

The New England Energy Roundtable

**Seven critical questions
and
answers from the experts**

**Henry Lee, Paul Joskow,
Susan Tierney,
William Ellis and Manfred Ernst**

April 12, 2006





When five prominent experts who have debated, analyzed and made critical decisions on energy issues for more than 25 years come together to talk about the challenges facing New England today, the thoughtful, well informed and direct insights should be of interest to government officials, industry executives and others who have a stake in the future of the region's energy security.

"The New England Energy Roundtable" held on April 12th by the New England Energy Alliance addressed pressing issues facing the region including: potential shortages of natural gas and electricity, barriers to building new energy facilities, the impact of climate change and actions to address it, how deregulated markets have influenced energy prices and supplies, and the role and effectiveness of regional leadership on these issues.

Moderated by Henry Lee, Program Director at Harvard University's Kennedy School of Government, thought-provoking perspectives and possible solutions to ensure adequate, reliable and affordable supplies in the future were provided by:

- Paul Joskow, Professor of Economics, MIT and acclaimed energy expert,
- Susan Tierney, Principal of the Analysis Group, former Commissioner of the Massachusetts PUC and Assistant Secretary for Policy of the U.S. DOE;
- William Ellis, Yale lecturer and former CEO of Northeast Utilities; and
- Manfred Ernst, CEO of Fieldstone, an investment bank.

The New England Energy Alliance, formed last year to encourage discussion of regional energy needs and to advocate for needed infrastructure, hopes you find the discussion helpful, even illuminating, as you consider both the nature of New England's energy challenges and possible solutions.

Please let us know if you have any questions or additional comments on the subject matter. For further information on the Alliance, please visit our web site – www.newenglandenergyalliance.org.

Sincerely,

Carl Gustin, President
New England Energy Alliance
77 Franklin Street, Suite 507
Boston, MA 02110

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Executive Summary

There is no single or simple solution to solve New England's need for electricity and natural gas supplies. While a recent agreement to address market uncertainties, the so-called LICAP settlement, if adopted, could attract investments in new electricity generation facilities, the region must still confront its growing dependence on natural gas, the difficulty in siting new energy facilities of all types, and the looming prospect of natural gas supply problems in the post-2010 period. Furthermore, it must do so recognizing the looming threat of climate change and the high probability that the United States will enact mandatory controls on carbon dioxide emissions within the next decade.

Incremental advances – in terms of energy supply and demand options, institutional change, and regulatory reforms – are the only politically realistic paths available. The development of new policy coalitions and establishment of new politically legitimate institutions that will approach energy issues in the broader context of the region's economic health are important steps to take. Regional negotiations that are specialized, and that do not include the Governors' most senior economic advisors, are much more apt to end in gridlock than those that do involve these advisors, and where the opportunities and incentives for balancing competing interests are greater.

Leadership is needed to attract investment, ensure timely approval of energy project proposals, encourage diversity in the fuel mix (large-scale renewables, coal gasification and next-generation nuclear) and harmonize competitive rules across the region. Without these improvements, the region will suffer even higher prices and further reductions in reliability while falling further behind other regions of the country in attracting and maintaining jobs and improving the quality of life.

Background and Participants

In November, 2005, the New England Energy Alliance published a report authored by Susan Tierney and Paul Hibbard of the Analysis Group, titled “New England Energy Infrastructure: Adequacy Assessment and Policy Review.” It concluded that the region faces a potential energy crisis characterized by an inadequate energy infrastructure and the possibility of both natural gas and electricity supply shortages by 2010 at the latest. The report raised a number of important questions about New England’s energy future.

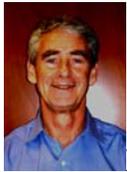
To address these questions, the New England Energy Alliance convened a panel of five experts who have been at the center of the region’s energy debates for the past twenty-five years.



William Ellis, Lecturer, Yale School of Forestry and Environmental Sciences, and former CEO of Northeast Utilities, the region’s largest electric utility



Henry Lee, Director, Environment and Natural Resources Program and Lecturer in Public Policy, John F. Kennedy School of Government, Harvard University, and the first director of the Massachusetts Energy Office



Manfred Ernst, CEO of Fieldstone, a highly-respected investment bank with a focus on energy infrastructure



Susan Tierney, former Commissioner of the Massachusetts Public Utility Commission, Massachusetts Secretary of Environmental Affairs, and Assistant Secretary for Policy of the US Department of Energy and a partner with the Analysis Group



Paul Joskow, Professor of Economics and Director of the Center for Energy and Environmental Policy Research, Massachusetts Institute of Technology, and one of the country’s most acclaimed experts on electricity and natural gas

The discussion among the panelists ranged across many topics and provided insight, guidance, and recommendations. The following is a synthesis of the dialog focusing on the major themes, including resource adequacy (natural gas, coal, and electric), diversity of supply, energy facility siting, and energy planning and decision-making.

