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FEDERAL POWER: The Case for Privatizing Electricity

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EXECUTIVE SUMMARY

The federal government is the nation's largest producer of electric power, via the Tennessee Valley Authority (TVA) and the five power marketing administrations (PMAs). These electricity businesses, along with the numerous federally subsidized cooperatives and municipal utilities, are poorly managed, inefficient, and at considerable risk in the emerging environment of electricity competition.

Two dozen other countries recognizing similar problems with government electricity provision have launched ambitious electricity privatization programs. Participating countries include highly developed nations such as Australia, Britain, Canada, and Germany; developing nations such as Argentina, Brazil, Taiwan, and Thailand; and former communist countries such as Hungary and Poland. In 1995 electricity was the largest category of privatization worldwide, with \$13 billion in sales volume. Over the past decade over \$35 billion of government electricity corporations have been privatized worldwide.

Other countries have privatized electricity for two main reasons: 1) to improve the efficiency and performance of their electric power industry, particularly as competition in this sector emerges, and 2) to raise capital to reduce their national debts. Both objectives

are equally applicable to the United States, but the U.S. federal government has yet to divest a single electric power asset. The Clinton administration's FY 1996 budget called for the privatization of the four smallest PMAs, but this initiative stalled in the 104th Congress, and congressional calls for privatization of the larger TVA and the Bonneville Power Administration (BPA) also have been rebuffed.

Privatizing federal electricity and ending current subsidies would have the following benefits:

- Sale of federal power enterprises would raise \$15-30 billion, which could be applied to reducing the national debt.
- Total direct subsidies to government-owned utilities and cooperatives of about \$7-10 billion per year would end. Of this total, \$3 billion per year is lost government revenue due to the sale of preference power at below-market prices.
- Privatization would lead to substantial gains in efficiency and performance by the privatized utilities. Government-owned utilities worldwide suffer substantial operational problems and face political interference in management and investment decisions, which can be solved by the shift to investor-ownership.
- Putting the transmission grids of the TVA and the PMAs into the emerging competitive market would help promote efficiency and lower electricity prices for all Americans. There is no good reason for the Federal Energy Regulatory Commission to treat these transmission assets differently from those of investor-owned utilities.

Privatization and the end of electricity subsidies could be a win-win proposition. First, existing subsidies are grossly inefficient; about half of the subsidies that flow through various government-owned utilities and co-ops don't reach the final consumers. Thus, a well-crafted privatization which provides these consumers with modest transitional protection from rising prices might push aside remaining consumer resistance. Second, environmental interests are not well served by government involvement in the electric power industry. Below-market pricing increases energy consumption and pollution; privatization legislation also offers an opportunity to reconsider the licenses on environmentally sensitive federal hydro facilities. Third, opening up all transmission access to competitive power delivery will expand price competition, benefiting electricity consumers nationwide.

At a time when President Clinton acknowledges that the era of big government is over and that government cannot solve all our problems, it would be sensible to begin this transition by eliminating the federal government's damaging role in our nation's power markets. In particular, the continued government ownership of the TVA and the PMAs outdated legacies of the era of big government can no longer be justified in the context of the president's framework.

I. INTRODUCTION.

Five years ago, few would have predicted that over two dozen previously government-owned power enterprises (SOEs) would be in private hands by 1995. Yet since 1990, governments have privatized over \$35.6 billion of power assets, partly in response to ongoing poor performances of SOEs and partly due to competing demands for scarce government funds. The pace of privatization, industry restructuring, and regulatory reform will remain brisk outside the United States which, by comparison, has resisted privatizing federally owned electric power assets. The Clinton administration's modest fiscal 1996 budget proposal to privatize four of the federal Power Marketing Administrations (PMAs) Southeastern, Southwestern, Western, and Alaska has not been well received by Congress or by interest groups. The largest federal power entities the Bonneville Power Administration (BPA) and the Tennessee Valley Authority (TVA) were not even considered as privatization candidates by the administration in light of anticipated political resistance.

Electricity privatization has limited interest to the general public in America. As a result, well-organized political constituencies opposing privatization, such as the American Public Power Association (APPA) and the National Rural Electric Cooperatives Association (NRECA), have effectively protected subsidies to their clients, overriding the weakly articulated but more important concerns of efficiency and fairness to taxpayers.

The case for privatization and elimination of subsidies to government-owned power providers and cooperatives merits serious consideration. The estimated annual dollar value of subsidies to government-owned utilities and cooperatives in the United States is \$7-\$10 billion per year. These subsidies simply transfer wealth to a set of lucky citizens who are no less affluent than their fellow citizen-taxpayers. These subsidized individuals are continuing to benefit from the public policy of the 1930s to develop rural America, a task long ago completed. To retain these subsidies interest groups mount massive political strategies (lobbying, campaign contributions, advertising, etc.) that are direct economic waste. Additional waste occurs when public power enterprises perform inefficiently; the predictable foibles of government enterprise are magnified as the power industry shifts to increasing market competition.

The purpose of this paper is to explore the probable effects of privatizing federal power enterprises and the elimination of subsidies in the electric power industry.

II. U.S. ELECTRICITY SUBSIDIES AND FEDERAL POWER ENTERPRISES

A. Overview

The federal government owns extensive electric power assets: dams, power plants, transmission lines, and equipment. The TVA and the PMAs reflected book values of over \$43 billion in 1990. The government's assets range in size from the very large TVA and BPA to the very small Alaska Power Administration (see Table 1). While federal utilities sell only 2.1 percent of total electricity to the ultimate consumer, they generate approximately 9 percent of our power (the rest of which is sold to cooperatives and state and municipal utilities at below-market rates). Another 16 percent is generated by those state, municipal, and cooperative utilities (see Table 2).

Prices received at wholesale (indicated in Table 3) ranged, in 1990, from Western Area Power Administration's (WAPA's) 1.51 cents per kWh to 4.42 cents per kWh for TVA. These prices are set on a cost-plus basis for all, and a number of subsidies, both explicit and implicit, keep many costs from being translated into price (as discussed below). TVA's prices are much higher than the PMAs' because of TVA's partial recovery of costs related to its massive nuclear construction projects, many of which now are deferred or discontinued.

Table 1: Assets, Long-Term Debt, and Financial Ratios for Federal Utilities, 1990

Federal Utility	Net Utility Assets (millions \$)	Long-Term Debt (millions \$)	Average Interest Rate (%)	Ratio of Debt to Utility Assets	Ratio of Utility Assets to Electricity Sales (dollars/kwh sold)
Alaska Power Administration	103.8	102.0	2.9	98.2	0.24
Bonneville Power Administration	14,322.1	14,964.6	4.5	104.5	0.17
Southeastern Power Administration	1,449.4	1,457.4	7.8	100.6	0.13
Southwestern Power Administration	814.1	818.9	2.4	99.4	0.11
Western Area Power Administration	4,202.5	2,818.6	4.8	67.1	0.12
Tennessee Valley Authority	22,907.3	18,805.0	8.5	82.1	0.19
Others	36.7	9.6	NA	25.1	0.06
Total	43,835.9	37,979.1	6.6	88.9	0.17

NA = Not available. Interest rate not available because no interest payments were reported.

Note: Federal appropriations are treated as long-term debt and interest payments on Federal appropriations as interest on debt.

Source: Form EIA-861, Annual Utility Report, and sources cited in Table 2.

Table 2: Electricity Revenues and Revenues per Kilowatthour from Sales to Ultimate Consumers, by Type of Utility Ownership, 1990

Type of Utility	Electricity Generated*	Electricity Sold to Ultimate Consumers*	Share of Electricity Sold to Ultimate Consumers (%)	Average Prices to Ultimate Consumers+	Average Price for Resale+
Investor-owned Utilities	2,111	2,071	76.3	6.8	4.0
Municipal/State Utilities	287	385	14.2	5.9	3.8
Rural Electric Cooperatives	156	200	7.4	6.3	4.0
Federal Utilities	253	55	2.1	3.1	3.1
Total	2,808	2,713	100.0	6.6	3.7

* billion kilowatthours + cents per kilowatthour

Table 2: Electricity Revenues and Revenues per Kilowatthour from

Sales to Ultimate Consumers, by Type of Utility Ownership, 1990

Source: Form EIA-861, Annual Utility Report, as reported in Energy Information Administration, Financial Statistics of Selected Publicly Owned Electric Utilities and Financial Statistics of Selected Investor-Owned Utilities (December 1991). Also annual reports of Power Marketing Administrations, Alaska Power Administration's Divestiture Summary Report: Sale of Eklutna and Snettisham Hydroelectric Projects (April 1992), and USDA/REA, 1990 Statistical Report, Rural Electric Borrowers, IP 201-1 (August 1991).

Several types of subsidies affect the cost structure of government-owned utilities and rural electric cooperatives. These include:

- Loan guarantees and lending at below-market interest rates to the rural cooperatives;
- Exemption from federal and state income taxes;
- Tax exemptions on municipal bond interest;
- Exemption from other taxes (e.g., property, gross receipts, excise);
- Federal hydro power sold at below-market prices (preference power).

Table 3: Electricity Sales for Resale and Unit Revenues for Federal Utilities, 1990

Federal Utility	Electricity Sold for Resale (billion kwh)	Average Price on Resale (cents kwh)
Alaska Power Administration	0.4	2.21
Bonneville Power Administration	56.4	2.27
Southeastern Power Administration	8.6	1.58
Southwestern Power Administration	6.7	1.29
Western Area Power Administration	28.0	1.51
Tennessee Valley Authority	65.4	4.42
Others	0.1	0.72
Total	195.7	3.18

kwh = kilowatthour.

Source: Form EIA-861, Annual Utility Report, and other sources cited in Table a.

B. Two Studies of Government Electricity Subsidies

Two estimates of subsidies, one done for the Edison Electric Institute by Putnam, Hayes, and Bartlett, and the other, by the Energy Department's Energy Information Administration (EIA) make clear that the magnitude of the giving is substantial at approximately \$9 10 billion per year. (Hereafter these studies are referred to as the Edison and EIA studies; for comparison, they are shown side by side in Table 4.) The categories of subsidies are: income taxes not paid; other taxes not paid; below-market cost of capital; and below-market federal hydro. Note that the year of analysis for the Edison report is 1992, while that of EIA is 1990; no attempt was made to revise these numbers to account for inflation.

Among the subsidy categories shown in Table 4, income tax estimates are not directly comparable because the EIA study did not estimate foregone income taxes for nonfederal entities (the primary recipients of the subsidy), while the Edison study estimates total income tax dollars foregone for all government-owned utilities and cooperatives. Dollar estimates for other taxes, which are generally state and local taxes foregone, with adjustments for contributions made by the government-owned utilities and cooperatives, are similar for the two analyses. Subsidy estimates for federal hydro sales at below-market prices also are similar for both studies. Most federal power is sold to government-owned utilities and rural electric cooperatives at prices below prevailing regional wholesale market prices. These organizations can pass subsidies along to their own retail consumers.

Table 4: Comparisons of Estimates of Annual Subsidies by Sources to Publicly Owned Utilities, Cooperatives and Others (\$ Millions)

Subsidy Source	Edison Electric Report (1992) ^a			EIA Report (1990)		
	Government-owned Utilities	Cooperatives	Total	Government-Owned Utilities	Cooperatives	Total
Income Taxes (Federal & State)	\$223	\$161	\$384 ^b	\$1,804	\$1,194	\$2,997
Other Taxes	NA	NA	2,000 ^c	963	964	1,927
Cost of Capital	1,680 ^d	1,140 ^e	2,820	829	791	1,619
Federal Hydro	NA	NA	2,026 ^f	1,401	770	2,171
Total Subsidies to Publicly Owned Utilities & Co-ops*	NA	NA	\$7,230	\$4,996	\$3,718	\$8,715
Federal Sales to Investor Owned Utilities : \$98 ^g						
Federal Sales to Final Consumers: \$1,084 ^g						
Total, All Uses: \$9,897*						

* Rounding accounts for totals not adding

Sources:

a Edison Electric Study, p. B-25.

b These numbers do not include a market return on capital.

c EIA Report, footnote 94, p. 55.

d EIA Report, Table 14, p. 57 and pp. 68 69.

e EIA Report, Table 14, p. 57 and p. 67.

f EIA Report, Table 14, p. 57, Table 19, p. 62, Table 20, p. 65

and pp. 61 65.

g Edison Electric Study, Table C-1, PC-7.

Federal power preference sales serve as an important benefit to government-owned utilities and co-ops, totaling \$2.0 2.1 billion measured at market prices according to the EIA and Edison reports. Another study estimates this subsidy, using the market benchmark approach, as \$1.6 billion for 1993. Table 5 breaks out preference power subsidies by four PMAs (Alaska is excluded) for this study. Fifty-four percent of all preference power subsidies go to BPA customers and another 34 percent to WAPA customers. But the total subsidy at risk, while suggesting a powerful motive for political action to defend the status quo against privatization, is an incomplete predictor. For example, Southwestern receives the greatest subsidy as a percentage of total estimated market value of power sold (60.7 percent). As a result, the average Southwestern customer has a relatively more powerful incentive to invest heavily in defending the status quo, compared to the customers of Southeastern, whose subsidy constitutes only 37.6 precent. All such estimates clearly are sensitive to the selection of the market price chosen as a benchmark. For a broad range of such market prices however, preference power in the United States would continue to be a major income transfer from taxpayers to a small group of customers, most located in the Pacific Northwest region.

Perhaps the most controversial component of the Edison and EIA subsidy analyses is the treatment of missing cost of capital. Often, advocates of public power have described their avoidance of an opportunity cost of capital as an important cost-saving advantage of public power entities over investor-owned utilities (IOUs). This is incorrect. Capital cost denotes a return on scarce capital invested, and no useful commercial evaluation of public power can be done without including the cost of capital.

Table 5: Seiple/Feiler Estimate of PMA Preference Power Subsidies

Federal Power Marketing Administrations	1993 Mwh Sold	1993 Revenue (\$1,000)	Average Rate	\$ Below Market (\$1,000)	% Below Market
Bonneville	53,814,018	\$1,321,805	2.25	\$867,435	39.6
Southeastern	9,014,114	164,858	1.89	99,445	37.6
Southwestern	8,310,189	102,181	1.23	157,943	60.7
Western	27,907,360	511,689	1.83	526,665	50.7
Total	99,045,681	\$2,100,533	2.06	\$1,651,488	44.0

Source: The Facts on PMAs, *Public Utilities Fortnightly*, March 15, 1995, p. 11.

