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FEDERAL POWER

PMA Rate Impacts, by Service Area

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Resources, Community, and
Economic Development Division

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The Honorable John T. Doolittle
Chairman, Subcommittee on Water and Power
Committee on Resources
House of Representatives

The Honorable John R. Kasich
Chairman, Committee on the Budget
House of Representatives

The federal government has played a significant role in the development of electricity markets. Primarily in the 1930s, the federal government began to market electricity after the Congress authorized the construction of dams and established major water projects. These projects are managed for multiple purposes—for example, providing water for irrigation, flood control, water supplies, navigation, and recreation. Federal agencies also generate electricity at about 130 hydropower plants located at the water projects, providing about 5 percent of the nation's electricity supply.[1] To provide this power to many parts of rural America, the government established power marketing administrations (PMA) to sell the power that is not used for projects' other purposes.[2] Rural America is now electrified. In the last Congress, proposals were introduced that would have required the government to sell the PMA-related hydropower assets.

To aid in congressional deliberations on the future role of the PMAs, as requested we are providing a PMA-by-PMA analysis of the potential rate changes that would likely be experienced by preference customers[3] who buy power from three of the PMAs if the power is sold at market rates.[4]

[1]This power excludes that which is provided by the Tennessee Valley Authority (TVA)—a multipurpose independent federal corporation. Among other activities, TVA generates and markets power, which it sells in most of Tennessee and parts of Alabama, Georgia, Kentucky, Mississippi, North Carolina, and Virginia.

[2]These PMAs include the Southeastern Power Administration, Southwestern Power Administration, and Western Area Power Administration. In addition, the Bonneville Power Administration (Bonneville), the oldest and the largest in terms of total revenues, operates in the Pacific Northwest. Finally, the projects constituting the Alaska Power Administration, the smallest PMA, were fully divested in October 1997 and August 1998.

[3]Preference customers are cooperatives and public bodies, such as municipal utilities, irrigation districts, and military installations.

[4]Recently, we issued Federal Power: Regional Effects of Changes in PMAs' Rates (GAO/RCED-99-15, Nov. 16, 1998). That report provides state-by-state information on (1) the extent to which preference customers' rates may change if market rates are charged, (2) the areas the three PMAs' preference customers report serving, and (3) the incomes in these areas and the extent to which they are rural or urban.

More specifically, we identify potential changes in preference customers' rates and the share of total state power consumption for each state served by the Southeastern Power Administration (Southeastern), the Southwestern Power Administration (Southwestern), and the Western Area Power Administration (Western).[5]

Background

Now that nearly all households in America have electricity, some believe that the Department of Energy's (DOE) PMAs have completed their mission of providing electricity to rural America and that the PMA-related hydropower assets[6] should be divested, particularly since greater competition exists in the electricity industry. Other options would be to (1) maintain the status quo regarding the ownership and operation of the government's hydropower assets or (2) improve how the federal assets are managed and operated, such as charging rates for power based on competition (market rates).[7] The PMAs sold wholesale power to their preference customers at average rates that, from 1990 through 1995, were from 40 to 50 percent below the rates nonfederal utilities charged.[8] Although preference customers generally purchase most of their power from sources other than the PMAs and, as a result, pay market rates for that power, concerns have been raised that a change in PMAs' ownership or the means by which they establish rates could increase rates and could adversely affect the rural or poorer areas they serve.

Our analyses identify how much preference customers' rates would likely change if market rates are charged. To do this, we assumed that a customer would pay a rate equal to the average rate it paid for wholesale power from sources other than the PMA(s) in 1995. We then estimated how each preference customer's rate change would affect the rates paid by its residential end-users. To do this, we assumed that the preference customer would pass the rate change on proportionally to its end-users.

[5]We focused our examination on Southeastern, Southwestern, and Western. Bonneville is not covered by this report; Bonneville's preference customers rely significantly on its power, which could cause rate increases that would not be comparable to those of the other PMA's customers.

[6]Power marketed by the PMAs is generally produced by facilities owned and operated by the Department of the Interior's Bureau of Reclamation and the U.S. Army Corps of Engineers.

