

Memorandum

To: Parties in Docket No. 96-999-01
From: The Public Service Commission
Date: April 1, 1998
Re: Parties Input to Unbundling

As noted in our March 12, 1998 memorandum, the Commission has been requested by the legislative leadership to "report, make suggestions and identify options on various issues related to restructuring in the electrical industry" as specified in the provisions of the proposed Substitute S.B. 67. In that memo, we detailed the types of reports requested and their due dates. In order to facilitate our efforts, we are eliciting the comments and critiques from interested parties on our draft preliminary reports or statements. Your comments and suggestions will be reviewed and considered before we write our final reports and send them to the task force.

The first report concerns the unbundling of electrical services and is due June 1st. We are specifically directed to "identify how electricity related services could be unbundled and identify which of the electricity related services once unbundled are potentially competitive". Attached to this cover letter is our preliminary list of services by function that could be unbundled and provided as separate services. The list is a compilation of work performed by the Nevada Public Service Commission and the National Regulatory Research Institute (NRRI). We request that you add or delete services from this list and provide a concise explanation for your proposed changes.

We request that you identify the best process by which one should determine which services can be unbundled and in addition, provide the economic criteria by which one would evaluate whether the unbundled service is potentially competitive. Given your identified economic criteria, determine which unbundled services could be provided competitively here in Utah. What safeguards are required to maintain the competitive provision of these unbundled services?

We have expanded our request for input and we will accordingly extend the time frame for your analyses. Please submit your comments to the Commission by April 23rd.

Introduction

Unbundling retail electricity services is a means to effect retail transactions ("direct access") between consumers and providers of electricity. Several stages are required to accomplish it. First, the rate for electric service a customer now pays (the "bundled" rate) must be functionally "unbundled" into distinct electric service components in order to allow customers to choose the provider of each component. To do so, the costs of generation, distribution and transmission must be functionally separated. Second, in order to preserve the reliability of electric service, and to facilitate commercial exchange, essential electric services must be divided into two categories, those that are potentially competitive and those that should remain regulated services. Third, the market and regulatory structures conducive to a reduction of overall costs to consumers must be identified. This third stage will require analyses of market structure, regulatory practices, and the legal rights and obligations of utilities, customers, and other industry participants.⁽¹⁾

Questions about Unbundling have been posed by legislative leadership to the Commission. We now request responses from interested parties to the two main Unbundling issues: how might electricity services be unbundled and which of them, once unbundled, might be competitively provided. We provide a preliminary list of such services for parties to consider. We also suggest how to analyze whether a service can be provided by competitive firms.

The Unbundling Process

As shown in other states, the process may begin with a statute or rule, by which customers are permitted to choose an electricity supplier by a specified date. But prior to that date, a process⁽²⁾ will have been initiated to identify distinct components of electric service. Following public comment and an order or rule identifying these components, utility companies will be ordered to file the functionally separated costs of each service component. After formal hearing, an order will then be issued to establish tariffs for each distinct component of electric service. The tariffs are intended to enable electric service providers and consumers to engage in transactions for electric service. For many of these distinct electric services, a separate cost of providing it will not have been identified before. That is why a technical hearing will be required.

Unbundling issues will be complicated and controversial. Apportioning costs to jointly produced services is difficult. States should begin by identifying the principles and objectives of unbundling. The primary objectives should include lower rates to final customers and choice of providers. Ultimately, accounting, cost apportionment, economics, engineering, and legal details must be addressed. Unbundling should be viewed as an evolutionary process to be pursued on a trial-and-error basis. Jurisdictional authority to review and change service unbundling should be established to insure customers are well served by the initial decision to unbundle.

Below is a preliminary list and description of electric service components identified by the Nevada Public Utilities Commission (Order in Docket No. 97-8001). Other services identified by the National Regulatory Research Institute are shown in italics.

Unbundled Services, By Function

Generation Capacity and Energy Supply

Generation Capacity
Energy Supply
System Black Start Capability
Backup Supply
Load Following

Generation Services Necessary to Support Transmission Service

Regulation and Frequency Response
Energy Imbalance
Loss Compensation
Reactive Supply and Voltage Control from Generation Sources
Operating Reserves - Spinning Reserve Service
Operating Reserves - Supplemental Reserve Service

Arranging for Power Supplies

Power Delivery

Transmission Service
Scheduling, System Control and Dispatch Service
Network-stability Services
Dynamic Scheduling
Distribution Service
Reactive Supply and Voltage Control
Loss Compensation Service - Distribution

End-Use Metering

Ownership
Operation and Maintenance
Meter Reading

Customer Accounting

Billing
Uncollectibles
Account Services
Payment Collection and Processing
Customer Information and Data Processing

Marketing and Sales

Public Good Services

Nevada And NRRI Service Definitions

Generation Capacity and Energy Supply - The generation capacity and energy supply category of service is subdivided into the following services.

