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Privatizing Federal Electricity Infrastructure

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Priate-sector utilities provide the bulk of electricity generation, transmission, and distribution in the United States. However, the federal government also owns a share of the nation's electricity infrastructure.

The government owns the Tennessee Valley Authority (TVA), as well as four Power Marketing Administrations (PMAs)—namely, the Bonneville Power Administration (BPA), Western Area Power Administration (WAPA), Southwestern Power Administration (SWPA), and Southeastern Power Administration (SEPA). TVA both generates and transmits power, whereas the PMAs mainly transmit power generated by dams owned by the Army Corps of Engineers and the Bureau of Reclamation.

Federal entities account for 7 percent of U.S. power generation, and they own about 14 percent of the nation's transmission lines.¹ Most of the power carried by the PMAs is hydroelectric, but an exception is that BPA buys power from the Columbia Nuclear Generating Station, owned by the state of Washington.²

The PMAs sell most of their power to “preference” customers, mainly government-owned local utilities and rural electric cooperatives (RECs).³ RECs are customer-owned nonprofit companies, which have grown because of their access to PMA power and the receipt of federal subsidies.⁴ PMA “preference” customers have first rights to buy low-priced federal power.

This bulletin discusses the PMAs, the related federal generation facilities, and the RECs. It argues that federal power infrastructure should be privatized and that subsidies to

the RECs should be ended. A separate Cato study discusses privatizing the TVA.⁵

The federal government entered the electricity business in the mid-20th century when faith in government ownership was high. But over time it has become clear that government-run businesses typically lag private businesses in efficiency, innovation, and environmental performance. As such, there has been a global trend toward privatizing government-run businesses.⁶ In recent decades, more than 100 countries have moved thousands of firms—worth a total of more than \$3 trillion—to the private sector.⁷ Many nations have privatized parts of their electricity infrastructure.⁸

In its 2018 federal budget, the Trump administration proposed privatizing the PMAs. The budget said that “ownership of transmission assets is best carried out by the private sector where there are appropriate market and regulatory incentives.”⁹ And it said the proposal to “eliminate or reduce the PMA's role in electricity transmission and increase the private sector's role would encourage a more efficient allocation of economic resources and mitigate risk to taxpayers.”¹⁰

The administration is on the right track. About three-quarters of Americans receive electric power from for-profit private utilities.¹¹ There are no sound policy reasons for the other one-quarter to be supplied by government facilities and subsidized nonprofit firms. Privatizing the PMAs and federal generation facilities would raise funds from the initial selloff, and the new private entities would pay income and property taxes, thus raising revenues for federal, state, and local governments. Ending subsidies to the RECs would also benefit the federal budget.

SUBSIDIZED POWER

The four PMAs operate in different regions of the country and have somewhat different structures. From the largest to the smallest:

- BPA transmits power from 31 hydroelectric dams owned by the Army Corps of Engineers and the Bureau of Reclamation, as well as power from a state nuclear plant. BPA delivers power to local utilities in 8 states in the Pacific Northwest. It was created in 1937.
- WAPA transmits power from 56 dams owned by the Corps of Engineers, the Bureau of Reclamation, and the International Boundary and Water Commission. It delivers power to local utilities in 15 western states. It was created in 1977.
- SWPA transmits power from 24 dams owned by the Corps of Engineers to local utilities in 6 southwestern states. It was created in 1943.
- SEPA markets power from 22 dams owned by the Corps of Engineers to local utilities in 11 southeastern states. Unlike the other PMAs, SEPA does not own transmission lines; it merely handles the marketing of the power. It was created in 1950.

