former will encourage efficiency, latter will not.

Deregulation of the electric industry is a “once in one hundred years” revolution. We should not sit this one out!

Instead of feeling giddy excitement about new opportunities for cheap power, energy professionals should be concerned about the risks and dangers deregulation poses. We should be insulted by the avalanche of deregulation and “retail wheeling” seminar brochures we receive which never mention the potential environmental impact of the profound change which is underway.

It's time for energy professionals to go beyond a commitment to dollars and to rediscover and reaffirm our commitment to conservation, efficiency and the environment. We owe this to our children and grandchildren. We owe it to the still-beautiful planet earth which is our home.

ABOUT THE AUTHOR

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Addendum:

Background

Through the work of SUNY Buffalo's Environmental Task Force (ETF), the University has identified environmental responsibility and stewardship as priorities. The ETF, organized in 1990, is comprised of approximately 40 faculty, staff and student members and is charged with studying campus environmental impacts and developing policies and programs to mitigate those impacts.

A number of environmental policies have been developed by the ETF and approved by SUNY Buffalo's administration. To date, these have focused on recycling, waste reduction, environmentally friendly purchasing practices, and "green" landscaping and grounds issues.

The environmental impact of campus energy use, however, has not been lost on members of the Task Force.

The University currently uses approximately 210 million kilowatt hours of electricity a year, at a cost of nearly \$14 million. To generate this amount of electricity, substantial air emissions (pollutants) are produced, i.e. approximately 180,000 tons of carbon dioxide (which contribute to global warming), 350 tons of sulfur dioxide and 560 tons of nitrogen oxides (which produce acid rain). Additional energy-related environmental impacts are produced as well.

During the summer of 1997, the SUNY Buffalo ETF drafted and submitted to the University administration the following proposed electricity purchasing policy. The proposed policy asks the University to continue to prioritize conservation and environmental concerns. It recognizes that the University has an obligation to be prudent and reduce energy expenditures but in so doing should consider long term costs (not just short term ones) and all costs including environmental and social costs. As of this date (August 1997), SUNY Buffalo's administration has made no determination on the policy proposal.

Proposed SUNY Buffalo Electricity Purchasing Policy

The following principles should apply to all electric purchases:

1. **Compatibility with Campus Energy Conservation Efforts**—The terms and conditions of electricity purchases should sustain or enhance SUNY Buffalo's energy conservation program—not undermine it—by avoiding damaging rate structures and, if possible, by incorporating energy efficiency services.
 - a.) **Rate Structure**—Electric rates should be structured to maintain

appropriate financial incentives for continued energy conservation and efficiency. Declining block or marginal rate structures provide disincentives to conservation and efficiency and should be avoided. Flat rates maintain incentives. An acceptable rate structure will provide sufficient financial incentive to sustain a program of campus energy conservation improvement.

- b.) **Energy Efficiency Services**—The University will attempt to negotiate electricity purchase agreements which include, as a value added component, energy efficiency services.
2. **Buying Clean Power**—SUNY Buffalo should buy power from environmentally clean sources as defined by emissions profile, i.e. CO₂, SO_x and NO_x per kilowatt hour. Dirty coal power should be rejected in favor of efficiently produced, natural gas-fired electricity. The University should explore buying a percentage of its power from clean, renewable power sources when these are available.
3. **Public Accountability**—As a public institution, committed to the principles of openness and public accountability, SUNY Buffalo's energy contracts should be on the public record and not be confidential.
4. **Autonomy**—SUNY Buffalo should determine its own energy purchasing policies, independent of SUNY or State collective buying initiatives.