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Elizabeth Paine has been a Commissioner of the Maine Public Utilities Commission for three years. Her experience with the PUC goes back to 1981, when she joined the PUC staff as a financial analyst. Commissioner Paine grew up in Seal Harbor. She earned an MBA from Harvard. Her ten years of experience in the private sector include service as director of financial planning for ABC. MPR is pleased to present this interview with Commissioner Paine on issues related to electric utility regulation in Maine.

MPR: What do you see as the most important issues facing the regulation of Maine's electric utilities in the next three to five years?

Paine: Right now we are seeing customer by-pass as a growing issue. I think by-pass could increase substantially in the long run, particularly with some of the newer technological developments. Eventually residential consumers may be able to by-pass the system. There are micro-generation units that may permit a small commercial customer to economically generate its own power. Another form of by-pass is fuel switching, where many opportunities already exist.

How to deal with the current excess capacity situation in electric generation is a general issue. Siting of new transmission and even distribution lines has become a major issue as the not-in-my-backyard syndrome could lead to siting paralysis. The incorporation of externalities into planning and rate-setting is another important issue. Finally, there is the immediate question of how the implementation of the new Clean Air Act, especially with respect to nitrogen oxides, will affect our utilities.

Recent rate issues

MPR: What are the factors that have caused the recent rate hikes that have received all the media attention? Are there more rate hikes of the same magnitude on the horizon?

Paine: There are many factors. First, there was the slowdown in demand between the 1970s and the 1980s. Since it takes five to ten years or more to build a new plant, if demand falls rapidly, then you have plants that are suddenly unnecessary. In 1980, we were building plants that were designed for expected load in 1985 or thereafter. Second, we had the Three Mile Island incident, which contributed to unbelievable increases in the cost of nuclear power, which affected those Maine utilities embroiled in Seabrook I and Seabrook II. New Hampshire's anti-construction-work-in-progress statute forestalled wise economic decisions to abandon Seabrook II and contributed to the problems of Public Service of New Hampshire, than on the verge of bankruptcy. A Maine PUC investigation into whether Maine utilities should continue in the Seabrook project led to the three largest utilities selling their Seabrook shares.

With the sale of Seabrook, we had to replace that power. At the same time we were implementing the federal Public Utility Regulatory Policy Act of 1978 (PURPA) as well as the corresponding state statute. We found that there were a lot of potential electric power suppliers in this state, such as co-generation plants, trash burners and so forth. Oil prices were very high in the early 1980s, with forecasts for continued oil price escalation. In this environment, two things happened. One, the costs upon which early qualifying facility (QF) contracts were based assumed higher oil prices, which have not yet materialized. Two, the contracts for power from QFs were financially front-end loaded. Any new plant, whether it is a QF or a utility plant, is front-end loaded in terms of costs. It costs more in the early years, when the plant is new and has not been depreciated. However, the benefit of these contracts will be seen in price stability beyond 1994 and 1995. We have many contracts for power that are very reasonably priced. However, many new plants have gone into service in a short period of time. In 1988, the commission decided to phase in the cost increases over three years (later changed to five years) out of its concern for rate stability. We did not anticipate the severity of the recession and its effects on electric consumption during the phase-in periods. So, the attempt to promote rate stability has created its own problems.

MPR: Exactly how important has purchased power been to the recent rate hike?

Paine: About fifty percent of recent rate increases can be attributed to new purchased power contracts. However, it is important to note that we have not analyzed what rates would have been without those contracts. Clearly, the current excess situation would have been far worse if the Hydro Quebec contract had been approved.

MPR: The rate redesign has been emphasized in the press as the source of residential rate increases. Has this been overemphasized?

Paine: Absolutely. Even if we had stayed with the previous methodology of calculating which costs were assigned to which customer class, we would have seen basically the same results. The rate increases for most of the classes would have been very similar. Furthermore, the overall cost increases dwarf the shifts of costs between customer classes.

MPR: What are the prospects for rates in the near future?

Paine: Unfortunately, there are still costs of recent power contracts left to phase in for CMP. Precisely how we will deal with that is under analysis. However, if we followed the original schedule, there would be roughly a $40 million increase in July of this year for CMP, as well as a roughly $10 million increase due to the electric rate adjustment mechanism - ERAM. Next year there should be a base rate increase of some amount. The projections for CMP are for much more stable rates after 1993. Maine Public Service has just given us notice of its intention to request an increase in base rates (i.e., non-fuel).