Another way to look at this is to consider the matter from a household perspective. Assets that are not working (earning a market-based, risk-adjusted rate of return) are being diverted from higher-yielding activity. By accepting a lower than market return, say on a bank deposit, worthwhile purchases perhaps taking a vacation or buying a home computer are foregone. This loss is precisely what happens to the federal government and by extension to the taxpayers who fund government power enterprises when they fail to receive a market return on invested capital. Higher taxes or reduced services follow. The view taken by government enterprises that they can evade capital costs also underscores a missing commercial sensibility in government enterprise. What would be impossible for private business is offered as reasonable public policy for government enterprise.

Total explicit subsidies to government-owned utilities and co-ops are in the range of \$7.9 billion per year, according to the Edison and EIA studies. According to the Edison study, removing the subsidies would lead to a 1.43 cents per kWh increase in municipal utility rates and 1.85 cents per kWh in coop prices, increases of 24 percent and 29 percent, respectively. As a rough measure, without these subsidies the ultimate consumer prices shown in Table 2 would become 7.33 cents per kWh for municipals and 8.15 cents per kWh for co-ops. These prices are well above the 6.8 cents per kWh for the average IOU (using 1990 data).

Ironically, much of the subsidy evaporates before it reaches the final consumer. For example, using the pricing data in Table 2, final consumers of the munis and the co-ops, if they received the full value of subsidies (1.43 and 1.85 cents per kWh), would have paid an average electricity price of 5.37 and 4.95 cents per kWh respectively. In fact, as the table shows, these consumers paid 5.9 and 6.3 cents per kWh.

Approximately \$2 billion to muni customers and \$2.7 billion to coop customers \$4.7 billion in total vanishes. This leakage is about half of all gross subsidization. If public policies are intended to redistribute income to these consumers, the mechanisms for doing so appear to be highly ineffective.

This analysis of government-owned utilities and co-ops confronts the claims of the APPA and the NRECA that they are doing quite well. For example, using 1990 data, the APPA estimates the amount of subsidy public power receives would account for only a small impact, pushing public power prices up by only 3.7 percent if removed. In other words, APPA claims that municipal and cooperative prices would still be far below the IOU rates, and that the lower prices reflect economic efficiencies of public power relative to IOUs. That conclusion is not supported by evidence. The APPA simply did not account for all of the subsidies received, as we have seen.

If their prices were higher than those of nearby IOUs, government-owned utilities and co-ops would face widespread, negative consumer responses. Because they depend on the political protection given by an extensive grass roots constituency, APPA's and NRECA's intense political campaign against privatization is understandable. A further response by public-power interests to charges that they are heavily subsidized is that IOUs, too, are subsidized. In particular, they point to the IOUs' use of deferred taxation and accelerated depreciation as special tax breaks which the munis and co-ops cannot take advantage of. Indeed, utilities do use such tax law to their advantage, as can any U.S. firm filing income tax returns. If the government entities were paying income taxes, the amount they would pay also could be reduced in a similar fashion.

Public power advocates also voice the opinion that the federal preference power sales by the PMAs are economically sound because they cover all operating and maintenance costs and return capital expenditures plus interest coverage to the federal government. This steady stream of revenue, they suggest, would be jeopardized by privatization. Quite the opposite is true. Revenues to the U.S. Treasury have been reduced for many decades by underpricing PMA power. Selling the assets of the PMAs would correct this situation. A shift to more market-sensitive pricing would occur and, as a result, the value of assets sold by the government would incorporate the anticipation of a larger profit flow. Additionally, privatization would expose the several fallacies embedded in the accounting practices of the PMAs, as described below.

C. Interest and Capital Subsidies to the PMAs

PMA accounting practices have long reflected interest and capital subsidies. First, interest rates used in recovering capital costs often have been set lower by law than the long-term borrowing rate the government actually faced when construction was begun. Table 6 compares PMA and Treasury interest rates for 20 selected projects. For example, the Bonneville dam project begun in 1981 was charged an interest rate of 3.25 percent. At that time, the average long-term Treasury rate was 12.87 percent; the difference is a large loss to the government, and, by extension, to taxpayers. On average, these 20 projects were charged only 39 percent of the Treasury borrowing rate.

Second, the general practice of the federal government has been to set the interest rate at the inception of a project and apply it to later stages of construction, even when these are separated by many years. This

practice is inconsistent with private lending practices; it permits a PMA to lock in a low rate even when it is unclear when future construction will occur.

Third, prior to 1983, simple rather than compound interest was used for computing interest during construction stages of projects. This ignored the interest costs in succeeding years on each year's interest charges and is inconsistent with normal private business practice.

Fourth, and most importantly, the PMAs have not amortized their federal loans and have extended old, highly subsidized borrowing long beyond the normal amortization schedules that would be required of a private company. Repayments are allowed to vary based on each year's water flows and the demands for electricity. As a result, repayment to capital often has fallen short of what a fixed repayment schedule would call for, often for several sequential years. These large past due capital payments are permitted to remain on the books for long periods (they are the lowest priority repayment item) and are repaid at historical interest rates, which typically are lower than the current government borrowing rates. As a result, the PMAs often have been financially unsound by normal private business accounting standards. As an example, a 1983 General Accounting Office (GAO) report found that the BPA had repaid only \$638 million of a federal investment of \$7.9 billion, and had, over the prior 10 years, paid neither interest charges nor principal in three of those years. Those PMAs that today claim positive net revenues apparently have been able to do so largely as the result of not following generally accepted accounting principles. For example, a Deloitte & Touche review found that WAPA was not operating profitably as claimed but should have reported losses of \$130 million in 1992 and \$250 million in 1993.

Table 6: Comparison of Power Administration and Treasury Interest Rates for Selected Projects

Project	Power Administration	In-service Date	Average Long-Term Treasury Interest Rate on In-service Date	PA Interest Rate	Percent of Treasury Rate
Pick Sloan	Western	1965	4.21	2.50	59.0
John Day	Bonneville	1987	5.26	2.50	47.5
Keystone	Southwestern	1968	5.26	2.50	47.5
Lower Monumental	Bonneville	1970	6.575	2.50	38.0
Ozark	Southeastern	1974	6.98	2.50	36.0
Hartwell	Southwestern	1963	8.63	2.50	29.0
The Dalles	Bonneville	1960	4.02	2.55	63.0
Washoe	Western	1987	8.63	2.591	30.0
Dworshak	Bonneville	1973	6.31	2.625	42.0
Millers Ferry	Southeastern	1970	6.575	2.625	40.0
Carters	Southeastern	1978	7.89	2.625	33.0
Aspinall	Western	1978	7.89	2.632	33.0
Central Valley	Southeastern	1972	5.64	3.00	53.0

Harry Truman	Southeastern	1982	12.23	3.00	24.0
Fryingpan Arkansas	Western	1984	11.99	3.046	25.0
Libby	Bonneville	1975	7.00	3.125	45.0
Clarence Cannon	Southwestern	1985	10.75	3.125	29.0
Chief Joseph	Bonneville	1985	10.75	3.25	30.0
Bonneville	Bonneville	1981	12.87	3.25	25.0
R. B. Russell	Southeastern	1985	10.78	6.125	57.0

Source: U.S. Office of Management and Budget, Fact Sheet on Reform of the Federal Power Marketing Administrations' Debt Repayment Practices (Washington, D.C., 1990).

In sum, numerous subsidies make their way to the government-owned utilities and cooperatives in the forms of below-market preference power, tax advantages, and various cost of capital (interest) subsidies. Although these benefits are only partly reflected in lower prices to the ultimate consumer, the subsidization places IOUs at a competitive disadvantage as reform and deregulation in the power industry make competition plausible.

D. Competitive Benchmarking

Despite the foregoing points, public power advocates' argument that IOUs also are subsidized has some validity if all power firms are viewed in the context of the more competitive power industry that is emerging in the United States. From this perspective, all utilities have received implicit subsidies due to exclusive franchises which shield them from competitors entering and consumers exiting. These barriers, however, are falling, and this implies that the context for electricity privatization will be an ongoing competitive process, the most likely emerging scenario for the future American power industry.

In such a competitive framework, the subsidies presented in Table 4 are somewhat misleading. For example, some subsidies (such as those related to foregone income tax payments) may be reduced as greater competition brings lower prices and lower profits (hence, lower taxable income) for all utilities. On the other hand, there are large implicit subsidies missing from the analysis done in both the Edison and EIA studies. These are the rents, extra profits due largely to exclusive franchised territories which protect suppliers from direct competition. These implicit subsidies are unsustainable in the coming competitive power market. Moody's Investors Service predicts stranded investment costs for the IOUs alone in the range of \$50 300 billion. Industry consensus is that large losses in utility capitalization cannot be avoided, only redistributed among consumers, shareholders, or taxpayers.

Because a competitive market in electric power will cause losses to any supplier whose survival depends upon subsidies, the government-owned utilities and co-ops have much to fear. So, too, do some investor-owned utilities. But the advent of competition in the power industry will be particularly threatening to firms that are slow to strategically reposition themselves or have poorly suited physical assets for this new environment. How the federal enterprises could most effectively be privatized can be judged, in part, by evaluating how various combinations of these assets would fare in the emerging competitive industry.

E. Problems with Public Power Enterprises in the United States

The TVA's current head, Craven Crowell, believes that the TVA can become a powerful competitor as a government-owned corporation. As a result, he opposes all recent attempts to privatize it, such as the bill sponsored in Congress by Rep. Scott Klug (R., Wis.). Although Crowell argues that a government-owned power corporation is well suited to deregulation, public power enterprises generally have been unable to remake themselves into bona fide competitors for two basic reasons.

First, a state-owned corporation would still remain shielded from some market forces. As discussed above, under competition protection vanishes for all suppliers. Technological change and entrepreneurial initiatives lead to the by-passing of moribund monopolies, and legislation, such as the Energy Policy Act of 1992, offers very limited safe harbors to utilities from competition. But a government-owned TVA would sail into these competitive waters with many subsidies unavailable to IOUs subsidies that would shield them from having to reduce their costs to competitive levels.

Second, these competing government enterprises still would fail to have an ownership structure that permits strong accountability. This failure is the primary economic motivation for privatization. Shareholders generally have equity prices and yield data available to them which permits a continuous appraisal of a firm's performance. For an investor-owned firm, poor financial results signal shareholders and other financial claimants that changing management or selling the firm could be profitable. By comparison, taxpayers' equity stakes in federal power enterprises are not transferable. No shares are held by or for them, nor do they see any other measure of market values. Not only are taxpayer-owners fundamentally ignorant about such performance, they have no direct way to respond even if they were knowledgeable. Therefore, they cannot function as true residual claimants, a vital role of capitalists. As Richard Zeckhauser and Murray Horn have put it:

In private corporations, the shareholders' ability to sell their stocks or to vote out management creates incentives for those who control the enterprise to serve the interests of owners. The very diffuse, nontransferable shareholding that characterizes government ownership, by contrast reduces these incentives. Consequently, those who control the public enterprise pay less attention to the interests of their taxpayer shareholders, and groups with more concentrated interests, such as suppliers, consumers and employees, can influence management to favor them over the taxpayers.

Because financial market discipline is lacking for government enterprises compared to private enterprises, a far greater burden logically should be placed on government to independently audit and control the management of the public organizations. But government monitoring is made more difficult for several reasons:

With no market signals (such as a change in the cost of capital), poor performance can easily go undetected.

Politicians are placed in an uncomfortable position if they vigorously investigate a public enterprise. On one hand, the value of ferreting out problems is slight because voters generally have little interest in the arcane doings of the government enterprises. However, interest groups gaining substantially from a government enterprise predictably will exert strong efforts in defense of the status quo. Without political entrepreneurs willing to buck seemingly poor odds, the defenders of the status quo typically dominate politically. This describes public power politics in America for many decades.

Pay-for-performance incentives are less useful tools within government enterprises because the measurement of performance is not closely tied to financial success or failure. The government owns the stock in the firm; thus financial incentives that are widely applied in private enterprises, such as stock options, are missing. Other output statistics are poor measures of market value and are easily manipulated to the interests of those ostensibly being incentivized.

A substantial part of good performance by a government electricity firm may relate to noncommercial demands, such as providing for recreation or irrigation; when these are stirred in with commercial objectives for power, the performance of the electricity enterprise component is obfuscated.

Thus, it is not surprising that stringent oversight has not been exercised over the federal power enterprises, even though economic common sense strongly suggests that more supervision is required than for private enterprises to attain the same level of control. Paul MacAvoy and George McIssac, writing about several federal enterprises (including the TVA), stated:

"..management has had greater discretion to serve particular purposes and respond to influence group problems at the expense of the more broadly conceived market for final goods and services. But discretion when applied has led to forms of behavior which have been detrimental to the basic public purpose of the organization. Strategic decisions on service offerings, on the level of investment, and on the matching of labor supply to service demand have all proceeded without an adequate economic discipline. The mechanisms used to substitute for such market-based discipline oversight and inspection do not work to a satisfactory degree as a substitute."

Indeed, Congress acted to avoid facing substantial questions regarding the TVA and the PMAs. In 1986, after a Reagan administration initiative to sell the BPA, Congress took preemptive action against those who might again ask hard questions by prohibiting the federal government from funding any study that looked at privatization of the PMAs or the TVA.

The financial records of the TVA offer little information of timely interest to Congress or the GAO. Even in the face of an accumulation of evidence of severe problems facing the TVA, congressional oversight of TVA remained weak. When, in March 1994, the House of Representatives held a hearing on the TVA's nuclear program, it was the first in six years, although TVA's nuclear program continually has been beset with problems. Neither the Office of Management and Budget (OMB) nor the Treasury ever reviewed the basis for lending to the TVA to further this nuclear program. While investor-owned utilities also made some poor investments in nuclear plants in the 1970s, by the early 1980s financial market indicators coupled with state regulators' actions had closed down additional lending for IOU nuclear expansion. By contrast, the Treasury's Federal Financing Bank continued to make loans to the TVA totaling \$17 billion until 1989, when TVA began financing in private bond markets.

Whenever the TVA and the PMAs undertake new business ventures requiring financial capitalization, the risks fall heavily upon ratepayers and taxpayers. They are placed in the position of unwittingly underwriting risky actions in which they have no authority to intervene. Thus, the TVA's current desire to compete in regional power markets suggests that more business risks would be shifted to taxpayers and ratepayers.

Another example of undesired risk shifting occurred in the Washington Public Power Supply System (WPPSS). WPPSS is a municipal corporation owned primarily by the public utility districts (power distributors) and municipalities supplied by the BPA. It began construction of nuclear power plants in the Pacific Northwest in the 1970's, with BPA's ostensible backing. BPA was blocked by law from directly investing in such power facilities. In a scheme known as net billing, BPA lent its financial position as a major marketer of hydro power to implicitly underwrite the construction projects. Preference utilities (those legally receiving BPA power at below market prices) were given the right to offset their construction costs in the nuclear power plants against their obligations to buy power from the BPA.

