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ENERGY CRUNCH LOOMS

REVIVING BOSTON'S ANTICRIME STRATEGY

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Teacher Eunji Gloria Cho Mantzouranis at Louis Angelo School in Brockton.

WINTER 2006

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POWER

FAULTURE

Restrictions on price in an otherwise deregulated market leave electricity producers with no reason to invest in new power plants. Unless they are given one, it could be lights out.

BY MATT KELLY

IF SOMETIME THIS WINTER you flip a light switch and nothing happens, think back to where you were on May 8, 2000—the day the electricity industry in Massachusetts started down a road that may now be leading toward rolling blackouts.

The day started normally enough. Predawn temperatures hovered in the low 70s, warm but not unprecedented. As Bay Staters went through their Monday morning routines, however, those temperatures climbed to a humid, uncomfortable 85 degrees by noon. Air conditioners across Massachusetts hummed to life.

As demand rose, the price of electricity began to climb—and climb, and climb. At 1 a.m. the cost of generating one megawatt-hour of electricity had been at \$30. By mid-afternoon, the price had shot up to \$6,000. Only when rain clouds rolled through that evening and cooled off the state did prices return to normal.

That day, three years after Massachusetts embarked on its pioneering effort to deregulate—or, as the industry prefers to say, restructure—the electricity market, those in charge of that market learned a costly lesson: If this was what a free market for electricity meant, then a free market was not such a good idea.

Efforts to fine-tune New England's energy markets trace their origins to that fateful price spike nearly six years ago. Price caps have been imposed, rate hikes proposed, lawsuits filed. All the while, the threat of power shortages looms larger and larger, casting lengthening shadows over the state's future safety and prosperity.

Those shadows may overtake us sooner rather than later. In early January, state officials warned that residents could be asked to conserve electricity during cold snaps this winter. During an official "power watch," people would be encouraged to turn down thermostats one to three degrees, turn off unused appliances and lights in unoccupied rooms, and avoid running washers, dryers, and dishwashers between the hours of 4 p.m. and 8 p.m. "Power saving hours" posters would be distributed, and state officials would ask television and radio broadcasters to incorporate the conservation message into newscasts and weather reports.

Days later, Nora Mead Brownell, a commissioner of the Federal Energy Regulatory Commission (FERC), told an Associated Industries of Massachusetts forum that economic development regionally and nationally hinges on solving the coming energy crunch. "We really haven't put in the context of our [energy] discussion what we need to grow our economy in our country," she said. "We are making decisions that will affect us for the next 20 to 30 years."

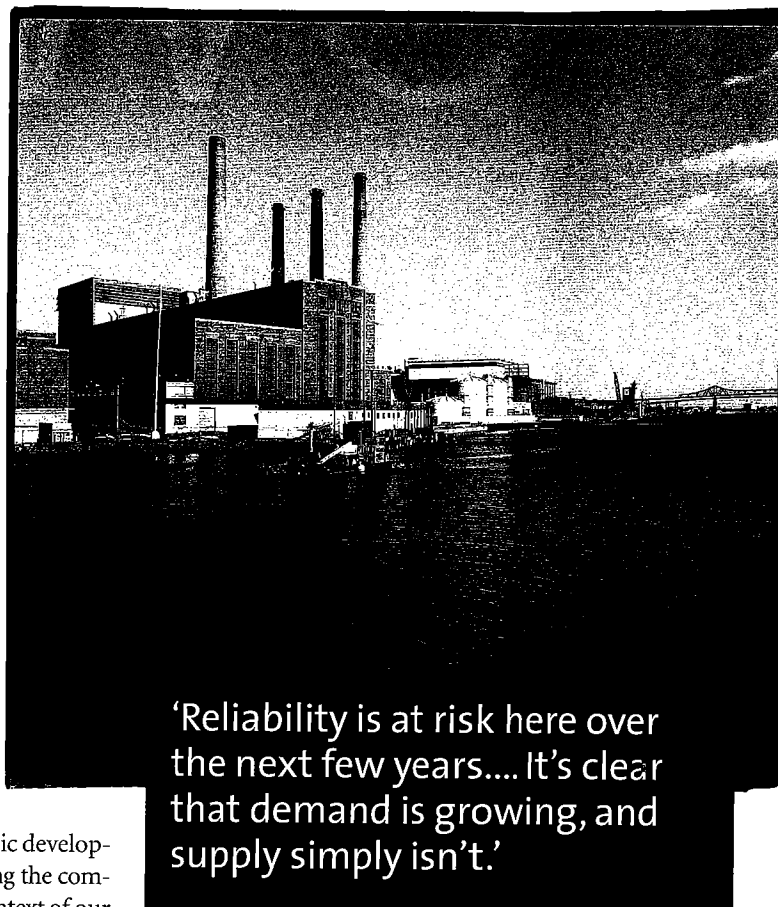
That could be especially true here in New England. "These are challenging times, for sure. Reliability is at risk here over the next few years," says Angela O'Connor, director of the New England Power Generators Association. "It's clear that demand is growing, and supply simply isn't."

