

A Proposal for Implementing Retail Competition in the Electricity Industry

State regulators can manage the transition to retail competition in a way that achieves the huge efficiency gains that retail competition can bring and is politically achievable. The strategy? Deregulate quickly, with a short transition period for large customers, and spread the pain of paying for stranded investment among utilities, customers and IPPs.

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At the heart of the controversy over retail competition in the electricity industry is a very large number: roughly \$250 billion. That's a ballpark estimate of the write-offs utilities would face if they had to sell all of their power at long-run marginal cost tomorrow, had no change in their cost structure, and marked all their assets to current market value. That compares to the book value of the equity of all investor-owned utilities of around \$175 billion, and a

market value that was around \$300 billion not long ago, but has dropped to around \$250 billion as investors confront the growing likelihood of large utility writeoffs.¹

This \$250 billion estimate largely reflects sunk costs: It's a bill for money that has already been spent. If retail competition and its close substitutes could be deferred forever, electricity customers would pay the full cost. If full market competition could be

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introduced tomorrow, utility investors would pay most of this cost. If market competition is phased in over a period of time, the cost will be split between utility investors and electricity customers. We are in the early stages of a long battle over who pays the huge bill for past utility inefficiency, as the industry makes the transition to retail competition.

This article outlines a strategy for PUCs to manage the transition to retail competition in a way that is both theoretically sound and politically achievable — that achieves the huge efficiency gains that retail competition can potentially bring, and can produce political support from enough interested parties so that rapid deregulation will be politically practical. The efficiency strategy is simple: deregulate quickly. It seems technically and logistically feasible to deregulate retail sales to large customers within one to two years, and to small customers within five to eight years. Only retail competition can force utilities to bring their operating costs down to market-clearing levels, on pain of losing customers.

A PUC should announce a limited transition period, after which customers can buy power from any supplier they choose, with power transmission over utility lines at PUC- or FERC-approved rates that treat all generators equally, including an integrated utility's own plants.² PUCs and FERC should also encourage utilities to deintegrate. Vertical deintegration will speed development

of a fully competitive wholesale market, and reduce the need for inevitably imperfect regulatory oversight of transmission pricing.

The details of how a competitive retail market is structured are decidedly less important than that retail competition be introduced promptly. Regulators should let the two principal models of retail competition — direct trading and the central pool approach — coexist and compete with each other. That will let market forces determine the winner, or the winning mixture. Probably, if regulators don't force trading into one mold

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or the other, a complex mixture of both types of trades will soon emerge, as it has for trading of common stocks and agricultural commodities.

The political strategy is to spread the pain of sunk costs so that large and small customers and better-managed utilities will be winners. This will leave weaker utilities and those who now feed at the utility subsidy trough — principally demand-side management (DSM) supporters and independent power producers (IPPs) who now sell power to utilities at above-market rates

— as the hopefully manageable political opposition.

Others have argued that the best strategy is to ignore sunk costs, and let them fall where they may. This produces optimal utility incentives to cut costs during the transition period and avoids costly rent-seeking battles over the prudence of the utility's past investments.³ But ignoring sunk costs guarantees fight-to-the-death opposition from utilities that will delay retail competition and its accompanying benefits. Spreading the pain of paying for past mistakes will increase political support for deregulation and let it proceed more rapidly. As discussed below, partial transition compensation, designed so that utilities benefit from their own cost-saving efforts, can also produce optimal utility incentives to cut costs during the transition period and involve low rent-seeking costs.

I. Utilities: Making the Best of a Bad Situation

Under any deregulatory scheme, utility investors will bear a significant fraction of utility sunk costs. First, they don't vote, and electricity customers do. Second, for every dollar of sunk cost that is loaded on to utility investors, the federal government pays roughly one-third by forgoing income taxes that the utility would otherwise pay. For state regulators, that wealth transfer from the federal fisc is found money. Third, PUCs and state legislators can easily blame high-cost utilities for having let their costs escalate.

The blame-the-big-utility story is not only politically attractive (and inevitable for that reason alone) — it's at least partly true.⁴

One might ask, then, why don't investor-owned utilities fiercely oppose retail competition in all shapes and forms? Why are some of them trying to *manage* the transition rather than simply fight it? Some utility executives *are* fighting the transition. But others understand that this is a fight they can't win. Even if they delay retail competition for a while, they'll still get killed by its close substitutes. One substitute is self-generation or cogeneration by large users, with surplus power sold back into the grid. The second, and the real killer, is municipalization.

Let me offer two municipalization anecdotes. The first involves Long Island Lighting Company. LILCO sells power at remarkably high rates: around 15¢/kWh. LILCO spent \$6 billion building the Shoreham nuclear power plant, and then shut it down without ever generating power, because, in short, the good citizens of Suffolk County refused to develop an emergency evacuation plan and the Nuclear Regulatory Commission wouldn't let the plant operate without such a plan. As part of the political compromise to close the Shoreham plant, the New York PSC promised that LILCO could recover about half of the \$6 billion cost through phased-in rate increases. But while the citizens of Suffolk County were delighted to see Shoreham closed, they weren't

happy about paying for even part of the cost of building it. The Suffolk County executive recently proposed to turn Suffolk County into a municipal power authority, which will buy wholesale power at market prices.⁵ This could reduce the rates paid by Suffolk County homeowners from 15¢ today, and 17¢ when Shoreham costs are fully phased in, to as low as 7¢. That has obvious political appeal, and it doesn't involve conventional "retail wheeling" at all.

It's too soon to tell whether the Suffolk plan will succeed. But the

Close substitutes for direct retail competition are building too much momentum to be stopped.

odds that customers will ever pay an appreciable fraction of Shoreham's cost seem remote. The *best* LILCO can expect is a compromise in which Suffolk receives lower rates in return for staying in the LILCO system. And whatever rate cuts Suffolk achieves, Nassau County (LILCO's other major service territory) will demand as well.

