Currents

Small Change

The Regulatory Record of the Bush Administration

For the past three years, in the name of a kinder and gentler America, the Bush administration has encouraged or allowed a rapid increase in federal regulation. President Bush nominated aggressive regulators to head the Environmental Protection Agency, the Food and Drug Administration, and the Securities and Exchange Commission. More important, the administration endorsed a series of new regulatory laws that will impose substantial costs on the economy on a continuing basis:

- a higher minimum wage
- a complex new physician's compensation schedule for services financed by Medicare
- the Americans with Disabilities Act
- the Clean Air Act amendments of 1990
- the Pollution Prevention Act of 1990
- the Civil Rights Act of 1991.

Moreover, the administration has allowed a weakening of the White House regulatory review process by the absence of a confirmed nominee to head the Office of Information and Regulatory Affairs (OIRA) and by allowing Congress to circumscribe the effectiveness of that office.

The net increase in the costs of federal regulation during the past three years has not been estimated, but the Clean Air Act amendments alone will cost around $30 billion a year when the new rules are fully implemented. The indirect indexes of the magnitude of federal regulation, however, are most disturbing. The number of employees in federal regulatory agencies increased from 106,000 in 1989 to 122,400 in 1992. The number of pages added to the *Federal Register* each year increased from 55,000 to 70,000 in the first two years of the Bush administration. President Bush—who, as vice president, was chairman of both the Task Force on Regulatory Relief and the Financial Reform Task Force—is reported to have expressed recent concern about those conditions, although he endorsed most of the measures that led to those conditions.

The New Regulatory Reform Initiative

Concern about the sputtering economy and increased concern about longer-term economic growth have now led the Bush administration to change course, at least temporarily, on yet another dimension of its economic policy agenda. On January 28, 1992, President Bush announced a new regulatory reform initiative to revise or eliminate regulations, to the extent allowed by law, that inhibit economic growth. As the initial element of that initiative, Bush asked each of the regulatory agencies to refrain from issuing any new regulations for ninety days—except those that are subject to statutory deadlines, those that address health and safety emergencies, and those that may promote economic growth.

Those of us who are concerned about the increasing cost of federal regulation should welcome Bush's regulatory reform initiative. For the following reasons, however, the effects of the ninety-day moratorium, by itself, are likely to be quite small:

- The president does not have the authority to change rules or deadlines prescribed by law.
- The president has no direct authority over rulemaking by the independent regulatory agencies.
- The White House regulatory review staff has been seriously weakened over the past several years.
- Most important, most of the proposed new rules now in the pipeline were drafted by men and women that Bush appointed under laws that he endorsed.

The record of the sixty-day moratorium implemented by President Reagan in January 1981 also leads one to be cautious about expecting very much from the Bush moratorium. Of the 172 rules reviewed during the 1981 moratorium, for example, 112 were approved without change, 42 were revised, and only 18 were withdrawn—and several of the rules changed during that period were later reversed by the courts.

Those who were involved in the regulatory review process in the Reagan administration recognized

that the initial moratorium on new rules was the *least* important of the several elements of the Reagan initiative. The more important elements were the appointment of able, committed deregulators to the regulatory agencies, creating and reinforcing OIRA, and conveying a strong presidential signal to the regulatory agencies to minimize new regulations that inhibit economic growth.

The early record of the Bush initiative is encouraging. Scattered reports from the agencies indicate increased attention to avoiding inefficient or unnecessary rules, and even the independent agencies are participating in the review process. For that initiative to be sustained, however, the Bush administration should reflect on the major lessons from the Reagan record. Stronger measures are necessary to sustain the initiative. One or more of the more aggressive regulators should be replaced. The White House regulatory review process should be strengthened by appointing an able political official to head OIRA or, possibly, by creating a new review office outside the Office of Management and Budget. One might hope that President Bush would also acknowledge that he made a mistake in endorsing one or more of the major new regulatory laws of the past several years.

It is awkward, but not too late, to try to jumpstart the Bush administration in its fourth year. But those of us who bear the increasing costs of federal regulation should not count on it.

W.N.

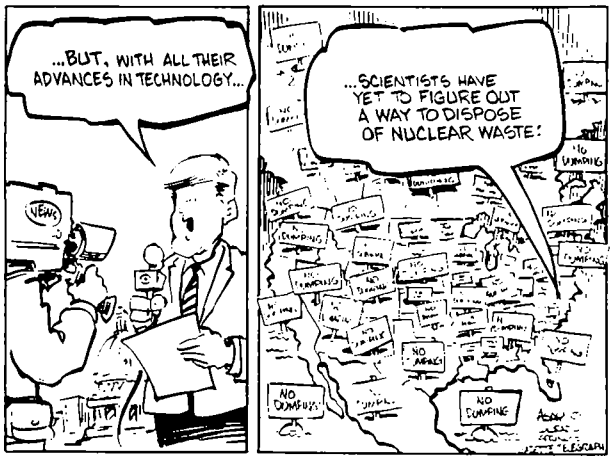
Power to the People

One of the challenges of an editor is to be a professional nonspecialist—to understand and evaluate material on a range of subjects about which one is not an expert. For me, the focus of this issue—the regulation of electric utilities—is such a subject. The reflections of a professional nonspecialist, however, may still be valuable to distill the lessons from the specialists and to identify related issues that are not yet resolved. In that spirit, I offer my own reflections on the focus of this issue.

Rate Regulation

Central station electricity is one of the great bargains of a modern economy. Near universal coverage, low rates, and high service quality have made most of us take electric power for granted—with little thought about the range of public policies that affect this huge industry with total annual sales now over $170 billion. The most important lesson of the articles in this issue, however, is that the regulation of electric power worked as well as it did for about six decades as a consequence of an *accidental* combination of technological and economic conditions. State power commissions beginning in the 1910s have set electric power rates based on the average variable cost of the monopoly utility supplying power in a specific area plus an allowed rate of return on the accounting value of the invested capital. Economists have long known that that type of rate regulation leads to a variety of problems; under static conditions insufficient power capacity is installed when the regulated price is below marginal cost and insufficient power is consumed when the price is higher than marginal cost. Moreover, that type of regulation leads utilities to choose a more capital-intensive production technology than is efficient. In addition, the political pressures on the regulatory commissions sometimes lead to a lower allowed rate of return than on alternative investments. For several reasons, however, most of these problems did not prove to be substantial. Improved generating and transmission technology reduced the cost of new power below the average cost of the existing capacity. And the growth of the market made it possible to realize greater economies of scale. As a consequence, the real price of electric power declined almost continuously for six decades without jeopardizing the financial viability of the utilities.