[7]Our report Federal Power: Options for Selected Power Marketing Administrations' Role in a Changing Electricity Industry (GAO/RCED-98-43, Mar. 6, 1998) identifies options that the Congress and other policymakers could pursue to address concerns about the PMAs' role in restructured markets or to manage them in a more businesslike fashion. Among other options, the report discusses divestiture and its potential impact on preference customers by individual PMA. DOE believes that market rates would not necessarily be charged if a PMA is divested to a public entity.

[8]Many of these preference customers resell the power that they purchase from the PMAs to industrial, commercial, and/or residential end-users.

Results in Brief

In general, a preference customer's potential rate increase depends primarily on what portion of its total power comes from the PMA and how close the PMA's rate is to the market rates. Significant variation exists among the PMAs and among states if these PMAs begin to charge market rates for the power they market—most rate increases would likely be relatively small, although some would likely be larger. Overall, slightly more than two-thirds of the preference customers that purchase power directly from Southeastern, Southwestern, and Western would likely see relatively small or no rate increases if these PMAs begin to charge market rates for the power they market.

- Almost all of Southeastern's preference customers would likely see relatively small rate increases of up to one-half cent per kilowatthour (kWh)[9] on rates that in 1995 typically ranged from 3.5 to 6.0 cents per kWh. Most of these preference customers would likely see increases of less than one-tenth cent per kWh. If the preference customers served by Southeastern pass the higher rates on proportionally to their residential end-users, most end-users would see their monthly electricity bill increase by less than $1, while the maximum increase in their electricity bill would range in most states between $1 and $8, depending on the state.
- Most of Southwestern's preference customers would likely see relatively small rate increases of up to one-half cent per kWh on rates that in 1995 typically ranged between 1.5 and 3.5 cents per kWh. In turn, in most cases, residential end-users that receive power from Southwestern's preference customers would see their electricity bill increase by less than $3 a month.
- Preference customers who receive power from Western would likely see a variety of rate increases on rates that typically ranged from 1.5 to 4.0 cents per kWh. In some states, more than three-quarters of the preference customers would likely see relatively small increases of less than one-half cent per kWh. In these states, residential end-users served by most preference customers would see rate increases of less than $2.50 in their monthly electricity bill. In contrast, a number of preference customers in some other states would likely see average rate increases that exceed 1.5 cents per kWh. For more than three-quarters of these preference customers, their residential end-users would pay about $11 to $24 more per month for electricity.

Generally, of the total power consumed in a state, the portion provided by the three PMAs is small. For example, in 1995, the PMAs provided 5 percent or less of the total power consumption in 22 of the 29 states in our

[9]A watt is the basic unit used to measure electric power. A watthour is equal to a watt of power applied for 1 hour. A kilowatthour is 1,000 watthours.

analysis. The share for three states, however, exceeded 10 percent—with the share for South Dakota being about 23 percent. The average for the 29 states was 2 percent.

Southeastern Power Administration

We found that most rate increases for Southeastern's customers would likely be relatively small and that the three PMAs provided small portions of power to those states served by Southeastern.