Second example: I understand that Ford Motor Company is quietly going around the country and offering the mayors of towns where its plants face high electric rates the following deal: You

agree to turn your town into a municipal utility. We'll do the paperwork, we'll fight the legal battles, and your residential electricity rates will drop by, say, 25 percent. No muss, no fuss, just cheap electricity. To no one's surprise, Ford has found some eager takers. Once that happens, it makes little difference whether the town actually municipalizes, or instead strikes a deal with the utility for reduced rates in return for staying in the utility system. The effect is the same: lower prices and someone else pays the utility's sunk costs. Other large firms are pursuing similar strategies.⁶

Firms can also use the threat of municipalization to win lower rates for themselves. This could help to explain the recent deal between Detroit Edison and the Big 3 U.S. automakers, where the automakers achieved lower rates but promised to stay with Detroit Edison as a supplier for the next 10 years. From Detroit Edison's perspective, it was apparently better to lose some revenue on sales to the Big 3 than to risk losing Detroit.⁷

These close substitutes for direct retail competition are building too much momentum to be stopped. With billions of dollars to be gained just by shifting power suppliers and leaving your old supplier to eat its bloated costs, industry and municipalities will find a way to capture the potential savings, just as they did for natural gas.⁸

Some utilities are managing rather than fighting the transition

to market competition for a second reason. The \$250 billion write-off estimate assumes no change in utility cost structures. That's a silly assumption. Billions of dollars in annual operating expenses can be taken out of utility costs. Some of those dollars are already being taken out, as utilities around the country prepare for competition. Increasingly utilities are *turning down* rate increases or, like Detroit Edison, offering rate cuts, and then cutting their own costs, because they know that higher rate won't stick for long.

Some utility costs, especially in California and New York, are attributable to power supply contracts that utilities signed with IPPs at PUC-prescribed rates that far exceed current market rates. Just as utility shareholders won't escape unscathed, these overpriced contracts won't escape the move to retail competition untouched. The lesson from the uranium contracts of the 1970s and the take-or-pay gas contracts of the 1980s is that purchasers can negotiate or litigate their way out of paying at least some of these costs.⁹ That will be a further source of savings to consumers and utility investors, and a further efficiency gain as high-cost suppliers shut down.

With a combination of —

(i) some ability to recover sunk costs from customers, especially small customers, during the transition period;

(ii) some ability to reduce their own costs;

(iii) some ability to cut contractual payments to IPPs;

(iv) the enticing prospect of shedding the delays and large costs of getting regulatory approval for everything utilities now do;

(v) the equally enticing prospect of limiting their exposure to future regulatory disallowances;

(vi) the opportunity for well-run utilities to form unregulated subsidiaries that can compete in the service territories of other utilities and keep any above-market returns from doing so;

(vii) the inevitability of some write-offs no matter what utilities do; and

Overpriced IPP contracts won't escape the move to retail competition untouched.

(viii) the political risks in fighting deregulation when one's assets and costs remain vulnerable to prudence review — it can be rational for utilities to support a rapid move to retail competition for large customers (who can threaten to self-generate or to sponsor municipalization efforts), and a somewhat slower move to retail competition for small customers (which gives the utility time to recover some sunk costs from small customers). The recent direct access proposal by the California Public Utilities Commission, while understandably

sketchy on the details of implementation, offers a fine roadmap for implementing retail competition.¹⁰ Early signs are that the CPUC proposal may prove acceptable to utilities, which must choose from among unpleasant alternatives.¹¹

II. The Efficiency Gains from Deregulation

The \$250 billion write-off estimate is central to the retail competition debate not just because of the battle over who pays it. We have long known that rate-of-return regulation dampens the powerful incentives to improve efficiency that a competitive market offers. Incentive regulation can help, but every incentive system yet designed can be gamed in one way or another. Moreover, in many states, legislators and utility regulators have micromanaged the resource procurement process. All too often, regulatory decisions have advanced political ends while increasing customer costs.

The twin problems of imperfect incentives and imperfect regulation are endemic to the regulation of monopoly. But, until recently, we couldn't measure the efficiency losses from rate-of-return regulation of electric utilities. Today, with the emergence of a competitive wholesale electric power market, we can estimate the efficiency losses, and the estimate is staggering. Roughly speaking, it's the same \$250 billion for the United States. The logic behind this inefficiency estimate is simple: If utilities were already operating efficiently, no write-offs or

reductions in operating costs would be needed to bring their costs down to competitive levels. To capture the same number in a different way, customers would be paying \$25-30 billion *per year* less for electricity in a competitive system than they are now paying. Utility bills would drop about 15 percent on average — far more in some geographic areas; not at all in others.

There is not a dollar-for-dollar correspondence between past inefficiencies and the write-off estimate. The problem of measuring past and current inefficiency is much more complex than that. The write-off estimate overstates utility inefficiency in some respects and understates it others.¹² But there is a rough correspondence between the two, and by any measure, the ongoing waste in electric power generation is massive. What should be driving the move to market competition, at both the wholesale and retail level, is recognition that the old system produced and continues to produce huge inefficiency. The sooner we can move to full competition, the sooner we can squeeze inefficiencies out of electric power generation *and* distribution, and the sooner we can generate market incentives for further efficiency improvements.

Competitive *wholesale* markets are wonderful. Properly run, they can squeeze out much of the waste in power production. But they're only half the story. *First*, resource procurement remains heavily politicized in many states, with producers competing for

preferences of various kinds. As long as a monopolist controls customer access to power, regulators can insist that utilities buy power from politically preferred suppliers at prices far above market. Experience with PUC-mandated "standard offer" contracts at close to twice market rates in California and with New York's infamous "6¢ law" shows that this is a serious risk. Retail competition can ensure that power producers compete based on cost and reliability,

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not on political clout — or, at least, that subsidies be made explicit through surcharges on transmission or distribution.