Questions and Answers

Q1. How concerned should we be about the adequacy and diversity of New England's energy infrastructure?

Background: There have been repeated warnings from various organizations including ISO New England, the New England Governors Conference and the New England Energy Alliance about potential shortages of both electricity and natural gas by 2010. Warnings have also been issued about the region's growing appetite for natural gas, which is largely due to its increased use to produce electricity. Today, the region gets more than 40 percent of its electricity from natural gas.

Paul Joskow: A small surplus of electric generating capacity remains, and I think the recent LICAP (see Question 5, Background) settlement will remove one of the major financial deterrents to attracting investment in new capacity. There may be problems getting new projects sited and the construction completed, but I think that the LICAP settlement will resolve one of the major deterrents to investment in new generation.

If natural gas prices stay high, the region has a very suboptimal mix of generating capacity. In principle, LICAP solves the "missing money" problem for all potential generating projects. However, it would be hard to build coal or nuclear capacity in New England due to vocal opposition to these technologies. If coal and nuclear are ruled out, natural gas and oil-fired generation will be on the margin in most hours, and wholesale electric prices will move up and down with gas and oil prices.

If you ask the person on the street what troubles them, they will point to their gas, oil and electric bills. This is the kind of thing that really upsets the politicians as they are inundated with complaints about high prices.

You can build coal facilities that are environmentally friendly. If our elected officials give up on these other technologies, gas is going to become even more expensive and the region will have an economic problem. If the region rules out all technologies except new gas plants, then the market will give us more gas plants.

Susan Tierney: I would be willing to bet that New England will never be willing to site another pulverized coal plant. The problems of siting and air quality impacts will make it impossible.

The region has a problem. It does not create incentives for the fuel diversity it says it wants. It does not want to pick winners and losers, does not want to make a mistake on either the upside or the downside. Because of the fear of being wrong, we tend to want only short-term procurements of power. That makes it hard to buy options with long-term benefits. We know we need diversity, but when push comes to shove on many specific projects we are not willing to get there.

Henry Lee: The region has a history of ignoring fuel diversity and investing in the fuel with the lowest price at any single moment in time. We seem to forget that fuel prices are volatile and electric generating plants have lifetimes that last forty years. The question the region needs to address is how important is fuel diversity. If diversity is as important as many people claim what is the region going to do to achieve it?

Manfred Ernst: I agree that fuel diversity is a problem. Everyone talks about gas-fired facilities, but other regions of the country are now turning to coal. Coal prices remain quite low, so that in a region where gas sets the clearing price, coal plants should be quite economical. The problem with coal facilities is that they need a much longer development period.

I never thought nuclear would once again be an option, but I think it will be, especially if the country decides to embrace carbon credits.

William Ellis: Coal plants ... are being built in Texas. They have the same air quality requirements. In a rational world, they should be built here.

Q2. With our growing dependence on natural gas and concerns about global warming, how likely is it that we will see either major wind and other renewable projects or new nuclear plants sited in New England?

Background: Recent federal legislation, the growing demand for electricity and concerns about climate change have led to a number of proposals for a new generation of coal-fired and nuclear power plants to be built in the United States. Within the region, two large scale wind projects have been proposed off the coast of Massachusetts, but face uncertain futures. Coal, nuclear and wind plants would help diversify the fuel mix and reduce dependence on foreign sources of supply.

William Ellis: I have yet to understand where the investor comes from for the next nuclear plant. Nuclear has a history, especially in New England. Investors remember the willingness of the regulators to deny recovery of their nuclear investments in the 80s.

The availability of federal [loan guarantees and production tax credits] has generated some interest, but when the day comes when the investors have to put their money on the table, some new arrangement will have to be developed.

Once you have taken a political position on an issue, it is not easy to back away. The environmental groups that have fought against the nuclear option have funders who mirror their anti-nuclear positions. To respond to a new rationale on this issue will be very difficult.