All of those conditions ended, however, beginning in the mid-1970s. Technological improvement, at least temporarily, appears to have stalled. In most areas the economies of scale appear to be fully exploited. And higher real interest rates during the 1980s increased the financing costs of new plants. Although real power rates have increased substantially since the mid-1970s, the bond ratings of numerous utilities have been downgraded, and the investment in new capacity has declined sharply. The basic features of rate regulation implemented in the 1910s, however, have not changed. The threat of more frequent brownouts has been reduced only because a slow economy and higher power rates have reduced the growth of power consumption and because more industrial users are producing their own power. A major change in the regulation of electric power, however, will be necessary to avoid



the inherent problems of the current structure of regulation. We cannot count on an accidental combination of technological and economic conditions to defer those problems indefinitely.

A New NIMBY Problem

In fact, the current combination of technological and economic conditions has created a new political problem not addressed elsewhere in this issue. In the past the technology of power transmission required most generating plants to be in the same state as the area serviced. In the past two decades, however, the costs of transmission have declined relative to the costs of generation owing to improved transmission technology, the increase in oil prices, and the increased financing costs of new plants. In some areas this has made it possible and efficient to wheel power over much larger distances, sometimes across state lines and national borders. We no longer need a power plant somewhere near our backyard. That has made it possible for governors to veto the siting of power plants in their state without denying access to additional power by their constituents.

And few such powers go unused. Governor Dukakis of Massachusetts substantially delayed completion of the Seabrook nuclear plant (across the border in New Hampshire), and Governor Cuomo of New York ordered the dismantling of the Shoreham nuclear plant on Long Island, both on the grounds that an evacuation plan had not been approved and that adequate power would someday be available from Quebec. Those actions precipitated the bankruptcy of one utility and a bailout of the other and will reduce the potential for economic growth in the Northeast.

The decisions on these plants reflect two problems. New regulations bearing on the evacuation plan were implemented after the sites were selected and most of the investment (several billion dollars in each case) was made, the primary problem that led to the bankruptcy or bailout of the affected utilities. And there was not an institutional procedure to offer the local residents compensation for the risks and other concerns they may have had about siting a power plant in their area; as a consequence, they had an incentive to object to the plants because the risks of brownout and higher power prices would be diffused among all the power users in the larger region.

As in other similar "not in my backyard" (NIMBY) problems, we need a new institutional procedure to select sites for facilities that are locally undesirable but are valuable to a larger community. That problem is common to the siting of landfills, toxic waste dumps, and nuclear materials storage as well as of power plants. The most promising approach to that problem (summarized in the Current by Herbert Inhaber in the Fall 1991 issue) is probably a bidding system in which the local jurisdiction affected by alternative feasible sites would state the price at which it would accept the facility. Some such procedure is necessary both to select the most efficient site (in terms of the cost to both power users and the local communities) and to gain the acceptance of the local community for that site. In addition, the utility should be compensated for the costs of meeting any *change* in regulations after any investment in a specific site. In the absence of some such procedure, the siting of new power plants will continue to be subject to indefinite delays and arbitrary decisions that do not protect the interests of either the local communities or the utilities.

The Regulation of Local Distribution

The articles in this issue make the case for the deregulation of power generation and of user-owned, long-distance transmission networks but do not address whether the regulation of local power distribution should be changed. The standard assumption is that local telephone, gas, and electric utilities should continue to be regulated by current procedures, whatever changes are made in the regulation of other parts of those systems. That assumption may be correct in some cases. There is a reasonable case, however, that a change in the type of rate regulation to which local power utilities are subject would have substantial benefits.

There may be no alternative to the regulation of local power distribution rates based on accounting costs, but regulation based on the specific costs of each utility would continue to provide insufficient incentives for cost control and would involve a continued dispute between the regulators and each utility about allowed costs. The most promising alternative may be to base local distribution rates on the average cost of a *group* of utilities in the same region. That would provide each utility with an incentive to reduce its own costs, would permit all rates to change to reflect changes in the average costs in each region, and would reduce the incentive of the regulators to second-guess the decisions of individual utilities.

The major institutional change necessary to implement this proposal would be to shift the authority for regulating local power rates from the state regulatory commissions to a smaller set of regional regulatory commissions. Each region should be large enough to include five or more utilities, and the regions should be selected to minimize the variance of input costs within each region. Some political entrepreneurship and, possibly, federal leadership would be necessary to implement this change because of the expected resistance from some states. The potential benefits of this change in the regulation of local power rates, however, are sufficient to merit more thorough study and attention by both state and federal energy-policy officials.

Next Steps

The energy bill considered by Congress in 1991, unfortunately, did not address any of those major issues and expired in the closing days of the session over disputes about oil drilling in the Alaska Natural Wildlife Refuge, automotive fuel-economy regulation, and minor changes in the Public Utility Holding Company Act. Reviving that bill may not be worthwhile, because the political price of approving the several minor reforms proposed may be more stringent regulation in other areas. In fact, the only reason to include oil, electric power, and automotive issues in the same bill is to facilitate such tradeoffs. The Bush administration should set its sights higher, propose one or more major energy policy reforms, and find someone articulate enough to make the case for those reforms. That probably will not happen, but that problem is not unique to energy policy.

W.N.

Market Deregulation of the Electric Utility Sector

Politics is the art of wealth redistribution, and economic regulation is the continuation of politics by other means. Whatever rationale for regulation one chooses—natural monopoly, external effects of individual behavior, health and safety, requirements of national defense, ad infinitum—the universal characteristic of regulation, regardless of industry, time, or place, is a redistribution of wealth from political losers to those favored by regulators and politicians. The Interstate Commerce Commission for years enforced rate structures that subsidized passenger trains at the expense of freight carriers and railroads at the expense of trucking in some circumstances and vice versa in others. The Civil Aeronautics Board enforced implicit subsidies for small communities at the expense of large urban passenger markets. The Federal Power Commission subsidized consumers of natural gas at the expense of producers. The list is endless.

Regulation of electricity rates by state agencies has had the same effect. Consumers of electricity during peak consumption periods traditionally have paid less than the full cost of peak service. Thus, they have received a subsidy from consumers in offpeak periods, who have been forced to pay more than the costs that they impose upon the system. Industrial users of electricity have subsidized commercial and residential consumers. Electricity users in rural and suburban areas have received substantial subsidies from urban markets. To say that a given consumer group is "subsidized" is to say that the group receives services at a price lower than the marginal cost of providing them. Accordingly, those forced to subsidize others do so by paying prices higher than marginal cost.