MPR: So we have another bad year coming up?

Paine: We have another tough 18 months ahead of us. The problem is exacerbated by the excess capacity situation due to the recession and declining electricity sales. There are fewer kilowatt hours to spread the fixed costs over.

MPR: On the issue of excess capacity, Bangor Hydro has recently announced a proposal for economic development rates. CMP has filed contracts that some people would characterize as economic development. What issues should we consider in deciding whether or not economic development rates or other special low rates for industrial customers should be considered?

Paine: First, let me emphasize that neither the PUC nor CMP have identified these special contracts as "economic development" rates. There is a tremendous free-rider problem with economic development rates or other special rates. First, if the sole purpose is economic development, I think we would need legislative directive to do it. That leaves the second problem of what to do about the excess capacity. I believe that if you are not allowed economic development rates, then you should sell the capacity for the highest price you can obtain from the customer, whether the buyer is another utility or some industrial customer. Economic development rates may be very appealing to academics. In practice, they are difficult to implement because of what I call "free riders": People who would have purchased the electricity at the standard rate who now get electricity at a lower rate. The remaining rate payers must make up the difference. There is a tremendous amount of public credibility at stake when you give discounts to big business, while people cannot afford to buy milk because their electric bills are so high.

In the past, we have dealt with special situations very carefully. One such special situation was LCP in Bangor Hydro's territory. That was such a large customer for Bangor Hydro that the loss of LCP would have been an enormous loss of revenue for the company, so the commission did approve a special contract However, I was very concerned about CMP's special contract with Sugarloaf (for daytime snow-making). While that was truly new load, because Sugarloaf could not afford to make snow during peak hours without this special rate, a direct competitor, Sunday River, was already paying on-peak rates to make snow during the day. Even if this is new load, why should Sugarloaf, because it is financially weaker, get a better deal than Sunday River?

Externalities

MPR: Let's turn to the question of externalities. Do you have an opinion about how externalities should be incorporated in utility planning or utility rates?

Paine: At a minimum, we should anticipate the environmental costs that we will face now and in the future. If you plan to build a coal plant, you should anticipate the cost of controlling emissions, whether you buy allowances or put in the latest technology or whatever.

The traditional economic argument is that all environmental costs should be incorporated in the prices of goods and services. The problems of distortions arise when you single out one industry or one geographic area for special treatment You may create more costs by having a limited treatment than you create benefits. To give an common example, what if electric vehicles are environmentally less damaging than an oil powered vehicle? You certainly would not want to increase the price of electricity with environmental adders so that electric vehicles became uneconomic. That is the kind of potential distortion that you can create.

MPR: Do you see models of externality planning in other states that you think are better or worse models of how to deal with externalities?

Paine: To date, I have seen no models that are a good way to incorporate environmental externalities. I think the externality "adder" approaches are not accomplishing their objectives. However, we cannot talk about energy and the environment separately any more as they are very much interwoven. The discussion of environmental externalities at a forum in New Hampshire this spring finally brought the environmental regulators and utility regulators into closer communication. Utility regulators have the skills to analyze costs and benefits and to evaluate priorities, which environmental regulators, for the most part, have not explored. Environmental regulators are swamped by conflicting concerns and they have difficulty assessing risks and establishing priorities. Hopefully we will be working with environmental regulators so we can all be more enlightened.

Let me give you an example of the kind of analysis I think we need to do more of. I saw some wonderful work done by a group at MIT. They concluded that for certain pollutants, you can pursue strategies that hardly cost anything to get from today's level of emissions to (for example) fifty percent of today's level. On the other hand, if you try to get from fifty percent to an eighty percent reduction, the cost to society is enormous. These kinds of studies can provide policymakers and government leaders with more input into their decisions on the effects of various proposals.

Demand-side management

MPR: How do you assess the appropriate role for demand-side management as a component of regulated oversight of electric utilities?

Paine: From a societal point of view, all demand-side management should be pursued that costs less than the cost of providing energy. The question of how to determine "lowest cost" is more difficult. There has been an on-going debate over a "lowest rate" standard versus a "lowest total bill" standard. I think both sides of this argument have valid points, but neither side is completely correct. Instead of continuing this tiresome debate, we should take the elements of truth on both sides and move forward.