Generation Capacity - Generation Capacity is the instantaneous supply of generation measured in kilowatts. It is the rate at which energy is produced, as opposed to the total amount of energy during a given period.

Energy Supply - Energy Supply is the total amount of energy produced over a period of time measured in kilowatt-hours.

System Black Start Capability - System Black Start Capability is the ability of a generating unit or station during a system restoration to go from a shutdown condition to an operating condition and start delivering power without assistance from the electric system.

Backup Supply - Backup Supply is the provision of generation capacity used to replace an outage of generation or the failure to deliver generation due to an outage of transmission facilities and/or to cover that portion of the customer's load that exceeds its generation.

Load Following - *The use of generation to meet the hour-to-hour and daily variations in system load.*

Generation Services Necessary to Support Transmission Service - The following services are generation services that must be procured by a transmission customer.

Regulation and Frequency Response - Regulation and Frequency Response service is the provision of adequate generation response capability to continuously balance supply resources with load and for maintaining scheduled interconnection frequency at sixty cycles per second. This service is a capacity service.

Energy Imbalance - Energy Imbalance is the energy counterpart to Regulation and Frequency Response service. Energy Imbalance must be provided when a difference occurs between the scheduled and actual energy delivered to a load located within a control area over a single hour.

Loss Compensation - Loss Compensation service compensates for the capacity and energy losses that occur when power is delivered for transmission or distribution customers, or both.

Reactive Power and Voltage Control from Generation Sources - Reactive Power and Voltage Control from Generation Sources service is the provision of reactive power (measured in kilovars) from generation resources to support transmission system operations, including the dynamic ability to continually adjust transmission system voltage in response to system changes.

Operating Reserves - Spinning Reserve - Operating Reserves - Spinning Reserve service is the provision of generation capacity synchronized to the system. The capacity used for this service is unloaded, is able to respond immediately to serve load, and is fully available within ten minutes.

Operating Reserves - Supplemental Reserve - Operating Reserves - Supplemental Reserve service is the provision of generation capacity not necessarily synchronized to the system but capable of serving demand within ten minutes. Certain diesel, combustion turbine and hydro units with emergency start capability fall into this category. This service is needed to serve load in the event of a system contingency. It is different from Spinning Reserves in that it is not synchronized to the system for immediate response, rather, it is available within a short period of time.

Arranging for Power Supplies - Supply Arrangement services are the services necessary to arrange for generation resources sufficient to meet the demand of the customers served by the aggregator. Arranging for generation, transmission, and distribution services either for direct customer purchase or on a resale basis are included within the function of Supply Arrangement.

Power Delivery

Transmission Service - Transmission service is the service, provided over physical transmission plant, of getting electricity from generation sources to the distribution system. FERC Order 888/888-A requires Transmission Providers to provide two primary types of transmission service: Point-to-Point Transmission Service and Network Integration Transmission Service.

Point-to-Point Transmission Service is used for the transmission of capacity and energy. Under the FERC requirements, the buyer of the service designates 1) the location where the purchased electricity enters the transmission system, 2) the locations where the load that has contracted for the service will accept electricity from the transmission system, and 3) the maximum magnitude of the transaction.

Network Integration Transmission Service allows the customer to integrate, economically dispatch, and regulate its current and planned generation resources to serve its load in a manner comparable to that in which the Transmission Provider utilizes the transmission system to serve Native Load Customers.

- Scheduling, System Control and Dispatch - This ancillary service is required for the movement of power through, out of, within, or into a utility's control area. Scheduling, System Control and Dispatch service is provided directly by the control area operator.

- Network-stability Services - Maintenance and use of special equipment (e.g., power-system stabilizers and dynamic-braking resistors) to maintain a secure transmission system.

- Dynamic Scheduling - Real-time metering, telemetering, and computer software and hardware to electronically transfer some or all of a generator's output or a customer's load from one control area to another.

Distribution Service - Distribution Service is the service provided over physical distribution plant of delivering electricity from the transmission system to the end user.

Two distribution ancillary services that must be procured by a distribution customer are:

- Reactive Supply and Voltage Control - Reactive Supply and Voltage Control is the provision of reactive power from generation or capacitors as required by the physical nature of the distribution system and customer load.

Currently, an average acceptable power factor is assumed and, if not met, a charge is assessed for the reactive power in excess of the allowable power factor.

- Loss Compensation - Distribution - Loss Compensation service is required to account for the capacity and energy losses that occur when power is delivered through the distribution system.

End-Use Metering

Meter Ownership - This service includes provision of the physical assets of the meter.

Operation and Maintenance - This service includes meter installation, testing, calibration and repair.

