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Changing Maine Lecture Series: Energy

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Energy, in Maine as in most places in the world, is a story of natural resources, technology, politics, culture, the environment, economics and above all else, dynamic though sometimes repetitive, change. It is also a story of rascals and saints though there is undoubtedly disagreement as to who belongs to which category. The angels of one decade often look like rascals in the next.

For example, in 1927 Walter Wyman, President of Central Maine Power Company sold majority ownership in the company he had carefully built in Maine to Samuel Insull, inventor of the electric utility holding company - an early incarnation of ENRON. Insull was building an empire of electric utilities and using their revenues to support wider investments in unrelated businesses, such as street trolleys. Wyman was looking for capital to expand CMP's service territory and to invest in a few affiliated businesses of his own. Insull was a high flyer, and one suspects there must have been a moment when Walter Wyman felt like he was hanging onto the ropes of a hot air balloon, rising several feet off the ground, too late to let go and not at all happy with the direction the balloon was taking. Insull acquired and borrowed against his acquisitions throughout the US and was moving into Europe when in the early 1930's he was stretched so thin, his empire came crashing down into bankruptcy. It was very much the ENRON the era. Walter Wyman, having lost control of his beloved company, did hang on and managed to repurchase CMP out of the Insull bankruptcy restoring himself to the full control of his company, undoubtedly a wiser man. The US Congress promptly to passed a law prohibiting any replay of Insull's use of ratepayer funds to expand into unrelated businesses, The Public Utility Holding Company Act. This law is now subject to repeal in the Bush Administration's Energy Bill.

In considering Maine's energy story over the past forty years, let's think a bit about the different ways in which this story might be told. For example, one can think about energy in terms of the resources or fuels used to produce it: oil, coal, gas, plutonium, as well as water, wind, the sun, the woods and other biofuels. These are often broken into three groups: fossil fuel, nuclear, and renewable resources. Maine's early energy sources were, of course, renewable. Wood and water power were at the center of Maine family and economic life long before the days of organized power companies; and these fuels have remained an important part of Maine's energy mix.

Another way to think about energy is the various ways we use it. This is called the "end use" analysis of energy. Generally, no one really needs a kilowatt hour of electricity, or even a gallon of gas, as an end in itself. What we need, and want, and are willing to pay for is the end use we get from energy: light, heat, and cooling; movement from place to place in our cars, trucks, and fishing boats; power for our computers; industrial motor power to run our manufacturing equipment, and so on. In particular, Maine uses more energy per capita than most states (we're #5 nationally) due primarily to our home heating and motor transport needs.

End use analysis leads directly to another important energy source in a complex economy like ours: energy efficiency. Strategies and technologies that allow us to get the same amount of end use from smaller and smaller amounts of energy are, in a very real sense, a source of energy in themselves. For example, modern refrigerators use half the electricity they did in the 1960's and 1970s, to produce the same amount of cooling; and many of them with very nice added amenities. The same is true of light bulbs and oil furnaces and cars and air conditioners and washer and dryers and a whole host of end use products; though for many appliances and products, including passenger vehicles, many already existing efficiency gains have yet to be incorporated into the models we buy today. So, end use and efficiency are important. Maine's economy has become more efficient in recent years. For example, between 1985 and 2000 our Gross State Product increased 40% (in real dollars) while our total energy consumption increased just 26%. Unfortunately, some of that change reflects a loss of manufacturing industries rather than an increase in efficiency itself.

One can also think about energy in terms of the technology used to create the energy: large hydro dams to capture and hold water used to produce hydro electricity; thermal-steam plants, or as one of my colleagues calls them, giant teakettles, that burn coal, oil, or nuclear fuel to boil water, using the steam to run turbines which produce electricity; combustion turbine engines which apply the principle of the jet engine to the production of electricity; wind mills and solar cells and storage, and so on. We use all these sources in Maine, though not all of them on a commercial level; and we have seen steady movement, first, to ever larger, capital intensive technologies associated with hydro power and the large steam driven power plants; and then to the smaller, cheaper-to-build combined cycle combustion turbine technologies (CCCT) associated with the increased availability of natural gas.

Of course, the most common way of thinking about energy is in terms of cost and price (which are not always the same thing), the opportunities for job production or loss, and other economic impacts, such as that on the family budget. Yet another, repeating set of concerns in the economic arena is how much we should rely on markets, and how much on regulation and state policy action, to assure the energy we need will be there when we need it, at affordable prices for all Maine citizens.

