EMERGING CONFLICTS BETWEEN COMPETITION, CONSERVATION AND ENVIRONMENTAL POLICIES IN THE ELECTRIC POWER INDUSTRY

Paul L. Joskow

INTRODUCTION

Almost everywhere on earth the traditional public utility industries—electric, gas, and telephone—are going through a process of fundamental change. The primary direction of these changes can be summarized by a few commonly used terms: privatization, vertical restructuring, unbundling, competition, and deregulation. These changes reflect a number of social, political, technological, and economic forces, but the general direction of these changes is fairly clear. State-owned enterprises are being replaced by private enterprises. Regulated private monopolies that were largely insulated from the pressures of competition are being restructured to accommodate and encourage competition at various levels of the supply and distribution chain. New suppliers are rapidly entering markets that were previously protected from competition. Customers can increasingly shop among competing suppliers for services that were historically bundled together and supplied by a single monopoly supplier. The domain of regulated pricing, entry, and service obligations is shrinking and that of competitive pricing,

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2Price and entry regulation have not, of course, been limited to these three industries. The railroad, trucking, and airline industries were also subject to price and entry regulation and have gone through fundamental structural and regulatory reforms during the last fifteen years. There are three important differences for my purpose here, however. First, both intra and intermodal competition always played a role in these industries even when they were regulated. Second, the role of state regulatory agencies was very limited. Third, and perhaps most important, at least a portion of the electric, gas, and telephone networks are generally viewed as not being conducive to competition and are expected to continue to be subject to price and entry regulation in all countries. These other industries effectively have been freed completely from price and entry regulation. Nevertheless, there is much to learn from the experience in these industries and any sharp distinctions are somewhat arbitrary.
entry, and service obligations determined by bilateral contracts is expanding.

The use of public and private regulated monopolies to pursue redistributive social goals (taxation by regulation) is rapidly being undermined by the constraints of competitive market forces and the unwillingness of private firms without regulatory protections from competition to provide services that are not compensatory on a stand-alone basis.

As the domain of the regulated monopoly shrinks, new forms of "light-handed" regulation designed to stimulate regulated firms to behave as if they operated in competitive markets are replacing traditional cost of service regulation and centrally managed planning of investments and price structures for those services that continue to be subject to price and entry regulation.

In the U.S., the impact of these changes on traditional industry structures and regulatory arrangements so far has been most significant in the telephone industry\(^3\), somewhat less, but still very significant, in the natural gas industry\(^4\), and least significant in the electric power industry\(^5\). Nevertheless, the generation segment of the electricity supply business rapidly is being opened up to competition, self-generation is becoming more and more economical, and large customers increasingly beat the drums for "retail wheeling" to allow them to shop for power from competing suppliers. Furthermore, changes in the electric power sectors in other countries suggest that at least some of the problems often associated with competition in electricity can be overcome if competition is introduced with the right regulatory and market

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\(^2\) Joskow and Noll, Ibid.

institutions. This experience will be used as evidence to support expanded competitive initiatives in the U.S., just as the experience in the U.S. has had an important effect on policies toward the telecommunications and natural gas industries in Europe and Latin America.

The evolution of competition in the electricity sector in the U.S. is, however, occurring simultaneously with other important public policy changes affecting electric utilities. Indeed as I see it, there are two trends in public policy which, at least on the surface, appear to be incompatible (economically and philosophically) with one another. One trend is directly related to efforts to introduce competition into the generation or wholesale segments of the industry and, I suspect, ultimately into retail markets as well. This trend is or will be accompanied by new utility obligations to provide services to facilitate the evolution of competition at these levels. These obligations include the provision of transmission and control area services to third parties, and the unbundling of generation, transmission, and distribution services.

The rationale for the introduction of competition in electricity is to create new institutional arrangements that allow customers to obtain reliable electric service at the lowest reasonable price, relying wherever possible on market forces to stimulate the availability of economical service. The domain of price and entry regulation is restricted to those aspects of electricity supply that have significant "natural monopoly" characteristics and where, as a result of these characteristics, the economical and reliable supply of these services is not conducive to competition.

The other trend is the expansion of the social obligations that electric utilities are being asked to take on. These social obligations are driven primarily by environmental concerns, with the electric power sector targeted for playing a special role in promoting energy conservation
and meeting tighter environmental standards than polluters in other sectors that are not subject to price and entry regulation. Requiring electric utilities to play a leadership role in the area of global warming appears to be especially popular.

These obligations include the use of utility funds to subsidize customer investments in cost-effective energy conservation and requirements to take into account social and environmental costs in planning and operations that are different and more stringent than those applicable to other polluters, including suppliers or customers who can bypass the utility network. At the extreme, at least one commission has instructed utilities to pursue policies aimed at "minimizing the global societal cost of producing and using electricity" regardless of the impact on the price of electricity. These obligations (implicitly) often involve an increased bundling together of utility services, lead to higher rates than would have emerged absent these obligations, and increase the extent of cross-subsidization of some customers by others. They have also been accompanied by an enhanced reliance on complex "integrated resource planning" procedures that involve both utility supply decision and decisions by utilities to induce customers to alter the way they use electricity. This trend is just the opposite of the "light handed" regulation schemes that have accompanied the introduction of competition in classical public utility industries in other countries.