WPPSS ran into difficulties similar to the TVA's, and, in July 1983, servicing of bonded debt of \$2.25 billion was halted, signaling the worst municipal bond default in U.S. history. Because the BPA was obligated by law to generate revenues sufficient to cover expenses, it was not able to bail out the WPPSS. The legal assessments of losses among various parties, including bondholders, was a prolonged and contentious affair. Ratepayers served by BPA were not immune from the fallout, which came in the form of

higher prices. Ironically, WPPSS's misfortune makes the sale of the BPA today a bit easier the remaining problems of nuclear power rest with WPPSS, and would not affect a private buyer of the BPA assets.

III. PRIVATIZING ELECTRIC POWER: A Worldwide Revolution

A. Scope

Overseas privatizations serve as object lessons for future sales of America's government-owned electric power enterprises, and for that reason are worthy of study. A worldwide revolution in the power industry is underway away from government ownership to investor control, generally accompanied by significant market reforms encouraging entry and competition.

Table 7: Completed Power Privatizations: 1988-95	
Country	Total (\$ Millions U.S.)
Argentina	\$4,652.9
Australia	4,276.0
Austria	400
Belize	14.2
Bolivia	212.5
Brazil	1,195.7
Canada	654
Chile	216.6
China	987
Czechoslovakia	173
Germany (East)	6,607.1
Germany (West)	1,350
Grenada	5.6
Honduras	11.4
Hungary	1,248.3
Malaysia	1,474.3
Peru	912.6
Philippines	98.3
Poland	1.7
Spain	1,300
Thailand	200

Trinidad/Tobago	112
Turkey	114
United Kingdom	13,515.7
Total	\$39,732.9

Source: Data supplied by Fin Mark Research, Inc

Even five years ago, such a shift would have been unthinkable because of the widespread acceptance of two key presumption about electric power:

These assets were seen as part of national infrastructure, with government control essential to achieving key planning objectives;

Electric power was believed to be a natural monopoly, and therefore enterprises should be operated as vertically integrated entities, subject to close government control.

Today, the actions taken by many nations developed, developing, and post-communist challenge these presumptions. In 1995, electric power led all other industries in terms of assets privatized at \$12.9 billion, and this trend should continue. Consider, for example, that large nations such as Australia and Brazil are in the middle of large, ambitious privatization programs, while many former socialist nations, such as Poland and Hungary, are only beginning to move into asset divestiture, and many other countries (virtually all of Africa) have yet to do much, but are being urged to do likewise by the World Bank. Thus, another \$20 billion of power assets privatized in 1996 is a likely forecast.

For most purposes, asset divestiture (sale) is the meaning applied to the term privatization, although incremental private capital can be considered a form of privatization, too. Table 7 shows annual dollar magnitudes of electric power asset divestitures for the 24 nations that have taken action since 1988. Much of the financial capital, technology, and managerial know-how has come from foreigners a surprisingly liberal approach to apply to an economic sector often considered sacrosanct infrastructure.

Table 8 indicates the top independent power producers (IPPs) in the world, ranked by equity investments in 1995. The equity portions held by these companies may not necessarily indicate long-term asset holdings, as some of these assets will be transferred back to government upon the expiration of their long-term franchises. But in many cases the ownership will remain private. The investments in Table 8 can be termed spontaneous privatization, injection of new private capacity into a nation which retains its existing state-owned power firms. These spontaneous privatizations are in addition to the figures in Table 7; hence, Table 7 understates the extent of private ownership in electricity. For example, New Zealand is not shown in Table 7, but it currently is privatizing through incremental investments of this type. A shift to greater consumer choice and market entry has been explicitly coupled with spontaneous privatization in New Zealand and Norway, and the results have been promising a 16-20 percent reported price decline.

Table 8: Top 25 Independent Power Companies by Net Project Ownership*

'95 Equity Rank	Company	July '95	Jan. '94	'94 Equity Rank
		Equity in MW		
1	National Power**	4,465	2,612	2

2	Con. Elec. Power Asia	4,391	1,460	7
3	PowerGen**	3,955	1,977	4
4	Mission Energy	3,463	2,741	1
5	Enron Development	2,638	2,039	3
6	AES	2,316	1,663	6
7	Sithe Energies	2,045	1,761	5
8	U.S. Gen./InterGen	1,909	1,100	11
9	Destec Energy	1,846	1,291	8
10	Southern Electric Intl.	1,615	723	15
11	CMS Generation	1,455	1,112	10
12	British Gas	1,402	1,231	13
13	Cogen Technologies	1,364	1,072	12
14	Cogentrix Energy	996	840	13
15	NRG Energy	982	293	33
16	Midlands Electricity	971	NA	NA
17	Tractebel	928	506	20
18	Electricite de France	898	404	27
19	Tenaga Nasional	879	NA	NA
20	Dominion Energy	872	811	14
21	California Energy	835	176	55
22	Endesa (Chile)	795	NA	NA
23	Wheelabrator	727	713	16
24	GE Capital	715	143	67
25	Energy Initiatives	633	182	54

*Does not include China Light & Power with net equity of 4,611 MW of hybrid utility capacity or its joint-venture partner Exxon Energy, with 5,911 MW; Huaneng Power International, with 3,500 MW of net equity in largely inherited capacity from state-owned entities; the 1,575 MW held by China's Shandong Huaneng Power Development, which is 70 percent state-owned; or Mobil Power, with 1,500 MW of in-house generation.

**Excludes capacity inherited from U.K.'s Central Electricity Generating Board after privatization.

Source: Electric Utility Week, July 23, 1995, from analysis by Independent Power Report, New York, N.Y.

B. Reasons for Worldwide Electricity Privatization

What caused this dramatic reversal of widely held beliefs and government practices? Figure 1 shows the aggregate data graphically and highlights several key events in this brief history. In particular, the British initiative to restructure its power industry, placing the majority of these assets in private hands over the last five years, has been the primary example studied in detail by other nations. Argentine and Australian electric power privatization, for example, share many features with the British. The British made clear that an ambitious electric power privatization could be accomplished in a democracy complete with a maze of contentious interest groups. And as shown in Table 9, they now have demonstrated that it pays off in increased efficiency that, in turn, has permitted lower consumer prices. The British also have sought to develop a way of regulating utility prices and services that does not inhibit efficient behaviors. These efforts have also influenced the course of power regulation worldwide. Last, the British provided a real-world laboratory in how to make the transition from government ownership to investor ownership.

**Table 9: Privatized U.K. Electricity Price Changes
1989/90 to 1994/95**

	Percent Nominal Change	Percent Real Change**
Domestic*	17.4	(5.2)
Small Sites	12.6	(9.0)
Medium Sites	4.6	(15.5)
Mod. Large Sites	5.0	(15.2)
Extra Large Sites	21.9	(1.5)

* Different basis of calculation.

**Approximately 2% greater reduction if RPI measured from beginning rather than the end of 1989/90.

Source: U.K. Office of Electricity Regulation

The British electricity privatization model has been pursued so widely because most nations share an understanding that several objectives can be attained:

Reducing Government Debt. Many governments are concerned about high debt levels, which might cut them off from further borrowing or at least soak up a growing share of the government budget with debt-service costs. Member states of the European Community must reduce their national debt levels in order to meet the Maastricht criteria for economic and monetary union. Developing countries face pressures from the International Monetary Fund and development banks to reduce their indebtedness. Thus, in both

developed and developing countries, privatization has become an important tool for raising cash to pay down accumulated national debts and reduce debt-servicing costs

Removing Constraints on Productivity and Economic Growth. Developing economy has often been synonymous with not developing. Many nations now attribute some of this failure to inferior and costly public power that has crippled the industrial and commercial sectors of their economies. They are privatizing and reforming their electric power sector as a means of enhancing economic productivity. In addition, developing nations generally seek high-quality telecommunications infrastructure, and reliable electric power supply is a basic factor in high-quality telecommunication services.

What are the sources of lagging electric power performance in state-owned power enterprises (SOEs) As with TVA and the PMAs, weak monitoring of management practices and disincentives to serve consumers well are endemic to SOEs; the use of these organizations as dispensers of political favors is predictable. A fundamental premise behind privatization, then, is that it will directly reduce the amount of these nonmarket (government) failures, and therefore lower consumer prices and raise quality of service.

SOE pricing practices also cause economic problems in many nations. Often, as with the PMAs and TVA, electric power is sold to favored consumer groups at far below its marginal cost. In India, for example, a kwh of electricity sold to an agricultural customer costs above 14 cents to produce and distribute, although the customer is charged less than 3 cents. Thus, revenues fall grossly short of costs. Charging higher rates to industrial consumers to cover the underpricing to residential consumers (as is also done by many U.S. municipal utilities) is rarely an adequate response, especially in struggling economies where the commercial/industrial sectors are small. Taxing one group of consumers by charging much higher prices to another group (cross-subsidization) also leads to socially inefficient (but individually rational) substitution measures by consumers.

Politicians everywhere clearly wish to avoid being held responsible either for rate hikes or economic despair. Thus, privatization is seen as a means of off-loading a problem that can no longer be finessed by cross-subsidization, borrowing money, or raising taxes.

Tapping External Markets for Resources. Many developing countries have found their internal capital markets inadequate to finance large public power projects. Obviously, devouring internal financial capital for electricity production means that this capital cannot be used for other public or private purposes. Since little international government lending is forthcoming these days without many strings attached, the primary source of financing is the private world capital market. International lending and assistance agencies now explicitly favor privatization or at least spontaneous privatization of electric power. Recently, the World Bank has reversed its policy course toward electric power infrastructure development. Where once they pressed for state controlled power monopolies, they now push for private ownership. According to a World Bank paper:

Both the World Bank and the IFC explicitly support a major role for the private sector in power supply. The private sector can be an important source of financing for power, a factor that is especially relevant for the financially pressed public sectors of many developing countries. Private power producers also tend to operate more efficiently than publicly-owned facilities, since they normally accept responsibility for project risks, such as construction cost overruns and efficient operation of the plant.

Restructuring (Deregulation) of Energy And Other Markets. Privatization often has been joined to deregulation, a fundamental rethinking about the role of energy markets within a country and region. Governments are moving away from their old role as central energy planners. For private investors, deregulation contains both good news and bad news. The bad news is that government-enforced monopoly status will not be given, making revenue flows more sensitive to the quality and cost-effectiveness of service provided, as judged by customers. The good news is that this openness, if not eroded by excessive regulation, permits the privatized firm to enter new markets and to respond flexibly to changes in its operating environment.

Some nations are privatizing without a great deal of thought about the market processes into which the privatized assets will be placed. Nations that privatize without reforming markets are unlikely to achieve desired efficiency improvements. Investors, aware of the unpromising long-term prospects for flexible market institutions, will be less willing to enter such a market. Thus, sound economic policy often ties market liberalization to privatization. This has been done in Argentina, Australia, Britain, Chile, and New Zealand.

B. Electricity Privatization: A General Framework for Success

The following lessons can be learned from international experiences regarding electric power privatization.

Government has shown no core competency in electric power. Government provision of electric power diverts scarce tax dollars from activities in which the government's role is unique and returns to investments are greater. The oft-used analogy that government's role in the economy should be to steer rather than to row is apt with respect to the power market.

Long-term efficiency, not the dollar value of assets privatized, or debt reduction, should guide privatization. Privatization is often characterized as a means of overcoming immediate fiscal difficulties of government. When this objective dominates, a government's privatization strategy is unlikely to be well-conceived or well-executed. Although short-term debt reduction can often be achieved through privatizing, there need not be a direct correlation, and some nations have chosen to reinvest the proceeds from privatized assets directly back into the industry, or they have used the proceeds to directly enrich their citizens.

Political manipulation of state-owned public power is a fundamental hurdle to an efficient power industry. Government-owned power enterprises invariably have become massive subsidization machines, diverting resources away from their highest-valued market applications and stimulating wasteful political expenditures to influence subsidy flows exercises in rent seeking. In sum, political considerations have overwhelmed sound commercial operation and planning of the government enterprises over the history of the electric power industry in most nations. Eliminating political interference is perhaps the primary reason for privatizing.

Selling power assets to the private sector is complemented by strong property and contract law. The expectation that future government policies and regulations will interfere with private decision rights (in effect, taking private property), reduces interest in privatization from the start. Still, it is noteworthy that many nations with less-than-ideal legal climates have made headway with privatization. Possibly, investors anticipate an improving legal climate. This expectation may be predicated largely on the amount of a nation's economy that is being made hostage to capitalism due to hard-to-reverse commitments made to private ownership and free trade. Given America's relatively strong legal protection for property, privatizing our government electricity enterprises should be practically irreversible.

State-owned power assets often can be usefully restructured prior to privatization. As the British and the Australians have shown, this is done by separating assets in two ways. First, generation (and in some cases distribution) assets are separated from transmission. Second, generation and distribution assets often are split into many smaller holdings prior to sale, laying the groundwork for potential competition.

Deregulating the power industry complements privatization. Along with privatization, market-based regulatory reforms often are introduced to give choices to consumers. This is done by reducing barriers to entry and exit from the power market. In particular, the transmission grid, whether privatized or not, generally is set up to operate as an open network. Services of transmission firms often are unbundled to accommodate a variety of transactions, and entry to the transmission network by many sellers and buyers is permitted. These efforts echo the current attempts to open America's transmission pools to multiple users, such as the ongoing investigation by the Federal Energy Regulatory Commission (FERC) concerning transmission access.

Price regulations can be simple and need not be based on historical costs. Privatized firms generally remain regulated where they exercise considerable market power. However, there has been no shift to American-style (cost-plus) public utility regulation. Instead, simpler devices are employed. For example, price caps are used in Great Britain, and these do less to distort incentives for efficient performance. Since the British privatizations of power began in 1989, the increase in electricity prices has been considerably less than the retail price index. The most recent experience is even more promising. From the second quarter of 1993 to the second quarter of 1995, average industrial electricity prices have fallen by 6 percent, largely due to growing competitive pressures. Even for residential consumers, still captives of their local distribution monopolies, prices have fallen slightly since 1994, after adjusting for the imposition of a value-added tax. Worldwide, there is a greater willingness by governments to depend upon competitive market self-regulation and only to engage in regulation where there is strong evidence of an absence of competition.