I am particularly critical of the notion of economists that there is perfect knowledge in the world. There is hardly a business in this country, in this world, that has perfect knowledge. Information is especially difficult for electric consumers because, unlike gasoline in their gas tanks or bread on their shelf, they cannot see electricity and they cannot (and should not) touch it. It is extraordinarily difficult to make the connection between electricity consumption and the cause of that consumption. If I fill up my tank of gas and drive down the highway, I will get 30 mpg. Thus, I know that after 400 or so miles, I will need to get a new tank of gas. I cannot do that with electricity. For inelastic customers, the total bill is the information to which the consumer responds. For elastic customers, the rate is more important. That means that we need to design our program to minimize the impact on the price that the elastic customer pays for the marginal kilowatt hour. The utility is in one of the best positions to assist in getting this market going.

MPR: Should we consider the impact of free riders in designing demand-side management programs?

Paine: Yes, we should try to minimize free riders, just as we discussed in the context of economic development rates.

MPR: What type of incentives should be provided to utilities to undertake demand-side management?

Paine: The worst incentive problem that exists in utility rate setting today is that about fifty percent of the utility's costs, namely the costs for fuel and purchased power, are subject to automatic adjustment and are recovered dollar for dollar. The automatic fuel clause was implemented at a time when oil prices were oscillating wildly in order to protect the utilities from financial hemorrhaging and to ensure that customers did not pay any more for oil than necessary. Oil is now a small percentage of fuel costs and oil prices are much less erratic. The original reason for automatic adjustment no longer appear to me to be very convincing. The detriments of the fuel clause outweigh the benefits. Because of the fuel clause, the utility can make money selling a kilowatt-hour at less than the marginal cost of fuel. Consequently, conservation will never be profitable for the utility as long as you have the fuel clause. Without a fuel clause, you could just account for the lost revenues associated with conservation and give them to the utility. However, because of the interaction with the fuel clause, the only way to eliminate the disincentive to make investments in conservation is to protect the utility from all revenue fluctuations. That is essentially what the PUC did for CMP with the "electric rate adjustment mechanism per customer" - ERAM per customer. The jury is out about whether or not the net effect of ERAM is good or bad. Certainly a utility has even less control over the state of the economy or the weather than it does over its fuel. So, if you insulate them from fuel gyrations, there may be even stronger arguments to insulate them from the economic and weather gyrations.

Every time I turn around, I find another reason why the fuel clause should be eliminated. On a simple level, if you get dollar for dollar recovery of your fuel, then you do not care whether or not you maintain your machinery at the highest efficiency. You must pay out of your own pocket for the maintenance, while the extra fuel is recovered automatically. It gives an incentive to build a high energy cost, low capital cost plant rather than go forward and build energy-efficient plants.

MPR: Why have we not ended the fuel adjustment clause?

Paine: Well, it is legislatively mandated, and utility lobbying is very powerful. We introduced legislation to alter the mandatory statute twice in the 1980s to no avail. These are not issues that are easy to explain to people. We tried to explain to one of the consumer intervenors why the fuel clause is not in their interest, but were not able to convince them.

MPR: What about the other kinds of incentives for demand-side management (DSM), such as sharing contracts?

Paine: As I discussed with respect to externalities, I have some reservations about partial incentives. It is like a dam that has a leak: You put your finger in the leak, and it squirts out someplace else. The trick is to design an incentive scheme that does not result in more damage than good.

As for the DSM incentive program implemented for CMP, I think it is worth trying. It will be hard to assess because or the current excess capacity and declining sales situation. One aspect or the incentive program that I really do like is that for a given level of demand-side management, the more the customer pays the more the utility earns. It is designed so that CMP will always have the incentive to maximize the amount of conservation that is cost effective, even if CMP has to pay for it all. In order to achieve that given level of conservation, the extent to which CMP can convince the customer to pay for the conservation (as opposed to subsidizing the entire cost), the company gets even more benefit.

I am concerned that all of our targeted incentives are basically incentives to stockholders. I think what is really much more interesting, and probably more effective, is to look at the management compensation incentive effects. For example, you may have a wonderful demand-side management incentive, and yet the head of the conservation department has a salary that is a function of the costs per kilowatt hour. Thus, the head of the conservation department will lower his or her salary by aggressively promoting conservation!

Power supply and transmission

MPR: How should we structure the process of contracting for new power supplies?

