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PROPOSED AMENDMENT #1

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AZ CORP COMMISSION

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Matter: Competition in the Provision of Electric Services
throughout the State of Arizona

DOA Agenda No. U-1

Docket No.: U-0000-94-165

Open Meeting Date: October 9, 1996

Prepared By: Utilities Division

To conform the proposed rule on retail electric competition to the style guidelines of the Secretary of State, Staff proposes the technical amendments to the proposed rule as indicated on the attached version of the docketed rule. Shaded areas in this version indicate additions to the docketed rule and lined-out text indicates deletions. The proposed amendments make no substantive changes to the proposed rules.

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**TITLE 14. PUBLIC SERVICE CORPORATIONS; CORPORATIONS AND
ASSOCIATIONS; SECURITIES REGULATIONS**

CHAPTER 2. CORPORATION COMMISSION - FIXED UTILITIES

ARTICLE 16. RETAIL ELECTRIC COMPETITION

Section

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ARTICLE 16. RETAIL ELECTRIC COMPETITION

R14-2-1601. Definitions

In this Article, unless the context otherwise requires:

1. "Affected Utilities" means the following public service corporations providing electric service:
Tucson Electric Power Company, Arizona Public Service Company, Citizens Utilities Company, Arizona Electric Power Cooperative, Trico Electric Cooperative, Duncan Valley Electric Cooperative, Graham County Electric Cooperative, Mohave Electric Cooperative, Sulphur Springs Valley Electric Cooperative, Navopache Electric Cooperative, Ajo Improvement Company, and Morenci Water and Electric Company.
2. "Bundled Service" means electric service provided as a package to the consumer including all generation, transmission, distribution, ancillary and other services necessary to deliver and measure useful electric energy and power to consumers.
3. "Buy-through" refers to a purchase of electricity by an Affected Utility at wholesale for a particular retail consumer or aggregate of consumers or at the direction of a particular retail consumer or aggregate of consumers.
4. "Distribution Service" means the delivery of electricity to a retail consumer through wires, transformers, and other devices that are not classified as transmission services subject to the jurisdiction of the Federal Energy Regulatory Commission; Distribution Service excludes meters and meter reading.
5. "Electric Service Provider" means a company supplying, marketing, or brokering at retail any of the services described in Subsections R14-2-1605 or R14-2-1606.
6. "Eligible Demand" means the total consumer kilowatts of demand which an Affected Utility must make available to competitive generation under the terms of this Article or the consumer kilowatts of demand provided competitively in an Affected Utility's distribution territory, whichever is greater.
7. "Standard Offer" means Bundled Service offered to all consumers in a designated area at regulated rates.
8. "Stranded Cost" means the verifiable net difference between:
 - a) the value of all the prudent jurisdictional assets and obligations necessary to furnish electricity (such as generating plants, purchased power contracts, fuel contracts, and regulatory assets), acquired or entered into prior to the adoption of this Article, under traditional regulation of Affected Utilities, and
 - b) the market value of those assets and obligations directly attributable to the introduction of competition under this Article.
9. "System Benefits" means Commission-approved utility low income, demand side management, environmental, renewables, and nuclear power plant decommissioning programs.
10. "Unbundled Service" means electric service elements provided and priced separately, including, but not limited to, such service elements as generation, transmission, distribution, and ancillary services. Unbundled Service may be sold to consumers or to

other Electric Service Providers.

R14-2-1602. Filing of Tariffs by Affected Utilities-

Each Affected Utility shall file tariffs consistent with this Article by December 31, 1997.

R14-2-1603. Certificates of Convenience and Necessity-

- A. Any Electric Service Provider intending to supply services described in Subsections R14-2-1605 or R-14-2-1606, other than services subject to federal jurisdiction, shall obtain a Certificate of Convenience and Necessity from the Commission pursuant to this Article; however, a Certificate is not required to offer information services or billing and collection services. An Affected Utility does not need to apply for a Certificate of Convenience and Necessity for any service provided as of the date of adoption of this Article within its distribution service territory.
- B. Any company desiring such a Certificate of Convenience and Necessity shall file with the Docket Control Center the required number of copies of an application. Such Certificates shall be restricted to geographical areas served by the Affected Utilities as of the date this Article is adopted and to service areas added under the provisions of Subsection R14-2-1611(B). In support of the request for a Certificate of Convenience and Necessity, the following information must be provided:
1. A description of the electric services which the applicant intends to offer-;
 2. The proper name and correct address of the applicant, and
 - a. The full name of the owner if a sole proprietorship,
 - b. The full name of each partner if a partnership,
 - c. A full list of officers and directors if a corporation, or
 - d. A full list of the members if a limited liability corporation-;
 3. A tariff for each service to be provided that states the maximum rate and terms and conditions that will apply to the provision of the service-;
 4. A description of the applicant's technical ability to obtain and deliver electricity and provide any other proposed services-;
 5. Documentation of the financial capability of the applicant to provide the proposed services, including the most recent income statement and balance sheet, the most recent projected income statement, and other pertinent financial information. Audited information shall be provided if available-;
 6. A description of the form of ownership (e.g., partnership, corporation)-;
 7. Such other information as the Commission or the Staff may request.
- C. At the time of filing for a Certificate of Convenience and Necessity, each applicant shall notify the Affected Utilities in whose service territories it wishes to offer service of the application by serving a complete copy of the application on the Affected Utilities.
- D. The Commission may deny certification to any applicant who:
1. Does not provide the information required by this Article-;
 2. Does not possess adequate technical or financial capabilities to provide the proposed services-;
 3. Fails to provide a performance bond, if required.
- E. Every Electric Service Provider obtaining a Certificate of Convenience and Necessity

under this Article shall obtain certification subject to the following conditions:

1. The Electric Service Provider shall comply with all Commission rules, orders, and other requirements relevant to the provision of electric service and relevant to resource planning.
 2. The Electric Service Provider shall maintain accounts and records as required by the Commission.
 3. The Electric Service Provider shall file with the Director of the Utilities Division all financial and other reports that the Commission may require and in a form and at such times as the Commission may designate.
 4. The Electric Service Provider shall maintain on file with the Commission all current tariffs and any service standards that the Commission shall require.
 5. The Electric Service Provider shall cooperate with any Commission investigation of customer complaints.
 6. The Electric Service Provider shall obtain all necessary permits and licenses.
 7. Failure to comply with any of the above conditions may result in rescission of the Electric Service Provider's Certificate of Convenience and Necessity.
- F. In appropriate circumstances, the Commission may require, as a precondition to certification, the procurement of a performance bond sufficient to cover any advances or deposits the applicant may collect from its customers, or order that such advances or deposits be held in escrow or trust.

R14-2-1604. Competitive Phases

- A. Each Affected Utility shall make available at least 20 percent of its 1995 system retail peak demand for competitive generation supply to all customer classes (including residential and small commercial consumers) not later than January 1, 1999. If data permit, coincident annual peak demand shall be used; otherwise noncoincident peak data may be used.
1. No more than one-half of the Eligible Demand may be procured by consumers, each of whose total competitive contract demand is greater than 3 MW.
 2. At least 15 percent of the Eligible Demand shall be reserved for residential consumers.
 3. Aggregation of loads of multiple consumers shall be permitted.
- B. Each Affected Utility shall make available at least 50 percent of its 1995 system retail peak demand for competitive generation supply to all customer classes (including residential and small commercial consumers) not later than January 1, 2001. If data permit, coincident peak annual demand shall be used; otherwise noncoincident peak data may be used.
1. No more than one-half of the Eligible Demand may be procured by consumers, each of whose total competitive contract demand is greater than 3 MW.
 2. At least 30 percent of the Eligible Demand shall be reserved for residential consumers.
 3. Aggregation of loads of multiple consumers shall be permitted.
- C. Prior to 2001, no single consumer shall receive more than 20 percent of the Eligible Demand in a given year in an Affected Utility's service territory.

- D. Each Affected Utility shall make available all of its retail demand for competitive generation supply not later than January 1, 2003.
- E. By the date indicated in ~~Subsection~~ R14-2-1602, Affected Utilities shall propose for Commission review and approval how customers will be selected for participation in the competitive market prior to 2003.
1. Possible selection methods are first-come, first-served; random selection via a lottery among volunteering consumers; or designation of geographic areas.
 2. The method for selecting customers to participate in the competitive market must fairly allow participation by a wide variety of customers of all sizes of loads.
 3. All customers who produce or purchase at least 10 percent % of their annual electricity consumption from photovoltaic or solar thermal resources installed in Arizona after January 1, 1997 shall be selected for participation in the competitive market if those customers apply for participation in the competitive market. Such participants count toward the minimum requirements in ~~Subsections~~ R14-2-1604(A) and R14-2-1604(B).
 4. The Commission Staff shall commence a series of workshops on selection issues within 45 days of the adoption of this Article and Staff shall submit a report to the Commission discussing the activities and recommendations of participants in the workshops. The report shall be due not later than 90 days prior to the date indicated in ~~Subsection~~ R14-2-1602.
- F. Retail consumers served under existing contracts are eligible to participate in the competitive market prior to expiration of the existing contract only if the Affected Utility and the consumer agree that the retail consumer may participate in the competitive market.
- G. An Affected Utility may engage in Buy-throughs with individual or aggregated consumers. Any contract for a Buy-through effective prior to the date indicated in ~~Subsection~~ R14-2-1604(A) must be approved by the Commission.
- H. Schedule Modifications for Cooperatives-
1. An electric cooperative may request that the Commission modify the schedule described in ~~Subsections~~ R14-2-1604(A) through R14-2-1604(D) so as to preserve the tax exempt status of the cooperative or to allow time to modify contractual arrangements pertaining to delivery of power supplies and associated loans.
 2. As part of the request, the cooperative shall propose methods to enhance consumer choice among generation resources.
 3. The Commission shall consider whether the benefits of modifying the schedule exceed the costs of modifying the schedule.