Most informed observers say the risk of rolling blackouts in New England this particular winter remains low; we're close to our limit for generating electricity, but not likely to surpass it just yet. But everyone also agrees that New England will have electricity shortages at some point, unless the region finds some way out of its deregulation maze.

Unfortunately, as Douglas Horan, a senior vice president at Boston-area power distributor NStar Corp., notes, "We're nowhere near the end of deregulation."

The irony is that deregulation itself has worked, for the

most part. After Massachusetts deregulated the electricity industry in 1998, power-generating companies added more than 10,000 megawatts of capacity in New England, an increase of nearly 50 percent. Indeed, when California was rocked by rolling blackouts in 2000, the energy industry and



'Reliability is at risk here over the next few years.... It's clear that demand is growing, and supply simply isn't.'

its regulatory overseers held press conferences proclaiming that such power shortages were no danger here, given the robust expansion of generating capacity. Deregulation has also caused inflation-adjusted residential electricity rates to fall by roughly 10 percent, according to the consulting firm Cambridge Energy Research Associates.

That's because the state didn't truly go to a California-like, market-based system, says Robert Ruddock, general counsel for Associated Industries of Massachusetts. "We were criticized at the time for being too timid and yet, at the end of the day, for consumers and businesses in Massachusetts, the right decisions were made," says Ruddock.

When it comes to reliability, competition, and price stability, restructuring has been very positive, says Rep. Brian Dempsey, a Haverhill Democrat and co-chairman of the Legislature's Joint Committee on Telecommunications, Utilities, and Energy.

But now, cracks are appearing in the industry's new struc-

ture. After an initial burst of enthusiasm, power generators have stopped trying to expand capacity. Only another 1,500 megawatts of generating capacity are in the pipeline for New England through 2009. Meanwhile, electricity demand is expected to soar from 131,000 megawatt-hours in 2004 to 152,000 megawatt-hours in 2014, a spike of 16 percent and much more than New England's electricity grid can produce. ("Megawatt-hour" is the unit of measurement in the electricity business; it is the demand that will keep a one-megawatt generator running for one hour.)

"The problem isn't whether we gave *enough* incentive," says Steve Cowell, president of Conservation Services Group, an energy-efficiency firm in Westborough. "The problem is whether we gave the right *kind* of incentive, for long-term investments."

At the same time, there is no public recognition of the standstill in energy investment as an impending problem, says Jack Alexander of the Massachusetts Affordable Reliable Electricity Alliance, a new group of business, labor, environment, academic, and community leaders aiming to raise that awareness. Alexander—who is also the government relations manager for Entergy, operator of the Pilgrim nuclear power plant in Plymouth—argues that the state isn't constructing new electrical power plants, pursuing a sufficiently aggressive

efficiency program, or developing renewable energy sources to meet its power needs going forward. Nor, he says, has there been enough dialogue about electricity's social and economic importance, or its limited availability.