The social obligations being placed on electric utilities go beyond those motivated by environmental concerns, of course. They include obligations to subsidize low-income customers, pervasive rate averaging across customers and geographic areas with different costs, and the use of utility rates and service obligations as instruments of state economic development policies. Much of what I have to say today can be applied to the costs of these social obligations as well,
but I want to focus on obligations motivated by environmental concerns.

It is not my purpose today to discuss whether it is a good idea or a bad idea to support the evolution of competition, the efforts to replace traditional regulatory mechanisms with "light handed" incentive regulation schemes, or to use utilities and the public utility regulatory process to pursue the environmental and other social objectives that I have mentioned. Certainly the motivations stimulating these policies are laudable and the implementation proposals well intentioned. Instead, I want to focus my remarks on what I see serious as potentially serious incompatibilities in the way that we are using the regulatory process to pursue these goals today.

Let me make it clear at the outset the I do not believe that the goals of relying more on competition to promote less costly electricity supplies and price structures that better reflect the cost of service, promoting truly efficient energy efficiency investments, and internalizing environmental externalities efficiently are necessarily incompatible. Rather it is the way that we are going about trying to achieve these goals that is the source of the incompatibilities. So I will conclude my remarks with some thoughts on how these goals can be harmonized.
THE SPREAD OF COMPETITION IN "NATURAL MONOPOLY" INDUSTRIES

The institution of regulated legal monopoly makes it possible, in theory, to convey the benefits of economies of scale, scope and vertical integration to consumers as long as the regulatory agency adopts procedures that simulate the price, cost, and quality outcomes that would emerge in a hypothetical competitive market for the goods and services provided by the legal monopoly.\(^6\) The institution of regulated legal monopoly also makes it possible (though not necessarily desirable) for regulators to pursue social and political goals that are implemented and paid for by requiring utilities to charge prices for some services, or to some groups of customers, that are significantly higher or lower than they would be otherwise.\(^7\) Competitors without the obligation to bear the costs of these social obligations would be able to offer to provide cheaper "unbundled" services to those customers faced with higher regulated rates that include a social tax if they were given the opportunity to compete with the regulated firm. The pricing (or taxing) flexibility that restrictions on competition provide is constrained further by the cost of unregulated substitute products (e.g. self-generation).

As a result, there is an inevitable tension between regulatory policies that seek to increase the competitive alternatives available to customers and the use of the ratemaking process to pursue social goals whose burdens are not symmetrically placed on competing suppliers. At the very least, the emergence of competition and less costly substitutes for utility services must lead to more careful thought about how these social goals can best be accommodated in light of these


competitive constraints. Alternatively, some might argue that competition should continue to be restricted, even if this is not justified under the natural monopoly model of regulation, to facilitate the use of the regulatory process to pursue social goals that rely on charging costs to some groups of ratepayers that they would not have to pay if they could escape from the regulated system.

As we think about this tension and how to deal with it, it is important that we understand how competition has evolved so far in the electric, gas, and telephone industries, because this history may have important implications for the future. In the U.S., competition has not tended to emerge initially in any of these industries as a consequence of a comprehensive clearly articulate pro-competition policy.\(^1\) The process has been more of a "camel's nose in the tent" or "slippery slope" phenomenon started by large customers seeking cheaper competitive alternatives to regulated prices. These regulated prices in turn had risen above competitive levels either due to subsidization and cross-subsidization, or to inefficiencies that have inflated costs, or as a result of efforts to fulfill regulatory obligations to recover historical sunk costs that led to prices considerably above prevailing market levels.\(^2\) Competition has often spread despite regulatory opposition to it and sometimes without regulators even being aware of the long run competitive implications of what were presented as minor "special" exceptions to traditional practice. The interests groups that would be hurt from the removal of the legal restrictions on

\(^1\)In this sense, telephones, gas, and electric are quite different from airlines, trucks, and (to a lesser extent) railroads.

\(^2\)In most other countries, the introduction of competition in these industries has flowed from a more comprehensive analysis and articulation of goals.
competition have often lobbied hard to keep the restrictions in place.\textsuperscript{10} Once the process starts, however, the incumbent utilities and their regulators typically find themselves holding on desperately to a fast moving train rather than blazing the path to the brave new world.

The evolution of competition in the telephone industry provides an instructive example. In the telephone industry the first (contemporary) efforts to escape AT&T's high prices by turning to competitive alternatives were associated with the development of low-cost microwave technology in the 1950s. This technology made it feasible for large business users to install their own private microwave systems to link their factories and offices spread around the country. Not only was it feasible, but from their perspective it was also economical. This was the case because AT&T's long distance rates for this type of service were much higher than the (rapidly falling) "stand-alone" costs of microwave technology when it could be used at high volumes. This gap between prices and costs existed, in part, because long distance rates, especially on the densest routes, were used to generate revenues that subsidized local service and toll service to rural areas.\textsuperscript{11} AT&T and the FCC resisted competitive entry by private microwave systems. However, their efforts to suppress competition were ultimately unsuccessful and private microwave systems became a competitive alternative for AT&T's large business customers. In response, AT&T had to offer "special" (lower) rates to large customers that better reflected the stand-alone cost of providing intra-company long distance telephone service using microwave systems.