Second, it's the prospect of *retail* competition that is spurring utilities to cut costs and reduce rates, and thereby already bringing benefits to both large and small customers. A monopoly utility needn't worry much about excessive operating costs for plants that are already in the rate base, nor about excessive distribution and transmission charges. Yet there is no reason to think that utilities are

more efficient at distribution than they have proved to be at power production.

Some distribution inefficiencies are obvious, as when high retail rates can be traced in large measure to high distribution and transmission charges or high levels of general corporate overhead.¹³ Other inefficiencies are more subtle, such as the virtual absence of time-of-day pricing for most customers, or the total absence of microprocessor-based controls to help customers manage power use, long after microprocessors have become an integral part of automobiles and hundreds of other consumer products.

To be sure, utilities are likely to retain their distribution monopolies for small customers for the foreseeable future. This will dampen their incentives to improve distribution efficiency. But retail competition will cause utilities to (i) lose most of their power to impose cross-subsidies running from large to small customers, (ii) unbundle distribution charges from transmission and generation charges, thus highlighting interutility differences in distribution charges; (iii) risk bypass by large customers if they levy high common charges on those customers; and (iv) become more vulnerable to competitors offering to buy and run their distribution systems. These changes will put substantial pressure on utilities to cut general overhead and distribution costs.

Third, fully competitive wholesale and retail markets will emerge most quickly if utilities

voluntarily deintegrate. A utility that must generate power at regulated rates, transmit its unregulated competitors' power at regulated rates, and face PUC and FERC scrutiny of the conflict-of-interest laden transmission charges it proposes for itself and its competitors may well decide to spin off either its generation or its transmission and distribution assets.¹⁴ Thus, retail competition can spur deintegration, which will strengthen wholesale and retail competition, which will spur more deintegration, in a virtuous cycle that can quickly end with fully competitive retail and wholesale markets.

III. Allocating Sunk Costs

How should a deregulation minded PUC allocate the legacy of past and present inefficiency among customers, utility investors, PURPA suppliers and others? The central principles should be to move fast and ensure that all customers are net winners.

Move fast, because that will accelerate the savings from squeezing out the inefficiencies that are still in the system. Here the CPUC's proposed timetable — very quick deregulation for large industrial and commercial customers), and full deregulation of individual households in about eight years — seems reasonable. It is hard to see how the logistical and marketing hurdles for residential direct access can be surmounted in less than five years or so.

During the transition period, small customers are at risk. Large

customers will pay competitive prices sooner than small customers, because they can more easily leave the utility system, or threaten to leave to obtain rate reductions. The utility will do its best to load the sunk costs that it can no longer recover from large customers onto small, captive customers.

I think it essential to the political viability of retail competition that all customers be net winners, even during the transition period. Otherwise, small customers may

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lose in the short run as utilities shift sunk costs onto them. Small customer opposition, combined with the inevitable opposition from current subsidy recipients, could slow the move to market competition.

To forestall utility efforts to shift sunk costs during the transition period, PUCs should insist that small customers pay, in addition to the market cost of power, only their proportionate share of the costs of past inefficiency. If small customers pay only their share of past excess costs, they will

quickly realize savings, as utilities cut their operating costs in anticipation of full retail competition. That, plus the promise of paying true market rates of around 6¢/kWh once the transition period is over, should quickly induce political support from small customers, and from politicians anxious to please their constituents.

In addition, PUCs that have approved subsidized residential rates, funded through higher industrial and commercial rates, will soon lose most of this cross-subsidy power. Losing a cross-subsidy will have the same effect on small customer rates as utility efforts to shift sunk costs onto small customers. To the extent possible without losing utility political support, the PUCs should ensure that small customer rates do not rise in the short run, despite the lost cross-subsidy. This will reduce the rate at which utilities can recover sunk costs, for which the political tradeoff might be a longer transition period during which sunk costs can be recovered.

The policy of not shifting sunk costs and, if possible, protecting residential customers against the loss of cross-subsidies is premised on the political necessity of procuring small customer support. I make no claim that this is "fair," whatever that might mean. Small customers did not deserve to have their rates subsidized by large customers, and will soon lose that cross-subsidy whatever PUCs do. But that will not make

them any happier about paying higher rates.

The fraction of sunk costs that utilities can recover during the transition period will vary from utility to utility and state to state. For example, Utility A, with current rates 1¢/kWh above competitive levels, is likely to recover a higher fraction of its sunk costs than Utility B, with current rates 4¢/kWh above competitive levels, because Utility B's high rates will attract competition sooner. This has rough justice to it: It's likely that Utility A was better managed than Utility B.¹⁵

Utility investors and non-utility generators will have to bear the sunk costs that customers — large and small — don't pay. But, as discussed above, that needn't preclude utility support for retail competition. The utility must weigh the losses from deregulation against the potential gains from deregulation, plus the losses it will incur as its rates come under pressure under alternatives to retail competition. High-cost Utility B, for example, is at high risk from substitutes for retail competition and for regulatory disallowance of some of its costs.¹⁶ Thus, it may support retail competition, despite large expected write-offs.

If the principle that small customer rates shouldn't increase is adhered to, both large and small customers should favor retail competition, though I have no confidence that customer groups will quickly realize this. They will worry about whether their constituents will bear a dispro-

portionate share of the cost of past and present inefficiency. Perhaps too, their leaders, who often neither trust nor understand markets, will be mesmerized by environmentalist claims of massive market failure in the electricity market that can be remedied only by massive subsidies for conservation, which require preserving the utility monopoly. But small customers can be won over, if a PUC announces and follows a policy of not shifting sunk costs onto small customers.



Beyond the principle that deregulation should proceed quickly; the policy, born of political necessity, that small customers shouldn't lose; and the need, again premised on political necessity and not on fairness, for utilities to recover enough sunk costs to win their (perhaps grudging) support, it matters little how much of their sunk costs the utilities recover.