We can also think about energy in terms of the environmental impacts by which various energy sources and technologies can be measured. How much lung disease, how much habitat destruction, how much risk of climate change? Accepting that energy and the environment are inextricably linked was perhaps the most important energy lesson of the past forty years, and possibly will be the most important lesson of the next forty years as well!

Both of these issues, the economy and the environment, have a strong link to the highly political nature of energy and energy policy mentioned in my opening remarks.

Having identified the various ways we can think about energy, let's take a look at what the past forty or so years have brought to Maine and what we may expect to find ourselves thinking about in the next several years when we think about energy.

1. The 1960's: As Good As It Got?

Whatever their other problems, which were many, the 1960's seemed like a pretty good time for energy in Maine. Many people had good jobs in manufacturing and natural resource industries, many households had cars, and there were many roads which had been expanded and improved throughout the 1950's. It was fun to drive, and gasoline was cheap. How about 25 cents a gallon? Our relentless increase in driving and motor fuel consumption had begun. We used 8,952 thousand barrels of motor fuel in 1965. By 1970 that number was 10,848 thousand barrels, a 21% increase in consumption in just five years. Mainers have enjoyed the same love affair with their cars and trucks and boats as the rest of America; in fact, as already noted, we love them above average. We drive more than most of the rest of the country.

In the electricity sector in the 1960's, the investor owned utilities – Central Maine Power, Bangor Hydroelectric, and Maine Public Service – were thriving businesses serving thriving businesses. Shoes, textiles and wood products all required electrical energy. Not least among utility customers were the pulp and papers mills, which no longer needed to be supported with loans from the power company to stay in business, as they had in the 1940's and 50's. Though some mills produced their own power, they were also customers of the utilities.

By the sixties, most Maine residential dwellings and commercial establishments were hooked up to the local power grid. Home amenities such as refrigerators, washers, and dryers were becoming commonplace, not to mention luxury items such as dishwashers and even the occasional air conditioner. This was the era of the electric knife, for those who remember that strange instrument. We were all encouraged by actor Ronald Reagan to “live better electrically;” and in fact, we did. The real price for electricity was falling, tracking the falling costs of power production, as generators of larger and larger size captured economies of scale. The electric companies in Maine stayed ahead of the growing demand curve by diversifying their generating sources, having already moved in the mid-1950's from mostly hydro generation to add coal burning stations (Mason Station), then oil burners (Yarmouth Wyman station), and, finally, into

the nuclear age. With nuclear power described as “too cheap to meter,” Maine’s utilities laid plans for the first nuclear power station to be constructed in Maine, in the Town of Wiscasset: the Maine Yankee Power Plant.

The electrical utilities were at the center of Maine economic power, in close connection with the pulp and paper industries, and that put them at the heart of political power, as well. The 1970’s were probably the height of the dual influence of the power and timber industries on Maine politics – power which yielded only slowly over the following decades as first regional, then national, and, finally, global changes worked their way into Maine’s economy. We should also mention that the power companies were in many ways at the heart of Maine’s social culture, as well. The utilities played a central role in many small towns through their local district offices, where you could buy your appliances or pay your bills. The bills of many social, sporting, cultural, and civic events, in turn, were paid by the utilities, often using ratepayer money . People knew their power company representatives, they were your good neighbors, and their executives and managers were among the first citizens of the state.

Of course, this being the sixties, upset was on the way. It arrived first in the form of Northeast Power Blackout of November 9, 1965. (Yes, there has been more than one northeast blackout. That’s why it is important to know your region’s history.) Thirty million people in the northeastern United States and Canada went without electrical power for as many as thirteen hours. The direct outcome of this event was the formation of the New England Power Pool or NEPOOL, which became operational in June of 1970. The significance of NEPOOL is that for the first time Maine, other than northern-most Maine, became fully integrated into the single power grid which served all six New England states. Key decisions regarding dispatch of plant production, use of major transmission lines, as well as need for new power plants and lines now occurred at the power pool, where Maine utilities participated but were minority voters. For all practical planning and operational purposes, the region was treated as though it were a single service territory. NEPOOL created significant economies of scale for all of New England, as well as the sought-for increase in system reliability. The Maine PUC continued to exercise authority over the dollars invested by Maine’s utilities through its setting of retail rates; but the

engineering dynamics and economics of electricity were now to be dominated by the regional architecture of the system. It was the first step towards the regional electricity market we participate in today but it was also a step in ceding local control to regional decision makers

2. 1970's: Time of Turmoil

The 1970's was a decade of unprecedented events for energy in Maine and the rest of country. First we should note that Maine Yankee was completed and came on line in 1972. The power system planners at NEPOOL envisioned a network of 16 or more nuclear stations throughout the region, including others in Maine – such as at Sears Island – to serve as the backbone of the New England grid. Only seven of these plants were ever constructed, as costs and environmental concerns quickly mounted.