Cape Wind (proposed to be built in Nantucket Sound) has the potential to be a real money maker. It is less costly than natural gas-fired facilities, and this advantage, together with the federal production tax credits, make the project a winner for the region. For this project with these economic advantages to be stalled worries me greatly. Nantucket Sound is one of the best sites, so if you say no to this project for any number of reasons, I do not see how the region can put together tens of megawatts of wind energy, yet alone hundreds.

I know of a much smaller project being proposed in a New England state and I have been flabbergasted at the opposition that has formed against it. People who strongly espouse renewable energy are quick to oppose any particular renewable project if it is proposed in a particular spot that they value.

Manfred Ernst: The world has changed. The biggest issues were cost overruns, but the nuclear industry has made some adjustments. I would not be surprised to see a number of new nuclear facilities going through the permitting process in the next several years.

The first round of nuclear facilities will have to be financed on the balance sheets of the investors until people get comfortable with the ghosts from the past.

Paul Joskow: When you look at the new nuclear plants being discussed, they are almost all proposed to be sited on existing sites, and they are all in the Southeast, where there has been no significant restructuring or deregulation. Further, some utilities may be counting on a free ride from their public utility commission, which I doubt will happen. Finally, I agree with Manfred. The plants will not be project financed, but rather be financed on the balance sheets of the investors.

Susan Tierney: I think the climate issue will make it difficult for some environmentalists to address nuclear in the same way that they have in the past. I am not saying it will be easier to site a new nuclear facility, but it will be different and perhaps more complex.

I think the whole Cape Wind saga is one of the worst examples of NIMBY siting challenges that we have seen in decades in this region. If Congress is going to allow – as it is now threatening to do – a state Governor to veto a wind farm in *federal* waters for any reason he wants, why should we have any confidence in our ability to site any other type of energy facility? This is a federal issue that has been shoved back to the states and it's not only bad news for Cape Wind, but it's also a terribly bad precedent that bodes poorly for LNG, for nuclear, for transmission and especially for renewables. What the region will be left with for renewables is sub-utility scale wind turbines that are not very economical.

Henry Lee: Interest in wind energy has improved dramatically in the last few years and, while the scale is smaller, biomass options have also received attention. Solar photovoltaics still seem more expensive than conventional power options and thus investors have targeted PVs for special applications.

Elected officials have embraced renewables quite enthusiastically, putting in place renewable portfolio standards as well as special funds to spur the penetration of renewable options. Yet, as witnessed by the recent perils facing the Cape Wind project, actually siting large-scale renewable energy projects in or near densely populated areas has proven to be very difficult. If New England cannot site large-scale renewable projects because of public opposition, it will have to import renewable power from Canada or upstate New York.

Q3. Turning to natural gas, with prices up dramatically in the last three years, what are the region's gas supply options going forward and what impact are they likely to have on prices?

Background: Natural gas demand increased 70 percent between 1993 and 2003 primarily as a result of its use in electricity generating plants. Today, natural gas is used in New England to heat 2.1 million homes and 240,000 industrial and commercial businesses, and is used to produce more than 40% of our electricity supply. Liquefied natural gas (LNG) comprises nearly 20% of New England's total year-round natural gas supply --- and up to 30% on peak demand days during the winter months.

Henry Lee: Gas prices have increased from \$2.50 per mcf a few years ago to as high as \$14 in the weeks after hurricane Katrina. The recent gas discoveries, in both Canada and the United States, have been disappointing, forcing the country to rely disproportionately on higher-priced, unconventional gas supplies. Thus, beyond the 1.5 TCF that will result from the proposed Alaska natural gas pipeline, there are only two significant sources of incremental supply: LNG and coal gasification. While there are investors that are pursuing coal gasification options, all but one are in states with rate of return regulation. This leaves us with LNG.

There has been a stampede to build new LNG regasification facilities in the United States and Canada, including several in New England. However, most of these have encountered significant opposition from those worried about environmental and safety problems. Yet if this region is unable to site new LNG facilities or purchase LNG from receiving terminals in Canada and transshipped to New England, there are really no other options to obtain additional gas supplies. In the next few years, this is not likely to be a constraint, but beyond 2010, there is a strong possibility of regional demand outstripping supply.

