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Three views on utility-generated externalities

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"Externalities" are costs imposed on third parties without compensation. Pollution is the archetypical externality. It is the pollution externality that has prompted the emerging national debate over whether public utility regulation should be modified to account for externalities. Jonathan Raab, Myrick Freeman, and Ralph Townsend discuss the arguments surrounding the externality debate. These three authors earlier presented similar material at a Legislative Institute, sponsored by the Margaret Chase Smith Center for Public Policy's Project for the Study of Regulation and the Environment, for the Utilities Committee of the Maine State Legislature.

Are adders right for Maine?

by Ralph E. Townsend, University of Maine

For public utility regulation, the issue of "externalities" may well be the policy issue of the 1990s. Five states have already adopted "adders" and another ten to fifteen consider externalities somehow in their generation planning process. Maine has been in the forefront of several new developments in utility planning, including aggressive acquisition of power from non-utility generators, mandated integrated resource plans, and aggressive demand-side management. For advocates who favor these policies of the Maine Public Utilities Commission, the use of externality adders may well seem like a logical extension of those policies.

Adders: A fourth-best approach

The concepts that underlie the externality debate are largely borrowed from economists. Indeed, the word "externality" has long been used by economists to mean "external costs" that are imposed upon others without compensation. The adder concept probably also finds roots in the economic argument that, when firms impose externalities, one solution is simply to make them pay a tax equal to those costs. But adders are, in fact, an extremely flawed way to implement this correction. These flaws must be weighed carefully when deciding whether to implement adders.

If the objective is to correct the economic incentives that create externalities, the "first-best" solution would be to charge a "tax" for the economic damage caused by any firm—whether a utility or not. Limiting this tax to regulated utilities creates a "second-best" situation, because incentives are created to substitute other energy sources for utility power. Any such tax would be passed on to consumers in the form of higher prices, and consumers would have an incentive to help reduce the externality by reducing consumption.

Because any solution that raises prices will be politically unpopular, approaches that impute the equivalent tax for planning purposes, but that do not actually collect the tax, have been proposed. A "third-best" strategy would be to require the utility (but not its customers) to act as if it paid for all the external costs of its decisions. This would involve not only considering externalities in new construction but also in the decisions about which existing power plants to use to generate power. Because older power plants typically create much greater pollution than new plants, the

"dispatch order" of the existing set of generating plants can have a very dramatic impact upon the level of externalities. (Because the dispatch order in New England is under the control of the New England Power Pool [NEPOOL], agreements on dispatch require agreement across New England. A state that builds new capacity that is expensive to operate would ordinarily have those plants placed low in the NEPOOL dispatch priority.)

Use of adders only in the planning process is a very pale image of the basic concept of internalizing externalities. Adders are, at best, a "fourth-best" methodology. And many of the adder approaches implemented to date have further flaws. For example, as both Jonathan Raab and Myrick Freeman explain, most adders are calculated from estimates of abatement costs, rather than from estimates of the damages caused. Most adders become an across-the-board penalty for a particular fuel, rather than a specific calculation of the damages. For example, the re-powering of any existing hydro dam would be treated the same as construction of a new dam on the main stem of a major recreational river under these across-the-board adders.

The national debate about adders is primarily a debate over how to account for air pollution. In Maine, however, most of the debate over environmental impacts of new projects, whether utility projects or not, has been over two siting concerns: groundwater contamination and what might be called "aesthetic" issues. For example, the opposition to new transmission lines has been mostly because they are ugly. (Wind turbines will face the same opposition, I would predict.) Hydro dam opponents argue that the salmon is the piscatorial equivalent of the endangered bald eagle. Noise and increased traffic have prompted opposition to even relatively small projects, like recycling plants. The inherently judgmental aspects of local siting issues will be very difficult to implement in an adder approach.

For Maine, which imports significant power from Canada, the computation problems for adders can be especially difficult. In computing the environmental cost of Hydro-Quebec, for example, how do we value the flooding of Cree lands? Should we let Canada and Quebec make that assessment, or do we impose our own judgments?

The issue is not that calculation of appropriate adders will be difficult and inherently imprecise. Rather, there are fundamental policy questions raised about how adders should be measured, even absent practical difficulties. If the effort is to be made to resolve these fundamental questions, it makes sense to resolve them in the context of a sounder approach than adders.

While most economists strongly endorse the "first-best" policy of using "pollution taxes" to correct externalities across our economy, there is no such agreement on the appropriateness of the "adder" approach. In Maine, there are some particular reasons not to adopt adders at this time.

Maine's air pollution problems: The risks of regulating easy targets

John Flumerfelt, in this issue, presents a graphical summary of the Maine sources of the seven major air pollutants. The message from those graphs is clear: In Maine, the transportation sector and wood-burning, especially residential wood use, are the pollution sources of greatest concern. For only one pollutant, sulfur dioxide, are utilities a predominant source. Even there, industrial

boilers create twice the sulfur dioxide that utilities do. (And the Clean Air Act Amendments will create a national cap on utility discharge of sulfur dioxide.) Flumerfelt concludes that on a per Btu basis, electric energy is a relatively clean source of energy.