The national environmental movement had begun to coalesce the early 1970's; and, in Maine, it began to demand that energy decisions reflect environmental impacts. This played out in two very interesting cases which dominated the news for most of the decade. The first was the proposed decision by the Army Corp of Engineers in 1972 to build two dams on the St. John River, one each at Dickey and Lincoln School, to provide 800 MW of peaking power for New England. The project was to be paid for by U.S. taxpayers, and would be a “public power” project – that is, a facility not owned by the existing utilities, but rather by a public entity along the lines of the Tennessee Valley Authority. The second environmental case-in-point was the attempt by private interests to build a major oil refinery in Machiasport, to serve the oil and gas needs of the entire northeast coast. Both of these were “mega” projects which, if built, would have had major impacts on both the landscape and the economics of Maine for many years to come. Both required federal approval, however and the ensuing battles, though vigorously joined by Maine citizens, businesses and politicians, were fought out largely in Washington, DC.

Needless to say, the environmental movement came of age opposing these two now nearly-forgotten projects. As to Dickey-Lincoln, the environmentalists had allies in the investor owned power companies, who were not interested in having a public power entity selling power in New

England. Interestingly, some of the advocates for public power later found their way into the electric industry mainstream as independent sellers of generation services.

By the end of the decade, both projects had failed, and neither was built. Considering the beauty of Starboard, Maine, where the oil refinery was to have been built, and the pristine St. John River corridor, now preserved as wilderness, it is difficult to regret the failure of these two projects. In both cases, priceless Maine ecosystems and scenery have been preserved for the contemplation and pleasure of future generations. The need to figure out *what* parts of our landscape might properly be made available for energy development, however, remains unresolved to this day. Where do we want to locate wind power? Do we want to use our ports to import liquefied natural gas? Should we think about designating energy development zones before projects are proposed and battles are engaged?

Meanwhile, in 1973, the growing dependence of the US on imported oil and the sales embargo by then-entirely middle eastern OPEC producers, rapidly escalated the cost of energy, reaching crisis proportions in 1974 and again in 1978. Crude oil, which had been selling for \$3.40 a barrel in 1970, tripled to \$9 a barrel in 1974; increased to \$12.46 in 1978; and was at \$28 a barrel in 1980 (nominal prices). Respected forecasters anticipated \$60-80 a barrel by the mid-eighties, and \$100 per barrel prices within the decade.

State and federal energy policies reacted strongly to these increases with a variety of strategies and incentives intended to reduce reliance on oil, increase efficiency, and diversify to other fuels. In 1978, the federal Public Utilities Regulatory Policy Act was enacted requiring investor-owned utilities to buy cogenerated energy and power from small, renewable energy projects when it could be acquired for less than the utilities own, going-forward costs for expanding and optimizing the electrical system, their so-called “avoided” costs. Maine passed its own indigenous resources law, The Small Power Production Act, which carried very similar requirements. These two laws set the stage for the many of the electric energy policy decisions and investments made in the 1980's.

Finally, in reviewing the electric industry in Maine in the 1970's, we should mention the bizarre bombing in 1974 in the CMP corporate offices on Edison Drive in Augusta. Domestic terrorism, strange as it seems today, had come to Maine. The late 60's and early 70's had been a time of domestic social turmoil throughout the country, much of it in protest of civil rights and to the Vietnam War. In at least one twisted mind, lashing out at a utility was lashing out at establishment authority. Fortunately, the two bombs which exploded in the library and mailroom did not result in personal injury. It did lead to tightened security within that building, however, and within many others within the electric system.

In the transportation sector, federal fuel efficiency standards (CAFÉ) were enacted, and drivers in Maine began to move to cars with better fuel efficiency, as gas prices spiked then settled at prices double what had been seen in the early years of the decade. The change was somewhat slow due to our tightwad tendencies to hang on to old cars. Ride share programs also became popular, with the state acting as surety for van purchases and providing convenient parking lots for ride sharing commuters. Motor fuel use in Maine had climbed to 12,526 thousand barrels by 1975, and then dropped to 11, 644 thousand barrels in 1980, the only such drop in this entire forty year time period.