Resistance to privatization from consumers can be overcome by applying price caps. Where politically essential to hold prices down, it is vital to do so in ways that do not check the incentive for producers to take cost-saving actions; these incentives largely are absent in United States under public utility profit regulation. Thus, the approach taken by the British of setting price caps, fixed for several years to be a few percentage points under the inflation rate, is an example worthy of consideration elsewhere. In terms of meeting political resistance, a price cap, held in place for a set number of years, is an easily understood notion, and a powerful tool for breaking the resistance of consumers who fear that the marketplace would inevitably yield higher prices with privatization.

Resistance to privatization from consumers can also be overcome by providing them with attractive opportunities for share purchases in newly privatized firms. The best examples of this approach come from the British privatizations of the 1980s and early 1990s. Smaller purchasers, and customers in particular, were given special treatment when shares were offered in the firms being privatized. For example, consumers and other small investors were given a loyalty bonus, meaning that at the end of three years they could obtain one bonus share for every 10 shares continuously held during that period. Consumers were generally given a priority over others in the allocation of shares during a secondary flotation. In addition, the British government permitted small purchasers to buy on installment in many of the utility privatizations, including all of those in the electricity field. They also permitted utility customers to buy shares via installment payments with their utility bills.

While there are costs to encouraging a large proportion of shares to be registered to small owners, the gains of using this scheme may greatly outweigh the costs. The British government viewed consumer share offerings as a minor issue, largely because consumers did not have the political force to block privatization initiatives under their parliamentary system. In the United States, by contrast, federal privatization legislation for the TVA and PMAs can be held hostage by regional consumer interest, now highly dependent on subsidized electric rates. Thus, when privatizing via share offerings, making attractive ownership offers to these entities' customers can play a larger role in the United States than it has in Great Britain.

Indeed, customer share ownership is more economically sensible than an extensive use of price caps to curry favor with customers. Supposedly transitional price ceilings may come to be regarded as permanent political entitlements, thereby hindering future market pricing. By contrast, consumer-owners have greater incentive to encourage market-based decisions by the newly privatized firm.

Resistance to privatization from employees and managers can be overcome by reserving shares in the newly privatized firms to these individuals. Again, privatization in Great Britain provides examples of how this approach can work as an incentive to gain support for privatization. At privatization, some free shares typically worth under \$300 were given to workers, and additional shares were offered on a matching basis (e.g., the employee would buy one share and the Treasury would match it with one or sometimes two shares). Employees were sometimes given discounts on a specific number of shares and always were given priority in purchasing shares over other investors.

These shares were widely subscribed by employees and acted to reduce worker opposition to privatization in Britain. Share offerings to employees, as well as to consumers, have an additional positive effect of fostering general public support for a process that is viewed as disbursing benefits broadly. This technique has been used in Britain in nearly all the large-scale privatizations of the past decade, and has subsequently become almost standard practice in many other nations now privatizing electricity, telecommunications, and numerous other SOEs.

The view that the electricity industry can be mainstreamed to the discipline of the market is now shared by dozens of nations, as well as the World Bank and other major financial institutions. Their perspectives and experiences are useful for America as we contemplate shifting our federal power organizations into the private sector.

IV. PRIVATIZATION OF FEDERAL POWER ENTERPRISES

This section briefly examines the roles that the TVA, the BPA, and the remaining PMAs now play in the energy markets of the United States. Current proposals to change those roles are described, and ways in which the PMAs and the TVA might be sold are assessed. In aggregate, \$15-30 billion could be realized from privatizing all these federal enterprises. This broad range is given because political choices, in particular the degree of protection offered to preference consumers and the conditions placed on hydroelectric licenses, will greatly affect asset values. These guesses are lower than some forecasts, reflecting a presumption that privatization will not occur without some operational constraints on the buyers. Specific proposals for privatization are left for the final Section V.

A. Tennessee Valley Authority

1. Background

Although neither the TVA nor the BPA were on the administration's 1995 list of privatization candidates, both are intriguing prospects. The two are by far the largest marketers of power, selling about 78 percent of all federal power. They also share two other features. Both have been involved in vast nuclear power projects that were substantial failures, and both would fetch far less than book value suggests in an asset sale, in contrast to the other PMAs that are likely to sell at above their book values. The TVA, unlike all the PMAs, has substantial operational and investment independence afforded it as a government corporation.

The TVA stands today as an anomaly in the American economy: the last, large symbol of government enterprise as the embodiment of heroic purpose. It was constructed in an era of grass roots democracy and New Deal activism as a way to lift up the people of an entire rural region. The TVA's early mission was clearly multipurpose: developing the Tennessee Valley region by generating and selling hydroelectric power, controlling flooding, improving navigation on the Tennessee River and tributaries, developing manufacturing of products like fertilizer, and providing recreation. The early TVA was run by individuals with a broad regional or federal viewpoint. Early on, politically savvy TVA managers realized the value of bringing local support to bear on issues related to federal funding, support for TVA projects, and defending against its numerous, pesky opponents, especially neighboring investor-owned utilities. In the 1930s, TVA Director David Lilienthal initiated a policy of bringing private, successful businessmen in communities served by the TVA into local support organizations. Abundant, cheap power became the goal around which support was built. These groups, now formally represented by the Tennessee Valley Public Power Association (TVPPA) and the Citizens for TVA, Inc. (CTVA), came to have great political influence.

The TVA gradually became more commercialized, and by the middle of the century was dedicated primarily to power production and marketing, building coal-fired plants to produce most of its electricity. By the 1970s, the shift from the earlier heroism to being a mere utility wore thin, according to Erwin Hargrove, and TVA searched for a new mission. It found it in technological grandeur. TVA planned and began building the largest system of nuclear power plants in the United States.

Subsequent nuclear failures have deeply affected the current TVA. Seventeen reactors were once planned; only two are now operating (Sequoyah 1 and 2). The rest are either canceled (eight); deferred or in rehab (six); and one is complete but unlicensed. To date, the TVA has written off only \$4.6 billion of nuclear assets. Its 1994 balance sheet still indicates deferred nuclear generating units worth \$6.2 billion and construction in progress at \$9.5 billion. Thus, the necessary writeoffs to bring market realism to TVA accounting have not been completed. Figure 2 shows total assets and revenues and the ratio of total revenue to total booked assets for the TVA and three surrounding IOUs. The latter statistic is a rough measure of asset performance, and indicates that TVA's assets, at book value, are not particularly hard-working. For example, the Southern Company in 1992 produced \$0.43 per dollar of asset; the TVA yielded only \$0.17 per dollar.

The financial and political fallout from its nuclear failures has hampered TVA for the better part of a decade now. In the late 1980s, Marvin Runyon, as Chairman, began to make TVA a more business-oriented enterprise, and now Craven Crowell has taken on this role. Many TVA initiatives under the leadership of these two men have been appropriate and long-needed. Cost controls and accountability for results were emphasized and principles of private corporate management were applied.

In 1995, TVA's management requested the removal of the fence, the prohibition on its selling power outside its region. However, Crowell's quest for expanding TVA's marketing was put on hold in 1995, primarily because of the resistance of the TVPPA, representing 160 distributors of the TVA's power. These distributors fear that misadventures in nontraditional markets might lead to increased prices to them. Faced with this consumer resistance and understanding that, if this fence came down, crossing it probably would be a two-way street, Crowell still believes that deregulation is sweeping through the power industry, and that the TVA must aggressively compete in order to survive. In this regard, he echoes the views of Maurice Strong, Chairman of Ontario Hydro, the large Canadian SOE with similar nuclear woes. However, where Strong campaigns for privatization, Crowell remains steadfastly opposed to it, a curious position for someone to defend who zealously advocates the forces of capitalism in electric power.

2. GAO's Study of TVA's Long-Term Viability

The GAO in a recent report strongly disagreed with the TVA about the wisdom of full competition with surrounding utilities. The report indicates that TVA must eventually recover over \$14 billion in debt tied to nonperforming nuclear plants through higher prices to its customers. The TVA now defers recovery of the costs of these nonproducing nuclear assets, and this has allowed them to hold prices down since 1988. According to the GAO:

Compared to other utilities, the dollar amount and length of time of TVA's deferral are unique. In contrast, IOUs absorb into their rates or write off in a much shorter time frame costs associated with uneconomic plants. If TVA began to amortize and depreciate its deferred assets according to its current amortization/depreciation schedules, its revenue requirements would increase by about \$454 million per year for at least 22 years. If all of these costs had been included in TVA's electricity rates in 1994 ... TVA's rates would have been increased by 9 percent which would have decreased TVA's competitiveness compared to neighboring utilities.

The GAO suggests that, with continued protection from competition with regional investor-owned utilities, the TVA can begin a program of sunk cost recovery, and that a one-time rate increase of 10 percent would allow a reduction of \$5 billion of debt in ten years. Still, the report paints a fairly bleak picture of the TVA's future, even if it follows this course. In particular, they foresee an eventual loss of TVA's distributor

customers through their giving notice (10 year prior notification is legally required) or contract renegotiation, and also through a decline in TVA's industrial load as firms relocate plants, cogenerate electricity, or directly purchase power. As a result, the TVA would, if it followed normal utility pricing principles, be forced to raise rates to its smaller base of remaining customers. This regulatory death spiral is well understood by all utilities that have nonperforming assets and face a degree of competition.

Generally, the accounting response to this situation would be to write off assets, which simply reflects judgment that the federal government's TVA assets are less valuable than the books indicate. But the GAO report struggles to find another way around the facts. The government, indeed, does have strategic weapons that are not available to private enterprises. It can alter the economic environment (to a degree) by the use of political force. Thus, while IOUs may have to struggle with an increasingly competitive marketplace, it is possible to limit competition in order to permit the TVA to capture rents (in the form of above-market prices) from its existing consumers for some time to come. Essentially, the GAO report suggests that course of action.

The GAO report suggests that merely removing the fence would expose TVA, even if it retains its various subsidies, to a competition with surrounding utilities that it is ill prepared to undertake, thereby placing both the U.S. government and public debtholders at risk of default. The report therefore recommends against an immediate dropping of marketing fences, as the TVA desires. The TVA argued for first removing the fence in one direction, to allow TVA to market outside the region, and only later to permit competitors to cross over, but the GAO and many other critics view this public policy prescription as politically unrealistic. Additionally, although a study that TVA commissioned from the Palmer Bellevue consultancy asserts that the TVA is a relatively low-cost producer of electricity in the region, other analysts disagree. Standard & Poor's characterizes the TVA as having higher marginal production costs than its IOU neighbors.

Nevertheless, the GAO report does agree with TVA's management that the world of electricity production and marketing is becoming increasingly competitive and therefore the TVA must, eventually, respond to these pressures. The question is when. Other than providing some general notions for imposing closer oversight, the GAO report says little about how or when this competition should be faced or about the importance of privatization in achieving market-based solutions to the TVA's problems.

Presuming that \$14 billion of the TVA's current \$32 billion of booked assets are nonproducing, the GAO analysis concludes that a sale of assets might not be sufficient to pay off all of the TVA's outstanding debt. They believe private buyers are unlikely to emerge for the troubled nuclear power plants for which the TVA has projected a medium decommissioning cost to be \$300-350 million each. Therefore, although the transmission system and coal and hydroelectric facilities might find eager buyers, a shortfall is probable according to the report, and this would negatively affect the national debt because the remaining debt would have to be borne by the federal government. While this may be true, it simply is descriptive of the facts; it says nothing of the merits of using privatization as a means of increasing the wealth-creating potential of the TVA's assets and thereby reducing the federal government's long-term liabilities.

Thus, the GAO analysis fails to distinguish any means for getting the TVA to face a more competitive future. Instead they propose delaying the encroachment of competition for as long as possible in order not to expose debtholders to existing liabilities. This tactic places the obligation to pay off past losses fully upon ratepayers who would pay higher prices for many years to come, presuming these consumers can be kept from escaping to lower-priced options. During this decades-long period of sunk cost recovery the TVA presumably would be preparing for true competition. How the TVA will learn to compete during a lengthy, undefined transition period in which it will be subjected to closer government bureaucratic controls of its decision-making and in which it will set prices based on cost-plus accounting principles rather than competitive market pricing is not addressed in the report.

Indeed, by delaying privatization, the federal government can impose damage. One becomes a competitive marketer by practicing competitive marketing and facing market discipline, not by hiding behind fences. If the existing collection of physical, human, and nontangible assets making up the present-day TVA are

insufficient for a competitive future, delaying a market test will not increase the value of these assets. Quite the contrary, the wait can easily raise the total social costs by preventing managerial learning about the best competitive practices and the repositioning of assets in ways that do respond to marketplace realities. As the experiences of a multitude of other nations suggests, the form of ownership affects both firm performance and the degree of competition that can be mounted in the industry. If the TVA is truly to test its capabilities in the emerging competitive power markets, then logically it will require facing a market-based accounting of all resources committed to the firm, including owners' capital.

In a startling reversal of his long-time defense of keeping the TVA in government hands, the recently retired chief financial officer of the TVA, William Malec, concludes that privatization of TVA is needed. He points out that: ...selling off TVA is a natural next step to build on the substantial progress made at this New Deal dinosaur during the past seven years. He points to market discipline as a quick remedy for the too-convenient response of government to raising prices when things go amiss; instead a privatized firm would be constrained to search for more efficient operations. Additionally, Malec argues that TVA's costs could be reduced due to the removal of Davis-Bacon Act wage rules, less-liberal benefits package for workers' compensation being needed, and the elimination of staff that solely meets federal government requirements, not the demands of the private power market.

Malec estimates that the sale of the TVA could raise \$10.5 billion, based on an appraisal of how book value might convert to share value. The current cash flows from the TVA (\$1.1 billion per year) also suggest that \$10 billion may be probable, although there is large uncertainty due to future nuclear power plant liabilities. Yet another political concern for private buyers will be any restraints placed on the marketing and pricing practices of a privatized TVA.

3. Packaging TVA Assets for Sale

How its assets are packaged will affect the aggregate sales value of the TVA. The federal government's interest in maximizing the sales value of federal power assets has been articulated by the GAO, but that goal realistically will be restrained by other political objectives. For example, imposing price restraints on the privatized firm, or putting one group, such as consumers, in a more favorable asset-bidding position would lead to lower sales value.