Dempsey agrees. "People assume that when you flip the switch, everything's OK," he says. But don't expect him and his fellow lawmakers to ride to the rescue. "I think [the Legislature] needs to let the market sort some things out and monitor that and continue to review," says Dempsey.

FERC Commissioner Brownell argues that the role for states in the new energy order has simply changed, not disappeared. Government is better able to define energy issues in ways real people understand, balance available resources with energy efficiency strategies, and coordinate regional planning. But beyond that, she says, politics and energy don't mix.

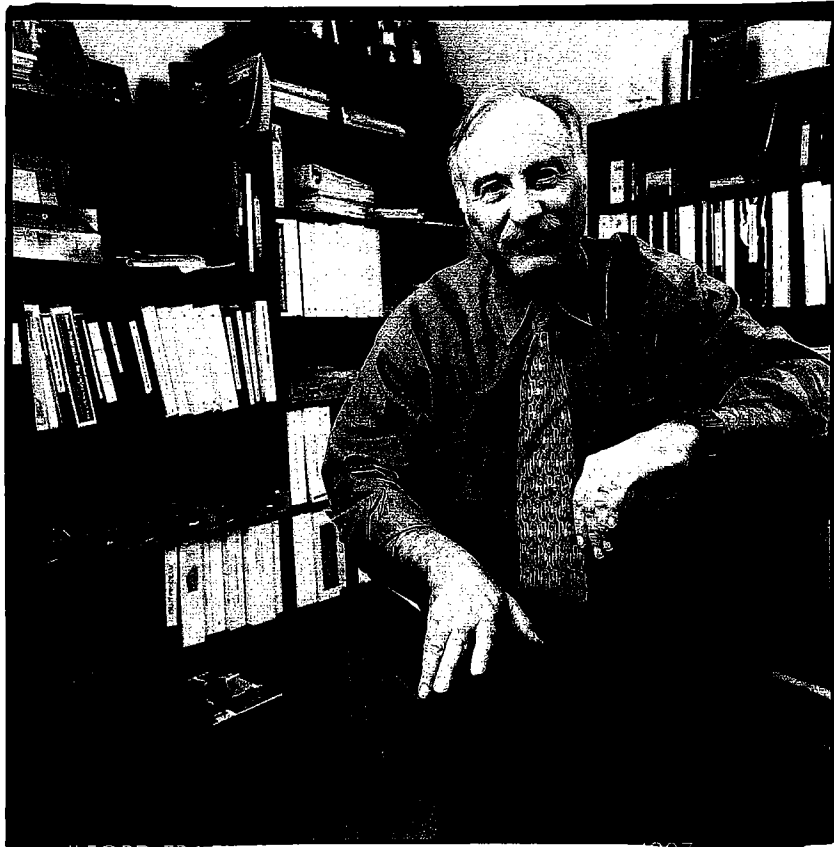
"This is harsh, but if you put political solutions on economic problems, you end up with California," says Brownell.

DEREGULATION, UP TO A POINT

For nearly 100 years, electricity was considered such a unique commodity—so vital, and so difficult to create and deliver—that government simply regulated the whole thing. Locally based utilities owned power plants, transmission wires, and substations connected to customers' homes. They charged rates set by government regulators and reaped profits at fixed levels.

Since 1998, however, Massachusetts has broken up the electricity supply chain, with privately owned power generators now selling electricity wholesale to transmission companies, which then vie for customer dollars, in a process overseen by New England Independent System Operator Inc., known as ISO New England. That entity is responsible for maintaining the region's power grid and for administering the electricity marketplace, subject to regulation by FERC. Gordon van Welie, chief executive of ISO New England, readily admits that deregulation "is still an evolving process" and involves some trial-and-error.

The price spike of May 8, 2000, was one of the errors. Up until then, power generators sold electricity wholesale to power distributors at prices that changed by the hour. Distributors then recouped those costs from consumers. After the \$6,000 price spike, NStar complained that any deregulation plan allowing such wild gyrations in price was flawed.



Energy-efficiency expert Cowell fears a lack of incentive for long-term investments.

Under orders from federal energy regulators, ISO New England remedied the situation later that year by capping the wholesale price of electricity at \$1,000 per megawatt hour—regardless of the real cost.