At home, Mainers installed wood stoves and turned to the forests for fuel. Wood had been on the decline as a fuel since the mid-1960's; but as fuel oil prices doubled and then doubled again, it seemed that all that cutting and stacking and carrying and burning was worth it. Maine hobby-horse'd from burning 322 thousand cords of wood for residential use in 1965, down to 222 thousand cords in 1970, and then up again to 356 thousand cords in 1980.

3. 1980's: Rise of the Independents

The 1980's saw the implementation of many of the energy policies established by legislation in the late 1970's, primarily in response to the oil crises. This was particularly true for electricity. Both state and federal law required wholesale purchases of electricity from qualifying independent power producers, when the price was lower than that which could be provided by

the regulated utilities. The utilities proposed to invest in major, capital intensive facilities such as Seabrook Units 1 and 2, as well as other nuclear units located in New England; a coal plant to be located on Sears Island; a new dam on the Penobscot River at Veazie; and, later, large power purchases from Hydro-Quebec. When the avoided costs for these proposed facilities were put to bid, qualifying independent producers offered power at less than the avoided cost, thus creating an historic shift in who would be building and producing the next generation of power plants in Maine. It also introduced new players into Maine's energy politics who, at least in part, balanced the political role of the investor owned utilities. Some of these were pulp and paper mills who now were in the energy selling business.

Many of the new power plants built by independent producers were biomass facilities burning wood waste, which were located in northern Maine counties. Municipal trash to energy facilities were built in near cities in Central and Southern Maine. As mentioned, other successful competitors were pulp and paper mills, which were already producing large amount of power for their own use. Since the 1980's, the cost of power from these non-utility facilities has taken much abuse as being well above the market cost of power in the 1990's; but it is important to remember that the facilities and investments proposed by the utilities would have been even *more* expensive than the non-utility power. The development of the independent power industry had a beneficial effect on the northern Maine economy (Mainewatch 1994 study,) one of the intended effects of the Maine law. And by the end of the 1980's, 40% of Maine's electrical energy was from renewable resources.

State policy also required energy efficiency investments by electric utilities, again when the cost of efficiency was below the utilities' "avoided cost." As most efficiency measures were substantially below avoided cost, a lot of energy efficiency investments were made by the utilities among *all* customer classes. The supply-oriented utilities, however, were not happy with the new state policies, which were hard to swallow after so many years of previous political success before both the Legislature and PUC.

One unexpected outcome of these realigned regulatory relationships was the replacement of

senior CMP management, after a Vice President lied under oath at the PUC to hide the political nature of questions appearing on a CMP customer satisfaction survey. Power company relations with the PUC remained strained throughout the decade, as the utilities viewed the implementation of competitive power and energy efficiency policies as a threat to their core business interest of producing and selling ever-more electricity.

Meanwhile, oil and gasoline prices had declined substantially by the mid-1980's. The average price for a barrel of crude oil in 1984 was \$24. In 1985 it was \$12. Not surprisingly, we saw renewed growth in the use of motor fuels. Maine's consumed 11,644 thousand barrels in 1980, climbing to 12,320 thousand barrels in 1985, and 13,393 thousand barrels in 1990. Once again, as prices dropped, we were driving more.

Environmentally, we voted twice at public referendum on whether to close Maine Yankee Nuclear Power plant, once in 1982 and again in 1984. Both failed to pass. We voted again in 1986 on a question to require approval by public referendum for the storage of low level waste; that one passed. Clearly, a significant portion of Maine's voters were concerned about the environmental impacts connected with the operation and location of Maine Yankee, and with the storage of its nuclear wastes.

Climate change issues also came of age in the late 1980's, as scientific evidence mounted that human activity was having an impact on our global atmosphere. The emission of carbon in particular, a byproduct of burning fossil fuels, was identified as one of the primary culprits. In general, coal emits twice the carbon per BTU as oil, and oil twice the amount of natural gas.

Following the collapse of world oil prices, energy policies began to tilt away from energy planning and towards greater reliance on markets. This trend accelerated following the fall of the Communist Bloc in the early 1990's. Planning was out, markets were, again, in. The moral: only the certain prospect of scarcity motivates the human species to plan for the future!