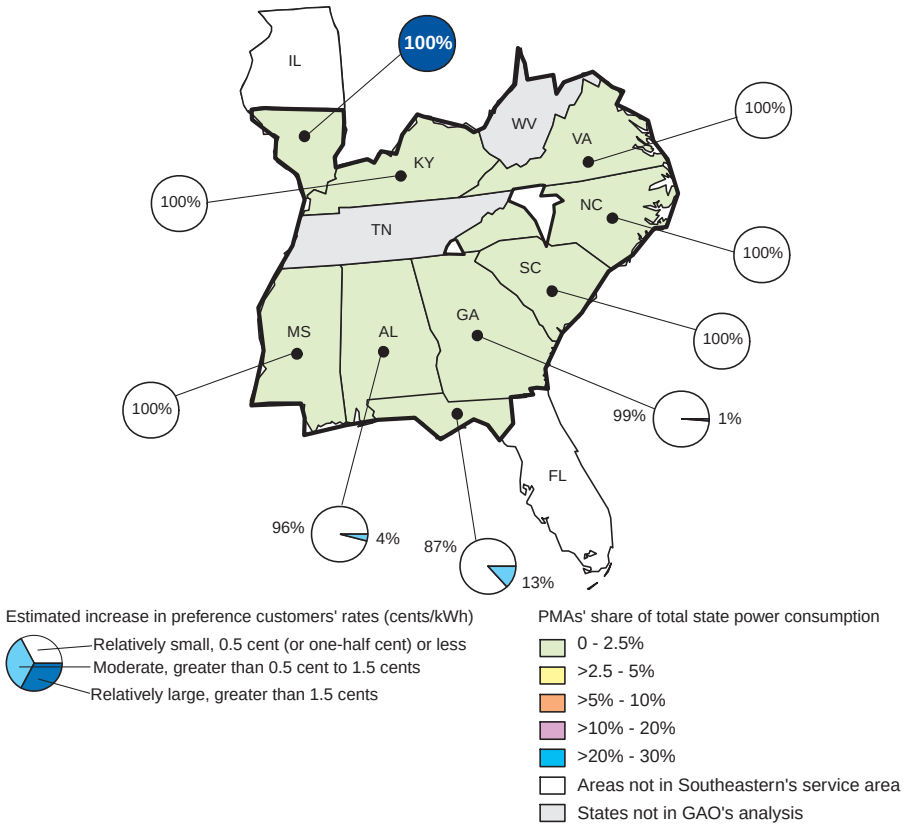
Most Rate Increases for Southeastern's Customers Would Likely Be Small

As shown in figure 1, most of Southeastern's preference customers would likely see relatively small rate increases if they pay market rates for PMA power.[10] Specifically, almost all of Southeastern's preference customers would likely see average rate increases of up to one-half cent per kWh on rates that in 1995 typically ranged from 3.5 to 6.0 cents per kWh. Most of these preference customers would likely see increases of less than one-tenth cent per kWh. If the preference customers served by Southeastern pass the higher rates on proportionally to their residential end-users, most end-users would see their monthly electricity bill increase by less than $1, while the maximum increase in their electricity bill would range in most states between $1 and $8, depending on the state.

Figure 1 also shows that in nearly every state Southeastern serves, at least 85 percent of the preference customers would likely see relatively small rate increases. Slightly more than half of the PMA's preference customers would likely see increases of less than one-tenth cent per kWh. The only relatively large rate increase for a preference customer served by Southeastern would likely be in Illinois, which has one preference customer.

[10]In our analysis, the increases that we considered relatively small (0.5 cent per kWh or less), moderate (from greater than 0.5 cent up to 1.5 cents), and relatively large (greater than 1.5 cents) represent amounts above the average rates that preference customers paid for power from all sources (both PMAs and others) in 1995. The increases represent the difference between these average rates and what preference customers would likely have to pay if they purchased all of their power at market rates. For example, if a preference customer of Southeastern paid a combined rate of 3.5 cents per kWh for power from the PMA and other sources in 1995 and paid 3.9 cents for power from non-PMA sources, we assumed the customer's rates would likely rise from 3.5 to 3.9 cents—a relatively small increase of 0.4 cent—if it had to pay market rates for all of its power. Our calculation of the increase in a residential end-user's monthly electricity bill represents the amount of the preference customer's increase times the average monthly consumption of electricity by residential end-users in the preference customer's state.

Figure 1: Potential Changes in Preference Customers' Rates and PMAs' Share of Total Power Consumption in Each State Served by Southeastern



Notes: PMA power as a share of the total power consumed in each state includes all power purchased from Southeastern, Southwestern, and/or Western but excludes power the PMAs sold to state-owned and federally owned preference customers.

The thicker black lines in the figure show the boundary of Southeastern's service territory.

The circles for five of the nine states--Kentucky, Mississippi, North Carolina, South Carolina, and Virginia--are colored entirely white because all preference customers in those states would likely see relatively small rate increases of 0.5 cent per kWh or less. The circle for Illinois is colored entirely dark blue because that state's one preference customers would likely see a relatively large rate increase.