\textsuperscript{10}Incumbent firms frequently, but not always, oppose the introduction of competition. But so too do various other interest groups that have been able to use the institution of regulated monopoly to feather their own nests.

\textsuperscript{11}These subsidies were justified, in part, because they promoted "universal service," a goal that had both equity (a necessity) and efficiency (internalizing a positive externality) dimensions.
technology. The rates of other customers rose accordingly.\footnote{In many cases they didn't actually rise, but fell less slowly than they would have otherwise. The fact that rates for interstate long distance telephone service were falling rapidly made it easier for AT&T to shift costs among customer classes without too much opposition.}

Before long "specialized" private telephone carriers like MCI came knocking at the door. These potential competitive suppliers sought to provide the benefits of private microwave service to groups of smaller business customers who individually could not credibly threaten to leave AT&T by building their own private networks. These customers without competitive alternatives where not eligible for the new special rates available to large business users. However, if they could pool their calling volumes in some way, they could profitably support an independent microwave network on selected routes. MCI was initially created to perform this aggregation function and to own and operate the facilities to move the calls from one urban area to another. It initially proposed that such "pooled" private microwave services would be limited only to intra-company calls and, as a result, required only very limited connection arrangements through AT&T subsidiaries' local telephone networks. Again AT&T and the FCC resisted this new competitive threat to the prevailing price structure. Despite these efforts, MCI and other competitors were eventually allowed to enter the market to provided "specialized" common carrier services in competition with AT&T. AT&T had no choice but to respond with lower rates for a larger group of business customers, so that prices better reflected the costs of providing these services. In the process more costs were shifted to AT&T's other customers.

It was only a short step from allowing competing "specialized" service providers to enter the market to allowing more general competition in switched long distance service available to all customers. After all, if customers in Chicago could now use MCI to call their offices in St.
Louis, why couldn’t they also call other companies located in St. Louis? All that was required was to expand the availability of access to the local switched network in St. Louis. Again AT&T and the FCC resisted the expansion of competition. And again, despite this resistance, the right to provide these expanded competitive services eventually was granted to the competitive entrants as well. Before we knew it, long distance service generally was rapidly being opened up to competition. This competition in turn provided increasing constraints on the use of long distance revenues to subsidize other telephone services.\(^{13}\)

In the midst of the regulatory disputes about competition, part of the U.S. government, the Justice Department, did evolve a comprehensive vision of what the U.S. telephone system should look like. Its vision involved a lot more competition and a lot less regulation than the vision of the FCC and most state regulators. The Justice Department also believed that this vision could not be implemented without a fundamental restructuring of the industry. The *Justice Department did not seek these fundamental changes from Congress, or the FCC, or state regulators*. It sought them from a federal District Court judge by arguing that AT&T’s behavior violated the antitrust laws and that structural (divestiture) remedies were required to keep AT&T from suppressing competition in a variety of upstream and downstream segments where it had maintained a near monopoly for most of this century.\(^{14}\) Eventually the Justice Department got just about all that it had sought through a settlement of its antitrust case. While some states have continued to resist allowing competition in telecommunications to spread further within their intra-state systems, the direction of change is inevitable. Some states are now even permitting

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\(^{13}\)A similar story can be told for customer premises equipment.

\(^{14}\)Other parts of the federal government, in particular the Department of Defense, opposed the Justice Department’s efforts.
competing suppliers of local service to enter the market. Technological change and competition between telephone and cable companies will soon bring competition "the last mile" to the customer.

There is little doubt in my mind that even absent the breakup of AT&T that resulted from the settlement of the government's antitrust suit, competition of the kind that we see today would have emerged anyway. It might have taken more time and there probably would have been a more costly transition as various interest groups fought it out at the FCC, in the federal courts, and in Congress. By 1980, the die was cast, however. It was only a matter of time before the pressures from incumbent competitors to expand their markets and the enhanced opportunities for competition resulting from technological change transformed the system.

We can find similar patterns of change in the natural gas industry. These changes have lead to unbundling of transportation and gas commodity charges, mandatory non-discriminatory contract carriage by pipelines for LDCs and direct service customers and by LDCs for retail customers, and intense competition for gas in the field. Again, the changes did not evolve from a well thought out plan for unbundling, competition and deregulation. The stimulus here was not technological change and cross-subsidy as in telephones, but an unanticipated collapse in oil and gas prices superimposed on the consequences of a thirty year history of failed regulation of natural gas field prices.