The four PMAs have one thing in common: they all receive benefits not enjoyed by private utilities. The main customers of the PMAs—local government utilities and rural electric cooperatives—also receive special benefits. There are more than 800 RECs, which deliver 12 percent of the nation’s electricity.¹²

The PMAs enjoy preferential financing compared with private businesses. Some of them receive federal appropriations for capital investment, which must be repaid but in a subsidized manner.¹³ The PMAs borrow from the U.S. Treasury at below-market rates.¹⁴ BPA borrows from external sources, but its bonds have implicit federal backing.¹⁵ These borrowing advantages create benefits of about \$300 million a year, according to the U.S. Energy Information Administration (EIA).¹⁶

PMA customers—the local utilities—have financial advantages as well. Government-owned local utilities issue tax-exempt bonds, which provide lower-cost financing than for-profit utilities enjoy. Utilities are often heavy borrowers, so this is an important advantage.

The RECs receive numerous financial benefits from the government, including subsidized loans and loan guarantees from the U.S. Department of Agriculture’s Rural Utilities Service (RUS).¹⁷ Those subsidies have averaged \$700 million a year in the past five years.¹⁸ Also, the RECs can borrow from

a special nonprofit financing company, which in turn borrows from the U.S. Treasury.¹⁹

The benefits enjoyed by the RECs had origins in the 1935 creation of the Rural Electrification Administration (REA), which aimed to electrify rural America.²⁰ By 1975, more than 99 percent of U.S. farms had electricity, so Congress might have ended the REA at that time.²¹ Instead, it changed the name to the Rural Utilities Service in 1994, and today the agency subsidizes a range of rural activities—from electricity and Internet service to gas stations and ice cream shops.²² There has been concern about the subsidized RECs unfairly competing against for-profit businesses.²³

Tax exemption is another benefit received by the PMAs, RECs, local government utilities, the Corps of Engineers, and the Bureau of Reclamation. Unlike for-profit utilities, these entities do not pay income taxes. The result is that in some parts of the country, the whole chain of generation-transmission-distribution is exempt from income tax, while in other places the whole chain is fully taxable.

In Northern Virginia, electricity is provided by the for-profit Virginia Power, which is taxed on its earnings from generation, transmission, and distribution. It pays hundreds of millions of dollars a year in federal and state corporate income taxes, which in recent years have averaged 8.5 percent of its revenues.²⁴ By contrast, in Washington State, many households receive tax-free power that flows from federal dams, through BPA transmission lines, and is delivered by local government utilities. The uneven tax treatment of the electricity industry in different regions of the nation is unfair and distortionary.

Property taxes also create uneven treatment. The PMAs, federal hydropower facilities, and local government utilities do not pay property taxes, although these entities may pay “payments in lieu of taxes.” By contrast, private utilities pay a heavy load of property taxes on their assets. In many states, they are some of the largest property taxpayers. Property taxes and other non-income taxes paid by for-profit utilities average 5 percent of revenues.²⁵

Congress passed a major tax reform bill in 2017. But one unjustified tax break the bill did not repeal was the tax-free status of government and nonprofit electric power. The way to fix the problem is to privatize the PMAs and federal hydropower facilities, while ending subsidies to the RECs and requiring them to pay income taxes.²⁶ Those reforms would broaden the tax bases of federal, state, and local governments.

The special benefits conferred on the PMAs and RECs are unnecessary. Three-quarters of Americans receive their

electric power from for-profit businesses that pay taxes. There is no reason for the federal government to favor the other one-quarter of the nation with subsidized electricity.

When it privatizes the PMAs, Congress should also end “preference” sales to local public utilities and the RECs. Those rules were based on misguided notions that it was somehow unfair or inefficient to earn profits on the sale of power. Besides, the RECs do earn net returns—essentially profits—and those earnings are distributed as “credits” to REC members.

As for the PMAs, they deliver electricity “at cost” without a layer of profit. Put aside that PMA costs are likely bloated by the inefficiencies of government operations. The lack of profits means that PMA owners—the American public—are being shortchanged because they are not being paid a sufficient net return for their investment in productive assets.²⁷ The benefits that PMA customers receive from subsidized power represent a loss to the general public.