Whether it is more blessed to give than to receive is, frankly, a matter of opinion, influenced heavily by whether one is being enriched or impoverished by the regulators. The losers in this game of taxation by regulation have incentives to avoid the cost of subsidizing others, and businesses have incentives to provide services at a price equal to marginal cost, and thereby to eliminate the subsidy. Thus does traditional economic regulation carry the seeds of its own destruction, as market forces tend over time to find ways to provide services to the political losers at marginal cost, and so to deprive the winners of the largesse generated by political and regulatory institutions.

No stranger to this process, the electric utility sector is deregulating itself, as market forces yield a more competitive environment by circumventing the restrictions and inefficiencies imposed by traditional rate-of-return regulation. But that process of deregulation is unlikely to prove more than partial over the foreseeable future, for reasons that largely are political. Rate regulation has subsidized large, important, and concentrated political groups at the expense of diffused ratepayers and the whole decentralized economy. Moreover, significant amounts of electricity, for which the accounting (but not economic) costs are very low, are produced or allocated by government. Unsurprisingly, the use and pricing of that power is affected primarily by political considerations. The winners will be loath to lose the benefits perceived to be inherent in the current system, while the losers often do not know that they are being fleeced, and, in any event, individually have free-rider incentives to wait for others to do something about the problem. Thus, price controls on some sources of "cheap" power are likely to remain a feature of the electric utility sector. In addition, implicit deregulation of generation is occurring far more rapidly than is deregulation of transmission and distribution. Such *partial* deregulation has important implications for the ability of individual utilities to compete in deregulated bulk power markets.

Competitive Market Forces in the Electric Utility Sector

For about a fifty-year period ending in the early 1970s (except from 1930 to 1933), real electricity rates generally fell. The decline in rates was due to the long-run decline in real oil prices and to technological advance, particularly in thermal efficiencies in generation. Greater scale economies in generation and transmission added to that trend. The long-term growth in electricity demand made it economic to invest in more advanced capital stock. The regulatory system, because of rate-of-return regulation based upon accounting costs, tended to protect the accounting value of obsolete capital and perpetuated other inefficiencies as well. But the long-term downward trend in real electricity prices protected the political viability of the system, despite its inherent inefficiencies.

The hidden problems surfaced in the 1970s. The rapid improvements in fossil-fuel technology slowed greatly. Pollution-control requirements became more severe. Oil prices increased dramatically in real terms, and general inflation drove up prices of other inputs and construction in the electric utility sector. Regulatory lag became a severe drag on utility profitability. That more adverse political environment yielded the Public Utilities Regulatory Policy Act of 1978 (PURPA), which essentially mandated explicit and implicit subsidies for inefficiently small generation facilities. In particular, the law required utilities to purchase expensive power produced by the PURPA generators at marginal avoided cost; that was "small is beautiful" at its most perverse. For generation projects competitive at prevailing rates, no legislation is needed. And heavy investment in nuclear generation, combined with load growth far lower than foreseen in the late 1960s, produced a collapse of the traditional regulatory compact, under which all utility investment undertaken prudently was rolled automatically into utilities' rate bases.

The increasingly adverse regulatory climate provided powerful incentives for utilities to circumvent the attendant economic constraints. Their quest was furthered by the important increase in interconnection of local utilities and the growth in remote sources of power. One effect of the price increases of the 1970s was a dramatic increase in generation costs *relative* to transmission and distribution costs. That meant, essentially, that greater competition among producers became economic for electricity sales in any given geographic market. Those changes in the economic environment surrounding utility operations have yielded several new market institutions that are inconsistent with the traditional regulated "monopoly" approach. The efficiency of those changes will tend to reduce costs and rates over time and thus will tend to erode the traditional regulatory framework.

Greater Long-Term Contracting. One result of the increase in generation costs relative to transmission and distribution costs is greater long-term contracting. Whether the buyer is a distribution company or a utility with insufficient generation capacity, many buyers increasingly will acquire energy through contract purchase rather than through their own generation. With an increase in the number of alternative sellers and buyers, contracting will become increasingly competitive and thus inconsistent with the geographic monopoly underlying the goals and procedures of traditional regulation.

Spot Markets for Bulk Wholesale Power. The short-run analogue of the long-term contract market

is the growing exchange of economy energy, which essentially has created an hourly spot market for bulk wholesale power. The growing interconnection of locally regulated utilities guarantees that behavior, since it is inevitable that the varying conditions and demand peaks facing the individual utilities would make it sensible to engage in short-term trade of electricity. What is important is that that market institution grew in response to market forces impervious to the artificial territorial boundaries created by state regulators. Thus, again, the spot market will tend over time to erode the importance of regulatory constraints. Indeed, the more severe the constraints on prices for electricity, the stronger the incentives to trade such power in competitive markets, after which the costs of purchased power simply can be reflected in rates directly.

Technological Interdependencies. Technological interdependence among utilities results from the difficulty (high cost) of storing power. Reserve capacity is needed to meet demand surges or problems posed by unscheduled outages, and utilities depend upon each other to provide some of it. This interdependence, interestingly enough, will *increase* rather than reduce decentralization of the market, as power pools develop more and more varied contractual approaches for providing on-line, backup, and replacement reserves. Those alternative contractual arrangements, which inevitably will increase in variety as the needs of individual utilities become more differentiated in a growing market, implicitly are a way to decentralize the pools; they are, then, an important dimension of competition. Thus, the contracts provide a means by which distributors can obtain reliable power externally in ways tailored to their individual circumstances.

Multiple Ownership of Facilities. When several utilities finance jointly the construction of large base-load units or transmission facilities, they are implicitly distributing both the risks posed by the investments and the rate-base effects of the capital spending. The typical arrangement is for each utility to receive capacity ownership in proportion to its contribution to the construction and nonvariable operating costs. For generating units, each utility pays a capacity charge whether energy is taken or not and also an energy charge for costs varying with the volume of energy actually taken. That contractual arrangement has grown in importance as risks in the industry have grown, that is, as the "protected" nature of operation under the regulatory umbrella has eroded. Multiple ownership is an effective device for diffusing or pooling risks.