Pipelines and distributors could not sell all of the gas that they had contracted for at high prices and minimum take or pay provisions. Some large customers could avoid the high prices by substituting alternative fuels, or if they could bypass their traditional pipeline companies, by playing one pipeline with excess supplies off against another. Indeed, despite opportunities for
unbundling of gas from transportation provided by the Natural Gas Act of 1978, it was a few pipelines which first offered unbundled transportation services to price sensitive customers as a way to sell additional gas at current market prices without having to reduce pipeline charges (the commodity portion) to all customers.\textsuperscript{15} However, the federal courts and ultimately the FERC viewed these practices as being unreasonably discriminatory. Rather than stopping the practice of unbundling, however, FERC moved to expand the availability of unbundled transportation services on a non-discriminatory basis to all distribution and direct service customers of interstate pipelines. Before long a "reactive" FERC had adopted unbundling, open access, and competition for gas in the field by LDC and direct service customers as their own vision for "a better way" to mix competition and regulation in the gas industry. The federal courts further helped to promote competition by facilitating the ability of retail gas customers to bypass the local distribution system and to gain direct access to interstate pipelines. In many cases these changes took place despite the objections of state regulators.

\textsuperscript{15}Classical third-degree price discrimination.
THE SPREAD OF COMPETITION IN ELECTRICITY

Absent a concerted effort to reverse course, there is every reason to believe that the electric power industry will follow a similar path to relying more on competition as have the telephone and natural gas industries. It is now widely recognized that the Public Utility Regulatory Policy Act of 1978 (PURPA) provided the primary stimulus to the opening up of the generation segment of the industry to competing non-utility suppliers based on incentive contracting arrangements rather than cost of service regulation.16 PURPA has facilitated the reliance on self-generation by industrial and commercial customers as a competitive alternative to utility supplied electricity. Relatively low gas prices and technological developments making small scale generating technology more economical, have made self-generation an increasingly important competitive alternative for large customers.

The problems encountered by early efforts to implement PURPA in several states stimulated the movement to competitive procurement systems to govern the acquisition of at least some of the utility’s incremental generating capacity needs. Indeed, some form of competitive market benchmark for evaluating new generating capacity needs has now become fairly routine.

In addition to these short term direct effects PURPA unleashed important long term forces that are likely to lead to more competition. It stimulated efforts to develop more economical small-scale generation technologies that can directly serve the needs of large customers or groups of customers with on-site generation. These new technologies will make

16See Joskow, 1989, op. cit. Competition among utilities to buy and sell economy energy, short term firm energy, and medium term capacity and energy has existed for many years and was growing in importance before PURPA. However, most of this activity was based on energy available from generating facilities that had been planned and built to serve the needs of native load customers subject to state and federal cost of service ratemaking rules and regulations.
self-generation more economical and increasingly constrain the prices that utilities can charge to customers with self-generation opportunities. Cheap natural gas has and will play an important role in stimulating competition from self-generation and independent power producers.

Perhaps most important, PURPA has created an economically and politically powerful set of interests, the independent power producers, that want to enhance their opportunities to sell electricity for a profit. They will sell it to the middleman (the utility) if it is buying, but they will increasingly look for ways to sell directly to end-use customers if significant gaps emerge between wholesale prices and retail prices.

The taste of competition was also the primary stimulus for the recent reforms of PUHCA, which in turn were accompanied by new transmission access and pricing legislation which expands FERC's authority to order wheeling to facilitate wholesale transactions. In my view, the most important implication of the Energy Policy Act of 1992 is not the specific provisions regarding EWGs and transmission, but Congress' formal recognition that competition has an important role to play in this industry.¹⁷

While the Energy Policy Act of 1992 expanded FERC's authority to order wholesale wheeling, the Act also made it clear that FERC's authority does not extend to retail wheeling. Indeed, the Act theoretically ensures that retail customers cannot take advantage of the PUHCA reforms to set up "sham" wholesale subsidiaries to engage in retail transactions. Nevertheless, large industrial customers continue to clamor for the right to bypass the middleman, using the unbundled distribution and transmission wires to gain direct access to competing suppliers of generating services. The more the gap between wholesale and retail rates widens, the more

¹⁷The Energy Policy Act of 1992 also embodies some of the incompatibilities that I will discuss presently.
excess supply there is looking for a market, and the more the large customers can make an "economic development" case for cheaper electricity, the more likely is it that "special case" exceptions will be granted to retail franchise exclusivity allowing certain customers to shop around. The lesson from the telephone and gas industries is that "special deals" quickly become more widely available than originally intended when they are first cut.

In part as a consequence of provision contained in the 1992 Energy Policy Act, it appears that whether and how retail wheeling develops will be subject primarily to state regulatory authority. The state of Michigan has already begun a process to implement an experimental retail wheeling initiative. California is considering a set of options for structural and regulatory reform, two of which would involve at least some retail wheeling.\(^\text{16}\) The heat continues to be on for retail wheeling in New Mexico. It has become an acceptable topic for discussion in other states as well.