Paine: First of all, we need to rely on the market. I am concerned that many independent power suppliers essentially want the commission to set monopoly prices for them.

The experience with power supply bidding in Maine has been rather interesting. In 1983, after a long regulatory battle, the commission came out with the first avoided costs for CMP. CMP found itself so inundated with interest that they did not know how to screen the prospects. They asked the commission if they could establish a bidding process. So the bidding process was initiated as a reaction to a specific problem, and it has evolved into a standard process for procuring energy resources in this state. CMP, and the other utilities, do not use a closed bidding process. They generally use bids as a screening tool to further negotiations. This is an important concept to understand and an important distinction to make. I think the experience has been extraordinarily successful in the state.

Utilities commissions in some other states have decided to run the bidding process themselves. Problems have occurred where the rules of the game are so inflexible that they are unworkable, or where the opportunities for shell bidders to win bids has arisen. The approach in Maine has been that the utility should buy from a power vendor just like any other vendor. We frown upon intervening in the process. We try to force the utility and power suppliers to work out their differences.

MPR: What are the issues for Maine in regard to access to electric transmission grids for wheeling of power? Does the recent Federal Energy Regulatory Commission (FERC) decision on the Public Service of New Hampshire - Northeast Utilities merger do enough to protect potential users of the transmission grid?

Paine: Transmission today is an increasingly difficult problem, in part because of all the health fears about electro-magnetic fields (EMF). It was not as much of an issue five or ten years ago. Five or ten years ago, you could usually get transmission through another state if you gave them some economic return. Today, I do not think you can build new transmission capabilities that serve out-of-state purposes.

There is a gap in transmission jurisdiction between the federal government and the state government. Nobody really has the power to order transmission access. FERC orders transmission indirectly through its approval of other activities, over which it has direct authority. I foresee that the more squabbles you have over transmission siting, the more centralized transmission regulation will become. There is a battle over preferential treatment of "native" load customers, that is, the local customers of the utility that owns the transmission line. My thoughts, which are not shared by many of my state regulatory counterparts, are that everybody is a native customer of someone. The analogy I use is the highway systems. Can you imagine if the Maine Turnpike reached capacity and the authorities decided that only people with Maine license plates could go up and down the Maine Turnpike? Or New Hampshire's roads get filled up and they decide that only trucks delivering produce to New Hampshire could be on the road that day? Well, you would never have a traffic jam and you would never need to build a new road. The same problem occurs with transmission lines. If you say protecting the native load customer has priority, then the native load customer can increase its load dramatically before you need to build new transmission. The concept of a native load customer can lead to paralysis. States will never be able to approve a new transmission line, because you will not be able to demonstrate a need for that transmission line based on your native load customers. It would be basically like blowing up the Kittery Bridge. We would never have to widen another road in the state.

The recent FERC decision in the Public Service of New Hampshire - Northeast Utilities merger tries to address the "native load" problem with a hybrid "opportunity cost" pricing scheme. Opportunity cost pricing, where transmitters pay for whatever opportunities were lost in terms of native load supply, may be an adequate concept. It is basically a marginal cost concept. The way the opportunity costs are implemented may be more of a problem. FERC put a floor as well as a ceiling on transmission prices. The floor is the historic accounting cost of the utility for that transmission line. The ceiling is the cost of building a new transmission line, which is a marginal cost concept I do not have a problem with the ceiling; I do have a problem with the floor. Mixing average and marginal costs together usually results in anomalies and distortions

MPR: Are there other issues in "least cost planning" that we have not discussed?

Paine: There is the whole area of trying to integrate generation, transmission and distribution planning. There is some very exciting work being done for CMP (by an outside consultant), and there are some slow steps towards integrating the plans for plant location and demand-side management.

MPR: Does this go beyond building transmission systems that minimize transmission load losses?

Paine: That is part of it, but demand-side management may also be driven by transmission costs. Consider, for example, an electric hot water heater load control program that was not cost effective universally. However, you might discover in certain areas, if you could avoid adding a new distribution line, the program could be cost effective. In the past, transmission and distribution lines were small parts of the overall cost of providing electricity. In the future, I expect that they will be more significant. Consequently, there will be a need to integrate transmission and distribution planning into least cost resource planning.

MPR: What are the future prospects with regard to siting new generation and transmission facilities?