One problem: Price caps give the maker of a product less incentive to invest and expand. Price caps almost always lead to shortages, which is especially problematic with respect to electricity. Since electric power cannot be stored (at least not on a large scale and at a reasonable cost), sufficient capacity to meet peak demand must be in place all the time, even if much of that capacity is underutilized most of the time. That makes expansion a risky venture for power generators: Why build new plants, at great expense, when the additional capacity is needed only from time to time, and when the price is capped even at the times of greatest market demand?

By imposing a price cap, van Welie admits, “there’s now a recognition that we’re not allowing units to recover revenues through shortage conditions.” That is why power generators are less and less willing to expand capacity, and why forecasts of rolling blackouts are in the headlines today.

Why a price cap? Imagine a world without one: Electricity prices fluctuate hourly, and are the highest precisely when consumers need electricity the most. Consumers have never paid electric rates that change by the hour, and most likely would not want to start. “The political consequences of living that close to the edge, along with the price volatility that would occur, are so severe that I personally don’t think that is a viable strategy,” says van Welie.

Neither do any of the other players in the electricity market, who almost universally agree that insulating ratepayers from wild price changes makes political and economic sense. The real question, then, is how to compensate power generators for that lost revenue created by the price cap.

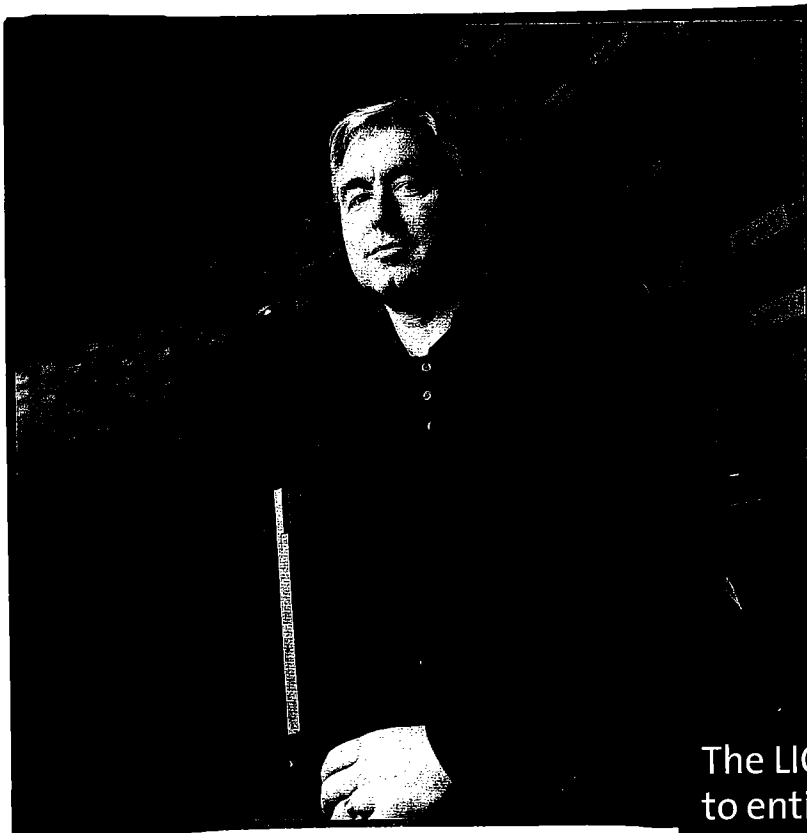
“We have not achieved a balance of risks and incentives to providers and users of electricity,” says O’Connor. “That’s become very clear.”

Right now, ISO New England forecasts what the region’s peak electricity demand will be for the next month, then tells each generator how much spare capacity it should maintain. When generating companies want to retire old plants, ISO New England pays them to keep the plants online.

That approach has worked well enough to keep the lights on today, when there is still capacity to spare, but it is starting to fray. The cost of contracts to keep older plants in service, known as “reliability must-run” contracts, ballooned from \$30 million in 2002 to \$426 million in 2004. And this approach gives generators no incentive to build more capacity to meet greater demand tomorrow.