The EIA produces an occasional report that tallies the subsidies going to each part of the energy industry. For electricity, the EIA notes that private utilities must earn a sufficient net return on their assets, but when “services provided by government-owned assets provide a below-market return on assets, a preferential benefit is being conferred on customers.”²⁸ The report says that the “opportunity cost” of public power is the return that the public is not receiving from its investments.

What are the effects of subsidies to the PMAs? One is that the PMAs sell their power at below-market rates.²⁹ The Government Accountability Office (GAO) found that WAPA, SWPA, and SEPA “sold wholesale electricity to their preference customers, from 1990 through 1995, at average rates from 40 to 50 percent below the rates that nonfederal utilities charged.”³⁰ Similarly, the Congressional Budget Office (CBO) found that the prices charged by WAPA and SWPA were “far below market rates.”³¹

PMA rates are low partly because the utilities rely on inexpensive hydropower. But in 2008 the EIA found that PMA rates are much lower than those of nearby private utilities. BPA rates were 38 percent lower than the average rates of nearby utilities, which also depend on hydropower.³² Similarly, the rates of the other PMAs averaged 28 percent below the rates of nearby utilities.³³ Those below-market rates resulted in PMA customers saving about \$2.4 billion per year, which “can be viewed as a form of federal support,” said the EIA.³⁴

A recent study by an economic consulting firm of President Donald Trump’s proposal to sell BPA found that the reform would raise BPA’s customer prices by between 26

and 44 percent.³⁵ The study was written from an anti-reform stance, but it indicated substantial underpricing in BPA’s current rates.³⁶

Artificially low prices might be good for PMA customers, but they induce customers to overconsume power, which in turn raises the demand for generation.³⁷ So federal ownership of power assets and the related subsidies runs counter to a green policy approach of promoting conservation. It is true that most PMA power comes from emissions-free hydro dams, but dams create other environmental problems, such as blocking salmon runs.

As for the RECs, they are definitely not green. A share of their power comes from more than 60 “generation and transmission” RECs, which rely heavily on coal-fired power plants.³⁸ Indeed, 7 out of the 10 most carbon-intensive utilities in the nation are RECs.³⁹

The *Washington Post* saw the irony of subsidizing the RECs: the federal government “is using taxpayer money to provide billions of dollars in low-interest loans [to the RECs] to build coal plants even as Congress seeks ways to limit greenhouse gas emissions.”⁴⁰ The RECs are known for their pro-coal lobbying efforts in Washington.⁴¹

The federal power-generating agencies—the TVA, Corps of Engineers, and Bureau of Reclamation—have also had poor environmental records over the decades, so privatization may improve their performance from a green perspective.⁴² There is some international evidence that electricity privatization improves environmental outcomes.⁴³

INEFFICIENCIES OF GOVERNMENT OWNERSHIP

Federal ownership of the PMAs and hydroelectric plants is out of step with the modern economy. The CBO found that most of the reasons for federal ownership of power facilities that “might have been appropriate in the 1930s are no longer valid.”⁴⁴ That is true. Rural America was put on the electric grid decades ago, so rural power subsidies are not needed today. Also, the subsidized and monopolistic federal power entities make less sense in an industry that has been moving toward deregulation and competition in recent decades.

Many nations have privatized electric utilities and other state-owned businesses. As noted, governments around the world have moved thousands of businesses—worth a total of more than \$3 trillion—to the private sector.⁴⁵ The trend was spurred by “disillusionment with the generally poor performance of state-owned enterprises,” said the Organisation for Economic Co-operation and Development (OECD).⁴⁶

The reforms have succeeded. Academic studies have found that privatization increases operational efficiencies, improves capital investment, and enhances customer service.⁴⁷ A review in the *Journal of Economic Literature* found that “privatization appears to improve performance measured in many different ways, in many different countries.”⁴⁸ The study concluded that privatized firms “almost always become more efficient, more profitable, increase their capital investment spending, and become financially healthier.”⁴⁹