It is clear that proposals to incorporate externalities into utility planning are not being proposed because utilities are the primary cause of air pollution or a uniquely dirty energy source. Rather, because utilities are already regulated through public utility commissions, they are easy targets for further regulation.

But there are real risks to piecemeal, regulate-what-you-can approaches. Such approaches encourage substitution of other energy sources for electricity. As electric rates increase, self-generation by large industrial customers becomes more attractive. In Maine's residential sector, an important substitute for electric space heat is wood heat, a much more serious source of most pollutants than electricity. In the longer run, electric vehicles may be the most attractive substitute for internal combustion engines in the transportation sector. Higher electric prices would discourage that substitution.

Maine's current excess supplies of power

If Maine's utilities were on the verge of making massive new investments in electrical generation capacity, one could understand the concerns over the environmental impact of that new plant over its life. In fact, all Maine utilities currently have large reserves of capacity. The only major new construction expected within the next ten years is Bangor Hydro's Basin Mills project. Maine's utilities are trying to cancel commitments to purchase power from non-utility generators.

Because Maine has large excess capacity, Maine electric consumers are already paying a large implicit "regulatory tax" above the marginal cost of electricity. Average residential rates are about 12 cents per kilowatt-hour for power that can be purchased wholesale for 3 cents per kilowatt-hour (or less). Customers are paying 9 cents more than the marginal cost of production, and this "regulatory tax" exceeds the adders that are typically proposed even for the dirtiest fuels. Further penalties for the use of electricity are simply not warranted under current supply conditions.

If Maine faces no immediate plans to build new capacity, there would seem to be little reason to enact an "adder" approach or some other flawed approach. By the time Maine does need to build new capacity in the next century, the sulfur dioxide markets under the Clean Air Act Amendments will probably be internalizing those costs. By that time, the results of various externality approaches in other states will be clearer, and Maine can benefit from that experience. With the new federal emphasis on competition in the wholesale market for electricity, it is quite conceivable that Maine's utilities will never build another major new generation plant, and will instead rely on competitive purchase of power. With these dramatic changes in our immediate future, a cautious, "wait-and-see" approach can avoid casting into legislative stone a very flawed approach.

Who is responsible for which regulations?

The proposal to require the Maine Public Utilities Commission to consider externalities does raise important questions about process in utility planning. At present, the Board of Environmental Protection does not limit itself to environmental impact. Rather, it accepts arguments about the "need" for a project, as well as its environmental impact. "Need" is an inherently economic concept that must consider the economic benefits of the project. A proposal to require the Public Utilities Commission to consider externalities would require two agencies to evaluate the entire project, including both environmental impact and economic benefits.

If the primary objective is to create as many hurdles as possible for any new project, then this duplicative process makes sense. But if the objective is to create a cost-effective review process with predictable standards for applicants, then duplication makes little sense.

Even without the inclusion of externalities in the utility planning process, utilities proposing new projects already can find themselves caught in a bureaucratic catch-22. The Board of Environmental Protection may require PUC certification of need before a project's need is accepted, while the Public Utilities Commission may require approval of all environmental permits before a project is issued a certificate of need. Perhaps a more unified approval process is required for utility-environmental planning. This unified approach would appropriately consider both environmental and economic issues concurrently. For example, some sort of joint board composed of members of the Board of Environmental Protection and the Public Utilities Commission (and perhaps other agencies) might decide applications for major new utility facilities. In addition to a more integrated decision, this approach might reduce the cost of litigation and the inherent delays of the current multi-step approval process.

Conclusion

Whenever a new idea, such as pollution taxes, faces political opposition, there are always calls to make "political" compromises to get some variation of the concept enacted. But if government is always enacting seriously flawed programs in order to deal with "political reality", it is little wonder that government has achieved a reputation for inefficiency. Rather than fall back on fourth-best strategies that create as many problems as they solve, we would be well served to insist on well-designed programs from the outset.

For air pollution, the Clean Air Act Amendments mark a dramatic shift towards market-based solutions. The market in sulfur dioxide rights will force utilities to internalize all of the external costs associated with that pollutant. If that market succeeds - and as an economist I have great faith in markets - then we are likely to see more market-based solutions. As Susan Dudley suggests elsewhere in this issue, states would spend their time more wisely if they think about ways to make the sulfur dioxide market work efficiently than if they think about new command-and-control approaches to pollution control.

Ralph Townsend is an associate professor of Economics at the University of Maine. His research activities include a number of scholarly publications on the management of fisheries and natural resources. He has consulted with public agencies and private firms on a variety of regulatory

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