The upshot is that growing competition, by increasing risks, will tend to increase the degree to which multiple ownership of utility capital assets will be observed. And not only will increasing competition spur that sort of contractual arrangement, but the arrangement itself will be self-reinforcing in that it will increase competition: multiple owners of a given generation asset still can compete for power sales into a particular market. Thus, multiple ownership of assets, whatever its purpose from the viewpoint of utilities, will have the *economic* effect of increasing competitive pressures even under conditions of substantial economies of scale, because individual owners of generating capacity or of transmission rights can keep, sublet, or sell their rights.

In short, even with only one producing unit, competition increasingly will arise in the market; scale economies in production do not yield market power in the end product. Even transmission and distribution will be future candidates for the same explicit or implicit deregulation now affecting electricity generation. Furthermore, just as integrated utilities computerize the optimal allocation of electric load among their generating units, so can the allocation of loads be optimized for regions or networks of utilities competing to serve given markets.

Cogeneration. As surplus power has become increasingly available over long-distance transmission lines, industrial and other bulk power users have sought to avoid the historical costs embedded in the rate structures of their local distribution networks. In other words, regulated rate structures tend to preserve the book values of inefficient generating units in rates, although competitive markets would force the value of such assets downward to reflect their relative inefficiency. The output of such generation assets would be priced accordingly. Direct contracting with suppliers of cheap power is a way to avoid those sunk costs and so has grown in attractiveness. Moreover, cogeneration, implicitly subsidized by PURPA, has increased the competitive pressures on bulk rates. Such an environment will increasingly spur distribution companies to seek transmission or "wheeling" rights with which access to cheaper electricity can be facilitated. As that behavior spreads in response to the availability of cheaper bulk power, the effect will be to remove generation capital from state rate bases,

thus subjecting new interstate power sales to FERC regulation instead.

Joint Ventures in Distribution. There is the further matter that the erosion of the regulatory compact has shifted (downside) risk from ratepayers to shareholders. That provides incentives for utility management to examine more closely the difference between market and book value for valuable capital assets. For generating facilities the market value of which exceeds book value, managements have incentives to sell the output from those units in competitive markets, thus capturing the extra asset values for their shareholders. (State regulators would allow only lower rates for the output of such facilities to reflect their depreciated book values.) Therefore, regulated rate bases increasingly will be skewed toward assets whose book values exceed their market values. But that process will provide incentives for the customers of the utilities to seek out cheaper sources of power. Thus, the process, again, will tend to erode the regulatory framework. That is the deeper meaning of the growing trend among utilities of vesting new subsidiaries with existing generation capital assets for purposes of engaging in essentially unregulated bulk power transactions.

As noted above, multiple ownership of capital assets is a mechanism through which competition can prevail despite scale economies or the presence of few or one generation, transmission, or distribution asset. Even in the "natural monopoly" case, such joint ventures can produce competition, and, in particular, pressure to satisfy the differentiated demands of submarkets. For example, distribution networks in the future are likely to be operated as joint ventures by independent distributors, whose proportionate ownership rights would be similar to those of the joint owners of generating units. The independent distributors would compete for commercial and residential (and perhaps industrial) business, with no single distributor given a monopoly in any particular territory. Customers would be free to choose, and presumably would do so on the basis of price level, price structure, reliability, interruptibility, and other attributes of power supply.

Those factors suggest strongly that greater competition and implicit or explicit deregulation are likely to loom large on the economic horizon for the electric utility sector. Consumers will have more choices, suppliers will be able to offer more choices, and competitive pressures will force utilities to cater to the varying demands and preferences of customers and submarkets.

Market Deregulation and Monopoly Government

Regulatory breakdown is the familiar result of market incentives to circumvent the artificial constraints and inefficiencies imposed by the historical system of taxation by regulation. It is a process quite familiar in other regulated sectors. Since the implicit regulatory tax/transfer mechanism is enforced by state regulators, it is limited explicitly by the existence of state boundaries, and implicitly by the perceived need from the viewpoint of the states to be competitive in the race for business investment and siting, creation of employment opportunities, and other such manifestations of the economic climate that conflict with the interest of state government sectors in higher taxation.

Just as substitution of federal activity for state activity—or state activity for that of localities—tends to increase the monopoly power of government, substitution of multistate or federal regulation for historical state regulation would retard the evolution discussed above. For economic regulation, again, is no less a tax/transfer mechanism than the more explicit system of taxation and spending. An expansion in the geographic scope of regulation necessarily would reduce the ability of the private sector to avoid the cross subsidies that inevitably result. It is hardly surprising, then, that some state regulators and their political allies are now calling for an expansion of regional and federal efforts to restrain the ability of utilities to shift the sale of electricity from consumers enjoying implicit subsidies to competitive markets. Those efforts are likely to have grown with the decline in the time horizons of regulators and politicians, a shift raising the economic costs but reducing the perceived political penalties attendant upon greater governmental intrusion. Since the historical cross-subsidy scheme engenders resource waste and reduced aggregate wealth, and since the transfers could be made directly at far lower cost, such efforts to increase the monopoly power of government regulation should be resisted.

Market forces are eroding the ability of regulators in the electric utility sector to enforce cross subsidies among groups, but the lingering effects of past price regulation will preserve important inefficiencies—resource waste—in the system. The political pressures to maintain privileged access to "cheap" power may be offset by other political incentives to end the system of cross subsidization. Foremost among those incentives is the potential desire of government officials to capture the economic value of "cheap" electric generation facilities for other spending

purposes. Let us hope, therefore, that the political aspects of the historical system of rate regulation also carry the seeds of their own destruction.

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The Politics of Electric Power Deregulation

If one were asked to pinpoint a date when the U.S. electric utility industry "hit bottom," it probably would be February 11, 1985, when *Forbes'* cover story, "Nuclear Follies," compared the U.S. utility industry's $125 billion investment in nuclear power plants to the total cost of the Vietnam War ($111 billion) and called the country's discredited nuclear power program "a defeat for the U.S. consumer and for the competitiveness of U.S. industry."

For years, America's electric power industry hummed along as one big, happy fraternity of monopolies, to which senior citizens could turn for steady dividends. But the days of such security began to vanish exponentially with the erection of huge cooling towers beside the nuclear power plants, whose construction costs were rapidly going out of control. While antinuclear activists demonstrated at power plant construction sites, business customers of the utilities began to protest that the growth of electric power rates was increasing their own cost of doing business. Executives from auto, steel, chemical, and other industries joined antinuclear activists in regulatory proceedings to deny utilities the compensation they needed to pay off the rising debt incurred by the construction cost overruns.

Nuclear power was not the sole source of the electric utility industry's declining credibility. Construction cost overruns also plagued coal-fired plants. In addition, utilities that also sold natural gas had to pass through to their customers the higher-than-expected costs of rising natural gas prices from the energy crunch of the late 1970s and early 1980s.