Meter Reading - Meter Reading includes the reading of meters for the purpose of billing customers. This service also includes performing meter check reads at the request of customers who are concerned that their meter was read in error.

Customer Accounting

Account Services - The credit service establishes and maintains customer deposits/bonds, issues deposit refunds, processes returned checks, and maintains updated refunds, processes returned checks, and maintains updated accurate records on call-in privileges, pay agreements and bankruptcies. Record services include maintaining accurate customer records, preparing a timely billing statement, resolving billing disputes, customer inquiries and balancing revenues.

Customer Information and Data Processing - The Customer Information and Data Processing service is responsible for all incoming customer calls and walk-ins requesting connection, disconnection, transfer of service, report of service outages and resolving customer problems and development of customer load profiles.

Billing - Billing services include the activities that are associated with billing customers for services rendered. They are provided in accordance with the Customer Bill of Rights (NAC 704.302 - 704.390).

Payment Collection and Processing - Collection services include the activities that are associated with collecting payment for billed services. They are provided in accordance with the Customer Bill of Rights (NAC 704.302 - 704.390).

Uncollectibles -Uncollectibles are the losses associated with past due bills that are recognized to be unrecoverable.

Marketing and Sales - Nevada Law (NAC 704.295) allows utilities to recover the following types of marketing and sales costs:

Advertising that informs customers how they can conserve energy or reduce peak demand for energy.

Advertising required by law, including advertising required under part 1 of Title II of the National Energy Conservation Policy Act (42 U.S.C. " 8211 et seq.).

Advertising regarding interruptions in service, safety measures or emergency conditions.

Advertising concerning opportunities for employment with the utility.

Any explanation of or justification for existing or proposed rate schedules, or notifications of hearings.

Services offered as of December 31, 1996, would be limited to those identified in NAC 704.295.

Public Good Services - Public Good services include those financial, technical and other services that further public policies on the provision of electric service. Such programs may include demand-side management programs, low income assistance programs, low cost energy audits for residential customers, provision of renewable resources, and protection of the environment.

Identification of Potentially Competitive Unbundled Electricity Services

To distinguish the unbundled electric services that might be provided in an unregulated market from those that will continue to be regulated, an analysis of technical and economic characteristics must be performed.

1. Of the services that might be offered on an unbundled basis, those that should be provided, or controlled, by the system operator, those that must be provided from inside the local control area, those needed for reliability, and those needed for purposes of commercial transactions must be identified.⁽³⁾ Generally, it is conceded that these services can not be competitively provided and will required some form of regulation.

2. The economic analysis should consider:

A. Separability: The extent to which the production process can be characterized as comprising discrete stages or separate activities.

B. Economies of Scale: The sensitivity of changes in outputs resulting from changes in inputs.

C. Economies of Scope: The effect on costs of providing two or more outputs or services together rather than producing them separately.

D. Dimensions of Market Structure:

i. Definition of Relevant Market (Product and Geography).

ii. Number and Size Distribution of Firms (Measures of Market Share).

iii. Barriers to Entry and Exit: Capital requirements, proportion of fixed to total costs and associated risk, access to or control of low-cost or essential resources, economies of scale and scope, and technological barriers or trade secrets.

iv. Transactions Costs: Information and activities internalized in a vertically integrated firm and included in the price of retail service but which must be separately acquired in an unbundled services market. Includes the costs of information and the processes customers face to exercise choice.

E. Conduct/ Pricing Behavior of Firms: Presence of Tacit or Overt Collusion, Anticompetitive Pricing Strategies.

F. Criteria for Effective Competition⁽⁴⁾

i. Aim for full deregulation only if technology is likely to permit effective competition, with enough room for numerous competitors.

ii. Remove regulatory constraints on prices and profits only after effective competition has been established, and not before the leading firm's market share falls below 40 percent and several strong rivals exist.

iii. To put competitors on a comparable footing, constrain the dominant firm more tightly than its rivals.

iv. Permit entry to explore the viability of competition, but do not rely on potential entry alone to neutralize dominance.⁽⁵⁾

v. Prohibit horizontal mergers that establish dominance or create market shares above 20 percent (research has shown that firms with market shares of less than 10 percent may be able to strategically price and bid to influence market price.⁽⁶⁾)

vi. Use profit rates to assess the effectiveness of competition (excess profit suggests market power while subnormal profits may indicate that rival firms are too weak to be effective competitors).