R14-2-1605. Competitive Services

A properly certificated Electric Service Provider may offer any of the following services under bilateral or multilateral contracts with retail consumers:

- A. Generation of electricity from generators at any location whether owned by the Electric Service Provider or purchased from another generator or wholesaler of electric generation.
- B. Any service described in ~~Subsection~~ R14-2-1606, except Distribution Service and except

services required by the Federal Energy Regulatory Commission to be monopoly services. Billing and collection services and information services do not require a Certificate of Convenience and Necessity.

R14-2-1606. Services Required To Be Made Available by Affected Utilities

- A.** Until the Commission determines that competition has been substantially implemented for a particular class of consumers (residential, commercial, industrial), each Affected Utility shall make available to all consumers in that class in its service area, as defined on the date indicated in ~~Subsection~~ R14-2-1602, Standard Offer bundled generation, transmission, ancillary, distribution, and other necessary services at regulated rates.
1. An Affected Utility may request that the Commission determine that competition has been substantially implemented to allow discontinuation of Standard Offer service and shall provide sufficient documentation to support its request.
 2. The Commission may, on its own motion, investigate whether competition has been substantially implemented and whether Standard Offer service may be discontinued.
- B.** Standard Offer Tariffs-
1. By the date indicated in ~~Subsection~~ R14-2-1602, each Affected Utility may file proposed tariffs to provide Standard Offer Bundled Service and such rates shall not become effective until approved by the Commission. If no such tariffs are filed, rates and services in existence as of the date in ~~Subsection~~ R14-2-1602 shall constitute the Standard Offer.
 2. Affected Utilities may file proposed revisions to such rates.
 3. Such rates shall reflect the costs of providing the service.
- C.** By the date indicated in ~~Subsection~~ R14-2-1602, each Affected Utility shall file Unbundled Service tariffs to provide the services listed below to all eligible purchasers on a nondiscriminatory basis-
1. Distribution Service-
 2. Metering and meter reading services-
 3. Billing and collection services-
 4. Open access transmission service (as approved by the Federal Energy Regulatory Commission, if applicable)-
 5. Ancillary services in accordance with Federal Energy Regulatory Commission Order 888 (III FERC Stats. & Regs. ¶ 31,036, 1996)- incorporated herein by reference-
 6. Information services such as provision of customer information to other Electric Service Providers-
 7. Other ancillary services necessary for safe and reliable system operation.
- D.** To manage its risks, an Affected Utility may include in its tariffs deposit requirements and advance payment requirements for Unbundled Services.
- E.** The Affected Utilities must provide transmission and ancillary services according to the following guidelines:
1. Services must be provided consistent with applicable tariffs filed with the Federal Energy Regulatory Commission.

2. Unless otherwise required by federal regulation, Affected Utilities must accept power and energy delivered to their transmission systems by others and offer transmission and related services comparable to services they provide to themselves.
- F. Customer Data-**
1. Upon authorization by the customer, an Electric Service Provider shall release in a timely and useful manner that customer's demand and energy data for the most recent 12 month period to a customer-specified Electric Service Provider.
 2. The Electric Service Provider requesting such customer data shall provide an accurate account number for the customer.
 3. The form of data shall be mutually agreed upon by the parties and such data shall not be unreasonably withheld.
- G. Rates for Unbundled Services-**
1. The Commission shall review and approve rates for services listed in ~~Subsection~~ R14-2-1606(C) and requirements listed in ~~Subsection~~ R14-2-1606(D), where it has jurisdiction, before such services can be offered.
 2. Such rates shall reflect the costs of providing the services.
 3. Such rates may be downwardly flexible if approved by the Commission.
- H. Electric Service Providers offering services under this ~~Subsection~~ R14-2-1606 shall provide adequate supporting documentation for their proposed rates. Where rates are approved by another jurisdiction, such as the Federal Energy Regulatory Commission, those rates shall be provided to this Commission.**
- I. Within 90 days of the adoption of this Article, the Commission Staff shall commence a series of workshops to explore issues in the provision of Unbundled Service and Standard Offer service.**
1. Parties to be invited to participate in the workshops shall include utilities, consumers, organizations promoting energy efficiency, and other Electric Service Providers.
 2. Among the issues to be reviewed in the workshops are: metering requirements; metering protocols; designation of appropriate test years; the nature of adjustments to test year data; de-averaging of rates; service characteristics such as voltage levels; revenue uncertainty; line extension policies; and the need for performance bonds.
 3. A report shall be submitted to the Commission by the Staff on the activities and recommendations of the participants in the workshops not later than 60 days prior to the date indicated in ~~Subsection~~ R14-2-1602. The Commission shall consider any recommendations regarding Unbundled Service and Standard Offer service tariffs.

R14-2-1607. Recovery of Stranded Cost of Affected Utilities

- A.** The Affected Utilities shall take every feasible, cost-effective measure to mitigate or offset Stranded Cost by means such as expanding wholesale or retail markets, or offering a wider scope of services for profit, among others.
- B.** The Commission shall allow recovery of unmitigated Stranded Cost by Affected Utilities.

- C. The Affected Utilities shall file estimates of unmitigated Stranded Cost. Such estimates shall be fully supported by analyses and by records of market transactions undertaken by willing buyers and willing sellers.
- D. An Affected Utility shall request Commission approval of distribution charges or other means of recovering unmitigated Stranded Cost from customers who reduce or terminate service from the Affected Utility as a direct result of competition governed by this Article, or who obtain lower rates from the Affected Utility as a direct result of the competition governed by this Article.
- E. The Commission shall, after hearing and consideration of analyses and recommendations presented by the Affected Utilities, Staff, and intervenors, determine for each Affected Utility the magnitude of Stranded Cost, and appropriate Stranded Cost recovery mechanisms and charges. In making its determination of mechanisms and charges, the Commission shall consider at least the following factors:
 - 1. The impact of Stranded Cost recovery on the effectiveness of competition.
 - 2. The impact of Stranded Cost recovery on customers of the Affected Utility who do not participate in the competitive market.
 - 3. The impact, if any, on the Affected Utility's ability to meet debt obligations.
 - 4. The impact of Stranded Cost recovery on prices paid by consumers who participate in the competitive market.
 - 5. The degree to which the Affected Utility has mitigated or offset Stranded Cost.
 - 6. The degree to which some assets have values in excess of their book values.
 - 7. Appropriate treatment of negative Stranded Cost.
 - 8. The time period over which such Stranded Cost charges may be recovered. The Commission shall limit the application of such charges to a specified time period.
 - 9. The ease of determining the amount of Stranded Cost.
 - 10. The applicability of Stranded Cost to interruptible customers.
 - 11. The amount of electricity generated by renewable generating resources owned by the Affected Utility.
- F. Stranded Cost may only be recovered from customer purchases made in the competitive market using the provisions of this Article. Any reduction in electricity purchases from an Affected Utility resulting from self-generation, demand side management, or other demand reduction attributable to any cause other than the retail access provisions of this Article shall not be used to calculate or recover any Stranded Cost from a consumer.
- G. The Commission may order an Affected Utility to file estimates of Stranded Cost and mechanisms to recover or, if negative, to refund Stranded Cost.
- H. The Commission may order regular revisions to estimates of the magnitude of Stranded Cost.
- I. Within 30 days of the adoption of this Article, the Commission Staff shall commence a series of workshops to develop guidelines for the analysis and recovery of Stranded Cost. Parties to be invited to participate in the workshops shall include utilities, consumers, organizations promoting energy efficiency, and other Electric Service Providers. Staff shall submit to the Commission a report on the activities and recommendations of the participants in the workshops no later than 90 days prior to the date indicated in Subsection R14-2-1602.