Congressional inquiries into the economic disasters confronting the nation's utilities became commonplace in the early 1980s. Politicians conducted inquiries into how the public trust was being betrayed by sloppy corporate management, inattentive regulators, and incompetent contractors. The "hit list" of consumer wrath included such nuclear plants as Shoreham in New York, Marble Hill in Indiana, Zimmer in Ohio, Midland in Michigan, Seabrook in New Hampshire, and Three Mile Island in Pennsylvania.

The situation was ripe for a revolution in the way the utility business was being run. The seed for such a revolution was planted by a utility industry executive, William Berry, president of Virginia Power Company, who suggested that a less monopolized, more competitive industry might be a better answer. In 1982 *Forbes* described Berry's dismay at the economic inefficiency of plants sitting idle because they could only deliver power when it was needed by the utility that owned the plant. New generating capacity, he said, was not being constructed where and by whom it could be built most cheaply.

Berry proposed breaking up the industry's traditional, vertically integrated structure of generators, transmission lines, and distribution facilities into separate entities with generators competing for sales across common transmission lines to local distribution outlets. Under such a system, Berry thought, generators would be in competition with each other to serve more than one utility distributor. Thus, the generators selling electricity at the lowest cost would have the most utility customers. The days of utility generators' enjoying monopoly status would be over.

Although most of Berry's colleagues dismissed his proposal, a number of key staffers at the Department of Energy thought that his suggestion was consistent with the notion of deregulating monopolies—a centerpiece of Reagan administration thinking.

In 1986 President Reagan nominated Martha Hesse to be chairman of the Federal Energy Regulatory Commission (FERC), the agency with responsibility for regulating the wholesale electric power business. Together with two other commissioners—Charles Stalon, an economist, and C.M. Naeve, an attorney—Hesse laid the political groundwork for bringing more competition into the electric power industry. Her staffers held a series of public inquiries into issues concerning the generation and transmission of wholesale electric power.

Almost immediately, the electric power industry was thrown into turmoil. On one side was the traditional, vertically integrated utility industry, which was determined to preserve the way it had been doing business for more than fifty years. On the other

"HAWKINS HAS SOME SORT OF VISION, BUT IT HAS TO DO WITH THE TWENTY-FIRST CENTURY."

side were large industrial consumers of electricity, who were eagerly searching for new ways to discipline what they saw as an industry out of control, and a new class of nonutility generating companies whose existence was spawned by the controversial Public Utility Regulatory Policies Act of 1978 (PURPA). That act established a favored regulatory environment to stimulate development of solar, wind, geothermal, waste-to-energy, and cogeneration power production facilities as alternatives to traditional utility plants. Ever since PURPA was enacted, utilities fought the efforts of those power producers to gain access to their transmission systems.

Recognizing that consumer unrest with past utility practices was strong, particularly among industrial consumers, and that policymakers and politicians intended to question the way their business was run, a number of utility executives allied with Berry. On September 4, 1987, twelve electric utility chief executive officers sent a letter to all five FERC commissioners to endorse Hesse's effort to craft rules bringing more competition into the wholesale electric power industry. The utilities joining Berry included Consumers Power Company, Duke Power, Baltimore Gas and Electric, General Public Utilities, New England Electric, Eastern Utilities Associates, Boston Edison, Nevada Power, Public Service of New Mexico, Arizona Public Service, and Entergy.

Within a few weeks, the utilities that signed that letter formed an ad hoc coalition called the Utility Working Group. They were subsequently joined by Pacific Gas and Electric Company, the nation's largest utility. Their activities in support of FERC's efforts shocked the rest of the industry.

Under Hesse's leadership, FERC issued notices of proposed rulemakings that—if finalized—would encourage the restructuring of the electric power industry into the more competitive regime that Berry and others had envisioned in the early 1980s. To lobby against the proposed changes a number of other utilities formed the Electric Reliability Coalition.

The activities of the two groups split the Edison Electric Institute into warring factions. The fundamental cause of the split was not over the issue of competition itself, but over what such competition might cause. If laws and regulations were to be changed to encourage greater competition in the generation sector of the industry, just how was that generation supposed to reach the market where the power was most needed? More important, what would happen to the expensive sources of generation that might be displaced on an open market by power from less expensive generators? For example, if an independent power producer located in the service territory of a utility that needed new capacity contracted to deliver the power, the utility could simply agree to make room on its system to accommodate the transaction. But if the independent power producer and the utility were located on either side of another utility that did not want to transmit—or "wheel"—the power over its system because the second utility wanted to sell excess generation from its own system to the first utility, the second utility could traditionally refuse to cooperate in the transaction. In most cases utilities that would refuse to accommodate such wheeling transactions were concerned about protecting their own assets from being "stranded" if their customers were buying generation from other sources. Indeed, lost revenue resulting from a shrinking customer base would prevent them from servicing the debt used to build their generators. Those utilities feared that they would not be able to compete in an open generation market.

For the Utility Working Group the real issue was how best to increase the number of generators in the marketplace. Forcing all utilities into an open access regime would not work. To focus the debate on generation rather than on transmission, the Utility Working Group urged Congress and the administration to support a change to the Public

Utility Holding Company Act of 1935 (PUHCA) to lift restrictions on the ability of utilities and independent power producers to locate their facilities where they might be most needed, either in other states or even in other countries.

PUHCA prevented utilities and independent power producers from issuing securities to build plants beyond their original geographic boundaries. Originally, that restriction was intended to prevent the growth of mammoth monopolies that might abuse their privileges of size. In passing PURPA, Congress partially lifted the lid PUHCA imposed on competition. PURPA said that such geographic boundaries would not have to apply to certain small power and cogeneration technologies. In addition, PURPA gave regulators the power to "force" unwilling utilities to wheel power from PURPA facilities across their systems. Although utilities fought PURPA with all the political power they could muster, Congress ultimately ignored their opposition. Subsequently, some utilities viewed PURPA as an asset. They profited from forming subsidiaries to enter the small power and cogeneration business themselves.

In 1989 executives from the Utility Working Group began to meet with counterparts from the nonutility, independent power industry and from large industrial consumers to see whether they could jointly support legislation before Congress. The discussions were agonizingly difficult at first. The independents and industrials said that they were willing to support legislation to lift PUHCA's restrictions, but they wanted legislation to mandate open transmission access and to limit a utility's participation in such broader wholesale ventures to 50 percent. (PURPA already had imposed a 50 percent ownership limitation on their participation in ventures that qualified for the special regulatory treatment in the law.) The Utility Working Group executives rejected that proposal.