We did not include Tennessee in our analysis because that state is served by TVA--a unique, federally owned utility. We were unable to design a methodology to incorporate TVA in our rate analysis. We did not include West Virginia in our analysis because Southeastern did not sell power to preference customers in that state in 1995.

Source: Developed by GAO from an analysis of data provided by the Energy Information Administration and Southeastern's, Southwestern's, and Western's 1995 annual reports.

As we discuss in our March and November 1998 reports, it is important to remember that in many cases where rate increases would likely be relatively large, the preference customers paid about 1 to 1.5 cents per kWh in 1995 for PMA power. These rates on average were about 2.5 to 3 cents per kWh lower than what utilities paid in the private market nationwide. Conversely, in many cases where rate increases would likely be relatively small, that is, one-half cent per kWh or less, preference customers generally paid rates close to the market rates.

Also, a preference customer's rate increase also depends on what portion of its total power comes from the PMA(s). Generally, the less a preference customer relies on PMA power, the lower the rate increase would likely be. In contrast, a preference customer that purchases a large portion of its power from a PMA is more likely to experience a larger increase. Notwithstanding, DOE officials noted that the amounts of power that customers purchase may be deemed more significant than our categorization suggests because in many cases the power purchased from the PMAs is provided at times of peak demand.

PMAs Provided Small Portions of Power to States Served by Southeastern

The likely rate increases if the preference customers pay market rates for PMA power would usually affect a small portion of the power consumed in each state, as shown by the coloring of the states in figure 1.[11] For states in our analysis that are served by Southeastern, the three PMAs provided less than 1.8 percent of the total power consumed in each state.

Southwestern Power Administration

We found that about half of Southwestern's customers would likely see relatively small rate increases but that others' increases would likely be larger. Also, the three PMAs provided small portions of power to the states served by Southwestern.

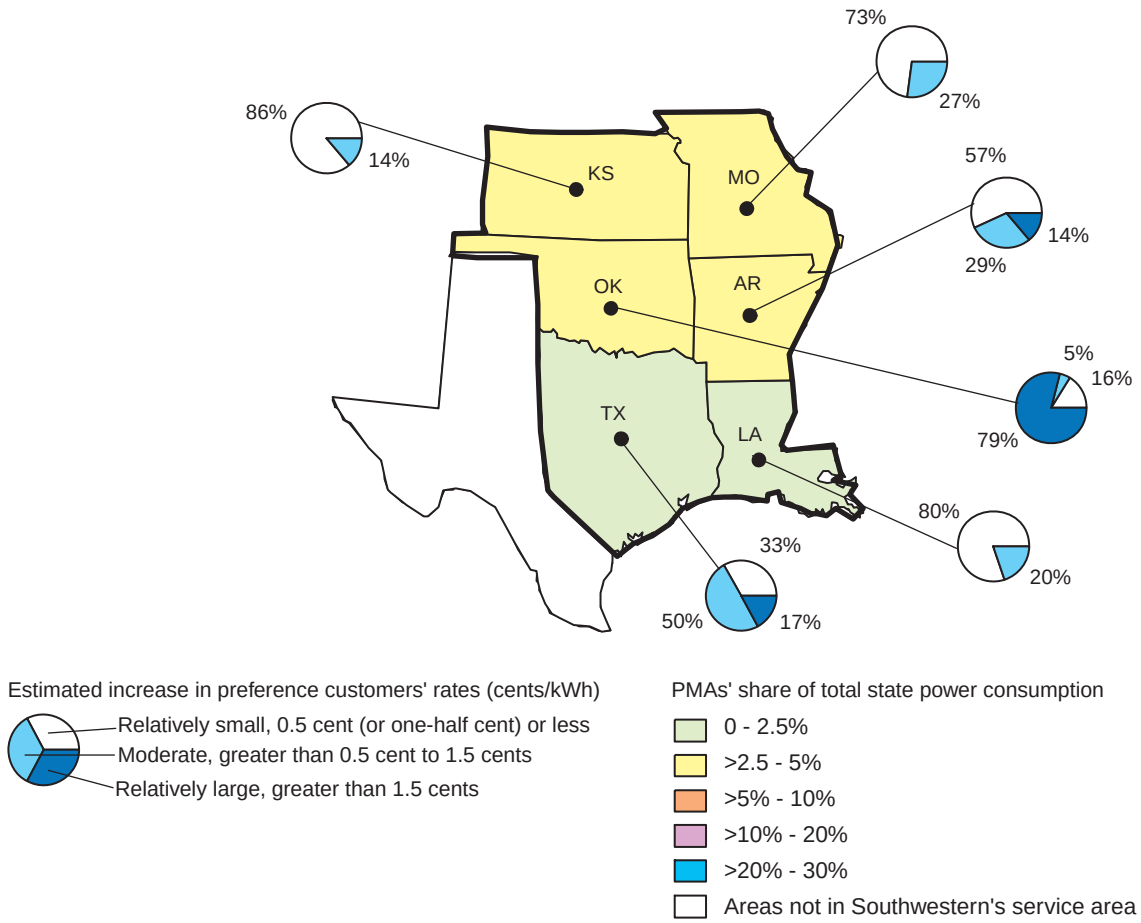
About Half of Southwestern's Customers Would Likely See Relatively Small Rate Increases, but Others' Would Likely Be Larger