4. The 1990's: Deregulation

The energy policies of the 1980's began to run into trouble when they hit the recession of the 90's, and the embedded costs of producing electricity were once again higher than falling market prices.

Aside from fuel prices, much had been happening in the electricity arena. The economies of scale which had been realized with the big steam kettle technology throughout the 1960's had stalled out by the 1970's, and slowly gave way to new, greater economies in the use of the smaller "jet engine" combustion turbine (CT) units. The military and aerospace development of these large engines, and the opportunity to turn them on end and use them to produce electricity, set off a revolution in power plant construction. The capital cost of constructing a CT unit fueled by natural gas was a fraction of the cost of the large, capital intensive thermal units, generally powered by coal. No one was proposing any new nuclear construction nor any large hydro production.

With the low cost and a seemingly unending "bubble" of available natural gas, the cost of producing electricity dropped dramatically. The difference between the low cost of power from CT units which could be built by anyone, and the higher cost power developed in the 1970's & 80's created pressure to restructure the highly regulated electricity markets. Maine's electric power costs represented the old technology. However, the growth of the independent power industry in Maine and elsewhere demonstrated that the production of electrical power need not be a regulated monopoly. Instead, electricity could be a competitive enterprise in which regulation would focus on market structures and rules, rather than on setting prices. Electricity policy at the state and federal level, from the mid-1990's on, concerned itself with creating the right conditions for the new wholesale electricity markets.

The Maine Electricity Restructuring Act of 1997 adopted the competitive model for both wholesale and retail sales of electricity in Maine. Wyman Dam, the once proud symbol of Maine energy and ingenuity, straddling the Kennebec River at Bingham, Maine was sold to Florida Power and Light along with most of Central Maine Power's other generating assets. The

generating facilities owned by BangorHydroelectric and Maine Public Service were also sold. The assets with positive market value were sold with proceeds benefitting ratepayers. Assets such as ME Yankee Nuclear plant and NUG contracts with negative market value were retained, paid for by ratepayers. At this same time, it became clear to CMP and its joint owners of Maine Yankee that costs of needed repairs to its vast system of pressurized pipes would cause power from that unit to exceed market value of power. The decision was made to cease power production and dismantle the facility, the first dismantlement of a major nuclear power plant in the country.

Maine utilities would no longer produce power; their business would be the *distribution* of power purchased elsewhere. Next, the utilities themselves were sold to out-of-state and out-of-country corporations. The electric utilities were no longer in the hands of Maine managers. Maine became an outpost of larger empires. The social, cultural and political roles which had been played by the utilities throughout the twentieth century were dramatically and eternally altered on the eve of the twenty-first.

The construction of the natural gas pipeline across Maine, bringing natural gas to the New England Market from the Canadian Sable Island field, provided the state with much-needed additional fuel diversity, and allowed new CT units to be built in Maine. Because natural gas emits far less carbon dioxide than coal, it had become a fuel favored by those who did not want more coal burned to serve the power needs of the northeast. In fact, natural gas became the favorite fuel of the entire electric industry.

Meanwhile, with oil prices as cheap as in the early 1970's, Mainers stopped burning wood at home, and for much of 1990's forgot about energy efficiency. The reformed power companies gleefully resumed promotion of KWH sales. In transportation, the 90's were a driver's and boat owner's heyday. In real dollars, gasoline prices were as low as they had been in 1960's. Motor fuel used for transportation grew from 13,931 thousand barrels in 1990, to 16,229 thousand barrels in 2000, just about double the use in 1960.

5. 2000 & Beyond

This brings us to the current decade. What do we now face by way of energy challenges? Well, the heavy reliance nationally on natural gas for new electricity generation has finally absorbed the gas “bubble,” and prices for natural gas have recently doubled as natural gas production from new wells falls short of compensating for losses from old, exhausted wells.

The heightened demand for natural gas throughout the US has led to the great interest in importing liquefied natural gas (LNG) from the Middle East, Africa, Asia and elsewhere. This will require significant infrastructure investment, estimated to be 200 billion dollars. Of course, an investment of that size might go a long way, indeed, if applied to energy efficiency and renewable resource development. The recently announced interest in construction of a facility for receiving LNG at Sears Island is a part of this growing national interest in LNG. Sears Island with its prime location at the top of Penobscot Bay, as you may have gathered by now, has had an amazing history of being the site of one energy proposal after another, each of which defined its own decade: oil refinery, nuclear plant, coal plant, and now LNG facility. An LNG facility also has been proposed at a location in Harpswell. Both proposed sites will undoubtedly face intense environmental scrutiny, though many who care for the environment are interested in encouraging the increased use of natural gas due to its lower emission of carbon when compared to coal..