In the meantime Edison Electric Institute executives were going through internal debate as well. Where some utility executives (notably those in the Utility Working Group) said that advocating legislation to change PUHCA would allow the industry to "get in the door first" and help define the debate, others (notably those in the Electric Reliability Coalition) said that such a step would lead to a breakup in the industry and more problems than any chief executive officer could possibly handle. Ultimately, the Edison Electric Institute executives negotiated a position statement saying that they did not advocate any legislation, but that if Congress did pass new legislation, it should conform to certain principles preserving the voluntary nature of such competition.

Sen. Bennett Johnston, chairman of the Senate Energy and Natural Resources Committee, introduced legislation to change PUHCA to enable anyone (utilities and independents alike) to build "exempt" wholesale generators (to signify their exemption from PUHCA) anywhere. The legislation was voluntary in nature; utilities did not have to buy power from exempt wholesale generators, nor would they have to open their transmission systems for mandatory access by exempt wholesale generators. Electric Reliability Coalition executives contended that the Johnston bill would wreak havoc on an industry that had served the nation well for more than fifty years.

When the Bush administration began holding inquiries into the development of a new national energy strategy proposal and announced that changing PUHCA was among options it was considering, the Electric Reliability Coalition went into high gear. The chairman of Carolina Power and Light Company informed Secretary of Energy James Watkins that a PUHCA amendment would lead to legislation to enhance transmission and to allow independent power producers to engage in direct sales to industrial customers. He also expressed concern that independent power producers often are permitted to use a higher percentage of debt to finance construction than are utilities. The chairman asserted, "As a utility increases its dependence on independent power producer power, credit rating agencies will treat its IPP-related contract obligations as debt, resulting in higher cost to finance the utility's other capital requirements."

A new coalition, formed in September 1990, urged Congress to amend PUHCA. That coalition included the Utility Working Group, the IPP Working Group (an ad hoc coalition of independent power producers and contractors), the Cogeneration and Independent Power Producers Coalition of America (power producers primarily developed as a result of PURPA), the Natural Gas Alliance for the Generation of Electricity (mainly natural gas pipelines and producers that saw independent power growth as a growing market for natural gas use), the National Independent Energy Producers, and the Ad Hoc Committee for a Competitive Electric Supply System (a group of industrial consumers). The group called for modifications to PUHCA that would allow for independent power plants to be built along with qualifying facilities and traditional rate-based plants to give consumers the benefits of a more competitive

system. The group could not agree on whether PUHCA legislation should include transmission.

On one side of the PUHCA debate were traditional utilities fighting hard to preserve their vertically integrated monopolies. On the other side was the coalition of independent power producers, fuel suppliers, industrial consumers, and "progressive" utilities that were convinced that change in the industry was inevitable and that helping to define the change was better than becoming victims of the change.

Encouraged by the coalition supporting PUHCA reform, a number of key politicians including Sens. Johnston and Malcolm Wallop and Reps. Philip Sharp, Billy Tauzin, Thomas Bliley, and Edward Markey began sponsoring their own versions of legislation to amend PUHCA to encourage more competition in the wholesale generation business. Sens. Johnston and Wallop sought to limit their legislation only to the voluntary nature of wholesale generation competition. Reps. Sharp, Tauzin, Bliley, and Markey, on the other hand, insisted that language be included giving FERC authority to mandate access on utility transmission systems to facilitate sales of power from independent power producers to other utilities.

Consumer and environmental groups—led by the Consumer Federation of America—joined the fray. They persuaded Rep. Sharp and his colleagues to include language in PUHCA legislation mandating transmission access, a ban on deals between utilities and their own nonregulated affiliates, and regulatory access to all books and records of utilities and their affiliates to guard against hidden cross subsidies.

While it is not possible to predict whether Congress will pass any PUHCA legislation, one statistic stands out: 1990 was the first year that the amount of new wholesale generation capacity owned by independent producers brought into commercial service (5,000 megawatts) exceeded by 300 megawatts that brought into commercial service through traditional utility rate base construction programs. In addition, the number of utilities voluntarily opening their transmission systems for greater access by off-system sellers and buyers was increasing. The push to amend PUHCA represents congressional recognition that it is time to reform the electric power industry so that it can operate efficiently in the 21st century.

John Howes
Washington International Energy Group

One U.S. Export Eastern Europe Does Not Need

Of all the advice that East European countries can seek from the West, antitrust counseling should be low on their list of priorities. As recently reported, however, teams of U.S. government lawyers are being dispatched to Eastern Europe to advise officials there about drafting antitrust laws.

It is tempting to be glib about the prospect of antitrust policy in former communist bloc countries. This is putting the cart before the horse—but they do not even have a horse yet. East Europeans should see it as a good sign if they can motivate a robber baron or two to create some monopoly profits.

Of course, a limited and well-reasoned antitrust policy can be a positive force in promoting competition. But there is a real danger here. The United States should remember its own mixed record on antitrust policy and consider the special circumstances facing Eastern Europe before promoting this export. The East European countries, for their part, ought to reconsider their needs.

Eastern Europe is made up of relatively small countries with miniscule private sectors. Nothing is more important to the development of a small economy than unencumbered international trade—not only in goods and services but in capital as well. Czechoslovakia, for example, is a country of some 15.7 million people, about the same population as Texas. Without free trade with the rest of the world, Texas would not enjoy the benefits of specialization and exchange that access to larger markets allows. Without guaranteeing the free movement of capital, Texas would be unable to attract investment. If Texas built a wall around itself, its standard of living would plummet. The smaller the country, the more essential free trade is to development.

Free trade stimulates wealth creation and development, and in a small country it makes antitrust concerns largely irrelevant. No matter how large their share of the local economy, domestic producers will have no market power if they must compete with producers from other countries. Markets that generally are local, such as services and distribution, tend to be easy to enter on a small scale. Such markets are likely to be intensely competitive under any circumstances. Unencumbered international trade is the best competition policy a small country can have.

That free trade can make antitrust concerns largely irrelevant does not mean, however, that

antitrust policy would be largely benign. The U.S. experience demonstrates the potential harm of misguided antitrust policy. It is only recently, since the early 1980s, that U.S. antitrust authorities began to apply sound economic analysis. Before then, antitrust policy often consisted of attacks on efficient but politically unpopular firms and industries. Antitrust suits brought by state governments or private parties still tend to subvert competition rather than to promote it. East European officials should look closely at the entire history of U.S. antitrust policy before embarking on their own adventures.