As shown in figure 2, most of Southwestern's preference customers would likely see relatively small rate increases of up to one-half cent per kWh on rates that typically ranged between 1.5 and 3.5 cents per kWh. In turn, residential end-users that receive power from most of Southwestern's preference customers would see their electricity bill increase by less than $3 a month. However, in Oklahoma, 79 percent of the preference customers would likely see larger increases that exceed 1.5 cents per kWh. For most of these customers, their residential end-users would see

[11]Collectively, the three PMAs provided 5 percent or less of the total power consumption in 22 of the 29 states in our analysis. The average for the 29 states was 2 percent.

monthly increases of about $22. Most of these customers paid less than 1.5 cents per kWh—less than half the 1995 national average market rate—and purchased all of their power from Southwestern. Taken together, Southwestern's preference customers would likely experience higher rate increases than Southeastern's customers but lower increases than Western's.

Figure 2: Potential Changes in Preference Customers' Rates and PMAs' Share of Total Power Consumption in Each State Served by Southwestern



Notes: PMA power as a share of the total power consumed in each state includes all power purchased from Southeastern, Southwestern, and/or Western but excludes power the PMAs sold to state-owned and federally owned preference customers.

In 1995, some preference customers in Kansas, Missouri, and Texas purchased power from Southwestern, while others purchased power from Western. This figure shows potential rate increases in these states for customers purchasing power only from Southwestern.

The thicker black line in the figure shows the boundary of Southwestern's service territory. Portions of Kansas are also within Western's service territory.

Source: Developed by GAO from an analysis of data provided by the Energy Information Administration and Southeastern's, Southwestern's, and Western's 1995 annual reports.

PMAs Also Provided Small Portions of Power to States Served by Southwestern

As with Southeastern, the likely rate increases in states served by Southwestern would usually affect a small portion of the power consumed in each state. For states in our analysis served by Southwestern, the three PMAs provided small portions of the total power consumed—ranging from about 0.6 percent to 4.1 percent.