In a 2005 book, finance professor William Megginson examined privatization in dozens of countries.⁵⁰ He concluded that “the weight of empirical evidence on the state versus private ownership question . . . now strongly supports those who believe that private ownership is inherently more efficient than state ownership. This is true even for natural monopolies.”⁵¹ The OECD found that “there is overwhelming support for the notion that privatization brings about a significant increase in the profitability, real output and efficiency.”⁵²

Megginson listed 136 electric utility privatizations between 1986 and 2003 in three dozen countries, including Australia, Germany, Italy, Spain, and the United Kingdom (UK).⁵³ The UK moved all of its generation, transmission, and distribution assets to the private sector in the 1990s. That led to the industry cutting its bloated workforce in half and doubling its labor productivity in the decade after reforms.⁵⁴

The UK electricity industry also became greener after privatization by replacing coal as a fuel source with cleaner natural gas.⁵⁵ The World Bank modeled the British reforms and found that “privatization yields substantial environmental benefits as cleaner gas generation replaces older coal-fired plant and thermal efficiencies rise at the remaining fossil fuel plant, leading to sharply reduced emissions.”⁵⁶ In general, privatization spurs increased production and consumption efficiency, and efficiency is green.

Would privatizing U.S. federal power facilities improve performance? Federal auditors have not studied that issue in recent years, but past studies on the failings of federal power still ring true. The CBO reported on the “high costs” of federal power in 1997 caused by various “government failures.”⁵⁷ It found that the “managerial structure of the federal power program . . . makes it hard to operate efficiently.”⁵⁸ It pointed to problems that remain today, such as the uncertainty created by the federal budget process.

The CBO said that federal power investments can be inefficient because of “the availability of low-cost federal financing, unrestrained by independent assessments of economic merit.”⁵⁹ There is a “lack of independent oversight of pricing and investment decisions” for federal power agencies.⁶⁰

The CBO found that federal power agencies spend “significantly less” on maintenance than for-profit utilities do.⁶¹ It found “inadequate maintenance of power assets—a problem that applies to all of the federal power agencies—and low utilization rates of hydropower-generating capacity.”⁶² And it found that private hydro dams “produced an average of 20 percent more electricity per unit of capacity than did [the federal] dams supplying the power marketing administrations.”⁶³ The CBO concluded that “privatization may offer the greatest opportunity for enhancing the efficiency of power production.”⁶⁴

The GAO has made similar observations. It found that “the federal planning and budgeting processes” in the Bureau of Reclamation and Corps of Engineers “do not always provide funding to repair the federal power assets when it is needed, delaying some repairs and also causing the power plants to become less available to provide power.”⁶⁵ It found that power plants owned by these two agencies “are generally less available to generate power than power plants operated by other generators of electricity.”⁶⁶ Recent Department of Energy data show that the capacity factor—the ratio of actual output to potential output—at federal power plants generally lags that of private plants.⁶⁷

The GAO found that uneven investment funding is a key problem: “the Bureau’s and the Corps’ hydropower plants are generally less reliable in generating electricity than non-federal hydropower plants. We concluded that these agencies were unable to obtain funding for maintenance and repairs as needed and therefore delayed repairs. These delays caused frequent, extended outages and inconsistent plant performance.”⁶⁸

These sorts of funding and management problems persist. A 2012 memo to the PMAs from Energy Secretary Steven Chu lamented: “The statutes governing the PMAs are extremely complex. There are hundreds of different statutes—the earliest dating back to 1902—that affect how and to whom the PMAs market federal power.”⁶⁹ Chu said, “The maze of statutes can divert the PMAs’ attention away from building and maintaining the infrastructure needed to compete in the global economy.”⁷⁰

Chu provided an example of the inefficiency: “Two PMAs—WAPA and SWPA—must obtain congressional approval to invest in even modest capital improvement, which could inadvertently limit the PMAs’ ability to maintain the reliability of the transmission grid.”⁷¹ There are similar concerns regarding the aging generation facilities of the Corps of Engineers and Bureau of Reclamation.⁷² Chronic federal deficits make the funding for needed upgrades to federal

power facilities uncertain. Privatization would open the door to new debt and equity financing of capital investment.