East Europeans should also question their U.S. guests on the current direction of antitrust policy. The latest enforcement actions by the Justice Department and the Federal Trade Commission are not encouraging. Justice has lost six of its last seven merger cases (including appeals), which suggests that only the courts are preventing overzealous enforcement. Even more disconcerting, the FTC is again bringing vertical cases to challenge agreements between manufacturers and distributors. Such challenges can only hinder the efficient distribution of goods and services. Eastern Europe has no need for antitrust policies based on vacuous and discredited theories.

The potential harm of misguided antitrust policy to newly emerging economies should not be discounted. First, these countries will be fragile, both politically and economically, and it would not take much hindrance to stifle their development. Investors and entrepreneurs in such an environment do not need to labor under the scrutiny of antitrust bureaucrats. Second, antitrust seeks to regulate stable firms and industries; it does not deal well with uncertainty and rapid change. There will be nothing but uncertainty and rapid change in Eastern Europe as state-owned firms are privatized and new industries arise. Those countries need to be dynamic. Antitrust will only impede their evolution.

As a general matter, the countries of Eastern Europe should not emulate America. The United States is a wealthy nation, able to afford wasteful social programs and distortional regulations. Hong Kong, Singapore, and Taiwan, which have no antitrust polices, are better models in this respect. East European countries have the awesome task of developing the basic infrastructure of capitalism. They have to resurrect the entire concept of property rights, regenerate property and contract law, and establish a workable monetary system. Compared with those issues, antitrust is a detail. With free trade, competition policy can and should wait. Without free trade, those countries will stagnate in any case.

East Europeans have limited resources and much more important things to worry about at this precarious stage in their development. Worrying about antitrust issues shows an unhealthy anxiety about the imagined ills of capitalism. Exporting antitrust to Eastern Europe is like giving a silk tie to a starving man. It is superfluous; a starving man has much more immediate needs. And if the tie is knotted too tightly, he will not be able to eat what little there is available to him.

Paul E. Godek
Economists Incorporated

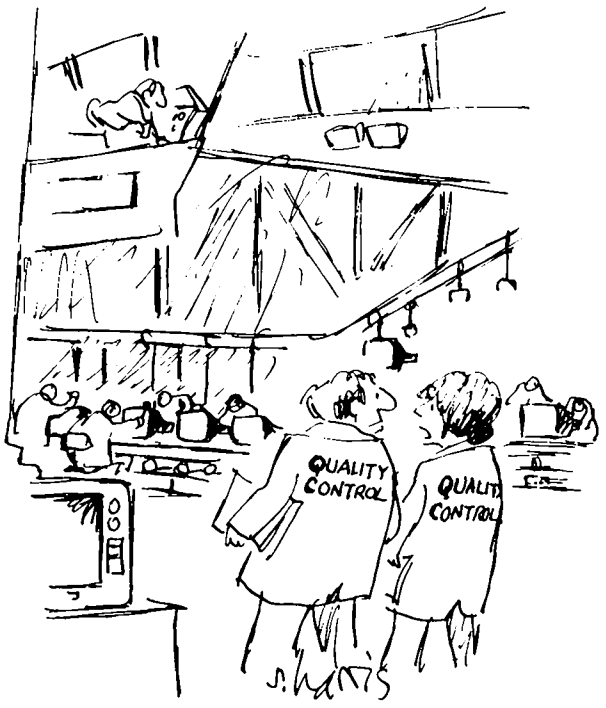
Are the Greens Planning Fridge-Bombs?

The DuPont chemical company has been showing a video of a home refrigerator going "whoomph" in a cloud of flame and smoke—just as you see in an episode of MacGyver. It is a refrigerator whose compressor and coils are filled with an experimental refrigerant fluid difluoroethane, commonly called R-152a. The Environmental Protection Agency (EPA) and many environmental activists want it in new refrigerators.

At issue is consumer safety versus the "green" crusade against global warming and for the preservation of the "endangered" ozone layer in the stratosphere. Pitted against environmentalists' grand global concerns about how mankind is affecting the earth's climate is the nightmare of a chemical company that could be accused of turning tens of millions of common home refrigerators into incendiary bombs! Not just refrigerators, but air conditioners too!

Companies stand to be regulated by the EPA into using what some worry is an unsafe product.

Present home refrigeration equipment runs on R-12 (widely known as Freon, the DuPont brandname)—but this chlorofluorocarbon is being banned because of its suspected role in depleting the stratospheric ozone layer. There are two competing substitutes, named R-134a and R-152a.



"LET'S FACE IT – WE HAVE NO QUALITY AND WE HAVE NO CONTROL."

The EPA and the environmentalists favor R-152a because R-134a is a greenhouse gas and therefore could be a contributor to global warming (although they acknowledge that it is benign for the ozone layer). R-134a supporters say that the greenhouse effect of R-134a is quite negligible—that 98 percent of any greenhouse effect of using a refrigerator will come from the generation of electricity to power the equipment.

Cathy Andriadis, a spokesman for the company, says that DuPont's tests have shown that a refrigerator with leaky R-152a fluid will produce an inferno if the filament of the 15 watt globe is exposed through breakage. She denies the charge that DuPont is working against the use of R-152a because it has committed to massive investments in production of R-134a under the brand name Suva. (DuPont is building factories in the United States and two other countries to make R-134a.) It is clear, however, that the company has made a gamble on R-134a's being adopted.

Car makers have already chosen R-134a, and Joseph Glas, the general manager of fluorochemicals at DuPont, calls R-134a "the workhorse product of the future."

The EPA official in charge of its Office of Atmospheric Programs, Eileen Claussen, accuses DuPont of not giving the R-152a a fair chance to compete with R-134a. She said in a letter to DuPont that the EPA heard from customers that they were being steered away from R-152a. The charge was also made that the chemical company would not provide R-152a for testing.

Merrit Wallick, an investigative writer at the Wilmington, Delaware, *News Journal*, on DuPont home turf, recently added a new twist by reporting that the chemical company faked the video demonstrating the flammability of R-152a by using a 15,000 volt spark plug for the ignition. Spokesman Andriadis scoffs at this as outrageous and absurd and says that the company did not even make the video itself. She asserts that a fridge with R-152a will burn like the one in the video, regardless of how it is ignited.