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ENERGY CONSERVATION, ENVIRONMENTAL ADDERS AND LEAST COST PLANNING

The introduction of competition on the supply side of the electric power sector has taken place as policymakers have shown a renewed interest in using electric utilities as a vehicle for promoting energy conservation. The interest in energy conservation in turn is motivated primarily by environmental concerns: less electricity consumption implies less pollution! These initiatives go well beyond traditional efforts to facilitate the wise use of energy—changes in rate designs to provide better price signals to consumers, the provision of information about energy conservation options, loans, and related kinds of activities and services that we routinely see in unregulated markets for goods and services. These obligations have been expanded to include the provision of significant subsidies to pay for conservation investments by residential, and especially commercial and industrial customers. These subsidies, along with short run losses in net revenues resulting from reduced loads, are then passed along to customers in higher electricity rates. Utilities will spend about $2.0 billion on energy conservation programs this year. Some energy conservation gurus see the number rising to $10 billion per year by the end of the decade. The majority of these expenditures are for commercial and industrial customers.

The rationale for these programs is that there exit vast untapped opportunities for energy conservation that can both reduce the demand for electricity (and the accompanying environmental costs of electricity production) and save customers a lot of money. Not only is there a free lunch, but an entire banquet with Hors d'oeuvres, champagne and dancing. Customers do not avail themselves of these enormous opportunities to cut their bills, it is argued, because the markets supporting energy conservation investments are characterized by
pervasive barriers to effective and efficient customer choice. The utility, it is argued is in the unique position of being able to break through these barriers, to identify conservation opportunities for customers and to "acquire" these conservation resources by paying for a large fraction of the associated costs.

The expansion of conservation efforts in turn have been accompanied by new utility planning and regulatory requirements. The buzz words are "least cost planning" and "integrated resource planning," the consideration of all supply-side and demand-side "resources" on an equivalent basis, and "global societal cost minimization" as a primary regulatory objective. Utilities are supposed to think of supply-side and demand-side investment opportunities from an overall societal cost-minimization perspective and spend their money where it has the greatest societal payoff without regard to the impact on the price of electricity. Indeed, efforts to develop programs that focus on keeping the price of electricity low are passé, even politically incorrect. Its societal cost minimization we are told that utility planning and investment strategies should be aimed at.

Once we expand our horizons from the modest goal of inducing utilities to keep their costs and rates low to the more expansive goal of societal cost minimization, there is virtually no limit to the kinds of things that we can rationalize utilities doing. It is only a short step to including a variety of other social costs in utility planning procedures and the resulting utility expenditure options. Environmental adders are a case in point.

While electric utilities must comply with costly state and federal environmental regulation, these regulations are far from optimal and, in particular, generally do not account directly for the societal damages caused by residual emissions. It is argued that this problem
can be fixed by making up numbers—so-called environmental adders—to measure the costs of residual emissions from different sources and including these costs in the planning process so that all of the social costs are included in resource decisions. So while old-style least cost planning might indicate that repowering a gas unit is most economical, least social cost planning might indicate investing in more privately costly, but more environmentally benign windmills.

When societal cost minimization is our goal, there is no reason to stop here, however. If customers can’t figure out when purchasing an efficient motor is in their self-interest, they probably have difficulty figuring out what the social cost minimizing fuel choice is when they choose between gas and electric heat or between gasoline, compressed natural gas, and electric vehicles. Well, we can put customer fuel choice options in our planning models and direct electric utilities to pay customers to use gas heat rather than electric heat when the models indicate that from a global societal cost minimization perspective many consumers who are choosing electricity should really be choosing gas. Indeed, once overall cost minimization is the goal, and rate impacts are unimportant, there is no end to it.

Now this all sounds very nice. Who could possibly be against something called “least social cost planning?” There are two fundamental problems that must be addressed, however. The first problem is that least cost planning will not necessarily lead to least cost outcomes. Specific planning procedures should never be an objective. The objective should be least cost or social welfare maximizing outcomes. From this perspective, the task is to find the set of institutional arrangements that perform best in practice, not the institutional arrangements that lead to the nicest computer printouts.

When we teach economic theory we often use a construct called the *perfectly informed
social planner* for pedagogical purposes. We work out what this social planner would do so as to maximize social welfare and then compare this (unachievable) norm with the outcomes in a variety of different institutional arrangements. Indeed, fifty years ago, the famous Polish economist Oscar Lange proved that central planning and pure laissez-faire capitalism theoretically led to the same results. All the central planner needed were: very smart fast computers; the right parameter values to characterize fully the attributes of all production processes, labor supply functions and consumer preferences in the economy; managers and workers who would do what the computers said they should do rather than what they wanted to do; and the ability to keep interest groups from deciding on what coefficients to put into the computer and which programs to use.

The difference between the good economist and a bad economist is that the good economist knows that neither the perfectly informed social planner nor ubiquitous perfectly competitive markets exist in reality. Many markets are imperfect, but so to is government planning and regulation, often much more imperfect.

But this is getting me away from the primary purpose of my talk today. The details of the problems associated with "least cost planning" and "integrated resource management" and why they are unlikely to lead to least cost outcomes will have to wait for another time.