The sunk cost recovery rule should, however, maximize utilities' incentives to swiftly improve their operating efficiency. Utilities should keep the savings from improved operating efficiency dur-

ing the transition period. Conversely, utilities that are slow to cut costs should face larger write-offs. Ideally, a utility's sunk cost recovery should be *independent of its future actions*, so that at the margin it keeps any cost savings it can generate and bears dollar for dollar any excess of its own costs over competitive levels. The approach proposed here — a finite transition period after which the utility is fully exposed to market competition — will largely accomplish this.

The sunk cost rule should also be cheap to administer. Only lawyers and consultants win from facility-by-facility litigation over how much of a utility's past costs were justified and therefore recoverable. Such fights will consume both dollars and scarce utility and PUC attention that is better devoted to managing the transition to competitive power markets. The finite transition period approach advocated here will accomplish this as well. Utilities will recover whatever they can during the transition period, and then no more. There will be a one-time fight over the length of the transition period, but no plant-by-plant review of past utility actions.

IV. The Inevitable Opposition: Environmentalists and High-Cost IPPs

If small customers and at least some utilities can be convinced to support retail competition, that leaves high-cost IPPs and some environmental groups as the principal opponents of retail competition. These unlikely bedfellows

share a common desire to preserve the utility's monopoly over local service in order to preserve the subsidies they now receive.

High-cost IPPs' interest in preserving the utility monopoly is obvious. Their above-market contracts are at risk if utilities can no longer pass above-market costs on to consumers. Within the universe of wholesale power producers, a natural fault line is already forming between suppliers who believe that they can profit in a truly competitive wholesale market — many of which support retail competition — and those who aren't competitive, know it, and implacably oppose retail competition.

Environmentalist opposition stems from two perfectly understandable sources. First, environmentalists basically don't want cheap electric power. Lower prices mean more consumption and, the environmentalists assume, more pollution. (As discussed below, that assumption may not be correct.) Environmentalists justify high prices by citing supposedly massive environmental externalities from power-plant pollution, but their bottom line is a preference for high prices.

Second, environmentalists want to preserve utility DSM programs in which utilities, encouraged by PUCs, subsidize investments in conservation by power customers (sometimes called buying "negawatts"). The utility then recovers the DSM subsidy through higher rates. DSM programs are a massive bet that the utility can find cost-effective opportunities

to save energy that its customers have missed. If the bet is correct, utilities and customers both profit. If the bet is wrong, consumers pay the bills. Either way, rates go up and electricity consumption goes down.

There is an irreconcilable tension between retail competition among power producers, and large-scale utility DSM programs, especially programs targeted at large customers. We can have retail competition or we can have large-scale DSM, but we can't have both. For reasons that Richard Pierce and I have developed at length elsewhere,¹⁷ I think this choice is easy: We ought to choose competition, and consign most current negawatt programs to the dustbin of bad ideas. In particular, many of the market failures that negawatt proponents

cite to justify conservation subsidies vanish on close analysis. Many reported dollar savings from DSM reflect a combination of overestimating energy savings, counting only some of the costs of achieving those energy savings, and overestimating the dollar value of the energy savings.¹⁸ Moreover, even if DSM produced all the benefits its supporters claim, those savings would still be swamped by the massive savings that market competition can produce.

Some forms of utility-financed DSM can survive. *Unsubsidized* conservation programs, paid for voluntarily by participants and *only* by participants, can survive. But they will have to meet a market test. Utilities and other negawatt providers will have to eat their own mistakes. DSM tar-



Will competition also strand deserving DSM programs?

geted at small customers, paid for through a PUC-approved surcharge on distribution rates, can also survive. However, the unbundling of utility charges that will accompany retail competition will make the surcharge more visible than it is today, which is likely to make large DSM surcharges less politically viable.¹⁹

V. Objections to Retail Competition

Opponents raise four main arguments to retail competition, in addition to reduced utility ability to subsidize conservation investments. None stands up to analysis.

A. Reliability

Opponents argue that a fully competitive market will reduce the reliability of electric service. Competition seems more likely to improve reliability. First, in a competitive environment, more customers will choose interruptible or capped service in return for lower rates, which will improve reliability for customers who want noninterruptible service. Second, power plant outages should be less common in a competitive market than today. A regulated monopolist continues to earn a return on out-of-service assets; an unregulated producer doesn't. A regulated monopolist keeps its customers despite bad service; an unregulated producer doesn't.²⁰

Opponents also worry that if the utility loses its monopoly it won't be able to maintain reserve capacity to meet demand spikes.

But peaking service — service available when other power sources are already being used — is a market service like any other. Suppliers will provide peaking service if there is demand for it, just as some firms today specialize in emergency backup computer service. For example, today many businesses, hospitals, etc. maintain almost-never-used emergency back-up generators. One can readily imagine an entrepreneur using this largely wasted resource to sell peaking or backup service to firms that now can't afford it or to a distribution utility.

Uneconomic bypass is possible, but unlikely to be economically significant.

Or perhaps pumped storage will move off the drawing boards and into actual use.²¹

In the end, the claim that a competitive market will produce less reliability than regulated monopoly presumes a market failure in the market for reliable electric service that is large enough to outweigh the stronger incentives of competitive producers to provide reliable service. This is conceivable, but unlikely. There are network externalities in producing reliable service, but the principal externality involves interconnected transmission grids, which

no one proposes to disconnect, rather than power generation.²²

Two analogies. The deregulated natural gas industry sailed through the tough winter of 1993-94 with no problems. In contrast, some electric utilities faced weather-related shortages, as did the price-regulated natural gas industry during the last similarly cold winter of 1977-78.²³ And anyone who thinks a monopolist is inherently more reliable than competing producers hasn't recently compared the Postal Service to Federal Express and UPS.