Federal mismanagement is exacerbated by political meddling. As one example, Congress required the nuclear power agency affiliated with BPA to purchase overly expensive fuel to prop up a Kentucky nuclear company.⁷³ That sort of costly meddling is common in government-run businesses, such as Amtrak and the U.S. Postal Service.

Privatization would improve operational efficiencies of the PMAs. Federal agencies tend to have bureaucratic procurement systems, and they are slower to fire poorly performing workers than private businesses. Federal pay scales tend to reward longevity, not performance. And federal worker benefits are excessive compared to benefits in the private sector.⁷⁴

The PMAs are also subject to the sorts of waste, fraud, and abuse that are common in federal agencies. Recent investigations found that WAPA employees have been using government credit cards for millions of dollars of personal spending on items such as guns, car parts, and sports equipment.⁷⁵ ABC News reported “outlandish spending” by WAPA employees, and Sen. John McCain of Arizona charged the agency with “widespread waste and mismanagement.”⁷⁶

When whistleblowers inside WAPA raised concerns, they were subjected to threats from agency managers to keep quiet.⁷⁷ WAPA has apparently accumulated a large slush fund of unobligated revenues, which has helped to facilitate the wasteful and illegal spending. McCain and Sen. Jeff Flake have introduced legislation to increase transparency at the agency.⁷⁸

However, privatization would be a more durable reform. It would create incentives to avoid such waste in the first place. Managers in for-profit businesses are accountable for reducing costs and improving performance, and they have the flexibility to adopt best practices on pay, procurement, and capital investment.

PMA REFORMS

In his study of the federal power agencies, economist Douglas Houston concluded that the “government has no core competency in electric power.”⁷⁹ Private businesses are entirely capable of generating, transmitting, and distributing power. For-profit companies generate more than four-fifths of the nation’s electricity, own two-thirds of transmission lines, and deliver about three-quarters of retail sales.⁸⁰ The federal government specializes in hydropower, but even here private companies own 62 percent of the nation’s hydropower plants, which account for 27 percent of hydropower capacity.⁸¹

Countries around the world have privatized electricity businesses, and U.S. foreign aid policies have supported that trend.⁸² In recent years, for example, the U.S. Agency for International Development helped fund privatization in Kosovo’s and Nigeria’s electricity systems.⁸³

Congress should privatize the PMAs and the related generation assets of the Corps of Engineers and Bureau of Reclamation. Either the assets could be sold to existing energy businesses, or portions of the systems could be established as new companies with public share offerings. Of the 136 global electricity privatizations that Megginson documented, two-thirds were sales to existing companies and one-third were share offerings.⁸⁴ Under privatization, the federal government could retain control over the nonpower functions of dams.⁸⁵

Privatization would improve operational efficiencies and allow prices to be set at market rates. Incentives to overconsume power would be ended. Privatization would increase transparency. It is difficult for the public to monitor the complex activities and finances of federal power entities, and Congress rarely holds oversight hearings, so waste and performance weaknesses go unchecked. By contrast, for-profit power firms are monitored by shareholders, creditors, and federal and state regulators. With the privatization of the British electricity industry, hidden financial problems were revealed.⁸⁶

Congress, the Federal Energy Regulatory Commission (FERC), and many states have taken steps in recent decades to inject greater competition into the electricity industry.⁸⁷ In this context, it makes sense for the federal government to level the industry’s playing field on taxes and regulations, and privatization would further that end.