R14-2-1608. System Benefits Charges

- A. By the date indicated in ~~Subsection~~ R14-2-1602, each Affected Utility shall file for Commission review rates or related mechanisms to recover the applicable pro-rata costs of System Benefits from all consumers located in the Affected Utility's service area who participate in the competitive market. In addition, the Affected Utility may file for a change in the System Benefits charge at any time.
- B. Each Affected Utility shall provide adequate supporting documentation for its proposed rates for System Benefits.
- C. An Affected Utility shall recover the costs of System Benefits only upon hearing and approval by the Commission of the recovery charge and mechanism. The Commission may combine its review of System Benefits ~~Charges~~ charges with its review of filings pursuant to ~~Subsection~~ R14-2-1606.
- D. Methods of calculating System Benefits charges shall be included in the workshops described in ~~Subsection~~ R14-2-1606(I).

R14-2-1609. Solar Portfolio Standard

- A. Starting on January 1, 1999, any Electric Service Provider selling electricity under the provisions of this Article must derive at least ~~one-half~~ 1/2 of 1 percent of the total retail energy sold competitively from new solar resources, whether that solar energy is purchased or generated by the seller. Solar resources include photovoltaic resources and solar thermal resources that generate electricity. New solar resources are those installed on or after January 1, 1997.
- B. Solar portfolio standard after December 31, 2001:
 - 1. Starting on January 1, 2002, any Electric Service Provider selling electricity under the provisions of this Article must derive at least 1 percent of the total retail energy sold competitively from new solar resources, whether that solar energy is purchased or generated by the seller. Solar resources include photovoltaic resources and solar thermal resources that generate electricity. New solar resources are those installed on or after January 1, 1997.
 - 2. The Commission may change the solar portfolio percentage applicable after December 31, 2001, taking into account, among other factors, the costs of producing solar electricity and the costs of fossil fuel for conventional power plants.
- C. Any Electric Service Provider certificated under the provisions of this Article shall be able to credit ~~two~~ 2 times the electric energy it generated, or caused to be generated under contract, before January 1, 1999 using photovoltaics or solar thermal resources installed on or after January 1, 1997 in Arizona to the electric energy requirements of ~~Subsections~~ R14-2-1609(A) or R14-2-1609(B).
- D. Electric Service Providers selling electricity under the provisions of this Article shall provide reports on sales and solar power as required in this Article, clearly demonstrating the output of solar resources, the installation date of solar resources, and the transmission of energy from those solar resources to Arizona consumers. The Commission may conduct necessary monitoring to ensure the accuracy of these data.
- E. If an Electric Service Provider selling electricity under the provisions of this Article fails

to meet the requirement in ~~Subsection~~ R14-2-1609(A) or ~~Subsection~~ R14-2-1609(B) in any year, the Commission may impose a penalty on that Electric Service Provider up to ~~\$0.30~~ 30¢ per kWh for deficiencies in the provision of solar energy. In addition, if the provision of solar energy is consistently deficient, the Commission may void an Electric Service Provider's contracts negotiated under this Article.

- F. Photovoltaic or solar thermal resources that are located on the consumer's premises shall count toward the solar portfolio standard applicable to the current Electric Service Provider serving that consumer.
- G. The solar portfolio standard described in this ~~Subsection~~ section is in addition to renewable resource goals for Affected Utilities established in Decision No. 58643.

R14-2-1610. Spot Markets and Independent System Operation

- A. The Commission shall conduct an inquiry into spot market development and independent system operation for the transmission system.
- B. The Commission may support development of a spot market or independent system operator(s) for the transmission system.
- C. The Commission may work with other entities to help establish spot markets and independent system operators.

R14-2-1611. In-State Reciprocity

- A. The service territories of Arizona electric utilities which are not Affected Utilities shall not be open to competition under the provisions of this Article, nor shall Arizona electric utilities which are not Affected Utilities be able to compete for sales in the service territories of the Affected Utilities.
- B. An Arizona electric utility, subject to the jurisdiction of the Commission, which is not an Affected Utility may voluntarily participate under the provisions of this Article if it makes its service territory available for competing sellers, if it agrees to all of the requirements of this Article, and if it obtains an appropriate Certificate of Convenience and Necessity.
- C. The Commission shall pursue, on its own or in cooperation with the Joint Legislative Study Committee on Electric Industry Competition established by House Bill 2504 (1996), legislation to address the role of electric utilities of Arizona political subdivisions or municipal corporations in a competitive market. The Commission shall further make available, as appropriate, Staff assistance to the Legislature if the Legislature requests such assistance for the purpose of determining the proper role of electric utilities of Arizona political subdivisions or municipal corporations in a competitive market.

R14-2-1612. Rates

- A. Market determined rates for competitively provided services as defined in ~~Subsection~~ R14-2-1605 shall be deemed to be just and reasonable.
- B. Each Electric Service Provider selling services under this Article shall have on file with the Commission tariffs describing such services and maximum rates for those services, but the services may not be provided until the Commission has approved the tariffs.
- C. Prior to the date indicated in ~~Subsection~~ R14-2-1604(D), competitively negotiated

contracts governed by this Article customized to individual customers which comply with approved tariffs do not require further Commission approval. However, all such contracts whose term is one (1) year or more and for service of one (1) MW or more must be filed with the Director of the Utilities Division as soon as practicable. If a contract does not comply with the provisions of this Article it shall not become effective without a Commission order.

- D. Contracts entered into on or after the date indicated in ~~Subsection~~ R14-2-1604(D) which comply with approved tariffs need not be filed with the Director of the Utilities Division. If a contract does not comply with the provisions of this Article it shall not become effective without a Commission order.
- E. An Electric Service Provider holding a Certificate pursuant to this Article may price its competitive services, as defined in ~~Subsection~~ R14-2-1605, at or below the maximum rates specified in its filed tariff, provided that the price is not less than the marginal cost of providing the service.
- F. Requests for changes in maximum rates or changes in terms and conditions of previously approved tariffs may be filed. Such changes become effective only upon Commission approval.

R14-2-1613. Service Quality, Consumer Protection, Safety, and Billing Requirements

- A. Except as indicated elsewhere in this Article, ~~Subsections~~ R14-2-201 through R14-2-212, inclusive, are adopted in this Article by reference. However, where the term "utility" is used in ~~Subsections~~ R14-2-201 through R14-2-212, the term "utility" shall pertain to Electric Service Providers providing the services described in each paragraph of ~~Subsections~~ R14-2-201 through R14-2-212. ~~Subsection~~ R14-2-212(G)(2) shall pertain only to Affected Utilities. ~~Subsection~~ R14-2-212(G)(4) shall apply only to Affected Utilities. ~~Subsection~~ R14-2-212(H) shall pertain only to Electric Service Providers who provide distribution service.
- B. The following ~~Subsections~~ shall not apply to this Article:
 - 1. ~~Subsection~~ R14-2-202 in its entirety.
 - 2. ~~Subsection~~ R14-2-212(F)(1).
 - 3. ~~Subsection~~ R14-2-213.
- C. No consumer shall be deemed to have changed suppliers of any service authorized in this Article (including changes from supply by the Affected Utility to another supplier) without written authorization by the consumer for service from the new supplier. If a consumer is switched to a different ("new") supplier without such written authorization, the new supplier shall cause service by the previous supplier to be resumed and the new supplier shall bear all costs associated with switching the consumer back to the previous supplier.
- D. Each Electric Service Provider providing service governed by this Article shall be responsible for meeting applicable reliability standards and shall work cooperatively with other companies with whom it has interconnections, directly or indirectly, to ensure safe, reliable electric service.
- E. Each Electric Service Provider shall provide at least 30 days notice to all of its affected consumers if it is no longer obtaining generation, transmission, distribution, or ancillary

services necessitating that the consumer obtain service from another supplier of generation, transmission, distribution, or ancillary services.

- F. All Electric Service Providers rendering service under this Article shall submit accident reports as required in ~~Subsection~~ R14-2-101.
- G. An Electric Service Provider providing firm electric service governed by this Article shall make reasonable efforts to reestablish service within the shortest possible time when service interruptions occur and shall work cooperatively with other companies to ensure timely restoration of service where facilities are not under the control of the Electric Service Provider.
- H. Each Electric Service Provider shall ensure that bills rendered on its behalf include the toll free telephone numbers for billing, service, and safety inquiries and the telephone number of the Consumer Services Section of the Arizona Corporation Commission Utilities Division. Each Electric Service Provider shall ensure that billing and collection services rendered on its behalf comply with ~~Subsections~~ R14-2-1613(A) and R14-2-1613(B).
- I. Additional Provisions for Metering and Meter Reading Services
 - 1. An Electric Service Provider who provides metering or meter reading services pertaining to a particular consumer shall provide access to meter readings to other Electric Service Providers serving that same consumer.
 - 2. A consumer or an Electric Service Provider relying on metering information provided by another Electric Service Provider may request a meter test according to the tariff on file and approved by the Commission. However, if the meter is found to be in error by more than 3 percent %, no meter testing fee will be charged.
 - 3. Protocols for metering shall be developed subsequent to the workshops described in ~~Subsection~~ R14-2-1606(I).
- J. ~~Working group on system reliability and safety:~~ **Group on System Reliability and Safety**
 - 1. If it has not already done so, the Commission shall establish, by separate order, a working group to monitor and review system reliability and safety.
 - a. The working group may establish technical advisory panels to assist it.
 - b. The working group shall commence activities within 15 days of the date of adoption of this Article.
 - c. Members of the working group shall include representatives of Staff, consumers, utilities, other Electric Service Providers and organizations promoting energy efficiency.
 - d. The working group shall be coordinated by the Director of the Utilities Division of the Commission or by his or her designee.
 - 2. All Electric Service Providers governed by this Article shall cooperate and participate in any investigation conducted by the working group, including provision of data reasonably related to system reliability or safety.
 - 3. The working group shall report to the Commission on system reliability and safety regularly, and shall make recommendations to the Commission regarding improvements to reliability or safety.
- K. Electric Service Providers shall comply with applicable reliability standards and practices

established by the Western Systems Coordinating Council and the North American Electric Reliability Council or successor organizations.