B. Uneconomic Bypass

A second complaint raised by opponents is that of "uneconomic bypass" — some customers will leave the utility system when it is economically cheaper for them to continue to be served by the utility. This is economically implausible. In a fully competitive market, if the utility is the lowest-cost service provider, it should be able to keep the customer by offering lower rates.²⁴

During the transition to full competition, uneconomic bypass is possible, but unlikely to be economically significant. Uneconomic bypass can result when (i) a competitor's cost to deliver power is higher than the utility's cost to deliver power from the plant that is replaced by the bypass, but (ii) the competitor can nonetheless undercut the utility's price. Bypass, however, will lead the utility to shut down its highest-cost facilities first. Thus, the primary factual setting for uneconomic bypass is: (i) a utility

charges rates well above marginal cost, due to large sunk costs; (ii) despite these high sunk costs, which are evidence of past inefficiency, the utility is so efficient than the competitor's cost exceeds the utility's cost to run even its *highest-cost* facility; and (iii) the utility is unwilling or unable to cut its rates by enough to retain Customer C, lest it have to cut rates to other customers as well. This will be rare indeed.

Uneconomic bypass is possible in a few other specialized circumstances.²⁵ But the basic point remains: Uneconomic bypass can occur only in specialized factual settings, and thus is unlikely to be economically significant. Moreover, any uneconomic bypass that exists argues not for continued regulation, but for rapid deregulation so that the utility's rates will reflect its true marginal costs.

Given overall utility inefficiency, reflected in today's above-market rates, situations where a utility system might be bypassed where it is more efficient for the customer to remain in the system are surely swamped by situations where bypass *would* be efficient because the new producer has lower costs which cannot be achieved because of regulatory obstacles. The real problem today is not uneconomic bypass but uneconomic *nonbypass*.

C. Cherry Picking

A further complaint levied against retail competition is that producers will "cherry pick" a utility's best customers. This complaint lacks substance. For a vari-

ety of reasons, large customers are cheaper to serve than small customers. In a competitive market, lower cost of service will lead to lower electric rates. But large customers won't be served for less than the cost of serving them, nor will small customers be charged more than the cost of serving them. The former is a prescription for losing money; the latter is a prescription for losing customers. Competition will eliminate cross subsidies from large customers to small customers (or vice-

Competition will eliminate cross subsidies from large to small customers—it will not lead to new cross subsidies.

versa); it will not lead to new cross subsidies going in a different direction.

D. Power Plant Pollution

Lower prices and no subsidies for conservation will mean *more* consumption of electricity. Should we worry that they will mean *overconsumption* of electricity? Power plants do, after all, pollute. Shouldn't regulators take pollution harm into account in assessing the desirability of retail competition?

The short answer is *no*, PUCs shouldn't take environmental ex-

ternalities into account because they are already internalized in other ways. As Richard Pierce and I have argued at length elsewhere, based on the best available estimates of pollution harm, the harm from power plant pollution is largely internalized by virtue of fuel taxes and other market-based environmental regulation *already in place*, and state PUCs can do very little to internalize any remaining harm. They're simply the wrong agency, with too narrow a jurisdiction.²⁶

Pollution is not zero. Pollution *harm* is not zero. But power plants already pay a market price for their emissions that forces producers and customers to internalize that harm. No further PUC regulation is needed, whether through environmental adders or other means.

The principal potential exception to the internalization of pollution harm is greenhouse gases. Here, however, we can sidestep the ongoing debate about the magnitude of harm from global warming. Global warming is a global problem requiring a global response. The benefit to *any one state* from reducing CO₂ or methane emissions is virtually zero. The reductions will be spread around the globe. If the citizens of California, say, want to help other people around the world, that's a worthy goal. But that's a political decision, not a PUC decision. And one suspects that there would be little public support for more foreign aid to be provided by individual states, let alone aid to be delivered in the peculiar

form of lower greenhouse gas emissions.

One can take the case for PUC unconcern with power plant emissions a step further. Full market competition may well, over the next 10-20 years, lead to lower total harm from power plant emissions. Retail competition will accelerate the replacement of old, high heat-rate plants, many of which are subject to minimal environmental controls, with new, more efficient, low-polluting plants. Total power plant emissions could well decline, despite increased consumption. Moreover, lower electric prices will cause some energy customers to replace direct burning of fuel with electric power. This energy source substitution will also reduce pollution.

The careful modeling needed to predict reliably whether fully competitive power markets will in fact reduce pollution over the next couple of decades has not yet been performed. The results will surely depend on the pollutants, and on the type of capacity being replaced and added. Nonetheless, one can make some general predictions. Retail competition cannot increase or decrease total power plant emissions of SO₂, because the federal SO₂ marketable permits plan caps total power plant emissions. Any substitution of electric power for other burning of sulfur-containing fuels will reduce non-power plant emissions. Retail competition seems likely to reduce NO_x, VOC, and particulate emissions in many areas of the country, due to

a combination of EPA requirements that new power plants located in ozone nonattainment areas offset their NO_x and VOC emissions with reductions by other sources, and faster replacement of very dirty old plants. Greenhouse gas emissions are likely to increase slightly, though this depends on how quickly nuclear plants (which have zero greenhouse gas emissions) are displaced, and on the mix of coal



and natural gas in new power plants (coal produces much more CO₂ per kWh).

VI. Central Pool vs. Direct Trading

There are two competing models of how retail competition should be implemented. The first is a standard direct trade model, in which a supplier and a customer enter into an agreement for electric services. In this model, the supplier arranges for "wheeling" of power over electric wires to the customer. This model treats as a manageable complication the

problem of loop flow — that once electric power leaves the power plant, the laws of physics, rather than of contract, determine where within the power grid it ends up — and the related problem of transmission line congestion. That assumption may be a reasonable one in areas of the country where most transmission lines are not congested.