There are people who, to avoid political opposition, argue in favor of offshore LNG facilities. However, these facilities have limited storage capacity, and in a winter peaking system like New England's, building sufficient storage is important.

Let me make one other point. The Japanese have demonstrated that there are benefits from building multiple LNG facilities in geographic proximity to each other. Japan has no domestic gas and thus imports all of its gas in the form of LNG. It has 23 LNG receiving stations and most are linked with at least one other station. This system has allowed Japan to weather several major supply disruptions over the last five years.

Paul Joskow: The Europeans are building LNG facilities all over the continent. In England, Spain, France and Italy, these facilities are being built. Gas prices are high and these countries are worried about being overly dependent on the Russians. They understand the value of diversity.

This region, on the other hand, is off the map right now as being impossible to get things sited. I met with an official from a large foreign oil company that has a permit to build a LNG receiving station. It has plans to invest in the Gulf Coast, but is unwilling to fight all the political battles in the Northeast.

Yet, if you could overcome the politics, it will not be hard to finance an LNG plant.

New England needs additional gas storage. If one looks back at the severe cold snaps in January 2004, there was no national gas shortage. Yet the pipelines into New England were filled – as were the lines within the region. One of the benefits of building additional capacity to import LNG is that it will free up pipeline capacity and provide more local storage capacity.

The region will get the gas it needs. Either it will buy the gas from Canada, from elsewhere in the United States, or it will import it. If we do the latter, we will either have to expand the pipelines from Canada or will have to build new LNG terminals. No matter which of these the region chooses, it will have little impact on natural gas prices, which will be set by national and international markets.

William Ellis: A coal-fired power plant can store up to five months of coal on site. A gas-fired facility has no storage and thus is quite vulnerable to short-term price volatility. In fact, there could be times when gas is unavailable at any price. The potential “interruption” of gas supplies is a big problem. This is why diversity of fuel matters and why building additional capacity to import LNG is important.

Susan Tierney: Prior to 9/11, concerns about safety existed, but they were more focused on technical issues, such as the proper size of the safety zones around LNG ships and terminals to protect the public in the event of a breach of the LNG containment equipment. Over the years, people have learned to live with LNG. But since 9/11, there is a more common awareness and concern about security issues, and government officials are focused on terrorism.

The strongest argument for siting additional LNG capacity is that New England needs gas. It is very hard to dispute this fact and for this reason I am more hopeful that we will be able to overcome the LNG siting problems than I am with coal, nuclear or wind facilities.

Q4. How difficult has it become to site new energy facilities in New England?

Background: The siting and permitting of energy facilities is a major obstacle to the region's ability to meet future needs. Siting processes have become more complex and opposition has been strengthened by political and community activism to the point where the region may not be able to add new capacity in time to meet growing energy demand.

William Ellis: New England stands out as a siting nightmare. This is nothing new.

A developer is talking about one unit in one place, but he almost always is confronted by the question whether the region has ensured that there are no other alternatives – such as energy efficiency improvements. Forgive me for sounding cynical, but the developer does not have much command over efficiency improvements in buildings. Demand management is important, but it is not really in the purview of the developer.

Paul Joskow: New England is a tough place to site energy facilities and our elected leaders have to recognize that there are consequences to refusing to site new facilities – volatile electricity prices and dependence on world oil and gas markets. There is no free lunch.

Having a market requires that you be able to site facilities. Ideally we should be able to pre-site facilities. Further, all the relevant rules – local, state and federal – should be contained in one book that all developers would have access to.

A project developer should not have to come in and prove that they have the best project. What they should prove is they have met the environmental and siting laws. If the developer overestimates the demand, the risk is on his or her shoulders; this is the beauty of markets.

A developer of an energy supply option should not have to deal with whether or not there are economic opportunities for energy efficiency. If one thinks there are economic opportunities in energy efficiency go ahead and make those investments. There are no barriers to one doing it. If states want to have energy efficiency investments beyond those that are happening in the market, they ought to do what they can to induce investors to pursue them. There is no reason why you cannot have parallel supply and demand-management markets

Henry Lee: When a developer goes to site a new energy facility, he or she must obtain thirty to forty permits from multiple agencies, each with their own priorities and jurisdiction. Even if you get the permits, citizens have the right to ask the courts to overturn those decisions, causing further delays. A smart lawyer can hold up almost any siting decision for several years.