- L. Electric Service Providers shall provide notification and informational materials to consumers about competition and consumer choices, such as a standardized description of services, as ordered by the Commission.

R14-2-1614. Reporting Requirements

- A. Reports covering the following items shall be submitted to the Director of the Utilities Division by Affected Utilities and all Electric Service Providers granted a Certificate of Convenience and Necessity pursuant to this Article. These reports shall include the following information pertaining to competitive service offerings, Unbundled Services, and Standard Offer services in Arizona:

1. Type of services offered-;
2. kW and kWh sales to consumers, disaggregated by customer class (e.g., residential, commercial, industrial)-;
3. Solar energy sales (kWh) and sources for grid connected solar resources; kW capacity for off-grid solar resources-;
4. Revenues from sales by customer class (e.g., residential, commercial, industrial)-;
5. Number of retail customers disaggregated as follows: aggregators-; residential-; commercial under 100 kW-; commercial 100 kW to 2999 kW-; commercial 3000 kW or more-; industrial less than 3000 kW-; industrial 3000 kW or more-; agricultural (if not included in commercial)-; and other-;
6. Retail kWh sales and revenues disaggregated by term of the contract (less than one 1 year, one 1 to four 4 years, longer than four 4 years), and by type of service (for example, firm, interruptible, other)-;
7. Amount of and revenues from each service provided under ~~Subsection R14-2-1605~~, and, if applicable, ~~Subsection R14-2-1606~~-;
8. Value of all Arizona specific assets and accumulated depreciation-;
9. Tabulation of Arizona electric generation plants owned by the Electric Service Provider broken down by generation technology, fuel type, and generation capacity-;
10. Other data requested by Staff or the Commission-;
11. In addition, prior to the date indicated in ~~Subsection R14-2-1604(D)~~, Affected Utilities shall provide data demonstrating compliance with the requirements of ~~Subsection R14-2-1604~~.

- B. Reporting Schedule:

1. For the period through December 31, 2003, semi-annual reports shall be due on April 15 (covering the previous period of July through December) and October 15 (covering the previous period of January through June). The first such report shall cover the period January 1 through June 30, 1999.
2. For the period after December 31, 2003, annual reports shall be due on April 15 (covering the previous period of January through December). The first such report shall cover the period January 1 through December 31, 2004.

- C. The information listed above may be provided on a confidential basis. However, Staff or the Commission may issue reports with aggregate statistics based on confidential information that do not disclose data pertaining to a particular seller or purchases by a particular buyer.
- D. Any Electric Service Provider governed by this Article which fails to file the above data in a timely manner may be subject to a penalty imposed by the Commission or may have its Certificate rescinded by the Commission.
- E. Any Electric Service Provider holding a Certificate pursuant to this Article shall report to the Director of the Utilities Division the discontinuation of any competitive tariff as soon as practicable after the decision to discontinue offering service is made.
- F. In addition to the above reporting requirements, Electric Service Providers governed by this Article shall participate in Commission workshops or other forums whose purpose is to evaluate competition or assess market issues.
- G. Reports filed under the provisions of this ~~Subsection R14-2-1614~~ section shall be submitted in written format and in electronic format. Electric Service Providers shall coordinate with the Commission Staff on formats.

R14-2-1615. Administrative Requirements

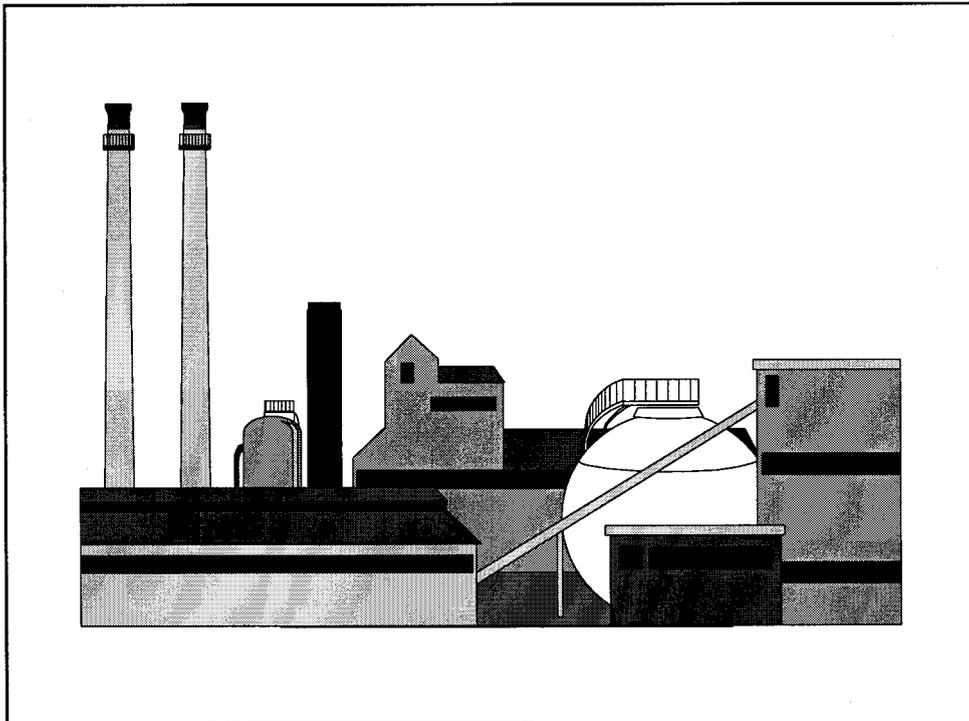
- A. Any Electric Service Provider certificated under this Article may propose additional electric services at any time by filing a proposed tariff with the Commission describing the service, maximum rates, terms and conditions. The proposed new electrical service may not be provided until the Commission has approved the tariff.
- B. Contracts filed pursuant to this Article shall not be open to public inspection or made public except on order of the Commission, or by the Commission or a Commissioner in the course of a hearing or proceeding.
- C. The Commission may consider variations or exemptions from the terms or requirements of any of the rules in this Article upon the application of an affected party. The application must set forth the reasons why the public interest will be served by the variation or exemption from the Commission rules and regulations. Any variation or exemption granted shall require an order of the Commission. Where a conflict exists between these rules and an approved tariff or order of the Commission, the provisions of the approved tariff or order of the Commission shall apply.
- D. The Commission may develop procedures for resolving disputes regarding implementation of retail electric competition.

**STAFF DISCUSSION OF THE PROPOSED RULE ON
ELECTRIC INDUSTRY RESTRUCTURING**

Docket No. U-0000-94-165

October 4, 1996

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**STAFF DISCUSSION OF THE PROPOSED RULE ON
ELECTRIC INDUSTRY RESTRUCTURING
Docket No. U-0000-94-165**

I. INTRODUCTION

On October 1, 1996, Staff docketed a proposed rule to introduce retail electric competition in Arizona. This report provides a discussion of the major elements of the proposed rule* In developing the proposed rule, we reviewed proposals in other states and reviewed the literature.¹ Further, we have obtained extensive public input:

- ◆ *An introductory workshop was held on September 7, 1994. One hundred eighteen representatives from utilities, consumer organizations, other power suppliers, and others attended the workshop. The workshop was summarized in a Staff Report dated October 1994.*
- ◆ *A series of nine working group and task force meetings were held in 1995 which addressed restructuring options, implementation of the options, and advantages and disadvantages of the options. Fifty-one groups were represented on task forces focused on systems and markets, regulatory issues, and energy efficiency and environmental issues. Members of the task forces included representatives from utilities, consumer organizations, other power suppliers, and others. This work was summarized in a "Report of the Working Group on Retail Electric Competition," dated October 5, 1995.*
- ◆ *A request for comments on how to implement electric industry restructuring was issued in February 1996. Comments were filed by 31 parties on June 28, 1996. Commenters included consumer groups, Arizona utilities, other suppliers, and other parties. Staff prepared a summary of the comments in July 1996.*
- ◆ *A workshop was held on August 12, 1996 to explore and obtain feedback on a small number of options for introducing retail electric competition. One hundred thirty workshop participants included representatives from utilities, consumer organizations, other power suppliers, and others. Staff summarized the workshop in a report dated August 19, 1996.*
- ◆ *A draft rule was issued on August 28, 1996 and comments on the draft rule were submitted by 30 parties on September 12, 1996. A workshop was held on September 18, 1996 to obtain additional comments on the draft rule.*

Section II provides a concise description of the proposed rule. Section III describes our

* Notes are located at the end of the text.

objectives in proposing the rule. And Section IV addresses major aspects of the proposed rule.