The second approach is William Hogan's "central pool" model. In Hogan's model, all power producers sell power to a monopoly transmission utility ("Poolco") at spot market prices. As with direct trading, transmission and distribution can be located in separate entities. Poolco can own transmission lines itself or, in effect, rent them from utilities. Poolco would charge rates that equal its cost to purchase power plus a regulated markup to cover transmission costs. A power producer can offer power supply to a customer (or a distribution utility) at a different price than Poolco charges by entering into a side contract with the customer for payment of the difference between the price charged by Poolco and the contract price.²⁷

The similarities between the two approaches far outweigh the differences. *If wholesale markets are fully competitive, transaction costs are zero, and regulators faithfully seek efficiency in electric power production and use, the two approaches are equivalent.* We are in a Coasean world²⁸ where relative transaction costs and relative risk of inefficient regulation determine which approach will work best.

It is likely that neither direct trading nor the central pool is a clear winner in all circumstances. My own best guess is that direct trading — in which contracts with pool-like features will surely evolve over time — is probably the better default regime if congestion is relatively low, or a short-term problem that can be solved by building more transmission capacity. In contrast, a pool is probably the better default regime under conditions of sustained transmission line congestion.

Given uncertainty about which approach will work best, regulators should strive to let the market decide the issue. In a world where the default regime is direct trading, power producers and utilities can (albeit with nontrivial coordination costs) develop a pool if there are competitive advantages to doing so. Regulators should facilitate establishment of pooling arrangements to compete with direct trading, if private ac-

tors are willing to take the lead in setting up a pool.

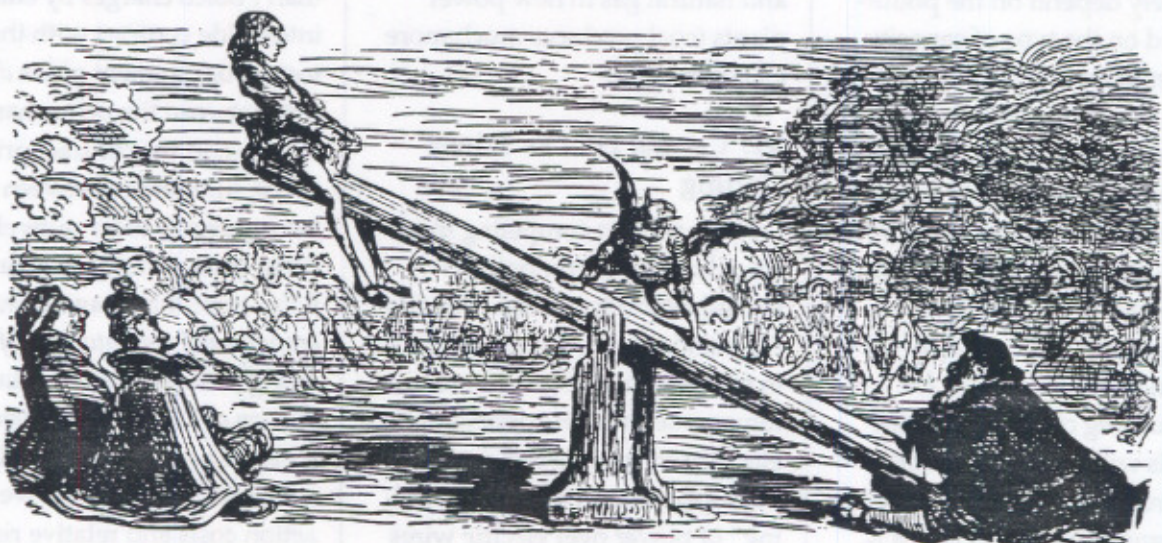
Conversely, if regulators make the central pool the default regime, they should make it nonexclusive so that it must compete with direct trading. If the pool is more efficient, it ought to win the competition.

If the two approaches are allowed to compete, electricity markets are likely to evolve toward a hybrid approach. Stock markets offer a useful analogy. Today, most small stock trades are handled rapidly and automatically, in both dealer and auction markets, through centralized arrangements that are analogous to pooling and economize on transaction costs. At the same time, large trades are mostly negotiated off the exchange in transactions that are analogous to direct trading. As in electric power markets, there is an important network externality — involving trade transparency — that requires regula-

tory oversight. Overall, the complex mix of on- and off-market trades defies any attempt to offer a single model of how to efficiently trade common stock.

Three important regulatory features affect the relative merits of the two approaches, and reinforce the value of letting market evolution determine the winner, or the winning hybrid. First, the pool approach is complicated, and will likely produce a longer transition period — which may be the (unstated) reason why utilities and other losers from full competition, thus far, mostly favor it. Other things equal, that's a reason to favor direct trading as the default rule.

Second, to work optimally, both approaches require a fully competitive wholesale market. Yet we will continue for some time to have substantial participation by vertically integrated electric utilities. Integrated utilities have an incentive to manipulate claimed



Poolco or direct trading? Why shouldn't they coexist?

transmission costs to benefit themselves as power suppliers.

Whether the central pool produces greater or lesser risk of this type of self-dealing is likely to depend critically on who controls Poolco. Current proposals involve making Poolco independent of both power generators and distribution utilities, but it is too soon to tell how ownership will in fact evolve. A Poolco controlled by utilities could well produce more transmission cost manipulation than direct trading with regulatory oversight of transmission contracts.

Third, transmission will remain largely (under direct trading) or entirely (under a central pool) a monopoly. A monopoly transmission utility can generate funds by surcharging all power delivered from the pool to customers. This gives the losers from full competition some hope that all will not be lost in the transition to retail competition. Utilities can hope to recover more of their sunk costs; environmentalists can hope for continued subsidies for DSM and "renewable" energy sources and for somewhat higher electricity prices; IPPs can hope that their existing above-market contracts will be honored.

It is not immediately apparent whether a central pool or direct trading carries greater surcharge potential. Both involve a monopoly or near-monopoly over transmission, which creates the potential for surcharge; both involve complicated jurisdictional questions about what agency — FERC or PUCs — has authority over

which specific charges. However, the losers from full competition seem thus far to believe that their chances of preserving subsidies or recovering sunk costs are higher with a central pool. That, in turn, should give pause to others who are worried about regulatory misuse of the surcharge power. If the central pool is the default legal regime, an important way to limit its surcharge potential is to allow competition from direct trading, including construction of (largely) dedicated transmission lines.