The nonoperating nuclear power plants cause most of TVA's softness, and attempting to bundle them with other generation assets in a privatization could reduce sales value substantially a point often stressed by the TVA in defending itself against privatization. Alone, the existence of nuclear uncertainties is not a valid reason for the government to retain the nuclear assets. Whether held by the government or not, they would have the same technical and operational characteristics. Investor ownership may, in fact, lead to an improvement in how they are managed and therefore in their capital value. But if great uncertainty about liabilities in operating and decommissioning the units exists, then extraordinary discounts might be required in order to sell a nuclear TVA. This argues for a careful analysis of privatization of the nuclear plants; some may prove difficult to privatize, and therefore they could be separated from other TVA assets in order not to delay those latter sales. If nuclear plants cannot be sold, it may be sensible to pay a private party to take ownership of what is judged by the market to be a liability. Economically, the judgment on who best should own nuclear assets should rest on which parties are best positioned to efficiently manage their remaining use and decommissioning. Politically, however, selling nuclear assets may prove unfeasible and the federal government may be forced to retain some or all of the TVA's nuclear plants.

Another privatization objective, a desire to encourage industry competition, has indeterminate effects on the TVA's sales value. HR 313, introduced in the 104th Congress by Rep. Scott Klug (R., Wis.), calls for selling all TVA power assets to the private sector, with an eye to expanding competition in the power industry. This bill would permit splitting the generation assets or selling the transmission assets to different private owners than the generation asset owners. Pursuing this seemingly pro-competitive objective may not be consistent with sales value maximization, for two reasons. First, the restructuring of assets might make monopolization more difficult. Potential purchasers then would bid less due to the loss of monopoly rents. Balanced against this are efficiency and consumer welfare gains. Second, the federal government

might bundle assets for sale that are not as productive as other asset combinations. Assuming that there are nontrivial transaction costs (or possibly legal prohibitions) to a later rearrangement of these assets, then asset divestiture would yield less than it otherwise could.

The key problem in privatizing is to encourage competition by offering productive configurations of assets for sale. In general, the federal administrative bureaucracy and Congress are poorly positioned to capture and use knowledge about combinations of assets that will be efficient in this, or any other, industry; this is the ongoing role best played by the market. Specific policy recommendations regarding the preparation for sale of TVA assets are made in Section V.

B. Power Marketing Administrations

1. Background

In its fiscal year 1996 budget, the Clinton administration placed four PMAs forward as privatization candidates and proposed restructuring the fifth and largest, the BPA, into a federal corporation akin to the TVA. (Tables 1 and 3 show operating and market statistics for the PMAs as well as for the TVA.)

In 1995, several bills on privatizing the PMAs were introduced in the 104th Congress. Among them H.R. 1801 sponsored by Rep. Mark Foley (R., Fla.), would sell all five PMAs. HR 1801 contains concessions to the current recipients of price subsidies (prices could rise by no more than 10 percent per year), and disallows foreign ownership. These conditions clearly would reduce the probable proceeds from a PMA sale, but may make the bill more acceptable to opposing interest groups. The strength of interest-group resistance exceeded the willingness of Republicans to press for privatization in the 104th Congress, and, by summer 1995, the Senate had passed a resolution against the PMAs' privatization, and over 50 members of the House sent Speaker Gingrich a letter opposing the sale of the PMAs. Interest-group concerns must either be allayed or the political coalitions pressing for privatization must be strengthened before PMA privatization can be legislated in the United States.

Four of the PMAs should be relatively easy to privatize. The current revenues from the four PMAs other than BPA appear more than sufficient to generate revenues in excess of a normal return on book value. As a result, even if privatization of the four took place with no anticipated increase in prices, it still could generate considerable value to the government. This suggests that these PMAs will sell for more than the \$3.7 billion that the Department of Energy predicts or the \$4.1 billion suggested by the House Budget Committee. The proposed bid of \$550 million by Tucson Electric, an investor-owned utility, for just the Arizona assets of the WAPA, also supports the view that the assets may go for more.

Other forms of protection for preference power consumers have been suggested. For example, Rep. John Shadegg (R., Ariz.) suggested conversion of all the PMAs to government corporations. Vouchers then would be issued to consumers, giving them an opportunity to gain controlling interest; thereafter, shares would be sold to the highest bidder at auction. This approach, without restraints on reselling shares, would have little effect on ultimate ownership. It would, however, give those equity-holding consumers an opportunity to directly exercise control over the corporation, which they would only do if they believed that they could more efficiently manage than any other party. This is unlikely, and most consumers would sell their shares to those placing a higher value on them. This scheme reduces the receipts to the federal government, transferring wealth to a select group of consumers but gaining their support for privatization.

2. Treatment of Transmission Assets

Another uncertainty for most PMA sales is the future treatment of transmission assets. As the FERC grapples with the rules of access to the transmission systems of IOUs, privatized transmission assets also should be subjected to the same rules. Currently, there is no federal legislation that requires either the TVA or the PMAs to yield transmission access to other power providers so that they may supply current customers of the federal government. Access requirements could be built into any privatization law. There

is considerable agreement that transmission access solutions will substantially expand competition in the American power industry, but it is unclear what the net effect of various transmission policy developments would be on the value of federal transmission assets. The prospects of transmission being far more open to multiple users has not soured interest by private parties in the PMA sales. IOUs, power brokers, independent power producers, and the investment banking community have all expressed interest in purchasing parts or all of the various PMAs. Generally utilities evaluate PMA assets in terms of how they could help them compete more effectively in a far more deregulated marketplace of the near future. The transmission assets can play a pivotal role by immediately expanding the market reach of any provider.

In theory, federal transmission assets could be used as a bottleneck to foreclose competitive entry, but the acquisition of PMA and TVA transmission assets by IOUs and other players would be unlikely to cause monopolization for many reasons. First, the Energy Policy Act of 1992 explicitly requires transmission services to be made available to all wholesale players in the industry, including IPPs, utilities, and power brokers. Second, the FERC has articulated its vision of an industry with broadly open transmission access, and it now seeks to achieve it. The FERC opened a NOPR (notice of proposed rulemaking) in March 1995 to address the issue. Third, the owners of these transmission assets would be unlikely to make rents (profits) from trying to hold up transmission service buyers who increasingly can circumvent transmission. Last, the political pressures for access by those excluded from use would be great.

The view that PMA privatization complements efficient, competitive power market developments is not yet accepted by all. Bruce Driver, speaking for the Land and Water Resources Fund of the Rockies before a House Subcommittee, said:

We do not see how selling Western's transmission assets is consistent with the need to coordinate transmission in the West.... In particular, in the new era of competition in electric service, now spreading even to the retail side of the business, there may be competition for sales to service territory among the transferees, complicating coordination. As a result, we believe that the coordination needed for the development of wholesale markets may best be facilitated by leaving ownership and control of transmission assets with Western.

Transmission coordination is a complex undertaking, but the owners need not be the coordinators. Regardless of the precise nature of transmission asset ownership in the future, it is clear enough that access to a large regional system will be permitted for many participants and many transactions, including direct retail sales. Indeed, it is the push for much more extensive trade under universally applicable rules of access that now provides the incentive for industry participants to acquire transmission assets. Instead of trying to monopolize a few bottleneck transmission miles, they can integrate the use of transmission assets when these assets are owned by many different parties in order to gain network access.

Future grids will operate under rules established for (and perhaps by) users of the regional grids. It is likely that we will see either broader shared user ownership of an entire grid or regulation of current owners that focuses on access conditions and pricing. What Driver fears a less-coordinated regional transmission system is precisely the problem that privatization can overcome because the WAPA, BPA, or SWPA contain only part of the transmission assets required to form a regional grid. In investor hands, these assets can more effectively be woven into evolving transmission arrangements.

3. Hydro Facilities

Another area of uncertainty in the sale of the PMAs is the treatment of the power generated from federal dams. Again, in the words of Bruce Driver: ...selling the generating turbines raises the specter that the West's rivers will be run primarily to meet utility needs to the disadvantage of other river values. Neither of these developments would be in the public interest. As a result, we urge Congress to consider transferring control over only the entitlement to use power generated by the dams, but not the transmission or generating assets themselves. The perceived need to protect rivers and to consider multiple effects of power use on the environment from hydro generation is a widely shared concern, especially in the West. The

WAPA, with 10,000 MW of hydro capacity, and the BPA, with over 22,000 MW, have great potential to affect the environment.

It does not follow, however, that privatization would lead to environmental deterioration. Current subsidized pricing of preference power stimulates power sales, leading to more pollution and reduced river flows. The federal PMAs, working with other agencies of the federal government not private investors are directly responsible for these decisions on use. Privatization legislation offers the opportunity to renegotiate the terms for operating the federal hydro facilities, shaping future dam use priorities. Therefore, privatization could cause improvement from an environmental perspective.

On the other hand, some potential purchasers of these PMA assets see licensing renegotiation as a threat and have argued for the need to hold to existing standards, grandfathering new owners into the old licenses. Additional qualifications on hydro facilities uses would lead to lower bids for these assets and less money for the Treasury. But changes in the licenses do not necessarily reduce efficiency. If we accord environmental attributes a much higher value than they are given under the current political agreements, then revisions that restrict hydroelectric capacity may move in the direction of greater efficiency, not less.

In addition, if private buyers of PMA assets also were forced to limit prices to old preference power customers as a condition of sale, bids would tumble further. The latter action would cause not only a wealth shift from taxpayers to consumers but also inefficiency due to misallocations of power away from the highest-valued use in the market unless preference consumers were given the option to resell this power. With many restraints imposed, some critics of privatization suggest that so little money would be received by the federal government that PMA privatization could be counted a failure. This conclusion misses the point that a lower sales value due to altering the terms of licenses on dams simply acknowledges the opportunity cost of environmental improvements that the government, representing citizens, is absorbing. It also can be considered a signal of environmental values that had been ignored. A lower sales value due to continued price subsidization manifests the capitalized cost of the subsidization. This makes transparent the costs all citizens now bear in order to subsidize a few.

4. Is Bonneville Power Administration Different from other PMAs

The short answer is yes. BPA dwarfs the other PMAs in capacity and revenues. Its preference power subsidies are large and its environmental impact immense, especially with respect to federal hydro facilities on the Columbia River and its tributaries. This breeds an intense factionalism in the Northwest that led the Clinton administration to leave BPA off the PMA privatization list in the fiscal 1996 budget.

Because of these powerful competing concerns low energy prices versus improved environment privatization legislation that is politically feasible might require both hydro licensing restrictions and some protection for preference power consumers. As a result, sale of the BPA would yield much less to the government than if it were sold with no restraints on production or marketing. Like the TVA (and unlike the other PMAs), a privatized BPA's book values probably are overstated. Because so much of the U.S. privatization debate has centered on reducing the budget deficit rather than on placing the assets in their most productive long-term use, a smaller yield on the BPA politically damages the chances of BPA privatization.

The BPA is less likely than the TVA to be saleable as a stand-alone privatized firm or firms in the electric power market. BPA's organizational structure and managerial practices are far removed from those of a private enterprise. BPA was created in 1936 as a temporary agency for regional hydroelectric development and has never had the centered sense of mission that has pervaded the TVA, nor is its accounting system set up as a parallel to the power industry's, as is the TVA's. The highest market value for the BPA probably would result from divesting specific assets to private firms.

C. Forecasts of Divestiture Values

Many analysts have estimated the proceeds that the sale of the PMAs and the TVA might bring to the U. S. Treasury. Estimates for the four PMAs (excluding the BPA) range from \$3.7 billion by the Clinton administration to \$8.9 billion by EOP, a consulting firm commissioned by the Edison Electric Institute. Estimates of the BPA's likely sales value range from a high of \$9 billion to the negative, suggesting that investors might have to be paid to accept ownership. Ronald Utt has argued that the generating capacity supporting the BPA would be worth no more than \$15.7 billion, which is approximately the level of existing BPA debt. He judges that these generating assets are grossly overvalued in a competitive power market, but appears to neglect a partial offset in the likely substantial increase in the value of transmission assets when assessed in the same competitive environment. William Malec, recently resigned CFO of the TVA, estimated

Estimated Value of Sales of PMAs/TVA

Alaska, SEPA, SWPA, WAPA

\$5 10 billion

BPA

3 10 billion

TVA

7 10 billion

TOTAL

\$15 30 billion

its market value to be \$10.5 billion. In the table above, I have indicated my own estimates. These predictions are dependent on uncertain market conditions (e.g., the market prices of electricity and fossil fuels and the speed with which deregulation will occur) and the regulatory treatment of the privatized assets (e.g., restraints on pricing and on the use of hydro facilities and transmission access rules). Thus, these sales value estimates are a broad range, with the lower number tied to a most restrictive scenario. Some upside optimism is due to the premise that federal transmission assets generally are undervalued at current book value and would fetch much higher prices when privatized and applied in a more competitive electric power market in which trade will expand greatly.

D. Rural Cooperatives

The Clinton administration has no plans to reform the old Rural Electrification Administration (REA), now renamed the Rural Utilities Service (RUS), or to eliminate subsidies to the local cooperatives. Subsidized credit to cooperatives has long been a target. Both the Reagan and Bush administrations tried to reduce these and to end the REA itself. Arguments for continuing the subsidies are conspicuously thin. If subsidization were ever needed to electrify rural America, that task was long ago completed. Today, the recipients of these federal subsidies are likely to be middle class, suburbanites or well-to-do retired Americans living in country retreats. Often cooperative territories that once were rural America are now posh suburbs, such as Cobb County, Georgia, the home of House Speaker Newt Gingrich.

It is possible for a rural cooperative to privatize itself, if the local members choose, although no electric power cooperative in the United States has yet done so. There are few reasons for members to agree to privatize, unless a purchaser can promise lower rates. But as Russell Klepper relates: ...most purchase overtures to cooperatives are met with defiance. In early 1985, Mississippi Power Company, a unit of the

Southern Company, held exploratory discussions with Coast Electric Power Association of Bay St. Louis, Mississippi, to ascertain their interest in a sale. Soon afterward, a huge 'Not for Sale' banner was hung at Coast Electric's headquarters.

Cooperatives frequently have banded together, using their subsidized financing, to build and own generation and transmission (G&Ts), or to buy into IOU projects. In some cases, cooperatives have managed themselves into financial crisis, forcing the federal government to make concessions in loan repayment schedules. Such is the case with the fiscally troubled Big Rivers G&T cooperative in Kentucky, which has discussed its sale with various private parties and the TVA. But unless subsidies to the local cooperatives are shut off or the Rural Utilities Service forces failing cooperatives that don't meet repayment schedules to be sold (which they have not done), there is little chance that grass roots privatization of the rural electric cooperatives will occur.

Congress views rural coop subsidization as a political hot potato. The loyalty of the co-ops' members is strong, and their trade association, NRECA, well-endowed. NRECA has a \$43 million budget and 10 lobbyists, including former Congressman Glenn English, the immediate past chair of the subcommittee on agricultural credit. The group can quickly mount broad grass roots lobbying campaigns targeting congressmen; their PAC makes sizeable donations to favored candidates, with \$513,000 given in the 1993-94 election period. The NRECA also has allied itself with the APPA to fight against federal power privatization. Since co-ops are major recipients of preference power, their self-interests are served by battling privatization, and the NRECA-APPA alliance broadens the resistance to any congressional move to tackle the entire range of energy subsidies.