Germany pre-sites certain energy facilities and reversed the burden of proof in siting procedures for what it deems “facilities of strategic interest.” Professors Alan Altschuler and David Luberoff have written a fascinating book on siting large scale projects. They argue that we are now in an era that any new facility must meet a “do no harm” criteria. Since all large energy projects leave an environmental footprint, this can become an ever more difficult criterion to meet. Take a look at the difficulties the city of Chicago is now confronting in its efforts to modernize O’Hare airport.

If a developer proposes a 300 megawatt generator, one of the first arguments made by opponents is that the region can get 300 megawatts from energy efficiency at a lower cost and without any subsequent environmental footprint. What is ignored is who is going to make the investment in 300 megawatts of energy efficiency improvements. The power developer has no ability to do so; the state may side with the efficiency proponents, but it is not willing to invest in those improvements; and the proponents themselves are not stepping up with a financial plan to capture these savings. Often the result is that the developer gives up and walks away from the project and the energy efficiency improvements never are pursued.

A stronger commitment to energy efficiency programs at the federal and state levels will defuse some of the opposition to siting new energy facilities.

Susan Tierney: A continuing problem is that our political leadership in this region is increasingly consumed by the short term election cycle. It is hard to make tough decisions in that environment, because someone is always going to perceive he or she is the loser.

It is very difficult to get any real siting reform passed because every group perceives that its “single issue” will be threatened by reform, and they recruit “the agency” or “the association” with jurisdiction for or interest in that issue to oppose the reform. It does not matter if we are talking about wetlands, antiquities, endangered species or coastal zone management. There’s going to be someone resisting reform. I cannot blame them, but it is these single issue interests that end up shaping the decisions by government.

If there are venues in which energy efficiency opportunities are vented and have a chance to be pursued, it will provide comfort to those who now seek to use energy infrastructure siting procedures to make the case for efficiency investments.

Is there a value in resurrecting a procedure to determine the need for power? Under the old system if the state could prove that there was a need for a certain increment of new

power, the regulators would say okay, now we will put our muscle behind these projects. There is nothing in the present process that determines what is in the public's interest, and ironically that makes it harder not easier to make tough siting decisions.

I do believe that there should be a process in place to procure energy efficiency improvements. Governments need to be able to say they have a process that is aggressively pursuing demand reductions that are a good idea, but not being delivered by markets alone.

Q5. Is LICAP the right answer to attract investment to meet the region's power needs?

Background: Locational Installed Capacity or LICAP is a proposed wholesale market that would be overseen by the region's electricity grid operator (ISO New England) to ensure that in areas where electricity supply is insufficient, new generating plants are built and existing ones continue to operate. Under a recent settlement agreement, ISO New England would project the needs of the power system three years in advance and then hold an annual auction to purchase power resources to satisfy the region's future needs. These resources include new and existing power plants, alternative energy sources, and demand response assets. A transition mechanism will provide interim compensation for power resources to ensure reliability as the Forward Capacity Market is established.

Paul Joskow: Every Attorney General in this region has had explained to him or her how prices can be high and new investors can walk away from what they believe is an unprofitable market. Prices are high because natural gas prices are high and the earnings margins for new combined cycle facilities and for new peakers are too low to support new investment. A coal plant might be profitable, but getting siting approvals for a new coal plant would be very difficult in this region. Everyone I have talked to understands this, but how can an elected official support a program that will make them higher than they already are?

The problem is that when the region decided to deregulate electricity markets, officials thought that prices were going down forever. That is not the way it turned out. Prices go up and down in markets.

As for the economists' argument, it is not easy to let markets work right when you have a system operator (ISO New England) whose behavior during "scarcity conditions", combined with administrative price caps, constrains wholesale prices during scarcity conditions at levels that are far too low.

I actually think the proposed LICAP settlement is pretty good.

The settlement will give new plants a guaranteed price for capacity for four years. Basically it assures investors that the price of power is going to fall within a certain range and thus an investor will know that his revenue stream will be stabilized for the first few years of the project. I think the settlement is a big step forward.

William Ellis: When the new market rules were put into place, there was supposition that the regulators were going to let the market function. But New England has many examples that when markets do not seem to be working politically, government officials change the rules.

Manfred Ernst: Markets require a certain amount of lead time. Public policy needs to allow investors to receive the correct signals so that they can make their investments and know that they are going to be paid in twenty four months. If this does not happen, investors will go to other markets that are seen as more attractive.