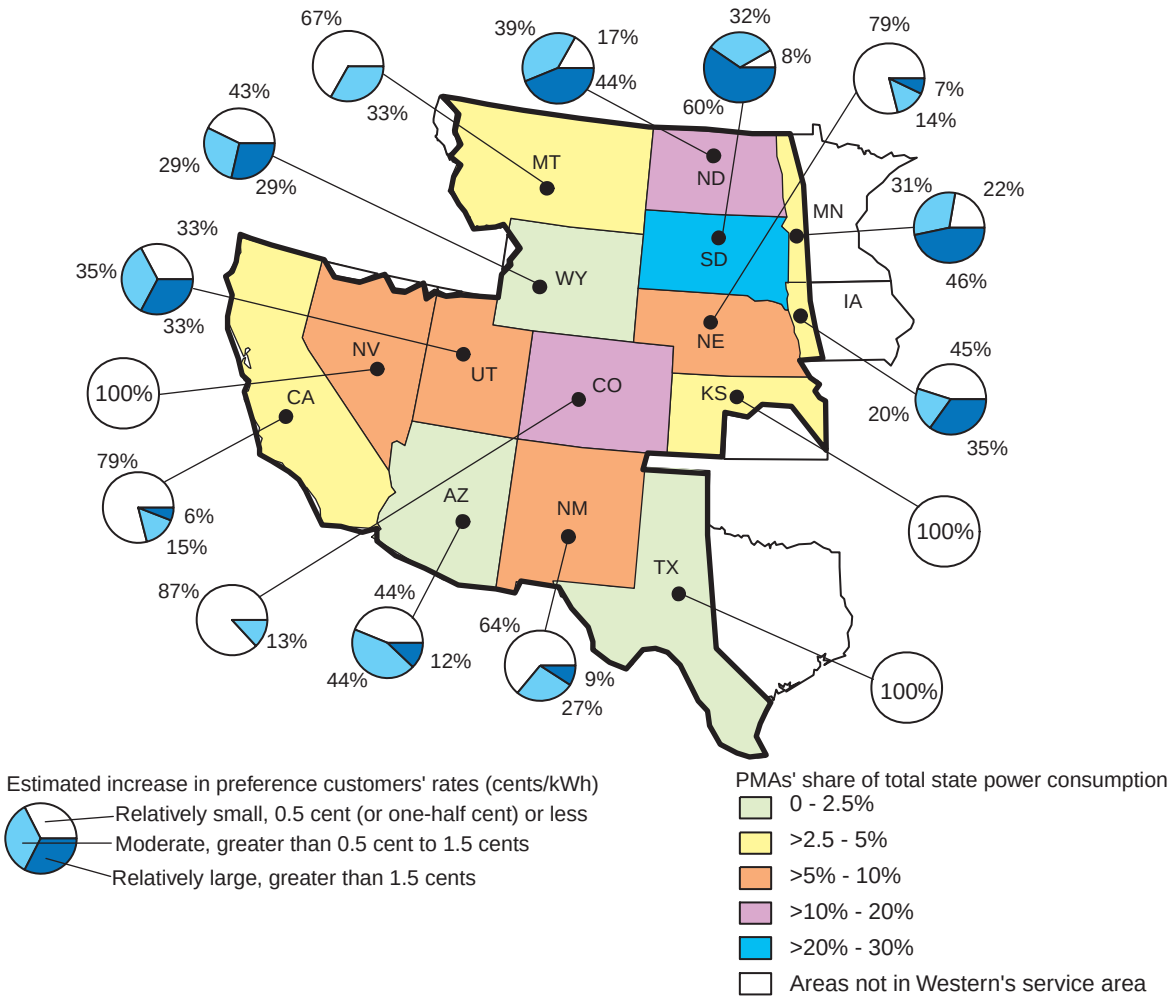
Western Area Power Administration

We found that Western's customers would likely see a variety of rate increases if market rates are charged. Also, the three PMAs provided larger portions of power to some states served by Western than they did for states served by Southeastern and Southwestern.

Western's Preference Customers Would Likely See a Variety of Rate Increases

As shown in figure 3, preference customers who receive power from Western would likely see a variety of rate increases on rates that typically ranged from 1.5 to 4.0 cents per kWh in 1995. In California, Colorado, and Nebraska, for example, more than three-quarters of the preference customers would likely see relatively small increases of less than one-half cent per kWh. In these states, residential end-users served by most preference customers would see rate increases of less than $2.50 in their monthly electricity bill. At least 25 percent of the preference customers in several states served by Western, including Arizona, Montana, and New Mexico, would likely experience average rate increases from greater than one-half cent up to 1.5 cents per kWh. Finally, a large number of preference customers in several states, including Iowa, Minnesota, and South Dakota, would likely experience rate increases that exceed 1.5 cents per kwh. For more than three-quarters of these preference customers, their residential end-users would pay about $11 to $24 more per month for electricity.