The second problem with "least social cost planning" and much of what its proponents would like to see go along with it is more directly relevant to the incompatibilities that concern me. When utilities pursue these social goals they incur costs that must somehow be recovered. Utilities properly feel that it is the customers who should pay for the costs incurred when they meet their regulatory obligations. The question is, how do we get the customers to pay for the
surcharges (regulatory taxes) to cover the costs of energy conservation subsidies, higher cost generating capacity and so on in a world where they have competitive supply alternatives that don’t incur the private costs of pursuing broader societal goals?

THE INCOMPATIBILITIES

I think that we can all agree that it would be desirable to have a set of structural and regulatory arrangements for the electric power sector that achieve the following kinds of performance outcomes:

a. Utilities should supply electricity as economically as possible given the supply alternatives available to them.

b. Customers should use electricity wisely so that the services that electricity provides for them are provided as cheaply as possible given the conservation options available to them.

c. The full environmental costs of producing electricity should be taken into account in electricity supply and pricing behavior in a way that achieves environmental goals at the lowest possible cost to society.

[There may be other goals as well which are probably more controversial, but I won’t get into those goals now.]
Well then where are the incompatibilities between competition and the achievement of these goals? Competition is supposed to help to promote the first goal. Utility conservation programs help to achieve the second goal. Environmental adders help to achieve the third goal. And we wrap them all together in a detailed least cost integrated resource planning process that ensures that these initiatives are all consistent with one another.

The primary incompatibility arises from the need to recover through higher electricity prices the direct and indirect costs of these social obligations in a regime where customers are given the freedom to act on their natural desire to turn to competitive suppliers who can offer lower prices because they do not have to incur these costs. Whenever the price of utility supplied electricity (or electricity services) rises above market levels, customers will at least have a look at what competitors are offering. The second incompatibility comes from the politicization of resource investment decisions when highly structured centralized planning processes are introduced.

The experience with the introduction of customer competition in the telephone, natural gas, and electricity industries here and abroad is instructive for understanding the nature of the conflicts. But so is reasoning by simple analogy to competitive markets that we all buy and sell goods and services in every day. When given the choice, customers will seek to buy electricity from the supplier that offers service with equivalent reliability at the lowest price. Utilities will not be able to charge prices significantly higher than what customers can get by supplying for themselves (self-generation) or buying from competing suppliers. Cross-subsidies become

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The gap between a utility's cost of service and market values depends on more than just the costs of these social obligations. Investments in generating facilities that turned out not to be economical ex post, QF contracts that utilities were forced to sign at excessive prices, and just plain old excess capacity account for a larger part of the gap.
difficult to sustain in competitive markets.

When utilities no longer have a monopoly over the provision of their customers' electricity supply needs their ability to charge them for conservation services that individual customers either don't receive or they don't value very highly will be sharply restricted. Customers that don't receive the benefits of conservation services that are paid for through higher rates will buy from suppliers that don't have to load those costs into their prices to break even.

In this regard it is important to recognize that utilities have no natural or legal monopoly over the provision of conservation services. ESCOs do not need access to the utilities' transmission or distribution lines to sell their services. Customers make energy conservation decisions on their own every day. There is nothing to keep a customer from buying electricity from one supplier and arranging for conservation services from another once they are given the opportunity to shop around. While utilities may have certain natural advantages in providing conservation services, the opportunity to use the regulated utility's rates as a tax and subsidy mechanism to pay for conservation out of general ratepayer funds derives entirely from their monopoly status. Once the legal monopoly is removed "taxation by regulation" not only becomes much more difficult, but efforts to continue to engage in cross-subsidization will accelerate the movement of customers to competing suppliers.

Nor can we force customers to buy electricity and conservation together as a bundle from utilities when there are competing suppliers offering the pieces of the bundle separately. No matter how loudly we scream that the market is for "electricity services" rather than electricity and conservation as separate services, in a competitive market it is consumers who get to choose
whether they want to purchase bundled or unbundled, electricity as a commodity or electricity services. And for many customers the answer is that electricity is a commodity and the price they have to pay for it is what matters. They can buy their conservation services separately.

The same problem emerges in the context of environmental adders. So, for example, assume that a gas-fired combined cycle generating unit meeting all state environmental laws is the cheapest legal way to produce electricity—let's say its 5.5 cents/kWh. However, after incorporating environmental adders into the planning process it turns out that the planning models say that geothermal capacity costing 8.5 cents/kWh minimizes global societal costs. So, the utility is told to buy geothermal capacity that is more costly than the best alternative that meets all environmental regulations.

Well in a competitive market, nobody is going to pay 8.5 cents when they can get it for 5.5 cents. And if the independent suppliers aren’t held to the same de facto environmental standards as are the utilities, those customers who can escape will escape. Remaining customers who cannot easily turn to the competitive market will end up paying more, or more likely, the utility will simply be out of the business of acquiring new supplies of generation as larger customers bypass the utility.

Finally, resource planning processes that become forums to satisfy the desires of a wide variety of interest groups almost inevitably lead to choices that are different and more costly than what would be achieved in an open competitive market.