Q6. In this post-restructuring era, do we have either the leadership or the institutions to guide and support the development of needed infrastructure?

Background: Restructuring of the markets in five of the six New England states has changed how regulatory institutions operate and how federal and state agencies relate to each other. It has also introduced one new significant player, the Independent System Operator responsible for the electric transmission network, while increasing the role of the Federal Energy Regulatory Commission.

Henry Lee: As the region has moved to a more market-focused system, markets have expanded beyond state boundaries. The number of industry players has multiplied. Friction between states has increased as some states perceive that new rules will favor other states at their expense. Some have proposed the creation of regional regulatory bodies, but no one has figured out how this might be done. Others argue that the federal government through FERC must assume greater jurisdiction over energy policy decisions that had previously been the responsibility of the states.

New England is characterized by differences among the states in terms of size, urbanization, resources, population density, and income. For at least the last thirty-five years, there have been political splits between the northern and southern tier states centered on economic advantage.

This split is complicated by the lack of regional institutions that foster the development of policies and programs that benefit the entire region, as opposed to one state or another. Twenty five years ago, the region had a number of such institutions. Several were well funded, but most of these have fallen by the wayside.

Paul Joskow: I think the governors in the region have to recognize that they cannot do it all with energy efficiency or with renewables. There isn't a silver bullet that can meet the region's electricity needs economically, given environmental policy goals. The region needs to have a portfolio of supply-side and demand-side options available to investors to move forward to be competitive with other regions of the country. I do not see how these problems are going to easily disappear. I think FERC is committed to resolving many of these issues over which it has jurisdiction, ideally with the cooperation of the states. Admittedly, in recent months, FERC has become much less committed to making markets work. This could become a problem since most of the wholesale market and transmission financing issues are technically within FERC's jurisdiction.

On the retail side, this region is a complete disaster because every state has its own retail competition rules and regulations. The retail business has real economies of scale. Companies have to do advertising and offer customer service. Trying to do this on a state-by-state basis with relatively small states – all with different regulations – is problematic. States need to think about ways they can harmonize their retail competition and procurement regulations in a reasonable way.

I think the ISO is doing a lot better. They have a hard job. They have gone through some major technical redesigns of their markets. I think the LICAP experience has taught them that they need to do more outreach. They are beginning to recognize that there are stakeholders other than those that show up at their meetings. Technically they do a good job. So I do not think that New England should criticize the ISO. Instead, it is more constructive to encourage them to continue on their present course.

William Ellis: I have always hoped that there could be a more formal arrangement for harmonizing regulations in this region. For an arrangement to be effective it must be formally tied to the political establishments in each of the six states. Unless you have a formal compact that can last, the arrangement will be chipped away by individual states. It does not necessarily have to include all six states. It would be better if you had five states that were willing to work together than have an arrangement that included all six that was not functional.

I am happy that FERC seems willing to show some strength in wholesale markets. It has to continue to expand its role in the region and to exert influence on the states to work together in a coordinated fashion. FERC's willingness to advocate change will ebb and flow. The important development is that it now has greater jurisdiction and this is unlikely to go away.

When New England Governors deal with each other, they do not deal with only one issue at a time. There has to be a locus of negotiating that integrates several issues at once.

Let me provide an analogy. There is a large DC transmission line from Quebec to southern New England that runs through Vermont and New Hampshire. The beneficiaries were primarily Massachusetts and Connecticut. The southern states wanted the northern states to allow this line to be sited. It turned out that New Hampshire had a controversial

nuclear plant that it wanted to build, and it wanted to get the southern states to stop trying to block that facility. So they horse traded. “You folks give us Seabrook, and we will let you run your power line down through Vermont and New Hampshire.”

In this example, the states had different interests. The same is true today. Perhaps Maine has more capacity to site wind facilities and wants transmission to move that power to prospective markets. Hence, this might be something that Connecticut can support that Maine wants. In exchange, Maine may stay in the ISO and help pay a fair share for the transmission into southwest Connecticut.

It is important to reach out to a larger circle of decision makers, particularly to those who share an interest in the economic health of the region. For example, why not set up opportunities for the economic development commissioners to work together? They share a concern about the need for adequate energy supplies. Urge them to meet with the leading private sector economic trade associations.