Currently, federal power activities are subject to different and sometimes looser regulations than those imposed on private power firms. For example, unlike private dams, federal hydro dams are exempt from FERC licensing.⁸⁸ The income and property tax advantages of government and nonprofit power entities were noted. Privatization of federal power entities and repeal of tax and spending subsidies for the RECs would equalize the treatment with for-profit power firms.

Such reforms would benefit governments. In 1997, the CBO estimated that the sale of the PMAs and related federal generation assets would raise up to \$34 billion for the government and create net budgetary savings of up to \$14 billion.⁸⁹ Those totals would likely be higher today.

Federal, state, and local governments would raise ongoing revenues from income and property taxes imposed on the newly taxable power entities. And the federal government would save money by ending the subsidies provided to the PMAs and RECs.

In his 1987 budget, President Ronald Reagan proposed privatizing the PMAs because it would “result in a more efficient power system for electricity customers.”⁹⁰ Reagan was unsuccessful in that effort. In 1995, President Bill Clinton proposed privatizing WAPA, SEPA, SWPA, and the Alaska Power Administration. Clinton was able to sell the Alaska Power Administration in 1996, but he was unable to sell the other PMAs.

It makes sense for President Trump to dust off the Reagan and Clinton plans. Government-owned electricity companies are an anachronism today, as the global trend for three decades has been to privatize the industry. In the United States, for-profit businesses dominate electricity, so there are no practical reasons federal generation and transmission facilities should not be put on an equal footing and moved to the private sector.

NOTES

1. Quadrennial Energy Review, “Transforming the Nation’s Electricity System: The Second Installment of the QER,” January 2017, p. A-34.
2. The station is owned by Energy Northwest, which describes itself as “a municipal corporation and a joint operating agency of the state of Washington.”
3. Preference customers also include federal agencies, Indian tribes, state-owned entities, and irrigation districts.
4. The Rural Electrification Administration drafted a model state law for RECs in 1937 and started providing low-interest loans and other subsidies to spur their growth.
5. Chris Edwards, “Privatizing the Tennessee Valley Authority,” *DownsizingGovernment.org*, Cato Institute, October 14, 2016. The Obama administration’s fiscal 2014 and 2015 budgets suggested privatizing the TVA.
6. Chris Edwards, “Privatization,” *DownsizingGovernment.org*, Cato Institute, July 12, 2016.
7. William L. Megginson, “Privatization Trends and Major Deals in 2014 and Two-Thirds 2015,” *The PB Report 2014/2015*, Privatization Barometer, www.privatizationbarometer.com.
8. William L. Megginson, *The Financial Economics of Privatization* (Oxford, UK: Oxford University Press, 2005), pp. 366–80.

9. *Budget of the U.S. Government, Major Savings and Reforms, Fiscal Year 2018* (Washington: Government Printing Office, 2017), p. 131.
10. *Budget of the U.S. Government, Major Savings and Reforms, Fiscal Year 2018* (Washington: Government Printing Office, 2017), p. 131.
11. Quadrennial Energy Review, “Transforming the Nation’s Electricity System: The Second Installment of the QER,” January 2017, p. A-33. And see Massachusetts Institute of Technology, “The Future of the Electric Grid: An Interdisciplinary MIT Study,” 2011, pp. 4–8.
12. National Rural Electric Cooperative Association, “America’s Electric Cooperatives: 2017 Fact Sheet,” January 31, 2017. About 600 of the RECs carry PMA power.
13. Government Accountability Office, “Power Marketing Administrations: Repayment of Power Costs Needs Closer Monitoring,” GAO/AIMD-98-164, June 1998. The GAO has found that there is “under recovery” of the full costs the government has borne in power rates collected by the PMAs.
14. Western Area Power Administration, Annual Report, 2016, p. 5. WAPA was authorized to borrow \$3.25 billion from the Treasury under the 2009 stimulus bill. Bonneville Power Administration, Annual Report, 2016, p. 42. BPA is authorized to borrow up to \$7.7 billion from the U.S. Treasury.
15. U.S. Energy Information Administration, “Direct Federal Financial Interventions and Subsidies in Energy in Fiscal Year 2013,” March 2015, p. 58.
16. U.S. Energy Information Administration, “Direct Federal Financial Interventions and Subsidies in Energy in Fiscal Year 2013,” March 2015, pp. 59, 60.
17. Stephen Slivinski and Chris Edwards, “Subsidy Programs for Rural America,” *DownsizingGovernment.org*, Cato Institute, October 1, 2016.
18. *Budget of the U.S. Government, Analytical Perspectives, Fiscal Year 2018* (Washington: Government Printing Office, 2017), Public Budget Database. This is outlays for the Rural Electrification and Telecommunications Loans Program Account. Average for 2013 to 2017.
19. This company is the National Rural Utilities Cooperative