The whole proposal to use R-152a is something of a throwback to the 1910s and 1920s, when refrigerants were based on ammonia, sulphur dioxide, or methyl chloride. People were poisoned by leaking refrigerants or blown up in terrible explosions. The old refrigerants were also corrosive, so that the equipment did not last long. Thomas Midgley, Jr., of Frigidaire Corporation is credited with development of chlorofluorocarbon compounds that included dichlorodifluoromethane (R-12). Together with DuPont, Frigidaire in the 1930s pioneered the introduction of the whole family of chlorofluorocarbons that have formed the basis for all refrigeration and air conditioning ever since. They were hailed as wonder chemicals that put an end to the fire and poisoning dangers of the old explosive refrigerants.

Appliance manufacturers are taking a low profile in the dispute so far. The Association of Home Appliance Manufacturers has sponsored a testing program for the refrigerator makers, but a spokesman said that there are no official results as yet. The association will not say when it expects them.

A senior engineer at the DuPont Fluorochemicals Laboratory, Ward Wells, says that the company has a long-standing corporate policy not to sell flammable refrigerants. It makes R-152a, but only for use as a blend that is nonflammable and as a propellant. In reply to accusations that DuPont is exaggerating the flammability of R-152a, Ward says that in tests it has produced "very forceful combustion" when ignited.

A leading technical adviser on these issues to the European Community, John McMullan, director of the Center for Energy Research at the University of Ulster in the United Kingdom, is strongly opposed to the idea that R-152a be used in home refrigerators and air conditioners. "We might as well use propane or butane as a refrigerant. If we are going to accept a flammable fluid, why not these readily available,

cheap chemicals?" he asks. He says, "I would not like it [R-152a] in my refrigerator in my house."

Once one introduces any kind of flammable refrigerant for home use, McMullan says, he faces complex problems of how the material is handled, how the equipment is serviced, and what precautions one must take when it is disposed of at the dump.

Meanwhile, in Washington, D.C., the EPA has had the major independent testing agency, Underwriters Laboratory of Northbrook, Illinois, conduct tests on the flammability of R-152a. Reports from the EPA claim that Underwriters Laboratory has concluded that R-152a is a minimal fire risk in a properly designed refrigerator. But Underwriters Laboratory will not release its report because it is the property of the EPA. A risk assessment for the EPA by Arthur D. Little consultants got some publicity for the conclusion that R-152a will produce an average of only one extra house fire per year in the United States.

The contents of the report itself were—in typical Washington fashion—leaked first with the leaker's "spin" being put on what the report supposedly said. Several environmental newsletters reported the "one extra fire per year" conclusion. I managed to get a copy of the Little study titled "Revised Draft Report September 1991," which the EPA is sending out for peer review. The report says, "Both the modelling and flammability testing indicated that the normal (refrigerator) charge of R-152a (5 to 8 oz.) if released and ignited could cause injury to nearby individuals."

The report, as leaked, does not say that R-152a's use threatens only one extra kitchen fire a year, but it does produce very low numbers—two to forty-five extra kitchen fires per year. The report reaches those conclusions by looking at the incidence of refrigerant leaks and damage, the dispersal rates of the refrigerant air mix, and the probabilities of various sources of ignition being present—following a standard fault "tree" analysis.

R-152a is flammable over quite a range of concentrations in air—between about 4 percent and 18 percent. The report says that possible sources of ignition of leaking refrigerant include the defrost heater and other electrical controls. The study quotes Underwriters Laboratory's tests indicating that items such as a temperature controller will provide enough energy to ignite R-152a in about one out of eleven shorts. Protective parts can be damaged and become sources of ignition: "Without its protective glass shield the bare (defrost) heater element has the potential to ignite a flammable mixture of R-152a."

R-152a leaking outside the fridge will dissipate below flammable concentration (4 percent) in about one minute. The report estimates that dangers of an explosion outside the fridge are considerably greater than inside it. Ignition could be caused by a stove or oven or by electrical switches in other appliances such as the dishwasher. Still, the Little study concludes that the most likely estimate is two fires per year in the nation's 89 million refrigerators with a worst case of forty-five fires a year.

That is hard to square, critics say, with 2,100 fires per year in kitchens caused by refrigerators with existing nonflammable refrigerant, as reported by the National Fire Protection Association. Little tries to reconcile the discrepancy by arguing that the association's figure is far too large and that most fires attributed to refrigerators have their source elsewhere. Little suggests that a better estimate is the appliance manufacturers' claim that the true figure for refrigerator fires is about a tenth of the fire protection association's number—about 210.

The vice president for fire analysis and research at the National Fire Protection Association, John Hall, says wearily that industry groups always deny that their products cause fires in the numbers reported. He asserts that there he has never seen a properly researched report substantiating major errors in the fire protection association's figures. He says that in many fires the source of the fire is obvious and beyond dispute, and that this will cover a good fraction of refrigerator fires. That alone makes the 210 figure appear absurd.

The EPA's consultants seem to be catering to their client's desire to minimize the fridge fire problem in preferring the appliance industry's number of 210 over the fire protection association's number of 2,100 and in apparently ignoring so many other sources of hazards.

Fire protection experts say that any study of refrigerator safety involving a flammable refrigerant should pay close attention to secondary dangers. A fire may begin without the refrigerant, perhaps because of damaged electrical cabling's short circuiting or because of a jammed compressor. That can produce overheating and fire in electric cables or the insulation foam of the fridge.

Refrigerant fluid is contained in soft copper or plastic tubing, which are jointed with solder and various epoxy cements. It seems likely that a fire will at some stage melt tubing joints and cause the refrigerant to leak. That is not a problem with nonflammable refrigerant, but with R-152a it could turn a small fire into an explosion or an inferno.

The Little study simply did not consider the consequences of a flammable refrigerant's exacerbating a fire!

If the figure of 2,100 refrigerator fires is in dispute, there is no question that kitchens are the most fire-prone places in the American house. The National Fire Protection Association reports that a third of all house fires or 144,000 a year originate in the kitchen. Most are caused by cooking materials and cooking equipment. Again the Little study fails to consider the extent to which the 142,000 or so kitchen fires not directly originating in the refrigerator might be aggravated by the presence of a flammable refrigerant in a nearby refrigerator.

Also, the whole network of handling, servicing, and disposal of refrigeration equipment has developed since the advent of Freon on the basis that the refrigerant is nonflammable. As one industry observer puts it: "Your average refrigeration mechanic has a cigarette hanging out the side of his mouth. There could be a lot of tragedies out there if he starts having to work with something that can explode on him."

Peter Samuel
Greentrack International