Figure 3: Potential Changes in Preference Customers' Rates and PMAs' Share of Total Power Consumption in Each State Served by Western



Notes: PMA power as a share of the total power consumed in each state includes all power purchased from Southeastern, Southwestern, and/or Western but excludes (1) power the PMAs sold to state-owned and federally owned preference customers and (2) any power purchased from Bonneville.

In 1995, some preference customers in Kansas, Missouri, and Texas purchased power from Western, while others purchased power from Southwestern. This figure shows potential rate increases in these states for customers purchasing power only from Western.

In 1995, Western sold power to one customer in Missouri. That customer's rates would likely see a relatively small increase if market rates are charged. In 1995, Western also sold power to one customer in Wisconsin, which represented less than 0.01 percent of the state's total power consumption. That customer's rates would likely see a moderate increase if market rates are charged.

The thicker black line in the figure shows the boundary of Western's service territory. The portion of Kansas within Western's service territory is also included in Southwestern's service territory.

The circles for 3 of the 15 states--Kansas, Nevada, and Texas--are colored entirely white because all preference customers in those states would likely see relatively small rate increases of 0.5 cent per kWh or less.

Source: Developed by GAO from an analysis of data provided by the Energy Information Administration and Southeastern's, Southwestern's, and Western's 1995 annual reports.

PMAs Provided Larger Portions of Power to Some States Served by Western

We found that the portions of PMA power consumed in some states served by Western were larger than those for states served by Southeastern and Southwestern. As shown in figure 3, the share of total state power consumption for states served by Western was small. It was as small as about 0.6 percent for Texas. The share for three states, however, exceeded 10 percent—with the share in South Dakota being nearly 23.3 percent.

Agency Comments

We discussed the facts in this report with DOE's Power Marketing Liaison Office, which represents Southeastern, Southwestern, and Western. Officials of that office, including its Assistant Administrator, stated that their comments fall into three general areas.[12] They stated that they believe that our data sources are flawed, that the data we used do not reflect today's market situation, and that average rates are not a good proxy for specific PMA power services. Specifically, DOE officials commented that their primary concern with our report was their belief that we relied on incomplete and/or inaccurate data. Our analyses used data reported annually by the PMAs to the Secretary of Energy and by the preference customers to the Energy Information Administration. These data describe the operating and financial condition of the PMAs as well preference customers' electricity purchases in the wholesale market and are the best data available. DOE officials also commented that using 1995 data does not reflect today's market situation because PMAs' rates have recently declined. Comparable data for 1996 or later were not available at the time of our analyses; however, we see no evidence that the PMAs' rates have fallen more than rates in the wholesale market. Industry experts state that market rates for wholesale power have also declined since 1995 and will fall farther. If market rates fall more than the PMAs' rates, our estimates of rate increases will prove to be overstated. Finally, DOE officials commented that average rates are not a good proxy for specific power services from PMAs. We acknowledge that average revenue per kWh (total revenues/total electricity sales) is an imperfect indicator of electricity rates because it combines the costs of several types of services; however, we believe it is a strong, broad indicator of the relative power production costs of the PMAs compared to those of investor-owned utilities and publicly owned generators.

[12]DOE officials stated that they had no new comments but reiterated some of their previous concerns with our data sources, which they raised for our November 1998 report. See app. V of GAO/RCED-99-15, pp. 94-105.