- Finance Corporation, which receives loans from the Federal Financing Bank of the U.S. Treasury.
20. The REA was created by Executive Order 7037 in 1935 and then codified by the Rural Electrification Act of 1936.
 21. Tadlock Cowen, “An Overview of USDA Rural Development Programs,” Congressional Research Service, January 18, 2007, p. 3.
 22. Steven Mufson, “Federal Loans for Coal Plants Clash with Carbon Cuts,” *Washington Post*, May 14, 2007. And see Lynne Kiesling and Terri Kandalepas, “Electric Cooperatives and a Changing Power Industry,” Reason Foundation, 2002.
 23. See “REC Expansion: Round II,” *LPGas*, March 1, 2003. One issue was an attempt by RECs to expand into the propane business.
 24. Dominion Resources, Inc., Securities and Exchange Commission Form 10-K, Fiscal Year Ended December 31, 2016, p. 49. This figure is the average of 2014 to 2016 for the Virginia Power subsidiary of Dominion Resources, which includes the business segments Dominion Virginia Power and Dominion Generation.
 25. Edison Electric Institute, “EEI 2016 Financial Review,” p. 6. This is the “Taxes (no income)” item in summary financial statements of U.S. investor-owned utilities for 2016. The bulk is property taxes.
 26. See Lynne Kiesling and Terri Kandalepas, “Electric Cooperatives and a Changing Power Industry,” Reason Foundation, 2002, p. 15. An estimate in the mid-1990s found that imposing federal income taxes on the RECs would raise about \$2.5 billion a year.
 27. Douglas A. Houston, “Federal Power: The Case for Privatizing Electricity,” Reason Foundation, March 1996.
 28. U.S. Energy Information Administration, “Federal Financial Interventions and Subsidies in Energy Markets 2007,” April 2008, p. 209.
 29. Douglas W. Elmendorf, Congressional Budget Office, “Federal Assets That Could Be Sold or Leased to Raise Revenue,” Letter to Honorable Ron Kind, March 6, 2009. And see Congressional Budget Office, “Budget Options,” February 2005.
 30. Government Accountability Office, “Federal Power: The Role of the Power Marketing Administrations in a Restructured