VII. Conclusion

The range of choices open to PUCs is steadily narrowing. Retail competition and its close substitutes, like municipalization, are coming whether anyone likes it or not. Greater competition is being driven by technological changes in electricity transmission, by new high-efficiency boilers and gas turbines that have made many of today's power plants obsolete (advances that are themselves partly a result of wholesale competition), by the massive inefficiency of many rate-regulated utilities,

and by the savings that electricity customers can realize by bypassing utility systems and leaving a utility's sunk costs to be paid by someone else.

PUCs can try to manage the transition, accelerate the efficiency gains, maybe steer the process a bit, and allocate among investors, large customers, and small customers the unpleasant legacy of sunk costs that the old rate regulation system has left behind. Or they can fight the transition and find themselves dragged along with it anyway, with much less control over the process.

We are seeing, in the trade press, an extended debate about whether retail wheeling will really produce efficiency gains.²⁹ Anyone who is familiar with the long theoretical debate among economists over whether central planning is more efficient than market allocation of goods and services can only find the debate amusing. The central economics lesson of this century is that imperfect markets work a lot better than imperfect central planning.

But the proof isn't to be found in academic debates. It's to be found in the real world, as consumers look for bargains and ask regulators to get out of the way. It's to be found as we ask how we ever built a system that delivers power to residential customers like me at 150 percent or 200 percent of what the market-clearing price ought to be. I live in Con Edison territory. I get a lesson in utility inefficiency every month, when I open my utility bill. ■

Endnotes:

1. For national write-off estimates, see Charles Studness, *Estimating the Financial Cost of Utility Regulation*, PUB. UTIL. FORT., Nov. 1, 1993, at 48; Steven Anderson, John Graham & William Hogan, *Electricity Transition Costs* (Harv. Elec. Pol'y Group working paper, Oct. 22, 1993); Richard Pierce, *The State of the Transition to Competitive Markets in Natural Gas and Electricity*, ENERGY LAW J. (forthcoming, 1994). For California estimates, see California "Gravy Train" Challenged, PUB. UTIL. FORT., July 1, 1994, at 8 (report by Economic Sciences, prepared for the California Division of Ratepayer Advocates estimates that California consumers pay \$6.4 billion per year more than competitive rates, implying a writedown in California of \$50-60 billion); Testimony of Jeffrey Skilling, CEO of Enron Gas Services Group, Cal. Pub. Util. Comm. hearing transcript at 269, 271 (June 14, 1994) (undocumented estimate that California consumers pay \$8.9 billion extra per year, relative to electric rates in neighboring states).

2. FERC is already moving in this direction. See, e.g., *What's Discrimination: FERC Rewrites the Book on Transmission*, ELEC. J., July/Aug. 1994, at 13.

3. See, e.g., Louis Kaplow, *An Ex Ante Perspective on Deregulation*, Viewed Ex Post, 15 RESOURCE & ENERGY ECON. 1 (1993); Robert Michaels, *Stranded Assets, Stranded Contracts, and Stranded DSM: Transitional Compensation in Electricity and Gas* (working paper 1994).

4. See, e.g., Irwin Stelzer, *Stranded Investment: Who Pays the Bill?* (Amer. Enterprise Inst. 1994).

5. See Jonathan Rabinowitz, *Suffolk Aims to Buy Cheaper Power Off Island*, N.Y. TIMES, June 10, 1994, at B4.

6. See, e.g., *Michigan Industrials Fund Studies Weighing Municipalization in 2 Cities*, IND'L. ENERGY BULL., June 3, 1994; Seth Lubove, *Another Monopoly Bites the Dust*, FORBES, May 23, 1994, at 42.

7. *Detroit Ed Cuts Deal for Big 3*, ELEC. DAILY, Aug. 5, 1994.

8. See, e.g., Pierce (1994), *supra* note 1.

9. This is already happening to a degree, as utilities negotiate their way out of uneconomic power supply contracts, at prices that reflect the power producer's recognition that the alternative is litigation, with uncertain outcome. See, e.g., *NY Approves NUG Buyout-cost Pass-through*, PUB. UTIL. FORT., June 15, 1994, at 52.

10 See California Pub. Util. Comm'n., *Order Instituting Rulemaking on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation* (R.94-04-031, Apr. 22, 1994).



11 See Southern California Edison, *POOLCO: An Independent Power Pool Company for an Efficient Power Market*, ELEC. J., Sept. 1994, at 42 (supporting central pool approach to retail competition); Larry Ruff, William Hogan & Donald Garber, *An Efficient Wholesale Electricity Market: Using a Pool to Support Real Competition*, ELEC. J., Sept. 1994, at 48 (same on behalf of San Diego Gas & Electric). The third major California investor-owned utility, Pacific Gas & Electric, currently favors a direct trading approach to retail competition.

12. For example, new technology, which would have emerged at the same date irrespective of competitive conditions in the industry, can cause a write-off of old assets even if those assets were efficiently created. But if the new technology would have emerged

earlier in a competitive market, then the write-off reflects regulatory dampening of incentives to innovate. To take a second example, if regulators prescribe unduly long asset depreciation periods, then write-offs to catch up to a more realistic depreciation schedule needn't indicate inefficiency. On the other hand: (i) roughly \$25 billion in excess costs associated with nuclear power plant construction have already been written off after prudence reviews, and thus are excluded from the current write-off estimate; and (ii) the write-off estimate does not take into account underfunding of nuclear decommissioning costs (decommissioning cost estimates vary widely, but underaccruals could easily total \$40-50 billion). Note too that the progressive tightening of environmental rules over the last 25 years, typically with stricter regulation of new than of existing plants, gives existing plants a large cost advantage that is unrelated to efficiency but, other things equal, reduces the need to write down old assets.