Even now, profit margins are razor-thin in the power industry, says Alexander. PG&E, Mirant, and some other firms that invested in Massachusetts plants in the early rush of deregulation eventually filed for bankruptcy.

“When you look back at the history of generation over



ISO New England's van Welie: no free lunch in energy.

the last five years, most of the people who have come up and risked funds have lost," says Alexander. "So what is the incentive for somebody to come into this market, the New England market, and build new [generating capacity]?"

CURE WORSE THAN THE DISEASE?

What the electricity industry needs is a way to give value to that surplus capacity—at least enough value to convince power generators to build more of it. "Everyone agrees that you have to get these markets right, and that means you

POWERSPEAK: A GLOSSARY

ISO New England: Formally known as the New England Independent System Operator; a regional regulatory body that is charged with monitoring New England's electricity industry to ensure that sufficient electricity is always available for public need.

FERC: Federal Energy Regulatory Commission, charged with regulating the US energy industry as a whole.

Capacity market: The market for electricity-generating ability—that is, the market for delivering energy when it is needed most. Capacity generators typically sit unused for long periods when demand is low; they can do so because, in theory, the price for at-capacity electricity is high.

Energy market: The "regular" electricity market, with power sold through fixed contracts arrived at in an unregulated wholesale marketplace, as well as the more volatile "spot" market, in which prices are now capped at \$1,000 per megawatt-hour.

need some form of a capacity market," O'Connor says.

Creating such a market will not be painless, however. The plan put forward by ISO New England, known as "locational installed capacity," or LICAP, would raise electricity rates to entice generators to build in high-demand zones like Boston and southern Connecticut. When ISO first proposed LICAP in 2004, opponents denounced the plan as too costly. Just how costly is a matter of dispute. Critics—including NStar, the business community, Gov. Mitt Romney, Attorney General Thomas Reilly, and other elected officials across New England—peg the number at \$13.6 billion, an amount they say would

The LICAP plan would raise rates to entice generators to build in high-demand zones like Boston and southern Connecticut.

drive up Boston-area residential electricity bills by 20 percent. Van Welie contends that figure is grossly overstated; he says the real cost would be around \$2 billion over the next five years, while the New England Power Generators Association says residential bills would rise by 3 percent.

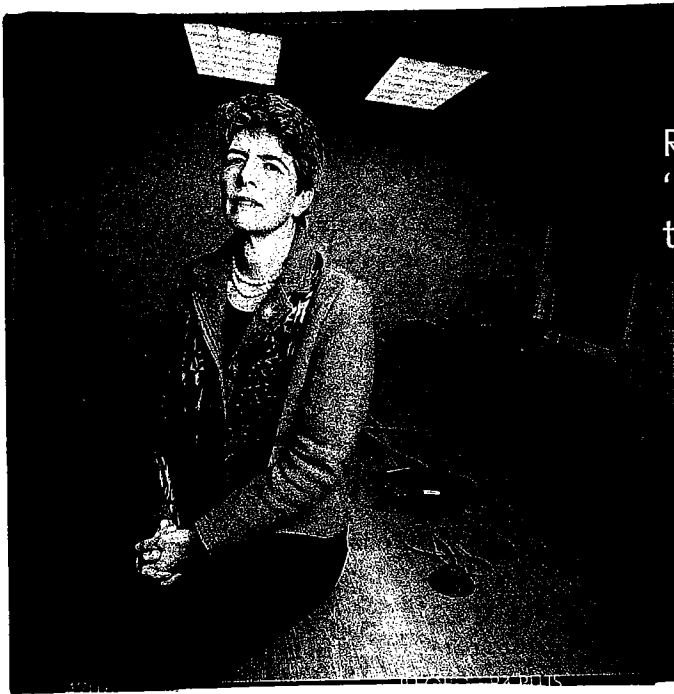
In statements earlier this year, Reilly called LICAP a "radical and experimental" plan that only claims, but does not guarantee, to bring new blocks of generating capacity

LICAP: "Locational installed capacity," a plan to pay power generators more money to produce greater power-generating capacity in high-demand areas, such as Boston.