Both Democrats and Republicans have steered far away from dealing with these subsidies or the more substantive issue of why the Rural Utilities Service exists at all. The Clinton administration's FY 1996 budget called for an \$89 million increase in subsidies and \$15 million in overhead funding in order to extend rural lending to \$1.1 billion. The Rural Utilities Service, like any rational federal bureaucracy, will continue to seek justification for its existence. Pruning back subsidies would only be a temporary fix. As long as the agency exists, it will attempt to provide benefits to its historical constituency, the 1,100 co-ops and their members in 46 states.

V. POLICY SUGGESTIONS

Both economic theory and an abundance of worldwide evidence suggest that privatization of federal power assets and the elimination of energy subsidies will yield economic gains for America. The sale of these assets would probably yield \$15-30 billion for the U.S. Treasury. Selling the federal power assets, combined with the removal of tax advantages to government-owned utilities and cooperatives, would increase future federal income tax revenue flow by \$3 billion per year. In addition, state and local governments would receive about \$2 billion more per year in tax revenues.

While some have argued for building a level playing field on which subsidies are balanced for all suppliers, the primary policy concern should be long-term efficiency, not fairness in distributing government largess. From this perspective, the primary reason to shift the assets of the five PMAs and the TVA into the private sector is to build them into energy organizations that cannot evade commercial accountability. They can and should face a marketplace discipline for their decisions similar to that encountered by other American businesses. In effect, ownership and control can be brought closer together for these federal enterprises.

America's experiences with privatization are limited, but we do understand industry deregulation, which like privatization, has the effect of placing more decisions in the private sector. In looking at various American industries that have been deregulated in the past 15 years railroading, trucking, airlines, and telecommunications the productivity improvements have been impressive, although changes often have been erratic and, to a degree, unsettling. And in examining the many power privatization experiences

overseas, a similar case can be made for better performance from private enterprises when competition is also spurred.

How privatized federal organizations fare will depend not only on the quality of the physical assets but also, if they are sold as going concerns, the qualities of workers, managers, and the organizations themselves. The key attributes of management for privatized federal organizations are those required of firms in other industries facing competitive pressures. Most firms that are capable of such behaviors are not designed as bureaucracies. They tend to move decision authority and accountability deeply into the organization, eliminate barriers to sharing information and resources, encourage internal and external alliances and teamwork, stimulate entrepreneurship, and quickly move resources to their areas of highest expected returns, evaluated by measuring financial performances of all assets. Many American firms have struggled over the past decade to remake themselves in these ways. Although currently far removed from the best practices and therefore from the dynamic efficiency that ensues federal electricity enterprises would have this opportunity when privatized.

Utilities in the United States still remain behind protective walls of exclusive franchise protection that deflect direct competitive challenges, and revenue recovery systems based on historical costing that are inconsistent with market realities. But these walls are coming down fast, and privatization can assist the process of deregulating in two obvious ways: first, by permitting the integration of federal transmission assets into open transmission networks; and, second, by adding more competing assets to the generation sector of the industry. The winners from expanded competition will be a broad range of consumers and those industry suppliers and middlemen who are most adept at providing value to consumers in a competitive energy market.

The near-term prospects for electric power privatization are promising if legislation can be crafted that responds to the concerns of key interest groups. Three principles are suggested for privatization legislation:

Any concessions made to an interest group should not interfere with the long-term operation of the electric power marketplace or of the privatized firms. Transitional assistance should be just that.

Licenses for hydroelectric facility operations on multi-purpose federal dams and other obligations of new owners should clearly establish the limits of legal rights of users. These should not be left indefinite and open to later political deal-making.

Assets should be packaged for privatization in the context of a competitive power marketplace rather than today's regulated industry. Although policy-makers simply cannot know enough to build the efficient organizational structures for an efficient power market, they can assist by removing the entanglements of old regulatory policies.

Ten specific recommendations are:

Divest promptly the assets of all five PMAs and the TVA. A working group led by Treasury and assisted by outside investment bankers and other consultants can be charged with devising methods of privatizing each PMA and the TVA. Their purpose would be to raise the most money possible for the Treasury, consistent with whatever constraints are established by legislation, and permitting potential bidders considerable flexibility in structuring bids that best meet their ends. No groups should be excluded from an open bidding process. The sale of any PMA just to the consumers of that PMA would be inefficient and certainly would be unfair to the taxpayer-owners of the PMAs who would lose substantial revenue in the sale.

Explore the feasibility of selling the TVA either as a stand-alone enterprise or as several firms formed from the current Authority. The TVA, unlike the PMAs, appears to have the management capabilities and organizational structure and practices that would make a switch to private ownership promising. The TVA might be sold through a share offering, possibly encouraging support for the privatization by providing

both TVA customers and employees of the new TVA(s) with the opportunity to acquire a reserved portion of the shares in the new firm(s) prior to a general offering. A potential gain from selling the entire organization rather than selling off its assets is that a direct competitor or competitors to other regional power firms would be formed. However, if selling shares in stand-alone enterprise(s) is predicted to yield substantially less than selling the assets, and the industry would not be substantially less competitive as a result of the direct asset divestiture, then sell the assets.

Remove the territorial fence once the TVA is sold. This keeps the TVA from marketing power outside its territory as well as keeping outside utilities and IPPs from marketing power within the current TVA region. It should be removed in both directions, giving all sellers the opportunity to market competitively, and consumers the opportunity to search widely for better service.

Require that all privatized federal transmission assets be used in ways that permit access by all technically qualified users, under universally applicable rules. The FERC has frequently stipulated that utilities open transmission access as a condition for FERC's approving IOU mergers. A similar requirement should grace the sale of federal assets. This would encourage the development of integrated regional transmission grids.

Consider selling federal transmission assets separately from generation assets. The intent of the separation would be to encourage all private transmission owners to cooperate with one another in providing broadly accessible services on regional grids. Several issues about U.S. electric transmission policy remain to be determined. Nevertheless, it is reasonably clear today that future public policy will provide transmission access for many parties. Privatization can encourage and complement these developments.

Give price protection to preference consumers only as transitional aid. One objective in privatizing is to achieve market pricing as quickly as possible. Whatever protection is afforded, it should be erased after a specified time frame, or upon a showing that prices are regionally competitive.

Encourage renegotiation of the hydroelectric power licenses. Some privatization advocates argue that the existing operating conditions on federal hydroelectric generating facilities should be grandfathered in, including minimum flows from the dams. However, there is no clear economic justification for holding to current uses. Absent some mechanism to reflect the values that the citizen-owners of these dams place on competing uses, we have little basis for calling for one or another set of licensing stipulations.

Pragmatically, a political compromise on this issue may go a long way to bringing environmental interest groups and perhaps a broader constituency of citizens in the Pacific Northwest into the privatization fold.

Eliminate subsidies that are entitlements. Preference power and income and other tax subsidies to government-owned utilities and cooperatives should be erased. The point is not to create a level playing field with respect to subsidies among utilities, but rather to provide consistent legal treatment for energy enterprises in the United States that promotes aggressive competition. This broader objective argues that privatization should be treated as a tool complementing ongoing power industry deregulation.

Abolish the Rural Utilities Service. Its mission is completed. Eliminating subsidies to the cooperatives is not enough.

Permit privatization proceeds to count toward deficit reduction goals. Currently, under the amended Budget Enforcement Act of 1990, sales proceeds from privatization do not count. On the other hand, any expenditures required to prepare assets for privatization are counted against the budget deficit, and so is the loss of the revenue stream from a government enterprise that is privatized. Thus, federal budgetary practices provide a disincentive to sell money-making operations, regardless of the economic merits of privatization. Congress should neutralize the scoring.

Success in privatization can be gauged in terms of broad social welfare gains. In the United States, the likely outcomes from privatization are:

Rapid improvement in cost-effective performance, and more entrepreneurial activity displayed.

Lower prices to consumers in comparison to what prices would be if federal power enterprises were unsubsidized.

A large payment to the U.S. Treasury that will reduce the national debt. For all five PMAs and the TVA, this could range from \$15 billion to \$30 billion.

Reduced political maneuvering on electric power issues; fewer subsidies mean less to fight over in Washington.

Acceleration of ongoing electric power deregulation. In particular, integration of transmission assets into evolving transmission arrangements in the private sector will increase the scope for market exchange.

A large increase in income and other taxes paid by privatized firms \$3 billion to the federal government and another \$2 billion to state and local governments each year.

Environmental improvement. Privatization permits renegotiation on the uses of large federal dams, and a shift to market pricing of preference power will clearly provide incentives to reduce usage.

Many nations, from Great Britain to Chile, are privatizing much of their electric power industries. They act on understandings that market forces in electric power push privately owned firms to be far more efficient than state-owned electric power enterprises and that remaining market-power issues in the industry can be treated by applying limited regulations. State-owned power enterprises are viewed, increasingly, as operational dinosaurs, congenitally subject to political pressures to redistribute wealth; this damages the foundations of a nation's productivity and its capacity for economic growth. These observations apply as well to the electric power assets owned by the U.S. government. As the American electric power industry continues to undergo deregulation, we still have many federal power assets that are interfering with an emerging competitive process. It would be wise policy now to place these federal assets in private hands.

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APPENDIX: Survey of Nations That Have Privatized Electric Utilities

There are 19 nations profiled in this appendix. By region, alphabetically, these are:

Western Europe: 4 (Germany; Great Britain, Italy, and Norway)

Eastern/Central: 2 (Hungary and Poland)

Europe

Asia and Pacific: 5 (Australia, New Zealand, Singapore, Taiwan, and Thailand)

Americas: 7 (Argentina, Bolivia, Brazil, Canada, Chile, Peru, and Venezuela)

Africa: 1 (Morocco)

Both the United States Agency for International Development (USAID) and the World Bank offer assistance to nations on power privatization. USAID technically assists developing nations through its Private Sector Energy Development (PSED) program. This program offers advice on reforms and policy design as well as technical expertise on drawing up and implementing agreements. The World Bank and the International Finance Corporation (IFC) support, through lending policies, the establishment of regulatory climates that permit private power producers to compete with existing state-owned public utilities.

There are approaches to privately investing in power that are not quite privatization. Independent power facilities often are built in a developing country by a government-foreign company collaboration, following several approaches. Often these are BOOT projects in which the outside contractor Builds, Owns, Operates, and eventually Transfers a facility back to the government utility once repayment of the project has been achieved. These have been used in Costa Rica, Dominican Republic, and China. The approach and its variants (such as BOO, where the transfer back does not occur) are means of complex project financing and development, with the project company assuming responsibility for the financing, mainly through debt. The BOOT approach engages the private sector only briefly in the energy sector, and does little to change the structure and practices of a nation's energy industry. BOO, however, can be spontaneous privatization, most often in generation. Privatization of existing state-owned facilities by asset divestiture clearly is a step beyond this: The structure of ownership is directly altered. Asset divestiture generally is what is meant when the word privatization is used, but several nations' efforts (Norway, New Zealand, and Thailand) are examples of spontaneous privatization.

Below, grouped by areas of the world, are synopses of activities in 19 nations.

Western Europe

Germany: In the early 1990s, \$6.7 billion of East German electric utility assets were privatized. Today, gradual sale of municipal and regional electric utilities is occurring. A current proposal is to sell 25 percent of a Berlin utility for an estimated \$360 million. A proposal to sell just under 50 percent of a Bremen electric utility (for about \$493 million) has been challenged by the Federal Cartels Office. German utilities resist greater openness via power trading although the larger industrial consumers would stand to gain a great deal from acquiring power from less expensive non-German sources.

Great Britain: Beginning in 1990, electric power resources were vertically disassembled. The previously fully integrated national power system became two generation firms, a transmission grid, and 12 regional distribution firms, all of which were subsequently privatized. This was the first major privatization of electric power in the world (excluding East German transfers in 1990), showing how short the time line is on the worldwide power privatization movement. Generation assets valued at \$6.0 billion were privatized in 1991; the British government continues to own nuclear generating assets, though it now plans to privatize them, as well.

Regional electric companies (RECs) also were formed, and they hold ownership in the transmission grid. A few other independent power producers have arisen to supplement the privatized generation, but a recent concern in Great Britain has been the paucity of competitors in generation and weaker price competition than some hoped for, although real electricity prices have fallen. One recurring criticism of the British approach was that it did not first break up the two large generating firms prior to privatization. The RECs now can be resold with foreign control possible. Although the RECs have reduced staff by over 20 percent,

some believe more fat can be trimmed, and that this anticipated cost-cutting is behind aggressive bidding for RECs today.

Britain also is taking steps to privatize Nuclear Electric, which will include Scottish Nuclear, in 1996. The assets to be privatized exclude the oldest nuclear power plants and have an estimated market value of \$4.8 billion. Britain also plans to float the National Grid (estimated value \$5.6 billion) early in 1996. The Grid (currently owned by the 12 regional electric companies) is to be sold by its owners, yielding proceeds for the shareholders of the regional firms rather than the government.

Italy: Italy is in the process of privatizing ENEL, the state electricity corporation. Current ENEL management and some in government desire continuance of a vertically integrated firm, but this is opposed by both Italy's antitrust authority and the European Union, which prefer a radical reorganization of ENEL prior to privatization in order to stimulate competition. Political scandals within the government slowed progress on privatization in 1995.

Norway: Norway is a leader in restructuring the power industry, but not in divestiture privatization. Its 1990 Energy Act opened transmission and distribution access to any generating firm or customer; thus a version of retail wheeling (choice of supplier for ultimate consumers) has been a fact of life in this nation for half a decade. They did not privatize any electricity assets and most of the industry remains in government hands. However, there is no constraint on private ownership of new generation facilities. The regulatory framework unbundles many services and serves to control transmission and distribution prices, but not generation prices.

According to one estimate, these reforms have reduced wholesale electricity prices by 20 percent and exerted pressure to keep producers operating efficiently. Norway's neighbors, Finland and Sweden, have also begun to reform power. Both separated their transmission grid into a separate organization and are considering opening access. Some privatization of generation may follow in those countries.

B. Central and East Europe

Hungary: Until 1995 the government owned all electricity assets, with the exception of one power plant purchased by British energy firm, Power Gen, for an estimated value of \$212 million. The Minister of Trade and Industry, Imre Duani, favors privatization of state-owned utilities to infuse foreign capital into these businesses while reducing the deficit of Hungary. Privatization of the remainder of the power industry will follow, and numerous foreign energy firms are interested. In September 1995, foreign firms were offered the opportunity to tender offers to acquire minority equity interests in six regional supply companies, seven generation firms, and a transmission company. Sales proceeds totaled \$1.25 billion.