Paine: We seem to be entering a period of gridlock with respect to siting new facilities. I think that some sort of integrated site planning at the state level may be required. While I really do not like the idea of creating a whole new agency and staff, I would like to see integration of the decision making. As I said earlier, you cannot talk about energy without talking about the environment. When we face siting decisions, I would have the environmental licensing process proceed and then have the conclusions brought into our proceedings. People from DEP would be part of our proceedings, as well as provide witnesses at our proceedings. The economic aspect of the siting might be analyzed by the State Planning Office. Then the PUC (or perhaps some other agency) would make a decision that strikes a balance between competing interests. I do not think that we as a state are striking that balance today.

Looking at a broader view of how we will get things done in the future, I think that increasingly we will move away from the old model of confrontation and towards collaboration. That takes me back to the environmental externalities issue. It is important to think about what role government should play and what role the marketplace should play. For example, the marketplace has a very short-term psychology. It is very hard for the marketplace to have a long term perspective. While the government should not try to micro-manage the market, the government must provide the infrastructure to support the market. It is obviously difficult to determine just where the line is between interfering with the market and supporting the market.

Hydropower relicensing

MPR: Does the relicensing of hydroelectric dams by FERC raise issues for the Maine PUC? Is this process likely to lead to higher rates?

Paine: That is hard to forecast. If FERC reduces the power that we can get from hydro plants, then we will need new sources of power. The commission has been deeply concerned about the potential impact of relicensing on rates. A 1986 federal statute, the Electric Consumer Protection Act (ECPA), requires FERC to balance environmental and economic considerations. The intent of ECPA is right on target. My fear is that the hydro resource is not on a level playing field with competing resources, and that we are in danger of losing power from existing hydro plants.

We are not even talking about building a new dam here. We have the dubious honor in Maine of having the most licenses up for renewal in the earliest stages. The commission is deeply concerned about the impact on our electric rates and on utility behavior. Because the utilities can pass on their costs, their incentive to reduce relicensing costs is not as great as it is for a non-utility like Great Northern Paper Company. This is a very deep concern for me.

MPR: Are most of these costs likely to be in the form of fish ladders and so on?

Paine: Those costs are not the costs I am most concerned about. Rather, relicensing requirements may require changes in flow rates that are poorly matched to generating needs. This can be very costly, particularly if you have any type of storage capacity. The advantages of hydro with respect to peaking power and so forth disappear. Hydro plants with peaking capacity displace oil-fired plants. So reduced hydro usually means more oil-fired power with a whole host of adverse air quality effects. I fear that the air quality regulators are not coordinating well with the water quality regulators in the relicensing process.

MPR: When will this relicensing process occur?

Paine: Very quickly. Next year it will be all over. All the applications, I believe, were filed by December 31st of 1991. There are so many of these applications going through at the same time and there seems to be no leadership in priority setting. When I see half a million dollars being spent on an archaeological dig that turns up chards, not even the arrowhead itself but just a scrap of early Indian life, which then means that we must spend another $5 million dollars at a 2 megawatt dam site, I think of the poverty of this state. We need some perspective on costs and benefits.

MPR: What is your evaluation of "lifeline" rates for low income consumers?

Paine: Lifeline rates are a must; it is their funding that is the question. As it is now structured, the electric lifeline program is very inefficient because oil and natural gas suppliers do not contribute. As significant utility revenues go towards these subsidies, it increases the by-pass problem mentioned earlier. More people will switch from electricity, even if it is not necessarily cost effective (from a social perspective) to do so. In addition, a disproportionate burden of the program is placed on those least able to afford it, because people with higher incomes can afford to fuel switch. Those who are just above the qualified income level (for lifeline rates) are more likely to be in electric space heat and more likely to be unable to afford alternatives. Therefore, they pay the highest subsidy.

MPR: Overall, how would you assess the future of the commission and electric utility regulation in Maine?

Paine: I am very optimistic, even though these are tough times for everybody. The tragedy is to know how tough it is for everybody and not to have much room to maneuver. People sometimes think utilities can maneuver more than they really can. With fifty percent of their costs in fuel and another thirty percent in debt financing, relatively little flexibility is left for the commission or the utilities.

We will get past the current crises. The long-term prospect is for much more stable electric rates. We have some very innovative policies in place that should not only keep energy costs stable, but also lessen our dependence on foreign oil and promote a sound environment.

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