II. CONCISE EXPLANATORY STATEMENT

The proposed rule introduces competition into the provision of electric service in the service territories of most electric utilities regulated by the Corporation Commission. Competition would occur primarily in the provision of electric generation. Typically, consumers will be able to shop around among generation suppliers and use, to the degree necessary, utility transmission and distribution lines to bring the power to their places of business or to their homes. The rule establishes the means by which competition occurs, the provision of transmission and distribution services by utilities, a schedule for introducing competition, encouragement of solar power, and means for dealing with the stranded cost experienced by existing utilities.

III. OBJECTIVES

This section reviews the objectives of the proposed rule and discusses how the rule meets these objectives. Competition directly affects the rates paid for electricity and rates of return of companies providing electricity and related services.

1. *Encourage the benefits of retail electric competition.* Historically, it was widely believed that electric utilities constituted a "natural monopoly" which could provide electric service at lower cost than would occur in a competitive market. However, these circumstances do not apply today. The costs of new electric generation plants are lower than the costs of many power plants built over the past two decades.² Additionally, the economies of scale of large central station generation plants are not nearly as large as they once were.³ Further, it is questionable whether regulated monopolies can produce prices that are as low as would occur in a competitive market or stimulate technological, marketing, and organizational innovations as would occur in a competitive market. Thus, the need for continuing monopoly service has been greatly undermined.

Based upon experience in telecommunications, transportation, and other deregulated markets, as well as on the history of capitalist economies, we believe that increased competition in the electric industry can produce several benefits:

- ◆ Consumer choice among energy suppliers.
- ◆ Greater customization of energy services, especially for larger consumers, regarding time of use rates, interruptible service, contract duration, pricing arrangements, risk management, etc.
- ◆ Greater innovation in technology and greater applications of technological innovations, especially in distributed generation, as a result of incentives in the

- competitive market place.
- ◆ Greater application of energy efficiency measures as energy service companies offer packages of electric energy, demand side management measures, and possibly other services such as building maintenance services.
- ◆ Lower prices for electricity due to competitive pressures and to technological, marketing, and organizational innovations that would not occur as rapidly, if at all, in a regulated monopoly environment.⁴

The proposed rule provides the procedures and schedules for introducing retail electric competition.

2. *Limit the potential harm to utilities and utility investors.* Utilities, which have offered service as monopolies for many decades, may be at great financial risk if they are forced to compete for customers. Some utility costs may be "stranded" in that the competitive market value of assets and obligations necessary to furnish electricity will fall below their regulated book value. The decline in the value of utility assets and obligations is in large part attributable to loss of some customers to competing suppliers and to lower revenues due to lower rates in a competitive market.

If the introduction of competition is delayed, there is more time for utilities to mitigate stranded cost by such means as:

- ◆ selling power in wholesale or retail markets outside Arizona;
- ◆ developing new lines of business such as demand side management for profit or on-site generation for consumers; and
- ◆ achieving greater cost reductions such as fuel cost reductions.

The proposal phases in competition, allowing for utilities and investors to learn about the competitive market gradually, without exposure to the risk of instantaneous conversion to competition. The pace of the phase-in will enable utilities to mitigate some of their stranded cost. In addition, the proposed rule allows for the recovery of stranded costs.

3. *Enable a wide range of consumers to participate in a competitive market.* The proposed rule requires that residential and small commercial consumers be allowed to participate in the competitive market from the outset. Larger commercial and industrial consumers can also participate. The phase-in allows utilities and new market entrants time to deploy new metering devices that may be needed.
4. *Limit the potential for decreases in electric system reliability.* System reliability encompasses several concepts. First is generation and transmission system reliability which involves matching supply with demand at all times, maintaining scheduled

Staff Discussion of Proposed Rule on Electric Industry Restructuring

interchange, maintaining the frequency of the electric power system within limits reflecting good utility practice, and providing sufficient generating capacity to maintain operating reserves in accordance with good utility practice. Second is prompt repair. Our existing rules (A.A.C. R14-2-208(D)), which are adopted in the proposed rule, require each utility to make reasonable efforts to reestablish service within the shortest possible time when service interruptions occur, to make reasonable provisions to meet emergencies, and to notify customers of planned repairs lasting four hours or more.⁵

The proposed rule addresses electric system reliability in several ways:

- ◆ An on-going working group is incorporated into the proposed rule to review and monitor system reliability and to report regularly to the Commission on how system reliability can be improved. (This working group was proposed in Docket No. U-0000-96-507).
- ◆ The proposed rule requires incumbent utilities to provide ancillary services to maintain system reliability and requires all suppliers to cooperate in maintaining system reliability. Ancillary services include scheduling, system control and dispatch service; reactive supply and voltage control from generation sources; regulation and frequency response service; energy imbalance service; spinning reserve; and supplemental reserves. These ancillary services are provided by transmission utilities subject to regulation by the Federal Energy Regulatory Commission. Eligible customers for transmission and ancillary services include any electric utility or other party generating electric energy for sale for resale and any retail customer taking unbundled transmission service pursuant to a state retail access program or pursuant to a voluntary offer of unbundled retail transmission service by the transmission provider. Transmission customers must acquire ancillary services for system reliability either from the transmission utility or from another party.
- ◆ The proposed rule requires utilities to identify and provide other ancillary services. Such services may be necessary to maintain system reliability.
- ◆ The proposed rule enables the Commission to consider an independent system operator which could be responsible for system reliability.
- ◆ Electric service providers will have to follow applicable North American Reliability Council and Western Systems Coordinating Council reliability requirements.
- ◆ Electric service providers are responsible for maintaining and promptly repairing

their facilities and for cooperating with each other when outages occur. Further, bills to consumers must indicate telephone numbers for billing, service, and safety inquiries. If a consumer suffers an outage, for example, he or she would call the appropriate number. Electric service providers would be responsible for coordinating with each other to determine the source of the problem and to identify who is responsible for repairs. This is similar to the situation today, where many companies' facilities are involved in the production and delivery of electricity to an individual consumer; in the future, more suppliers will be involved though.

- ◆ The phase-in enables utilities, other suppliers, and consumers to learn about reliability issues in a competitive market in the first phase, where only 20 percent of the market is open to competition, before proceeding to subsequent phases.

5. *Limit the potential for market impediments such as: a) exertion of market power by utilities which blunts competitive forces, and b) high transaction costs for market participants.* Market power may arise from:

- ◆ utility control over transmission and distribution systems, perhaps precluding consumers or competing suppliers from gaining access to the transmission and distribution system;
- ◆ utility barriers to the release of customer information to other suppliers, thereby putting competing suppliers at a disadvantage in gaining customers;
- ◆ oligopolistic pricing behavior by a small number of central station generating companies that keeps prices above marginal cost;
- ◆ transaction costs of participating in a competitive market.

With regard to control over the transmission and distribution system, the proposed rule addresses market power by requiring utilities to provide transmission, distribution, and ancillary services in an unbundled manner at regulated, nondiscriminatory rates. A utility must charge itself the same rate as it charges others for comparable service. Further, the proposed rule enables the Commission to establish (perhaps in cooperation with other jurisdictions) an independent system operator which could operate the transmission system (and possibly the generation system) in a nondiscriminatory manner.

We considered additional actions to reduce the market power of incumbent utilities with respect to their ability to control access to the transmission and distribution systems. One approach is to require divestiture of vertically integrated utilities into separate generation, transmission, and distribution companies. Another approach is functional separation in which vertically integrated utilities set up separate generation, transmission, and distribution areas within their companies in such a manner as to be separate operating

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divisions that treat each other as separate companies. We do not believe that divestiture or functional separation is necessary if unbundled rates work as intended. However, if problems with access to transmission and distribution are serious, divestiture or functional separation may be necessary.

With regard to the provision of customer information, the rule requires utilities to make such information available to other suppliers, upon the customer's request, in a timely and useful manner. We expect that utilities will have to develop computerized systems for recording the customer's request, for retrieving the necessary information, and for forwarding that information to competing suppliers. There may be a charge assessed to cover the costs of these activities.

With regard to oligopolies of central station generating companies, we fully expect mergers and acquisitions to reduce the number of generating companies serving a given region.⁶ The market share of the largest central station generating companies serving Arizona consumers in the future is unknown. Anti-trust actions may be possible to counter such market power.⁷ Further, our requirement that suppliers not price below marginal cost limits the ability of incumbent utilities to engage in predatory pricing.