The Governors are more apt to listen to their appointed economic development commissioners than they are to outside groups or even to their own regulators. ISO-New England may be developing great policies, but the Governors are going to listen to their own senior appointees. If we are going to break the logjam around our energy issues, it is as important to think about who should deliver the message, as the substance of the message itself.

Susan Tierney: The problem is lack of leadership. It is figuring what we, as a region, want and how we are going to improve the world we have right now. Right now many of the dollars involved in providing electricity to consumers have shifted to FERC jurisdiction. State regulators pay a lot more attention to what is going on at FERC than they used to. They intervene, they are active in FERC proceedings, and they are willing to spend resources to participate at FERC. I think that FERC needs to let some issues, like resource adequacy or LICAP, cook at the state and regional levels before coming to a final decision. This combination of having FERC as the final arbitrator while giving states the opportunity to develop their own recommended solutions can be quite effective.

It is very difficult to change things at the ISO. At the end of the day, ISO views FERC as its primary constituency. The ISO is by design independent of all market participants and government players. But this independence needs to be artfully exercised. The ISO is caught between trying to work with stakeholders in thousands of meetings and then sometimes having to pull the plug and file a position at FERC. People get upset and issues get politicized. It is worth spending considerably more effort to figure out how to manage this process a little bit better, in part because this way of doing business is very resource-consuming for everyone.

The problem is exacerbated by the reality that the officials (within each state’s executive branch) who deal with energy are not familiar with other issues like agriculture or natural resources. The regional discussions that go on today are quite specialized. And the horse-

trading occurs only on issues within the energy box. That sometimes makes it hard to reach agreements.

Q7. How does the possible prospect of federal regulation of carbon emissions affect energy infrastructure regulation? More specifically, does it matter that four of the New England states have joined with other states in the Northeast to reduce greenhouse gases while two have not?

Background: Concerns about climate change have led to adoption by four New England states of greenhouse gas reduction targets under the Regional Greenhouse Gas Initiative (RGGI). Massachusetts has adopted similar targets, but along with Rhode Island decided not to participate in RGGI. Congress is also considering legislation to limit emissions of greenhouse gases. These actions are likely to affect existing and future power plants and energy supply mix.

Susan Tierney: New England is ahead of the rest of the nation in facing up to this looming problem. I think it is only a matter of time before a new Massachusetts governor or the legislature reverses Governor Romney's decision not to join RGGI. I think it is inevitable that there will be a national program and that is more important than having our region act alone. And while I would not have designed the pact exactly the way it was designed, I think the region is moving in the right direction and this initiative will increase pressure on Washington.

Paul Joskow: Whatever New England does unilaterally on this issue, we have to recognize that it is purely symbolic and will have no real effect on global emissions or climate change. It should be thought of as a demonstration program from which lessons can be learned for the entire country.

I think the climate issue is on everyone's radar screen. What is the likelihood of a national CO2 policy? At what level will the cap be set and how will it be phased in? How will allowances be allocated? How will it affect electricity prices in my region? This is a complicated set of issues, and if you are an investor, you would like to know what the program is going to be.

Henry Lee: I agree with Paul that New England by itself can't solve the climate problem. The region is too small. It can eliminate all its carbon dioxide emissions and the effect on global carbon concentrations will be minimal. On the other hand, I do not think the RGGI program will deter investors nor do I think that it will cause noticeable increases in electricity prices.

The larger question is how the looming possibility of future federal regulation affects the type of investments that we are likely to see in this region.

William Ellis: I agree with Sue. I think a federal carbon reduction program is inevitable. You have heard companies like GE and Cinergy speak out on this topic, but there are going to be many more over the next six months. However, the existence of a carbon tax or a cap on emissions may complicate any efforts in this region to seek a more diverse fuel mix. A carbon tax will make it more difficult to site a coal plant and will further empower the argument that the region needs to squeeze more savings out of efficiency improvements before it builds new supply alternatives. This may be true, but I suspect that the energy infrastructure debates in a carbon-regulated environment will be even more complicated than those we are hearing today.

Manfred Ernst: If you look at the international scene, there are huge amounts of money being made trading carbon credits. In some cases, the value of these credits exceeds the stream of revenue from the projects. For example, wind farms generate carbon credits that significantly increase their financial value. Investors can make a lot of money if the federal government introduces a carbon tax or cap if they have the foresight to invest in the right energy projects.

For more information on energy challenges and opportunities facing New England, please visit the New England Energy Alliance at www.newenglandenergyalliance.org.