So, if there is broad agreement that public policy should be directed toward expanding the prevailing types of DSM programs, encouraging utilities to pay customers to switch fuels based on social rather than private cost criteria, using big environmental adders to require
utilities to meet tougher environmental standards and set an example for confronting global warming problems, then policymakers should be doing everything possible to make self-generation, retail wheeling and other types of retail competition very difficult, or at the very least, find some way to put the associated costs somewhere where they cannot be evaded by bypassing the system (i.e. in the transmission rates).²⁰

If you have any doubt about the incompatibility between competitive and social obligations induced by environmental concerns, let me point out that the most outspoken advocates in the environmental community for aggressive utility conservation subsidy programs, environmental adders, and complex least cost planning exercisers have also actively opposed retail wheeling because they understand that competition is incompatible with what they believe utilities should be doing.²¹

On the other hand, if you believe that promoting retail competition is a good idea because it will lead to lower electricity supply costs and lower prices, or that it is an inevitable result of the forces that are already out there, then you should be looking for other ways to deal with energy efficiency and environmental concerns because the current framework inevitably will be undermined by competition.

²⁰ However, FERC has recently indicated that it is not inclined to place stranded investments associated with state jurisdictional retail costs in FERC jurisdictional wholesale tariffs. See re United Illuminating Company, Docket No. ER93-3-000, May 19, 1993. This raises some interesting questions about how a utility can recover stranded investment costs from a retail customer in a retail wheeling regime when the customer only has transmission and control area service contracts with the utility.

HARMONIZING THE GOALS

Not only is what I have said so far inconsistent with much recent conventional wisdom regarding the virtues of the new obligations being placed on utilities, and is certainly politically incorrect, but it is also pretty depressing. Surely there should be some way to harness market forces in the electricity sector if we feel that these forces can lead to lower costs while at the same time pursuing what I believe are widely accepted energy efficiency and environmental goals.

Well, one answer is that such harmonization is not possible. There are many who argue that retail competition is a bad idea even without considering these other policy constraints. Retail competition already raises a host of problems associated with efficient planning, contracting, reliability, free riding, utility cost-accounting and ratemaking rules, recovery of sunk investments made to fulfill regulatory obligations, that conflict with the traditional goals of providing economical and reliable supplies of electricity to all consumers. The additional conflicts with energy conservation and environmental goals just cements the case against retail competition.

Despite what many economists think one can make a respectable theoretical case for this view. A case that turns both on natural monopoly arguments, problems associated with mixing competition and regulation, contracting imperfections and investment incentives, and the task of fairly dealing with sunk costs. However, the experience in the UK suggests that a regime that relies extensively on competition can work reasonably well if all of the right pieces are put

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22 Though not necessarily perfectly. I was originally quite skeptical about the UK’s model. While it certainly has its problems, it is also working reasonably well.
in place at the outset.\textsuperscript{23}

If, on the other hand, you believe that retail competition should or for a variety of reasons inevitably will evolve over time (perhaps as a consequence of the cost increasing effects of these other policies), then we need to work a bit harder to see if we can harmonize what appear to be conflicting methods for pursuing a set of accepted goals.

As I have already mentioned, there is no necessary conflict between the goals of promoting competition to reduce costs and prices, promoting energy efficiency, and internalizing externalities efficiently. If we go down the path of giving customers the opportunity to choose among competing suppliers of electricity we will simply have to pursue these goals with the constraints created by competition in mind, as we must do in every other competitive industry.

With regard to energy conservation initiatives, the solution to the conflicts are clear. Utilities can continue to play an important role in the energy conservation area, but they will have to approach it more like an ordinary business and less like a social welfare program funded out of general electricity rates.

In thinking through the proper role of the utility as electricity supplier and utility as electricity service company in a competitive world, I like to ask the question "how would a hypothetical company in a competitive market approach this problem? What would be bundled together and what would be unbundled? How would the costs of the programs get reflected in prices?"

The first step along this path is to reverse currently fashionable thinking about conservation. Energy conservation must be conceptualized as a customer service and a customer

\textsuperscript{23}Retail wheeling in the U.S. is likely to emerge without all of the right pieces in place and, as a result, will probably be costly and inequitable.
resource, not as a utility resource that is equivalent to a utility "supply source." The customer will own the conservation devices, decide how to utilize them, and when to scrap them. Nobody has yet invented a negawatt meter that enables a utility to measure what the savings from conservation actually are. The customer ultimately is in the best position to fully evaluate how what the energy savings will be, how long they will last, and to evaluate the overall benefits and costs of investments in conservation.