In addition, we believe that distributed generation offers a powerful countervailing force to central station oligopolies. Distributed generation is located near consumers, making use of such technologies as small combustion turbines, small combined cycle units, cogeneration, renewables, or fuel cells. Because these plants are smaller and less costly than large central station power plants, there are reduced barriers to entry into the market and, thus, many potential market entrants. Technological and marketing innovations are occurring in distributed generation that could give these technologies a large cost advantage over central station generation, similar to the improvements in efficiency and lower prices that have occurred in other dynamic industries.^{8,9} Thus, market entry by firms offering distributed generation could offset some of the market power of a small number of central station generation companies.

Finally, with regard to transaction costs, the phase-in will enable buyers and sellers to gain experience with the market and allow brokers and aggregators the opportunity to learn about how to market services. The experience with the New Hampshire electric competition pilot program suggests that aggregators and other suppliers will be inventive and vigorous in providing service to all classes of customers. There are about 30 suppliers and 17,000 customers in the New Hampshire pilot.¹⁰ Further, the rule anticipates that the Commission will initiate a consumer education program. The Commission could require utilities and other suppliers to make Commission information available or could require utilities and other suppliers to make information available to consumers. Going beyond the rule, the Commission could also conduct educational

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campaigns on its own. The specifics of this consumer education program will be developed in the future as marketing issues become better understood.

6. *Encourage a variety of market developments.* There is the potential for many innovative solutions to problems that will arise if regulated monopolies are partially or completely replaced by a competitive market. A phase-in will let the market reveal these solutions without the need to assume perfect foresight and impose solutions from the outset. Areas in which innovative solutions may occur include: contract development, risk management, cost control, spot market development, technological improvements in distributed generation, and creating or unbundling services and pricing them competitively.
7. *Promote renewable resources.* "Renewables" refers to electric generation technologies which use energy inputs that are continuously replenished within the limits of human time, such as solar, wind, biomass, geothermal, and hydropower resources. Renewables allow Arizona to hedge against uncertain fossil fuel prices. Further, a renewables program can help bring down the costs of renewables. The Commission has promoted development of renewables in its resource planning process and in rate cases. The phase-in incorporates a solar portfolio standard to encourage development of Arizona's leading renewable resource -- sunshine. The rule further encourages early development of solar thermal and photovoltaic resources by giving double credit for kWh generation from early projects.
8. *Protect important public programs.* The Commission has promoted environmental protection, renewable resource development, low income customer assistance, increased energy efficiency, and safe nuclear power plant decommissioning. Such programs could be jeopardized by competition, and means to continue them are encouraged in the rule. The phase-in ensures continuation of these programs through a non-bypassable charge.
9. *Shield consumers who do not or cannot participate in the competitive market from rate increases attributable to competition.* The phase-in requires that incumbent utilities provide standard offer service under which consumers who do not or cannot participate in the competitive market purchase bundled service at regulated rates. Existing tariffs may constitute the standard offer. The Commission must review and approve standard offer rates.

IV. IMPLEMENTATION OF THE PHASE-IN

This section describes the major features of the proposed rule. It does not describe all features of the proposed rule, however, and the proposed rule should be consulted for a complete picture.

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The proposed rule envisions a phase-in of retail electric competition. A phase-in is proposed instead of full implementation of competition at the outset because consumers, utilities, and other suppliers will have to learn how to function in a competitive market.

In a competitive market, consumers will be able to shop around for generation service. Suppliers will include central station generators, power marketers, or distributed generators located near consumers. Utility-provided transmission, distribution, and ancillary services will still be supplied at regulated rates, although some of these services may eventually be competitive. Aggregators may shop around on behalf of consumers; assemble generation, transmission, distribution, and ancillary services; and package services according to market demand.

To introduce retail electric competition several steps must be taken, including:

- ◆ Unbundling of distribution, transmission, and ancillary services so that new suppliers can have fair access to consumers.
- ◆ Provision of standard offer service during the transition to allow consumers who are not participating in the competitive market to continue to receive bundled service from their traditional utility.
- ◆ Entry of new suppliers, such as independent power producers, other utilities, and aggregators into the market for generation.

As a practical matter, a phase-in could not begin until about January 1999. Tariffs will have to be developed, filed, reviewed, and approved before utilities may offer unbundled and standard offer services. Further, the Commission and Staff will have to review applications for new suppliers to enter the market before competition effectively begins.

Affected Utilities. Competition will be introduced in the service territories of all the jurisdictional electric utilities in Arizona except those whose service territories are largely in other states. We believe that competition should be introduced as widely as possible so that consumers state-wide are all able to benefit. However, those cooperatives which are located primarily in other states (Garkane, Continental Divide, Columbus, and Dixie-Escalante) are exempt because of the burden of providing for competitive service for only a small fraction of their customers.

Date for Filing Tariffs. The affected utilities are required to file tariffs to allow for competitive electric service. The proposed filing date is December 31, 1997. This will provide the affected utilities with time to prepare unbundled tariffs and other information before competition is implemented. We anticipate that Commission review of these filings, with hearings as necessary, will take about a year to complete. Prior to developing the necessary tariffs for unbundled service, competition, and standard offers, Staff will conduct workshops

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on selection of participants for the early phases of the phase-in, unbundling of services, estimation and recovery of stranded costs, and system reliability.

Certificates of Convenience and Necessity. Suppliers of competitive services (except services subject to federal jurisdiction) and Affected Utilities offering services outside their traditional territories must obtain Certificates of Convenience and Necessity. However, a Certificate is not required for offering information services or billing and collection services.

The rule indicates how a Certificate is obtained. Certificates cover the entire service areas of the affected utilities (as those areas existed on the date of adoption of the phase-in) plus service areas of jurisdictional utilities which voluntarily participate in the phase-in.

Applicants for Certificates must also file tariffs for each service to be provided that describe the services offered and state the maximum rate and terms and conditions for the service.

The rules are intended to encourage competition. Therefore, entry into the market should not be unduly restricted by regulation. However, in the interest of protecting consumers from firms that lack the technical or financial capability to provide electric generation and related services, the rule requires documentation of the financial and technical capability of the applicant to provide the proposed services.

The Commission may deny certification to any applicant who: does not provide the information required by the rule; does not possess adequate technical or financial capabilities to provide the proposed services; or fails to provide a performance bond, if required.

The rule also indicates that companies with Certificates must comply with Commission orders and record keeping requirements. The Commission may rescind a Certificate if a company does not comply with Commission rules and orders.

Competitive Phases. In the first phase (starting in 1999), affected utilities open up 20 percent of their base year (1995) markets (as measured by kW demand) to competition.¹¹ This market size is large enough to allow for many current customers to shop around, yet is restricted to curb major disruptions to the utility and to system performance. The second phase (starting in 2001) enlarges the competitive portion of the market to at least 50 percent of the incumbent utilities' base year markets. It is not required that 20 percent or 50 percent of consumers actually shop competitively, but only that the incumbent utilities allow them to shop competitively. Full competition for generation, the third phase, begins in 2003.

We considered several methods for allocation demand to the competitive market during the phase-in. One way is to allow the market to develop without constraint but larger consumers

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may dominate the purchases. Another way is to allocate fractions of the competitive market to various customer classes in proportion to those classes' current consumption. However, this approach would not reflect the variations in consumers' desire to participate in early phases of the competitive market. Therefore, we propose a simple approach to allocating demand in the competitive market during the early phases as described below.

To preclude the possibility that most of the competitive power would go to a few large customers in the first two phases, no more than one-half of the eligible demand may be procured by consumers, each of whose total competitive contract demand is greater than 3 MW. For example, if a chain store had one competitive contract for delivery of 1 MW to each of 5 sites, its total competitive contract demand is greater than 3 MW and it would count toward the limit on large customers. Similarly, a factory with 3 two MW contracts for service at one site would also have a total competitive contract demand greater than 3 MW and it would count toward the limit on large customers.

At least 15 percent of the eligible demand must be reserved for residential consumers in the competitive marketplace in the first phase, and at least 30 percent of the eligible demand must be reserved for residential consumers in the competitive marketplace in the second phase. (Residential consumers may be served by aggregators). In addition, prior to 2001, no single consumer may receive more than 20 percent of the total service available in the competitive market in an Affected Utility's service territory.

In the first phase, the demands for APS and TEP could break out approximately as follows, assuming that APS' base year peak demand is 4000 MW and TEP's is 1500 MW:

- ◆ residential (15% of 20% of base year demand) = 120 MW for APS (or about 40,000 customers at 3 kW per customer), and = 45 MW for TEP (or about 15,000 customers at 3 kW per customer) in the first phase.
- ◆ large commercial and industrial demand (50% of 20% of base year demand) = 400 MW for APS, and 150 MW for TEP in the first phase. This could serve a few or several dozen consumers, depending on the utilities' specific programs and on which consumers can shop around, given existing contract commitments. Further, consumers, such as chain stores, individually under 3 MW could aggregate their load and be considered over 3 MW for the purposes of this calculation. However, no single consumer could receive more than 160 MW (if located in APS' territory) or 60 MW (if located in TEP's territory).
- ◆ smaller commercial and industrial consumers are eligible for at least 280 MW of service in APS' territory and at least 105 MW in TEP's territory in the first phase. *Note that residential and smaller commercial and industrial demand in the*

Staff Discussion of Proposed Rule on Electric Industry Restructuring

competitive market could be greater if the large commercial and industrial demands do not meet the upper limit of 50 percent.