13. In New York, for example, a substantial part of Con Edison's 14c/kWh retail rates can be traced to high distribution, transmission, and general overhead costs. Some of these costs may be an unavoidable result of operating in New York City, but it is unlikely that all are.

14. An early example of these incentives at work is reported in *SDG&E Revives Holding Co. Plan, Would Spin Off Genco*, ELEC. DAILY, Aug. 4, 1994, at 1 (deintegration proposal by SDG&E in wake of CPUC retail competition proposal).

15. But only rough justice, because Utility B may also simply have suffered the misfortune of having had worse regulators than Utility A. For example, many utilities unsuccessfully fought PUC requirements that they sign power supply contracts with IPPs at rates that the utilities claimed at the time were too high. In hindsight, these utilities were right.

16. See, e.g., *Stranded Investment Armageddon in N.E.*, ELEC. J., Apr. 1994, at 3;

Central Maine Power, Looking for Relief, Strikes Deal with Regulators, ELEC. J., May 1994, at 11 (news articles describing Central Maine Power's two-front battle against both regulatory disallowances and a municipality's efforts to switch to a lower-cost power supplier).

17. See Bernard Black & Richard Pierce, *The Choice Between Markets and Central Planning in Regulating the U.S. Electricity Industry*, 93 COLUM. L. REV. 1339 (1993).

18. See, e.g., Black & Pierce, *supra* note 17, at 1381-85, and sources cited therein; Paul Joskow, *More From the Guru of Energy Efficiency: "There Must Be a Pony!"*, ELEC. J., May 1994, at 50.

19. In principle, a DSM surcharge could also be added to the transmission rates charged by a monopoly transmission utility. However, the *Cajun Electric* case, which reverses a FERC order authorizing Entergy to use a transmission surcharge to recover stranded investment costs, casts doubt on FERC's power to authorize utilities to use transmission charges to cover DSM costs. *Cajun Electric Power Coop. v. FERC*, ___ F.3d ___, 1994 WL 326863 (D.C.Cir.1994).

20. Early evidence on the reliability of IPPs suggests that they are at least as reliable as utility plants. One cannot yet determine whether this reliability advantage will persist as the plants age. See, e.g., Lawrence Kolbe, Sarah Johnson & Johannes Pfeifenberger, *Banking on NUG Reliability*, PUB. UTIL. FORT., May 15, 1994, at 26.

21. For reviews of the available storage options, see Fred Harty, Fred Depenbrock, Patrick Ward & Daniel Shectman, *Options in Energy Storage Technologies*, ELEC. J., July/Aug. 1994, at 21; Ron Boucher & Paul Rodzianko, *Advanced Pumped Storage: The Competitive Edge*, ELEC. J., July/Aug. 1994, at 27. For a current pumped storage proposal, see John Holusha, *Harnessing an Underground Source of Electricity*, N.Y. TIMES, Aug. 7, 1994, § 3, at 7.

22. The ability to maintain fuel diversity is sometimes mentioned as an ad-

vantage of the current system. Fuel diversity, however, involves price risk rather than availability. Coal is in ample supply, and now that natural gas prices have been deregulated, there is no reason to expect a return to the price-control-induced shortages of the 1970s. Customers can take the risk of future price increases into account in choosing suppliers. Or customers can sign contracts that put fuel price risk onto suppliers, who will then take this risk into account in deciding on the mix of capacity to build.

23. See Pierce (1994), *supra* note 1.

24. See generally Harry Broadman & Joseph Kalt, *How Natural is Monopoly?*



The Case of Bypass in Natural Gas Distribution Markets, 6 YALE J. REG. 181 (1989). The principal situation where Broadman & Kalt identify a potential for inefficient bypass in competitive markets is when the cost of building duplicative transmission facilities exceeds the benefit from greater competition. This is unlikely to be a significant problem for electric power markets because (i) power will primarily be transmitted over existing transmission lines, rather than over newly built lines; and (ii) the cost of high-voltage transmission is a small fraction of total electric power costs.

25. Some additional scenarios: (i) Uneconomic bypass is more plausible if there is transmission line congestion, because bypass could then, in some circumstances, reduce use of a relatively low-cost utility plant, while high-cost plants continue to run; (ii) Underpricing of transmission services could encourage uneconomic bypass. This seems unlikely, however, because utilities everywhere are doing their best to overcharge competitors for transmission; (iii) uneconomic bypass could occur if the utility retains an obligation to provide backup service to the customer for free. See Paul MacAvoy, Daniel Spulber & Bruce Stangle, *Is Competitive Entry Free? Bypass and Partial Deregulation in Natural Gas Markets*, 6 YALE J. REG. 209 (1989). This scenario, however, requires uncommon stupidity on the part of utility regulators, in requiring utilities to provide backup services to customers that opt for bypass, without letting the utilities charge for this service.

26. Black & Pierce (1993), *supra* note 17.

27. See, e.g., William Hogan, *Efficient Direct Access: Comments on the California Blue Book Proposals*, ELEC. J., Sept. 1994, at 30; William Hogan, *An Efficient Electricity Pool Market* (working paper, May 1994); Ruff, Hogan & Garber, *supra* note 11; Larry Ruff, *Stop Wheeling and Start Dealing: Resolving the Transmission Dilemma*, ELEC. J., June 1994, at 24.

28. Not in the sense of the Coase theorem, which requires zero transaction costs, but in the sense in which Coase intended his work on social cost to be understood. See RONALD COASE, *THE FIRM, THE MARKET, AND THE LAW* (1988).

29. Hogan agrees that a nonexclusive pool is feasible, and has proposed it informally as a valuable test of whether the pool in fact is more efficient than direct trading. Letter from Prof. William Hogan to Bernard Black (July 20, 1994), at 4.

29. See, e.g., *Symposium: Retail Wheeling — Round I*, ELEC. J., April 1994; *Symposium: Retail Wheeling — Round II*, ELEC. J., June 1994.

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