RMR: "Reliability must-run" contracts, established between ISO and power generators, guaranteeing that an inefficient power plant that a utility might like to retire will still run to meet electricity demand.

Forward-procurement market: An alternative to LICAP that would have ISO estimate electricity demand three years out, and then bid for generators to deliver that capacity in a reverse auction, offering a high price to begin with and gradually lowering it to the lowest price sellers will agree to.

Megawatt-hour: The unit of measurement for electricity demand, equal to demand that would keep a one-megawatt generator running for one hour. Most generators are large enough to produce hundreds, if not thousands, of megawatts per hour.



NEEP's Susan Coakley asks how much "pain" will prompt action.

to market.

"There are a number of different things happening here with energy," says Assistant Attorney General Alice Moore, chief of the AG's public protection bureau. "But certainly the

Romney labeled LICAP a 'broader, more costly approach than is necessary.'

LICAP would be the most detrimental proposal for consumers because it has such a huge price tag without any specific return for consumers."

Similarly, Romney, in a June 2005 letter to then-FERC chairman Patrick Wood, labeled LICAP a "broader, more costly approach than is necessary," and warned that the resulting "rate shock will have a detrimental effect on Massachusetts and the region's economy."

NStar vice president Horan likens LICAP to a "giant battleship of a structure," disproportionate to New England's need for a few additional small power plants to meet demand peaks. Planning for long-term capacity can move at a more deliberate pace, he says. (Such peak-use power plants, such as the 96-megawatt facility recently proposed to sit next to the existing L'Energia power plant in Lowell, are less difficult to site and less costly to build than larger power plants, and they can go online or offline in response to demand.) Power-

delivery companies such as NStar favor another approach, a “forward-procurement market” that estimates needed capacity and pays generators to meet that goal with prices set in a reverse auction. Essentially, ISO would offer a high price to attract an oversupply of generators eager to provide electricity, then keep cutting that price (thus pushing generators out of the bidding). Eventually ISO would have only the electricity it needs at the lowest cost.

“It’s painting with too broad a stroke to say we’ll need more power in 2008,” Horan says. More capacity will be needed ultimately, he acknowledges, “but it is a very small need to start.”

However, when Reilly offered a forward-procurement alternative built around such peak-use plants—one providing guarantees that new capacity would get built, not just encouraged by higher prices—FERC refused to accept it for filing as part of the public record, says Moore.

Still, FERC was persuaded to slow down the process. LICAP was scheduled for January 1 implementation, but FERC has put off a final ruling until October. If FERC goes forward with LICAP, the attorney general would likely pursue further legal action, Moore says.

For their part, power generators say the time for talking is over. The region can’t afford to squabble over regulatory plans any longer, says O’Connor.

“We don’t need any new laws right now,” she says. “We don’t need legislators. What we really need is regulators and generators and users to roll up their sleeves and get the job done.”

All the parties are now in talks to settle upon some middle ground. Suffice it to say that whatever regulatory scheme survives, the ratepayer will pay more.

“There’s no way to avoid the long-run cost of making the investment,” says van Welie. “There’s no free lunch when it comes to having to pay for all this.”

CONSERVATION AND DIVERSIFICATION

Another reason ratepayers will ultimately have to pay more is because of New England’s dependence on natural gas. Power generators built a flock of gas-fired plants in the 1990s, when gas cost a paltry 50 cents per million BTUs. According to the Energy Information Administration, by 2003 natural gas accounted for 47 percent of Massachusetts’s electricity generation, and the state’s power plants nearly doubled their gas consumption, from 88.1 billion cubic feet in 2000 to 163.6 billion cubic feet in 2004.

That made perfect economic sense—until the price of natural gas started to soar in this decade. Today prices routinely hit \$5 per million BTUs, and can reach \$10 or more after supply disruptions like Hurricane Katrina; in December, the price hit \$15. Generators are left struggling with higher costs to make electricity, and unable to pass them along, thanks to the wholesale price cap.