The affected utilities must propose how customers will be selected for participation in the competitive market. Possible selection methods are first-come, first-served, and random selection via a lottery among volunteering consumers. These approaches could be supplemented by utilities designating specific communities for competition in the first and second phases. Consumers who use photovoltaics or solar thermal resources (built after January 1, 1997 and installed in Arizona) for at least 10 percent of their annual electricity consumption are automatically included in the list of eligible customers for participation in the competitive market if they wish to participate in the competitive market. This feature is intended to further encourage the use of solar resources.

Using geographic areas as competitive zones may ease the burden of metering residential or small commercial consumers in the competitive market by enabling utilities to meter the entire zone through one or a small number of timed demand meters at delivery points to the zone instead of placing timed demand meters at all customer locations. Utilities would have to work with such communities or developments to implement geographic competitive areas.

Utilities must also take into account selection methods to fairly allow participation in the competitive market by a wide variety of customers of all sizes. We note that utilities have different customer characteristics and no one selection formula could be applied equitably to all utilities.

To assist the utilities and the Commission in understanding selection issues a workshop will be conducted on selection issues prior to the date when selection filings are due.

Customers served under existing contracts are eligible to participate in the competitive market prior to expiration of the existing contract only if the affected utility and customer agree to early revision of the contract.

Buy-throughs are permitted on a voluntary basis. These mechanisms, which enable the incumbent utility to purchase specific sources of energy at wholesale for the use of a specific consumer, may enable some consumers to obtain some of the benefits of competition prior to the start of the first competitive phase.

Electric cooperatives may find the proposed implementation schedule problematic as it may jeopardize their tax exempt status or conflict with contractual arrangements for delivery of power and make payment obligations on loans more difficult to meet. However, we expect that cooperatives may vary in their perceptions of these difficulties and in their preferences for solutions to these potential problems. Therefore, we have included in the proposed rule a

provision to allow cooperatives to request a modification to the schedule. Any such requests must include proposals on enhancing consumer choice among generation resources. The Commission will have to consider the costs and benefits of modifying the schedule in making a determination on the proposed modifications.

Competitive Services. Services which can be provided competitively are generation at any location (including distributed generation) plus other services except distribution service and except services required by the federal government to be provided on a monopoly basis.

Required Services To Be Made Available by Affected Utilities. This section deals primarily with utilities' obligations to provide unbundled services and standard offer services.

With electric competition, incumbent utilities will transform their transmission and distribution services into common carrier type services. This means that any eligible supplier (or consumer) has access to transmission, distribution, and ancillary services at comparable, nondiscriminatory rates. Incumbent utilities will have to unbundle transmission, distribution, and ancillary services into component services. The Commission would set rates for unbundled distribution and other services (where it has jurisdiction) and these rates would include cost recovery and a return on investment. Cost support information must be provided along with proposed unbundled transmission, distribution, and ancillary service tariffs, so that the Commission can analyze the proposed rates. Rates for unbundled services must reflect costs. In general, we anticipate that such rates would be set using traditional rate-making principles for monopoly utility services, although marginal cost may be considered in circumstances where a market is competitive. If competition in the provision of unbundled services arises during the phase-in, the regulated rates could be downwardly flexible.

An incumbent utility must pay the same amount for a given unbundled service as it charges to others for that service. For example, a utility could not include in rates it charges to its customers \$0.01 per kWh for distribution services, but charge \$0.05 per kWh for those same distribution services sold to competing generators. Without comparable pricing of services, utilities could reduce competition through price squeezes.

In addition to distribution and transmission services, other unbundled services include metering and meter reading, billing and collection, and ancillary services. Ancillary services are those transmission- and generation-related services that ensure system reliability and match generation with consumption. Oak Ridge National Laboratory identified the following ancillary services: scheduling and dispatch services; generation reserves for load following, reliability, and supplemental operating reserve services; energy imbalance service; real power loss replacement service; and voltage control.¹² The Federal Energy Regulatory Commission ancillary services are: scheduling, system control and dispatch service; reactive supply and voltage control from generation sources; regulation and frequency response service; energy

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imbalance service; spinning reserve; and supplemental reserves. We recognize that ancillary services may be defined differently by others than in the rule and variations in the list of services are acceptable.

We note that the Federal Energy Regulatory Commission (FERC) requires the filing of comparable rates for transmission services. Where such rates have been approved by the FERC, we will use those rates. The incumbent utilities must provide transmission service according to the following guidelines:

1. Services must be provided consistent with tariffs filed with the Federal Energy Regulatory Commission, where applicable.
2. Unless otherwise required by federal regulation, affected utilities must accept power and energy delivered to their transmission systems by others and offer wheeling services comparable to services they provide to themselves.

Incumbent utilities must offer "Standard Offer" service in their service territories until the Commission determines that competition has been substantially implemented. Standard offer service consists of bundled service at regulated rates for consumers who do not or cannot participate in the competitive market. Existing approved tariffs for bundled service may be used for standard offer service.

An alternative to a Standard Offer required of the incumbent utilities is to put the standard offer service out to bid. The bid could be to either: a) bundle the utility unbundled services plus generation from the market plus perhaps some competitive alternatives to utility unbundled services; or b) acquire the utility's property plus other facilities and contracts to deliver bundled service to consumers. These approaches may have merit if there were a long phase in period. However, the phase-in period is relatively brief and electric service providers who can offer bundled packages to consumers will have the opportunity to do so in competition with the utility's standard offer. Therefore, we did not pursue bidding to provide standard offer service.

The combination of the standard offer and unbundled distribution, transmission and ancillary services constitutes utilities' "obligation to serve" in the transition period. That is, utilities are obligated to provide distribution service (if they have distribution facilities), transmission (if they have transmission facilities), and ancillary services (if applicable). In addition, they must provide standard offer service until the Commission determines that competition is substantially implemented. An affected utility may request that the Commission find that competition is substantially implemented.

A utility could file a standard offer rate that exceeds current rates for similar service. Such a result could occur if the utility reallocates its costs following its unbundled service

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charges. We anticipate that the Commission would weigh the rate impacts of such a standard offer when reviewing the proposed tariffs.

To facilitate competition, the rule requires that incumbent utilities (and later other electric service providers) release a particular consumer's load and usage data to a certificated supplier upon request by the consumer. Such data may be useful to a potential supplier in developing a contract with the consumer. Some consumers may have adequate records that utility load and usage data are not needed. Utilities will have to develop a customer request form and data retrieval mechanism that sends out the requested information in a timely and useful manner. These kinds of information services must be unbundled and priced separately so that other suppliers can use them.

With numerous suppliers and aggregators entering the market, the utility providing unbundled services may be at risk for nonpayment for services rendered. Therefore, the proposed rule provides for utilities to manage such risks by employing deposit requirements and advance payment requirements for unbundled services. Such techniques must reflect costs should not stifle competition.

Utilities can also manage the risk of nonpayment for unbundled services by aggregators by requiring that the utility bill the consumer directly for unbundled services. The proposed rule does not require this approach, but it is possible under the proposed rule. Thus, if an aggregator might fail to reimburse the utility for unbundled services the utility could avoid this situation by billing the consumer directly.

The Commission Staff will conduct workshops to explore issues regarding unbundled services and standard offer services. Among the issues to be reviewed are metering requirements, metering protocols, designation of appropriate test years, the nature of adjustments to test year data, de-averaging of rates, service characteristics such as voltage levels, revenue uncertainty, line extension policies, and the need for performance bonds. As a result of the workshops, recommendations may be submitted to the Commission on the implementation of unbundled service or standard offer service.

Recovery of Stranded Cost of Affected Utilities. Stranded cost is the verifiable net difference between: a) the value of all the prudent jurisdictional assets and obligations necessary to furnish electricity (such as generating plants, purchased power contracts, fuel contracts, and regulatory assets), acquired or entered into prior to the adoption of the proposed rule, under traditional regulation of incumbent utilities, and b) the market value of those assets and obligations directly attributable to the introduction of competition under the proposed rule. The rule allows recovery of unmitigated stranded cost.¹³

Stranded cost will, in part, be reduced, by utility actions prior to the commencement of

competition and during the early phases of competition. Utilities have mitigated stranded cost by accelerating depreciation, for example. In addition, utilities can mitigate stranded cost by expanding their markets into other states and, once competition in Arizona begins, into other Arizona service territories. As prices fall, kWh sales of electricity will increase. It is possible that the demand for electricity by some commercial and industrial consumers, over the long run, is elastic, indicating that the percentage increase in revenues exceeds the percentage decrease in prices. In such circumstances, stranded cost will automatically be mitigated. Utilities can also expand the scope of services offered (such as offering demand side management services for profit) and the profits from these ventures will mitigate stranded cost. The rule requires that affected utilities take every feasible, cost-effective measure to mitigate or offset stranded cost.