From this perspective there are certain services that I would expect an electricity supplier to provide bundled with the price of electricity. These services would include the provision of information about how to use electricity wisely, some energy efficiency studies and associated recommendations for investments that can make better use of electricity. There are other services that I would expect utilities to provide on an unbundled basis in competition with energy service companies that do not necessarily sell or broker electricity. These services would include more detailed specialized studies of energy efficiency opportunities, focusing primarily on larger commercial and industrial customer, playing a general contracting role, integrating the procurement and installation of equipment for customers for a fee, and providing various financing options, including shared savings contracts that improve the customer's cash flow. For these unbundled DSM services, the customers who benefit from the conservation investments would pay for the associated costs, in one way or another out of the savings that they expect to achieve. One thing that would not occur is that Mrs. Pearlman would not get sent the bill for energy conservation expenditures made in Mr. Joskow's house. If you send Mrs. Pearlman the bill she will just throw it away or turn to an alternative electricity supplier who will provide her with unbundled service for a lower price.
The benefits of this approach go beyond the elimination of cross-subsidies that customers may seek to avoid by turning to alternative suppliers. This approach will lead to real energy savings rather than just paper savings and relieve regulators of the very difficult task of measuring actually savings, imputing customer costs, dealing with free riders, changing customer behavior over time, etc.

A regime that requires the customers who benefit from conservation to pay for the associated investment costs introduces a certain discipline into the system that it not there when you offer the customers heavy subsidies and rely on engineering models to compute savings over long periods into the future. The energy service charge approach makes it necessary to convince customers that the savings are really there when all relevant factors are taken into account.

With regard to environmental adders, it is quite clear that they simply cannot be used as they have been in states like California or Massachusetts if we are going to allow customers to shop around in competitive wholesale markets. If there is to be competition, all sources must face the same explicit and implicit environmental control costs. You simply can’t put a shadow price on carbon emissions, residual NOx, PM10, and SO2 emissions when utilities seek to make supply choices and not add these charges to competing supply options. It simply is not sustainable. The obvious solution here is to bring all sources under a common set of market based environmental control mechanisms that internalize environmental externalities comprehensively and consistently. More reliance on comprehensive emissions fees and tradeable allowance programs is the only way to go if we want to “price” residual emissions in a way that is compatible with competition in the electricity sector. And if Congress is unwilling to depart from its historical reliance on other instruments for environmental control, then utility regulators
will just have to live with the residual emissions like we do in every other market.

Finally, we need to rethink our approach to utility planning. If utilities are to compete effectively with other suppliers they can’t be expected to meet societal cost tests that these other entities don’t have to meet. Nor can they compete if there decisions are governed by complex administrative processes that take years to complete and where, in the end, expenditures are heavily influenced by interest group politics rather than driven by what provides the services customers want at the lowest possible cost. We need less formal planning and more attention to meeting market tests. We need new regulatory rules that provide incentives for utilities to provide services that customers want as cheaply as possible. Rather than integrated resource planning we should be encouraging utilities to develop separate but coordinated business units that focus on finding the lowest cost electricity supplies and working with customers to find ways to use electricity more wisely. The linkages between the supply side and the demand side are prices, costs, and load forecasts that incorporate changes in energy efficiency.

None of these changes will deal with the existing sunk cost problems that create a gap between regulated rates and market values. If retail wheeling is to become widely available either conscious regulatory decisions will have to be made to make it possible for utilities to recover these costs or they will become a stockholder burden. It will be difficult to construct a rational structure to accommodate retail wheeling without dealing with the sunk cost issue because utilities, groups representing small consumers, and some environmental groups will fight it every step of the way. Thus, utilities face a dilemma. On the one hand, it is rationale for them to oppose retail wheeling to protect historical sunk costs and prospective future sunk costs created by existing regulatory requirements. On the other hand, if they ever want to resolve the
sunk cost problem, they must openly discuss the need to deal with it in any retail wheeling regime. But discussing retail wheeling may hasten its spread and their is no guarantee that these sunk costs may not become stranded even more quickly than they would be otherwise.

CONCLUSION

When we teach economic principles to freshman we spend a lot of time teaching them about demand and supply and why they are different from one another. We also teach them how decentralized markets link demand side and supply side decision, often with very good results, but sometimes very imperfectly. We have spent the last decade both promoting the virtues of more competition in the electricity sector while at the same time making concerted efforts to obscure the differences between supply and demand and the important role that individual decentralized decisions play in linking consumer and supplier decisions. We have made a concerted effort to replace decentralized decisionmaking regarding the use of electricity with centralized planning and directed subsidies aimed at making the plan come true.

Thus on the one hand we are promoting competition because we think that it will lead to less costly supplies of electricity and lower rates. On the other hand we think that energy markets are characterized by profound market imperfections that require more comprehensive planning for what both utilities and their customers do, more subsidies to get them to meet the plan, and special environmental criteria to compensate for the infirmities that characterizes our environmental regulation. We can’t have it both ways.

It seems to me that we will only be able to accommodate the mounting pressures of competition in a fair and efficient way if we agree to adopt regulatory procedures that do not
add to the gap between rates and market values and that deal directly with the sunk costs that contribute to that gap already. Fixing things going forward is easy if we only have the will to reform existing DSM, resource planning and procurement policies. Dealing with the existing sunk costs is more difficult, but can be accomplished if state and federal regulators make it a priority to do so.\textsuperscript{24}

\textsuperscript{24}The natural place to recover sunk costs is in backup charges or system access charges that are assessed to all consumers whether they take power from the host utility or not.