Poland: The Ministry of Industry has stated that both power plants and regional distribution companies would be privatized, while the Polish Power Grid will remain state-owned. The run-down Polish power system may need \$13.15 billion of investments to be modernized. The Polish approach to privatization is to first transform generating plants into firms, which then are offered for sale as public stock, with some shares set aside for managers and employees. A long-awaited law regarding competition among power generators has not been approved by Parliament. The doubts regarding the industry's future competitive structure and regulation have had a chilling effect on the privatization process.

C. Asia and the Pacific

Australia: State-owned generation and transmission/distribution monopolies still dominate, but extensive preparation for deregulation and privatization has been initiated by the state of Victoria, which unbundled its vertically integrated utility in 1994, and by the Australian national government.

An agreement reached in April 1995, will establish a national grid in 1996. This grid is intended to foster broad competition for power. The national grid concept partly mimics the British approach, using a pooling

mechanism. Initially it will be opened to large consumers (above 10 MW), with a phase-in to smaller consumers over five years. A National Grid Management Council will oversee the movement to open access transmission. Encouragement has been given to privatizing the various state-owned transmission monopolies and to obtaining further interconnections among these privatized transmission firms. Currently, Australian transmission capacity is inadequate in many parts of the country, suggesting generation plants are likely to be built close to demand.

The state of Victoria leads on deregulation. Within the past year, this state (which includes Melbourne) has taken several explicit steps to encourage competition. First, it split generation, transmission, and distribution. Second, it split the generation assets into five competing firms, and the distribution side into seven firms. Of the latter, United has already been sold to a three-utility consortium lead by the American firm, Utilicorp, for \$1.15 billion. Four other distributors will be up for sale: Eastern Energy (\$1.1 billion); Solaris (\$734 mil.); Citipower (\$1.06 billion); Powercorp (\$1.85 billion). Two generation plants are likely to be offered for sale by the end of 1995 or early 1996. Elsewhere in Australia, the pace is much slower. The expansion of the national grid is expected to permit independent power producers to aggressively market against remaining state-owned monopolies. That pressure can, in turn, force the state-owned firms to change practices and structure.

Third, Victoria has begun to open the electricity market to competition by gradually opening access. Currently small customers, with loads above 1 MW, are permitted to buy either from wholesalers or a competing distributor. Soon, customers will have additional options of purchasing from the pool or contracting with generators directly. By 2000, all of Victoria's electricity consumers are expected to be able to buy power in a competitive market. Victoria has mandated retail price reductions for smaller customers over the next five years in lieu of more detailed regulation during a transition to market competition. Thereafter, state electricity prices will be reviewed by an independent regulator.

Australia's intent to break apart state power monopolies depends significantly on the continued efforts of Victoria and its ruling pro-growth, free-market oriented Liberal Party. They face elections in 1996, and if they were defeated the privatization movement could slow; it is unlikely to be reversed. The expected outcomes from privatization are: 1) more reliable, lower-priced energy for consumers; 2) productivity improvements in the industry; 3) better access to foreign capital; and 4) reduced government debt.

New Zealand: New Zealand began restructuring its power industry in 1987 by corporatizing generation and transmission, creating The Electricity Corporation of New Zealand (ECNZ), and then corralling all local distribution companies into another corporate framework. Finally, transmission was split from generation, although still under government ownership. Few private generation investments have occurred, and the ECNZ remains the dominant supplier; its generation assets have not been split.

According to one analyst, these limited actions alone have caused real price declines of 16 percent with a substantial improvement in productivity and reduced unit costs. In some ways, ECNZ is comparable to the United States' own corporatized entity, the TVA, which ostensibly operates free of direct political involvement, much as ECNZ is supposed to act.

New Zealand now plans to split up the generation assets into two firms that will compete and to encourage new private entrants. ECNZ will be held back from expanding until its market share drops from its current 60 percent to 45 percent. The grid remains in state hands as Trans Power, and prices and pool rules on the grid will be monitored. New Zealand also is privatizing its electricity distribution companies, and this has led to joint ventures between foreign energy firms and local companies.

Singapore: Currently, Singapore has a state-owned Public Utilities Board with gas and electric departments. Corporate status was granted on September 26, 1995 to Singapore Power. Through a share flotation Singapore citizens will have an opportunity to buy shares. This company then will be a regulated holding company composed of five operating subsidiaries. The estimates of value of assets to be corporatized is unclear; recent annual net profit are \$430 million and estimated gross fixed assets are \$7.3 billion.

Singapore, unlike many other privatizing nations, will not be reforming the electric industry to encourage competition.

Taiwan: The government owns Taipower, as a vertically integrated monopoly. In June 1995, the government announced its intention to privatize Taipower. Under study are various restructuring proposals. The most probable scenario is two or more competing generating companies will be formed, with transmission and distribution arrangements unclear. Transmission could remain under government ownership and distribution broken into local regulated entities.

Thailand: Thailand continues a movement to a more deregulated power industry. Its rapid growth and limited power capacity have led the government to recently encourage independent power producers to build new plants and to sell onto the national grid. These independent power producers (IPPs) are to be self-financing, as either build, own, operate (BOO) or build, own, and transfer (BOT) facilities. Thirty-two energy consortia, many involving non-Thai firms, responded to the initial, qualifying exercises for IPP participation in building capacity. Power would be purchased by the grid, controlled by the Electricity Generating Authority of Thailand (EGAT). Thailand, like New Zealand and Norway, offers an example of spontaneous privatization.

D. Americas

Argentina: Argentina's electricity industry was restructured substantially following the government's 1992 privatization initiative. The generation sector now is largely deregulated; the splitting of state power assets prior to privatization has provided numerous competitors in generation, and entry is open. Transmission is treated as a regulated public service, with obligations to provide nondiscriminatory access to all users. Distribution is also treated as a local utility. Each utility is obligated to acquire least-cost contracts for power for local consumers, but large consumers are able to purchase power independently.

At the federal level, the government has sold 15 of the 18 major fossil-fuel generating plants and five of the nine large hydro plants. Overseas firms from the United States, Europe, and Chile have bought most of these plants. Partial privatization of Yacyreta, an incomplete 3,200 MW producing dam, is expected. Paraguay remains a part owner in this project. It is likely that the privatization of Yacyreta will involve a 20-30 year concession to sell power to the purchaser, who will complete the dam and also manage it. The hoped-for value of this partial privatization is \$1.5 billion. The sale is controversial, and much hinges on settling environmental issues because financial side-effects from environmental problems will be the liability of the purchaser. Argentina is also studying privatization of Salto Grande, a joint production venture (1,900 MW) with Uruguay, as well as its three nuclear power plants. In all cases, the sales will involve a long-term concession to the purchaser, the purchaser's commitment to invest, and regulated pricing.

Many provincial electricity companies are likely to be privatized in 1996. Argentina's provinces are in very poor financial shape, which has led to pressures to privatize in the face of voter opposition. The federal government has used its holding of provincial debt as a lever to obtain the privatizations.

Argentina has chosen to aggressively pursue energy privatization. Minister of Economy Domingo Cavallo indicates that the energy sector privatization is their most significant accomplishment among a wide range of privatization initiatives. Argentina acts under pressure to reach fiscal targets set by the IMF, and this may influence the haste with which they pursue privatization. But the stated reasoning for privatization are put differently: to improve infrastructure performance and to increase the economic growth rate of the nation. The privatization accomplished in Argentina to date is surprising in light of its history of national planning.

Bolivia: Empresa Nacional de Electricidad (ENDE), previously the state-owned energy company, has been sold to three U.S. energy companies. The assets include three of Bolivia's largest power generating plants. In a novel twist, each firm takes a 50 percent ownership share in a generation facility, and the remaining 50

percent will be distributed to Bolivians over 21 years of age as the funding for a new, private pension system. Firms' bids involved a commitment to invest in the plant (\$140 million) rather than payments to the government. New law required disaggregation of generation, transmission, and distribution activities. The distribution component of ENDE will be sold privately, as will the transmission grid.

Bolivia's approach to privatization (capitalization) forces commitments on direct investments into the electric power industry by foreign investors. The presumptions behind capitalization are that funding cannot be achieved from domestic savings in a nation of severe poverty and that, with few sound domestic economic institutions, foreign investors would be unlikely to bet on Bolivia's future without extraordinary measures being taken. According to Bolivia's president, Sanchez de Lozada, Capitalization is a good alternative to privatization in countries with big social inequalities and a strong nationalist streak. Bolivia is extending this approach to numerous other state-owned enterprises.

Brazil: Escelsa, a distributor, was privatized in 1995 for \$387 million. In 1994, several generation plants were sold for a total of \$800 million. Major concerns about power privatization have centered on the government's regulatory policies previously, it has held prices down in periods of high inflation. The Cardozo government plans to sell off much of the energy sector by 1998. A large distributor, Light, may be sold early in 1996, and Brazil is studying the sale of four federally controlled generating companies which have combined assets of over \$50 billion.

The national government prepared the way for privatization by first creating a National System for Electrical Power Transmission (SINTREL) as a means of obtaining open access. On July 8, 1995, a new law passed that established the legal foundations for private producers to sell electricity. This independent power producer law opens the door for rapid expansion of new investments in Brazil, although a complete regulatory structure for the industry remains absent and is not expected to be drafted until early 1996. Brazil is a huge potential market with anticipated capacity additions through 2004 of 22,000 MW, by far the largest addition in Latin America. Among international energy firms, it is seen as the most promising target for privatization investments.

Canada: Much like the TVA in the United States, Ontario Hydro began with a mission of bringing hydroelectric power to a wide array of citizens, and later used its state ownership to debt-finance a massive nuclear power program. Beginning in the early 1990s, large rate increases were imposed to cover the sunk costs from a failure to construct cost-effective units. This, coupled with threats of consumer by-pass, led to calls for Ontario Hydro's privatization. Ontario's current Tory premier, Mike Harris, promised to move toward partial privatization (of non-nuclear assets), but has yet to put together a plan.

A report commissioned by Ontario Hydro calls for industry restructuring and privatization of this public utility's generating assets. The estimated value of a privatization, which would be a stock offering, is \$7.5 billion. This proposal calls for unbundling generation, transmission, and distribution. Generation assets would be sold to five competing companies, and transmission would remain in provincial government hands, as would distribution, initially. (The report also calls for a merger of the province's municipal utilities in the province with Ontario Hydro prior to privatization.) Nuclear assets would be jointly owned by the generating companies. Regulation of the industry would be under an independent body. Yet another Ontario Hydro report, however, calls for a more aggressive approach: market-based pricing and open transmission access. Pressure for privatization is driven largely by the risk that industrial consumers will exit due to excessively high rates charged by Ontario Hydro.

Given the June 1995 victory of the Progressive Conservative Party of Ontario, which supports privatization of Ontario Hydro, prospects are favorable for privatization. The management of the utility also has supported retail wheeling and permitting all utility and non-utility generators to sell freely inside or outside of the province. Ontario Hydro's Chairman, Maurice Strong, in speaking about restructuring the industry and privatizing, said:

The benefits for the Province will arise from a more efficient sustainable and competitive energy industry, from a major reduction in the Province's debt and the establishment of its equity interest in Ontario Hydro, which will realize several billion dollar if it elected to sell it. This could be quite tempting given the current financial state of the Province. Indeed, quite apart from ideology, there is a real question as to whether the Ontario Government can afford to own all of Ontario Hydro today.

Chile: Chile represents the most thoroughly restructured electric power industry in the Western Hemisphere. Most of the electric producing assets now are in private hands; Empresa Electrica Colbun-Machicura SA is the only remaining state-owned electric utility in the country. Chile plans to privatize Colbun within a few years, and this company is now expanding its capabilities in order to be better able to compete for power customers not only in Chile but throughout South America. Colbun is building three new power stations in order to compete with Endesa and Chilgener, the two largest privately owned electric power firms in Chile.

Because Chile's electricity pricing structure never involved large subsidies (an anomaly among Latin American nations), a shift to private ownership did not face strong consumer resistance when prices began to reflect the costs of production and delivery. At current and expected electricity rates, investment is attractive in Chile. Its private power industry is robust, and these firms are now players investing in power developments, often via privatization, in other Latin American nations such as Argentina and Peru.

Peru: This poor nation with a history of violent factionalism, has established an ambitious electric power privatization program. In 1994, in preparation for privatization, Lima's utility, ElectroLima, was divided into two distribution companies and one generation firm. ElectroLima established October 17, 1995, as the date for the sale of 60 percent of a 693 MW set of generation assets (Edegel) taken from the state-owned ElectroLima. Of the remaining 40 percent, 30 percent will be held by the government to be floated on the Lima stock exchange, and 10 percent held for the firm's employees. The distribution firms have already been sold to consortiums, representing firms from several nations.

The sale of ElectroLima assets represents a portion of a comprehensive privatization plan which includes sale of Peru's largest utility, ElectroPeru. Its assets will be sold individually in open bidding. One small plant already has been sold, with three plants with combined capacity of 285 MW to be sold by the end of 1995. In addition, the 798 MW hydro facility, Antunez de Mayolo, eventually will be sold.

Peru also encourages foreign firms to build and own new capacity. This has included a natural gas and power project involving four U.S. energy firms. The comprehensive project involves the construction of 145 MW gas-fired power plant, substations, and transmission lines to be operated by Entergy, an American utility.

Peru's electric power privatization program is only part of a sweeping effort by the government of President Fujimori to place state-owned enterprises in investor hands. This process is clearly sensitive to his remaining in power. In April, 1995, Fujimori and his party won a majority in the congress and, as a result, privatization initiatives, which briefly slowed during the election period, have accelerated.

Venezuela: The proposed sale of the producer Planta Centro, for an expected \$800 million, has been deferred. Although privatization in infrastructure had been given apparent legitimacy via reform to the Public Works Concessions Law, the current government has reversed past market liberalizations. The lack of a coherent regulatory framework for electricity also has checked privatization efforts. Additionally, the massive subsidization of electricity prices by the government (charging 4 cents per kwh residential; 2 cents per kwh commercial) are distortions that dim external investor interest in Venezuela's power assets. Venezuela is an example of the fragility of market liberalization and privatization in a nation without a strong traditional support for democracy or capitalism.