Bibliography

- [1] Chessler, David, "Determining When Competition is 'Workable': A Handbook for State Commissions Making Assessments Required by the Telecommunications Act of 1996," The National Research Institute, NRRI 96-19, July 1996.
- [2] California, "opinion Ordering Separation of Transmission from Distribution and Requesting Comment on Related Items," Internet Document, http://www.cpuc.ca.gov/electric_restructuring/d9610074.htm.
- [3] Costello, Kenneth W., "The Next Gordian Knot for State Regulators and Electric Utilities: The Unbundling of retail Services," *The Electricity Journal*, November 1995, pp.38-47.
- [4] Duann, Daniel J., "Pricing Local Distribution Services in a Competitive Market," The National Research Institute, NRRI 95-12, December 1995.
- [5] Hirst, Eric and Brendan Kirby, "Creating Competitive markets for Ancillary Services," Oak Ridge National Laboratory, ORNL/CON-448, October 1997.
- [6] Hirst, Eric and Brendan Kirby, "Unbundling Generation and Transmission Services for Competitive Electricity Markets: Examining Ancillary Services," The National Regulatory Research Institute, NRRI 98-05, January 1998.
- [7] Hunt, Sally and Graham Shuttleworth, "Unlocking the Grid," *IEEE Spectrum*, July 1996, pp 20-25.
- [8] Illinois, "Request for Comments: Delivery Services Issues," Staff of the Illinois Commerce Commission, march 18, 1998.
- [9] Kirby, Brendan, Eric Hirst, and James Vancoevering, "Identification and Definition of Unbundled Electric Generation and Transmission Services," Oak Ridge National Laboratory, ORNL/CON-415, March 1995.
- [10] Kirby, Brendan and Eric Hirst, "Ancillary Service Details: Dynamic Scheduling, Oak Ridge National Laboratory, ORNL/CON-438, January 1997.
- [11] Kirby, Brendan and Eric Hirst, "Ancillary Service Details: Operating Reserves," Oak Ridge National Laboratory, ORNL/CON-452, November 1997.
- [12] Kirby, Brendan and Eric Hirst, "Ancillary Service Details: Voltage Control," Oak Ridge National Laboratory, ORNL/CON-453, December 1997.
- [13] Maine Public Utilities Commission, "Inquiry Into Rules Governing Bill unbundling," Docket No. 97-587, October 31, 1997.
- [14] Masiello, Ralph D., "Integrating Metering & Information Systems," *Public Utilities Fortnightly*, February 1, 1998, pp. 38-43.
- [15] Massachusetts, "Investigation by the DPU: Proposed Rulemaking Schedule," D.P.U. 96-100.
- [16] Minnesota, "Unbundling Electric Utility Rates and Services," Report of the Subcommittee on Unbundling, Minnesota Public Utilities Commission Electric Competition Work Group, October 1997.
- [17] Morse, Susan Stratton, Meg Meal, and Melissa Lavinson, "Rate Unbundling: Are We There Yet?," *Public Utilities Fortnightly*, February 15, 1996, pp. 30-35.
- [18] Nevada, "In Re Investigation of Issues to be Considered as a Result of Restructuring of Electric Industry," Public Utilities Commission of Nevada, Docket No. 97-8001, October 30, 1997.

[19] Pleat, George R., "Should Metering Stay at the Stand-Alone Disco?," *Public Utilities Fortnightly*, February 1, 1998, pp. 44-48.

[20] Rosenberg, Robert G., "Unbundling Capital Costs: It Doesn't Add Up," *Public Utilities Fortnightly*, November 1, 1997, pp. 46-49.

[21] Shepherd, William G., "Converting Dominance to Competition: Criteria for Effective Deregulation," in *New Regulatory and Management Strategies in a Changing Market Environment*, MSU Public Utilities Papers, Michigan State University, 1987, pp. 22-45.

[22] Valle, Anna P. Della, "Separating Transmission From Generation: What's Required and Why," *The Electricity Journal*, March 1997, pp. 83-90.

[23] Wagner, David P., "Letting Go of Electric Generation," *Public Utilities Fortnightly*, February 15, 1995, pp. 33-35.

1. "Unbundling Electric Utility Rates and Services", Report of the Subcommittee on Unbundling, Minnesota Public Utilities Commission, Electric Competition Work Group, October, 1997, p.9.

2. This process occurs at state public service commissions and varies from state to state.

3. See Hirst, Eric and Brendan Kirby, *Unbundling Generation and Transmission Services for Competitive Electricity Markets: Examining Ancillary Services*. The National Regulatory Research Institute. NRRI 98-05. January 1998.

4. The following is taken directly from William G. Shepherd, "Converting Dominance to Competition: Criteria for Effective Deregulation," in *New Regulatory and Management Strategies in a Changing Market Environment*, MSU Public Utilities Papers, Michigan State University, 1987, pp. 22 - 45.

5. William G. Shepherd, *The Economics of Industrial Organization*, Prentice Hall, 1997, especially chapters 2 and 9.

6. R. Rosen and H. Kroll, "Leveraging - The key to the Exercise of market Power in a Poolco," Tellus Institute, June 1996.