“There is no question that we haven’t gotten out of the conundrum of having both high prices and events such as Katrina, [which] show how precarious our energy system is,” warns Cowell, of the Conservation Services Group. New England’s energy infrastructure “is stretched so thin,” he says, that even modest increases in gas costs could wreck the region’s capacity to produce electricity.

Cowell and other conservation advocates say a coherent energy strategy is needed to alleviate that strain and reduce the costs consumers will need to pay in the future. Their suggestions: a more diverse supply of energy sources, especially green alternatives such as wind or solar power; tougher energy-efficiency standards, to make better use of electricity; “demand response” policies that encourage consumers to use less electricity at peak times; and streamlined approval processes so that new plants, gas pipelines, and transmission wires can be built more quickly.

Energy conservation and energy efficiency are the best ways to solve New England’s energy problems, agrees energy advocate Frank Gorke of MassPIRG. But Gorke isn’t a fan of building more power plants. “If the starting point is, ‘How do we build more capacity?’ then we’ve already lost the race,” says Gorke.

Dempsey says that isn’t the case and that the tide has turned, at least as far as energy standards are concerned. In November, the Legislature passed new efficiency standards for certain household appliances, like furnaces and boilers, as well as AC/DC transformers, metal halide lamps, and state-regulated incandescent reflector lamps. The legislation also offered tax credits for the purchase of

Conservation advocates suggest a more diverse supply of power sources and better energy efficiency.

products to boost home heating efficiency, such as new windows, weather stripping, insulation, and programmable thermostats.

Conservation advocates say there’s more to be done, however. The Northeast Energy Efficiency Partnership in Lexington, for example, estimates that rigorous energy-efficiency standards could reduce electricity consumption in New England by more than 17,000 gigawatt hours by 2013, equivalent to more than a dozen mid-sized power plants and enough to forestall a capacity crisis for years.

Sue Coakley, NEEP’s executive director, says that those

gains would require strong leadership at the political or regulatory levels to impose more exacting building codes or efficiency standards for a variety of household appliances. “The question is how painful things will have to be” to prod legislative action, she says.

A HARSH CLIMATE

When it comes to new power plants, things might have to get pretty painful. The Romney administration and members of Congress have repeatedly tried to block Cape Wind, the proposed wind farm off Nantucket that would generate nearly 200 megawatts of electricity for Cape Cod. The administration also opposes a liquefied natural gas terminal proposed for Brewster Island. Boston Mayor Thomas Menino wants all LNG shipments coming through Boston Harbor to stop completely, citing terrorist concerns. Whether or not they have merit, those stances impede the creation of new generating capacity—and reinforce Massachusetts’s reputation as a difficult place to do business.

“People have moved to address our need, but infrastructure cannot be built so quickly. There are a lot of issues with siting and rights-of-way,” says utility consultant Wang. “You know how things are in New England. That’s a very real issue.”

“If you are an investor coming in here,” says Alexander,

of the power generators’ association, “you have to say, ‘How much aggravation [do I want to put up with], how long do I want to commit myself to a long licensing process, when I can go to Ohio and get almost guaranteed profit, where they’ll welcome me with almost open arms?’”

How to restructure the electricity market to spur investment in generating capacity is a secondary question, conservation expert Cowell insists. Foremost, he says, the region must decide how much it wants to diversify its power base and lean on reliable, safe, clean energy sources. “That should be the bedrock of where you start from,” he insists.

Van Welie disagrees, insisting that, sooner or later, the bill to increase New England’s electricity capacity will need to be paid. Conservation and diverse energy resources are important, he says, but only to keep that bill a little bit lower or to keep it from coming due a little while longer. His bottom line: Fix the market to give generators reason to build more capacity, and the lights will stay on.

“If you choose to build nothing and do nothing, you are going to jeopardize your economy and your well-being,” warns FERC Commissioner Brownell. ■

Matt Kelly is a freelance writer in Somerville. Additional reporting by Gabrielle Gurley.