- Electricity Industry,” GAO/TRCED/AIMD-99-229, June 24, 1999, p. 5.
31. Congressional Budget Office, “Should the Federal Government Sell Electricity?” November 1997, p. 62.
 32. U.S. Energy Information Administration, “Federal Financial Interventions and Subsidies in Energy Markets 2007,” April 2008, p. 207.
 33. U.S. Energy Information Administration, “Federal Financial Interventions and Subsidies in Energy Markets 2007,” April 2008, p. 209. This figure is the simple average of the price advantage of the three utilities.
 34. U.S. Energy Information Administration, “Federal Financial Interventions and Subsidies in Energy Markets 2007,” April 2008, p. 208.
 35. Robert F. McCullough, Jr., “Privatization of Bonneville Power Administration’s Transmission Assets,” McCullough Research Partners, June 13, 2017.
 36. Robert F. McCullough, Jr., “Privatization of Bonneville Power Administration’s Transmission Assets,” McCullough Research Partners, June 13, 2017. The study’s assumption of higher prices from privatization was based on a higher rate of return under private ownership and the cost of paying income taxes. However, the author did not assume any increase of efficiency under privatization, which could mitigate price increases.
 37. For background on PMA pricing, see Kyna Powers, “Power Marketing Administrations: Proposals for Market-Based Rates,” Congressional Research Service Report no. RL32798, March 11, 2005.
 38. University of Wisconsin, Center for Cooperatives, “Research on the Economic Impact of Cooperatives: Rural Electric Overview,” undated, <http://reic.uwcc.wisc.edu/electric>.
 39. John Farrell et al., “Re-Member-ing the Cooperative Way,” Institute for Local Self-Reliance, March 2016.
 40. Steven Mufson, “Federal Loans for Coal Plants Clash with Carbon Cuts,” *Washington Post*, May 14, 2007.
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- Power Network, “Rural Electric Co-ops and Renewables: The Future of Distributed Generation,” October 31, 2013. The RECs lobby in favor of coal, and apparently many RECS have undemocratic managements, despite being “cooperative” organizations.
42. Chris Edwards, “Privatizing the Tennessee Valley Authority,” DownsizingGovernment.org, Cato Institute, October 14, 2016; Chris Edwards and Peter J. Hill, “Cutting the Bureau of Reclamation and Reforming Water Markets,” DownsizingGovernment.org, Cato Institute, February 1, 2012; Chris Edwards, “Cutting the Army Corps of Engineers,” DownsizingGovernment.org, Cato Institute, March 1, 2012.
43. Andrew Meyer and Grzegorz Pac, “Environmental Performance of State-Owned and Privatized Eastern European Energy Utilities,” *Energy Economics* 35 (March 2013): 205–14. The authors find that privatized generation plants in Eastern Europe produced 55 percent less SO₂ than did state-owned plants.
44. Congressional Budget Office, “Should the Federal Government Sell Electricity?” November 1997, p. 13.
45. William L. Megginson, “Privatization Trends and Major Deals in 2014 and Two-Thirds 2015,” *The PB Report 2014/2015*, Privatization Barometer, www.privatizationbarometer.com.
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48. William L. Megginson and Jeffrey M. Netter, “From State to Market: A Survey of Empirical Studies on Privatization,” *Journal of Economic Literature* 39, no. 2 (June 2001), 25.
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50. William L. Megginson, *The Financial Economics of Privatization* (Oxford, UK: Oxford University Press, 2005), p. 66.
51. William L. Megginson, *The Financial Economics of Privatization* (Oxford, UK: Oxford University Press, 2005), p. 66.
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56. David M. Newbery and Michael G. Pollitt, “The Restructuring and Privatization of the U.K. Electricity Supply—Was It Worth It?” World Bank, September 1997.
57. Congressional Budget Office, “Should the Federal Government Sell Electricity?” November 1997, p. xiii.
58. Congressional Budget Office, “Should the Federal Government Sell Electricity?” November 1997, p. xiii.
59. Congressional Budget Office, “Should the Federal Government Sell Electricity?” November 1997, p. 17.
60. Congressional Budget Office, “Should the Federal Government Sell Electricity?” November 1997, p. 17.
61. Congressional Budget Office, “Should the Federal Government Sell Electricity?” November 1997, p. 20.
62. Congressional Budget Office, “Should the Federal Government Sell Electricity?” November 1997, p. xiii.
63. Congressional Budget Office, “Should the Federal Government Sell Electricity?” November 1997, p. 21.
64. Congressional Budget Office, “Should the Federal Government Sell Electricity?” November 1997, p. xiv.
65. Government Accountability Office, “Federal Power: Options for Selected Power Marketing Administrations; Role in a Changing Electricity Industry,” GAO/RCED-98-43, March 1998, p. 8.
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