Scope and Methodology

To estimate any potential rate changes if market rates are charged (after a divestiture of the PMAs or otherwise), we calculated how much, in cents per kWh, each preference customer[13] paid, on average, for power purchased from (1) all sources, including the PMAs, and (2) sources other than the PMAs, including the wholesale market, in 1995.[14] Then, we took the difference between these two, considering the latter to be the market rate. To calculate how much preference customers paid for the PMA power, we obtained data from Southeastern's, Southwestern's, and Western's fiscal year 1995 annual reports. Then, to determine how much each preference customer paid for the power it purchased from other sources, we used the "sales for resale" databases compiled by DOE's Energy Information Administration. In cases in which the Energy Information Administration's data lacked the volumes of wholesale power the customers purchased from non-PMA sources, the amounts the customers paid for power, or both, we assumed the customer paid a rate equal to the average market rate paid by customers of the same type for wholesale power in the customer's state. To estimate how much each preference customer's rates would likely change if it paid market rates for PMA power, we assumed that the customer would pay a rate equal to the average rate it paid for wholesale power from sources other than the PMA(s) in 1995. We used this assumption because, for example, it is likely that in the period immediately after a divestiture, the new owners of the PMAs' assets would charge the prevailing market rates for wholesale power in the area. Finally, we compared the average rate each preference customer paid for all of its power in 1995 with the rate the customer paid for the power it purchased from sources other than the PMA(s). The difference in these two rates represents our estimate in cents per kWh of each customer's potential change in average rates if it paid market rates for the power it purchased from the PMA(s). After estimating how much preference customers' rates would likely change, we analyzed the rate changes by state. To provide context for the rate changes, we estimated how each preference customer's rate change would affect the rates paid by its residential end-users. We assumed that (1) the preference customer would pass the rate change on proportionally to its end-users and (2) that each

[13]We estimated potential rate increases for the preference customers that the PMAs listed in their 1995 annual reports. These customers buy power directly from the PMAs. We did not include utilities that indirectly buy PMA power through direct preference customers, such as generation and transmission cooperatives and municipal joint action agencies.

[14]For this report, we based our work on an existing database developed for an earlier GAO report, GAO/RCED-98-43, which compiled information on 1995 purchases. Our analyses for both reports used data reported annually by the PMAs to the Secretary of Energy and by the preference customers to the Energy Information Administration. As of November 1998, when we completed our analyses, comparable data for 1996 or later were not available, according to DOE's Energy Information Administration.

state's residential end-users would consume a quantity of electricity equal to the average residential consumption for that state in 1995, according to the Energy Information Administration.[15]

To calculate the share of total state power consumption provided by the PMAs, we added the power provided by any of the three PMAs to those preference customers included in our analysis and divided that sum by the total state power consumption in 1995, as reported by the Energy Information Administration.[16]

It is important to note that our analysis included only those customers that purchased power directly from the PMAs. It is also important to note that because our estimates of potential rate increases are based on market rates in 1995, our methodology is conservative. If prices for wholesale power decline in the future, as many industry analysts and DOE officials believe they will, customers' rate increases generally will be smaller than our estimates. We conducted our review from November 1998 through January 1999 in accordance with generally accepted government auditing standards.

As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies to appropriate House and Senate committees and subcommittees; interested Members of the Congress; the Administrators of Southeastern, Southwestern, and Western; and other interested parties. We will also make copies available to others upon request.

[15]A more detailed discussion of our scope and methodology is contained in GAO/RCED-99-15.

[16]See Electric Sales and Revenue 1995 (DOE/EIA-0540 (95), Dec. 1996).

If you have any questions or need additional information, please contact me on (202) 512-3841. Major contributors to this report were Peg Reese, Charles Hessler, Lynne Goldfarb, and Daren Sweeney.

Susan D. Kladiva
Associate Director, Energy,
Resources, and Science Issues

Related GAO Products

Federal Power: Regional Effects of Changes in PMAs' Rates (GAO/RCED-99-15, Nov. 16, 1998).

Federal Power: Options for Selected Power Marketing Administrations' Role in a Changing Electricity Industry (GAO/RCED-98-43, Mar. 6, 1998).

Federal Electricity Activities: The Federal Government's Net Cost and Potential for Future Losses (GAO/AIMD-97-110 and 110A, Sept. 19, 1997).

Federal Power: Issues Related to the Divestiture of Federal Hydropower Resources (GAO/RCED-97-48, Mar. 31, 1997).

Power Marketing Administrations: Cost Recovery, Financing, and Comparison to Nonfederal Utilities (GAO/AIMD-96-145, Sept. 19, 1996).

Federal Electric Power: Operating and Financial Status of DOE's Power Marketing Administrations (GAO/RCED/AIMD-96-9FS, Oct. 13, 1995).

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