In Maine, our competitive retail electric markets seem to be working for industrial customers, but not for residential and commercial customers, almost all of whom remain on a regulated rate. Oddly, for those who were on the losing side of the public power debates of the 1970's, the state now contracts with competing wholesale suppliers for the electricity sold to retail customers, a function which used to be carried on by private utilities. The question of how these non-industrial electricity customers will be best served over the long run has not yet been finally answered. The current practice of relying on single contracts of short duration heightens customer exposure to volatile electricity markets, which are becoming more volatile as the shortage of natural gas drives up prices in peak hours of electricity use.

Short term arrangements of 1-3 years encourages the market to invest in new natural gas-fired power plants and not much else. We simply may not want all of our eggs in that one natural gas basket. On other hand, relying solely upon long term commitments might lead to the costs imbalances of 1990's. There is a role for careful portfolio management that manages risk by using a diversity of fuels; multiple contracts of various commitments; and energy efficiency. Efficiency, too, has become a function of the PUC, rather than the utilities. The State of Maine now plays a role on *both* the demand and the supply sides of the electric markets, as well as participating in its regulatory oversight. An odd turn of events, indeed!

In transportation, our confirmed driving habits have continued to grow, exacerbated by the extended love affair with SUV's which burn a lot more fuel to get where they are going than standard sedans. Our motor fuel use in 2000 was 16,229 thousand barrels. Nationally and probably in Maine, transportation is the fastest growing contributor to global warming gases. Becoming efficient in our transportation energy use remains a significant challenge for Maine.

Finally, there are the costs of trying to keep the Middle East a peaceful, reliable supplier of energy, as well as our ongoing concerns for climate change. These are energy-related costs which remain largely external to the calculations of those who make energy investment decisions. The price we pay for oil does not reflect the costs of military involvement needed to protect oil sources in the Middle East (Have I mentioned that Saudi Arabia has the largest known reserves of LNG? Or, that Iran is a close second?); nor do the prices we pay for other fossil fuels reflect the full cost of environmental and health impacts which occur from burning these fuels in our cars, homes, and power plants. The cost of the harm is real, and is borne by all of us through increased health costs, loss of woods and agricultural productivity, of wildlife habitat and scenic places – such as the view from Cadillac Mountain. Can we adopt a “no regrets” policy which leads us to a greater use of renewable fuels and energy efficiency, as a hedge against catastrophic climate change? Are we ready to learn the lesson of diversity and efficiency all over again?

Governor Baldacci has recently created the Office of Energy Independence (independent from what, I am not certain) with the mandate of drawing public policy attention back to the development of indigenous renewable resources and energy efficiency. This is a step to be applauded. On December 3 of this year, The Energy Office filed a Draft Report with the Maine Legislature setting out several excellent policy recommendations, which, if adopted will help Maine move in the right direction on energy.

So what have learned in the past forty years? I think we've learned that:

We have slowly ceded much control over energy decisions to regional, national and international events;

Many of the true costs of energy remain external to the prices we pay, distorting our energy choices;

We don't have the political will to internalize these true costs of energy;

We forget to diversify;

We buy more and more when prices drop, ignoring history;

We engage in patchwork catch-up remedies when prices rise and forget about them when prices fall;

We love to drive.

In short, Maine looks very much like the rest of the country these days when it comes to energy.

Because energy supply decisions are profoundly effected by events outside of Maine, I think Maine must concentrate on its policy attention on the demand side of the equation. We are what we buy. We can be considerably more efficient while enjoying the lifestyle and conveniences all Americans want to enjoy. Adoption of energy efficiency standards for many appliances and vehicles and convincing our sister states to join us would be a good first step. Rewarding our distribution utilities for encouraging conservation and penalizing them for promoting sales of kWh is another needed step. Maine also must become a savvy electricity purchaser, insisting upon a portfolio of diversified resources and refusing to ride the volatility of an all natural gas driven electricity market. We can choose to invest more in new renewable development. And,

we have to stop deluding ourselves that energy is cheap. It isn't.

In closing, it is my hope that Maine might just be the first state to figure out how markets and state action can work together to give us the energy we need, at prices we can afford to pay, with out doing damage to this beautiful world we call home.