E. Africa

Morocco: Morocco expects to transfer one-half of the SOE power assets to the private sector in 1995-96 and is negotiating for new capacity to be built under BOT arrangements valued at \$2 to \$2.5 billion in total. Operating concessions would run for 30 years, with the winning bidder determined by the lowest electricity price over the concession period. Morocco has no intentions of altering the transmission or distribution sectors, which will remain a monopoly.

These subsidies are not evenly received. Not all cooperatives are exempt from state income taxes, and tax exempt lending is not available to the cooperatives. Both government-owned utilities and cooperatives typically make some payments to the states in lieu of the income taxes, but these amount to far less than the tax burdens that would be placed on a comparable investor-owned utility (IOU).

ENDNOTES

Putnam, Hayes & Bartlett, Subsidies and Unfair Competitive Advantages Available to Publicly-Owned and Cooperative Utilities, September, 1994, p. B-13. This report was prepared for the Edison Electric Institute; and United States Department of Energy, Energy Information Administration, Federal Energy Subsidies: Direct and Indirect Interventions in Energy Markets, Washington, D.C., November, 1992, p. 57.

The EIA study also estimated this subsidy as \$4.2 billion using an alternative cost-plus approach, but, because prices built on historical costs are well above the prevailing wholesale level prices in effect, PMAs would be unlikely to achieve that estimated revenues in a competitive environment. Therefore, a lower market-based estimate is more reasonable.

Christopher Seiple and Thomas Feiler, "The Facts on the PMAs," Public Utilities Fortnightly, March 15, 1996, p. 11.

Energy Daily, October 4, 1994.

This adjustment was considered in the calculation of income tax foregone in the Edison study. See Edison Electric Institute, The Electric Utility Industry: Cutting Through the Smoke Screen, Background, 1995.

Prepared Statement of Alan Richardson, Deputy Executive Director, American Public Power Association before the House Committee on Resources, Subcommittee on Water and Hydro, FDCH Congressional Testimony, May 18, 1995.

U.S. Office of Management and Budget, Fact Sheet on Reform of the Federal Power Marketing Administrations' Debt Repayment Practices, Washington, D.C., 1990.

United States, Government Accounting Office, Federal Electric Power: Pricing Alternatives for Power Marketed by the Department of Energy, Report No. RCED-86-186BR, Washington, D.C., September, 1986.

United States, General Accounting Office, Policies Governing Bonneville Power Administration's Repayment of Federal Investment Still Need Revision, Report No. RCED-84-24, Washington, D.C., October 26, 1983.

Testimony, Jerry Taylor, Director, Natural Resource Studies, Cato Institute before the House Committee on Government Reform and Oversight, Subcommittee on Government Management, Information & Technology, FDCH Congressional Testimony, May 16, 1995.

Major Utilities Face Credit Problems Due to Stranded Costs, Say Moody's, Energy Report, August 21, 1995.

The Energy Policy Act requires that utilities that own transmission develop transmission access rules and pricing that is nondiscriminatory for all qualified potential buyers. The law, however, does not establish a legal requirement to provide access for retail (ultimate) customers, who continue to struggle to achieve it through state actions, both in legislatures and before public service commissions.

Accountability to ownership is not as great a problem for IOUs, where managers understand well the needs to show strong performance in order to make investors happy. Nevertheless, the meaning of strong performance in a utility also is not presently consumer-driven. Indeed, the political skills of IOUs in evading market tests of value-added are an important component in the financial community's assessment of a utility's well-being.

Richard J. Zeckhauser and Murray Horn, *The Control and Performance of State-Owned Enterprises, Privatization and State-Owned Enterprises*; Paul W. MacAvoy, W.T. Stanbury, George Yarrow, and Richard J. Zeckhauser, ed., (Boston: Kluwer Academic Publishers, 1989), pp. 35 36.

Paul W. MacAvoy and George S. McIssac, *The Performance and Management of United States Federal Government Corporations, Privatization and State-Owned Enterprises*, ed. Paul W. MacAvoy, W.T. Stanbury, George Yarrow, and Richard J. Zeckhauser (Boston: Kluwer Academic Publishers, 1989), p. 130.

David L. Shapiro, *Generating Failure: Public Power Policy in the Northwest* (New York: University Press, 1989), pp. x xi.

This offset, available only to the preference utilities, was on a take or pay basis, and the participating utilities rightly feared that they might eventually get stuck with payments for power never delivered.

Generating Failure, pp. 21 45.

A footnote on the fiasco known as Whoops is that the man perhaps most responsible for the BPA's role in this affair, BPA administrator Donald Hodel, subsequently became Secretary of Energy and Interior. The deficiencies of public power enterprises seemingly has had little negative impact on the political reputations of their managers, perhaps another cautionary tale for those who believe that the quality of business decision-making plays a role in perceptions of political merit in Washington, D.C.

Alex Henney, *The Global Evolution of Power Markets*, *Public Utilities Fortnightly*, January, 15, 1995, p. 38.

Private Profit, Public Service, *Economist*, December 9, 1995, pp. 66 67.

Charles Wolf, Jr., *Markets or Governments*, (MIT Press: Cambridge, Mass., 1988). Wolf writes of predictable problems endemic to public bureaucracy, suggesting that non-market failures (inefficiencies related to the peculiar nature of government control of an activity) are as important to consider as the market failures often casually provided as justification for regulation.

James B. Sullivan, *Private Participation in the Electric Power Sector*, in *Latin America's Turnaround*, ed. Paul H. Boeker, (ICS Press: San Francisco, 1993), p. 136.

World Bank, Industry and Energy Department, *Submission and Evaluation of Proposals for Private Power Generation Projects in Developing Countries*, IEN Occasional Paper No. 2, World Bank, Washington D.C., April 1994, p. xiii.

Colin Robinson, *Profit, Discovery, and the Role of Entry: The Case of Electricity*, *Lectures on Regulation*, London: Institute of Economic Affairs, November 1995, p. 13.

Private Profit, Public Service, Economist, December 9, 1995, pp. 66 67.

Ernst & Young, Privatisation in the U.K., London: Ernst & Young.

Ernst & Young, Privatisation in the U.K.

William D. Eggers and John O. O'Leary, Overcoming Public Employee Opposition to Privatization, Business Forum, January 1994.

Richard Cuoto, New Seeds at the Grass Roots: The Politics of the TVA Power Program since World War II, in TVA: Fifty Years of Grassroots Bureaucracy, ed. Erwin Hargrove and Paul Conklin (Urbana, IL: University of Illinois Press, 1983), p. 32.

Erwin C. Hargrove, Prisoners of Myth, (Princeton , N.J.: Princeton Univ. Press, 1994), pp. 1 15.

Public Utilities Fortnightly, March 15, 1995, p. 40 42.

Allan G. Pulsipher, TVA's Debt Limit, Public Utilities Fortnightly, March 15, 1995, p. 41.

Tennessee Valley Authority Annual Report, 1994.

Lori A. Burkhart, GAO Reports, TVA Retorts, Public Utilities Fortnightly, October 15, 1995, p. 38.

United States, General Accounting Office, Tennessee Valley Authority: Financial Problems Raise Questions about Long-term Viability, GAO/AIMD/RCED-95-134, Washington, D.C., August 1995, p. 64.

Ibid, pp. 65 66.

Ibid, p. 73.

Ibid, p. 70.

William F. Malec, ...The Party's Over, Wall Street Journal, July 25, 1995, p. A12.

Malec,...TheParty'sOver,p.A12.

In a 1988 paper, I estimated the TVA's market value at \$10.2 billion. Douglas A. Houston, Privatization of the Tennessee Valley Authority, Issue Paper for Reason Foundation, October 7, 1988, p. 24.

Neal P. Curtin, Lessons Learned about Evaluation of Federal Asset Sale Proposals, Statement for the Record before the Subcommittee on Water, Power, and Offshore Energy Resources, House Committee on Interior and Insular Affairs, September 26, 1989.

United States Congress, House of Representative, 104 Congress (1st session) House Bill 313.

United States Congress, House of Representative, 104 Congress (1st session) House Bill 1808.

Power Play, Wall Street Journal, July 25, 1995, p. A12.

Concurrent Resolution on the Budget FY 1996, Report of House Committee on the Budget, May 15, 1995, p. 28.

Benjamin Holden, Tucson Electric Offers \$550 Million for the Arizona Assets of U.S. Utility, *Wall Street Journal*, May 1, 1995.

Privatized Power Agencies: Search for Best Options, *The Phoenix Gazette*, September 1, 1995, p. B6.

Bruce C. Driver, Prepared Testimony before the House Committee on Resources, Water and Power Resources Subcommittee on Behalf of the Land and Water Fund of the Rockies, Natural Resources Defense Council, and Grand Canyon Trust, May 18, 1995.

Douglas A. Houston, User Ownership of Electric Transmission Grids, *Regulation*, Winter 91/92.

Bruce C. Driver, Prepared Testimony, May 18, 1995.

George A. Schreiber, Jr. in testimony to the House Resources Committee, Subcommittee on Water and Power Resources, Federal News Service, May 18, 1995.

Douglas A. Houston, *Privatization of Electricity in the United States, Competition and the Regulation of Utilities*, ed. Michael A. Crew (Kluwer Academic Publishers: Norwell, MA, 1991), p. 192.

Thomas Kuhn, Prepared Testimony before the Committee on Commerce, Subcommittee on Energy & Power, U.S. House of Representatives, July 19, 1995.

Ronald Utt, Bye, Bye, BPA, *Seattle Weekly*, May 24, 1995.

Russell L. Klepper, *Privatization: An Overview of Worldwide Experience with Implications for the Electric Utility Industry in the United States*, report prepared for Edison Electric Institute, Power Supply Policy Group, August 1989, p. 91.

TVA's Crowell Pulls Back on Campaign to Remove the 'Fence', *Southeast Power Report*, July 28, 1995, p. 1.

Power Play, *Wall Street Journal*, July 25, 1995, p. A12.

Bruce Ingersoll, *Rural Electrification Program Gets a Reprieve Thanks to a Dose of Powerhouse Lobbying*, *Wall Street Journal*, May 19, 1995.

This is consistent with the advice of George A. Schreiber, Jr. in testimony to the House Resources Committee, Subcommittee on Water and Power Resources, Federal News Service, May 18, 1995.

Schreiber, Testimony.

United States, General Accounting Office, *Privatization/Divestiture Practices in Other Nations, Report to the Honorable Scott Klug*, House of Representatives, December 15, 1995.

World Bank, Industry and Energy Department, *Submission and Evaluation of Proposals for Private Power Generation Projects in Developing Countries*, pp. 12.

James B. Sullivan, *Private Participation in the Electric Power Sector, in Latin America's Turnaround*, Paul H. Boeker, ed. (ICSPress: San Francisco, 1993), pp. 140-143.

Unloved and Undervalued, *Financial Times*, September 20, 1995.

Nuclear Electric Prepares for Sale, *Privatisation International*, July, 1995.

NationalGrid,PrivatisationInternational,May,1995,p.19.

ENELPrivatizationMayFaceFurtherDelays,PrivatisationInternational,July,1995.

AlexHenney,TheGlobalEvolutionofCompetitivePowerMarkets,PublicUtilitiesFortnightly,January15,1995,p.38.

FirstElectricitySaleinHungary,PrivatisationInternational,July,1995.

GreatHungarianEnergySaleBegins,PrivatisationInternational,September,1995.

PolandtoSellOil,TobaccoandPower,PrivatisationInternational,March,1995,p.11.

PaulAzkaris,ARushoranAustralianCrawltoCompetition ElectricalWorld,July27,1995,p.72.

BenjaminA.Holden,UtiliCorpChairmanHopesAcquisitionWillFurtherHisWorld-WideAmbitions,WallStreetJournal,August8,1995,p.B3.

VictoriaPowersOn,PrivatisationInternational,August,1995.

PaulAzkaris,AllEyesAreonVictoria,ElectricalWorld,July27,1995,p.74.

AlexHenney,TheGlobalEvolutionofCompetitivePowerMarkets,PublicUtilitiesFortnightly,January15,1995,p.38.

EnergyMarketReport:Electricity,EnergyEconomist,June,1995.

NewZealandPrivatizationSpurBidWars,SearchesforPartners,ElectricUtilityWeek,July3,1995,p.14.

SingaporePowerNextMonth,PrivatisationInternational,August,1995.

TaiwanPondersFutureforTaipower,PrivatisationInternational,August,1995.

ThailandFacesanEmbarrassmentofRiches,TheFinancialTimesLimited,July10,1995.

ElMercadoElectricoArgentinocomoOportunidaddeNegocios,(TheArgentineElectricMarketasaBusinessOpportunity)KPMGConsultores,DepartamentoDesarrollodeRecursosHumanos,BuenosAires,July1,1993.

YacyretaDealThisYear,PrivatisationInternational,July,1995.

EdwardShaw,AManofConviction,InfrastructureFinance,April/May,1995,pp.3940.

BoliviaSellsGenerators,PrivatisationInternational,August,1995.

JonathanFriedland,BoliviaIsSellingOffStateFirmstoFundItsCitizens'Future,WallStreetJournal,August15,1995,p.1.

EscelsaBoostCordosoCredentials,PrivatisationInternational,August,1995.

Brazil'sPresidentSigns'IPPLaw,'ClearingWayforPrivatePower,IndependentPowerReport,July14,1995,p.13.

GEExecutiveSees79,300-MWMarketforPowerPlantsinLatinAmerica,IndependentPowerReports,June2,1995,p.17.

RobertC.McFarlane,GlobalPowerProjects,PublicUtilitiesFortnightly,September1,1995,p.23.

RobertBlohm,ToriesMustDeregulateandPrivatizeOntarioHydro,WallStreetJournal,September15,1995,p.A11.

OntarioHydroReportCallsforRapidRestructuring,AssetPrivatization,NortheastPowerReport,July21,1995,p.6

OntarioHydroChairmanPushesPrivatization,OpenCompetition,IndependentPowerReport,July14,1995,p.8.

MauriceF.Strong,Competition,CustomerChoice, andConvergence:ANewStructureforOntario'sElectricityIndustry,NotesforRemarks,TheCanadianElectricalAssociation,Huntsville,Ontario,July4,1995,p.12.

MargaretOrgill,ColbunPlans\$500MillionExpansion,Reuters,June9,1995.

Peru's693MWGeneratorEdegelScheduledforSaleOctober17,1995,ElectricUtilityWeek,August7,1995,p.14.

DevelopmentofPeru'sAguaytiaNatgasSet,Reuters,Limited,August4,1995.

FujimoriResumesonElectionVictory,Edge:Work-GroupComputingReport,June19,1995.

IndecisioninVenezuela,Edge:Work-GroupComputingReport,June19,1995.

Morocco'sInnovativePowerSale,PrivatisationInternational,February,1995.