Stranded cost applies to the competitive market. The concept of stranded cost does not strictly apply in the standard offer, or non-competitive, market. Rates for standard offer service will cover the costs of incumbent utilities' regulatory assets, obligations and investments necessary to furnish electricity. Thus, there is no stranded cost associated with these consumers.

Incumbent utilities are to file estimates of stranded cost and proposed recovery mechanisms. The Commission must hold hearings on stranded cost and consider the analyses and recommendations not only of the incumbent utilities, but also of Staff and intervenors. The hearing would encompass the magnitude of stranded cost and mechanisms for recovery of stranded costs, including specific charges. The Commission must consider several factors in setting rates for recovery of stranded cost:

- ◆ The impact of stranded cost recovery on the effectiveness of competition. Stranded cost recovery charges should not be so burdensome that few consumers pursue competitive options.
- ◆ The impact of stranded cost recovery on customers of the affected utility who do not participate in the competitive market. Shifting of costs to nonparticipating consumers should be minimized.
- ◆ The impact of the incumbent utility's ability to meet debt obligations.
- ◆ The impact of stranded cost recovery on prices paid by consumers in the competitive market. Burdensome charges will offset the benefits of competition and be viewed by consumers as "heavy fines" for being allowed to shop around.¹⁴
- ◆ The degree to which the affected utility has mitigated or offset stranded cost.
- ◆ The degree to which some assets have market values in excess of their book values; stranded cost in some generation assets may be offset by negative stranded cost in other generation, transmission, or distribution assets.
- ◆ Appropriate treatment of negative stranded cost.
- ◆ The time period over which such stranded cost charges may be recovered. The Commission is to limit the application of stranded cost recovery charges to a specific time period.

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- ◆ The ease of determining the amount of stranded cost.
- ◆ The applicability of stranded cost to interruptible customers who may not have required the utility to build or maintain any generating capacity to serve them.
- ◆ The amount of electricity generated by renewable generating resources owned by the utility.

The Commission will conduct evidentiary hearings on stranded cost recovery for each affected utility or possibly for all affected utilities in a combined hearing. Estimates of the magnitude of stranded cost will be imprecise because of many uncertainties such as the future market price of electricity. The Commission will review a range of estimates of stranded cost proposed by utilities, Staff, and intervenors. Stranded cost may even be negative indicating that the market value of the utility's assets and obligations exceeds book value.¹⁵

Stranded cost could be estimated in several ways. For example, the book value of all relevant assets could be compared to the present value of expected revenues minus operating costs attributable to those assets over a long time period in a competitive market. It is possible that over time the market value of the assets will rise and the book value will fall, creating a period during which stranded cost is negative. That negative stranded cost should be balanced against any positive stranded cost in early years.

We anticipate that utilities will need to carefully develop their stranded cost estimates and that these estimates need to be carefully scrutinized. The Commission may order a utility to file estimates of stranded cost and mechanisms to recover or, if negative, to refund stranded cost.

The affected utilities may request Commission approval of distribution charges, or other means of recovering stranded cost from customers who reduce or terminate service from the affected utility as a direct result of the phase-in program or who obtain lower rates from the affected utility as a direct result of the phase-in program. We leave open the type of mechanism so that utilities may balance market factors, ease of administration, consumer response, and the factors listed above. In addition, some types of charges may be impossible to implement because of federal pre-emption (e.g., transmission charges). The Commission must approve stranded cost recovery charges before they can be implemented. However, stranded cost may only be recovered from customers served competitively under the competitive rules. Customers who are served under special contracts that are not negotiated under these rules would not be subject to the stranded cost recovery charge. Additionally, any reduction in electricity purchases from an affected utility resulting from self-generation, demand side management, or other demand reduction attributable to any cause other than the retail access provisions of the proposed rule shall not be used to calculate or recover any stranded cost from a consumer.

Charges to recover stranded cost may require regular updating and true-ups as revisions are made in the estimates of the magnitude of stranded cost. Further, if charges are based on

historical or forecasted sales in the competitive market, revisions in those charges will have to be made as actual sales data are collected.

To assist the parties and the Commission, the proposed rule requires that the Commission Staff conduct workshops to develop guidelines for the analysis and recovery of stranded cost.

System Benefits Charges. System benefits charges enable the recovery of costs of Commission-approved utility low income, demand side management, environmental, renewables, and nuclear power plant decommissioning programs. The phase-in requires recovery of applicable costs of system benefits via a non-bypassable charge levied on suppliers in the competitive market. The applicable costs are the competitive consumers' shares of the costs of total system benefits. Without such a charge, utilities may cut back on these programs due to dwindling revenue to support them as competition increases. Utilities are to propose the necessary charges on competitive consumers (to continue existing programs) for Commission review and approval. We note that consumers not in the competitive market pay the costs of system benefits through regulated rates such as standard offer rates.

Solar Portfolio Standard. The literature on competition suggests that the predominant sources of energy in the competitive market will be system power where excess capacity is available and new gas-fired combustion turbines and combined cycle units. Distributed generation using gas fired technologies may also be important. The role of renewable energy resources in a competitive market is uncertain.

The Commission has supported development of renewables by utilities in Arizona for several reasons including: building institutions to effectively apply renewables as the costs of renewable generation technology fall; hedging against fossil fuel price increases; encouraging manufacturers of renewables to get their costs down through economies of scale resulting from increased purchases of renewables; and installing renewables where they are currently cost effective.

Solar technologies are the most applicable renewables in Arizona.¹⁶ The phase-in program extends our interest in renewables by requiring that suppliers in the competitive market obtain at least one half of one percent of the total retail electric energy sold competitively from solar resources located in Arizona, whether that solar energy is purchased or generated by the seller. Solar resources include photovoltaic resources and solar thermal resources (for example, dish-Stirling generation). After 2 years, the Commission may change the solar portfolio percentage; if it does not act the percentage increases to one percent of electric energy sold competitively.

Solar resources may be built and operated by sellers of electricity in the competitive market. However, we expect that some of the solar energy will be supplied by firms

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specializing in solar resources and which sell their electric output to competitive suppliers under contract. Entrepreneurial electric service providers could use the solar portfolio standard as a springboard to developing solar projects. For example, Enron and Amoco have proposed a 100 MW photovoltaic project to the Department of Energy. The additional of the solar portfolio standard may further advance these types of innovations.

The rule indicates that the solar resources must be new, i.e., installed on or after January 1, 1997. The purpose of the requirement is to foster advances in technology, encourage economies of scale in manufacturing, and gain greater experience with applying solar resources. Therefore, suppliers in the competitive market cannot simply assign existing solar generation to sales in the competitive Arizona market to meet this criterion. They must build or use new facilities. Sellers must report regularly on their compliance with the solar portfolio standard; they must clearly demonstrate the output of solar resources, the installation date of solar resources, and the transmission of energy from those solar resources to Arizona consumers.

The proposed rule encourages early development of solar resources through a "double credit provision." Any company certificated under the provisions of the rule is able to credit two times the electric energy generated before January 1, 1999 using photovoltaics or solar thermal resources installed in Arizona on or after January 1, 1997 to the percentage requirement cited above. Thus, for example, an early starter could generate 10,000 kWh between January 1, 1997 and December 31, 1998 and credit 20,000 kWh toward the solar requirement at any time after December 31, 1998.

Competitive market consumers and suppliers will pay for the solar portfolio standard. We expect that the costs will be shared by both consumers and suppliers reflecting the price elasticities of demand and supply. Further, among consumers, a large share of the costs are likely to be borne by those competitive market consumers who desire "green power." That is, those consumers who value solar power the most are likely to bear a large fraction of the costs of the solar portfolio standard and they will satisfy their demand for solar power in the mix of generation resources serving them.

We selected the percentage standard to balance our interest in encouraging solar power and the higher costs of solar power relative to conventional generation. If solar power costs about \$0.30 per kWh today and conventional generation costs \$0.03 per kWh, a one half percent blend of solar energy with conventional energy would cost \$0.03135 per kWh. This imposes a 4.5 percent cost increase on generation (a smaller percent cost increase when transmission and distribution charges are also figured in), but we believe that it is justified by the value of solar resources as a hedge against fossil fuel price increases, as an inducement to encourage greater production of solar generating systems with the attendant economies of scale, and by their environmental benefits. The cost impact will fall over time as the costs of solar power decline. The cost impact of the solar portfolio standard is expected to be smaller than the savings which

can occur through competition, especially as stranded cost recovery concludes.

The MW of solar generating capacity additions required under various solar portfolio standards are shown in Figure 1 assuming that statewide demand for electricity grows at a rate of 4 percent per year from a 1995 base of 45.6 million MWH.¹⁷ The capacity factor for solar generation is assumed to be 29 percent. Capacity is shown for solar portfolio standards of 0.5 percent of competitive demand and 1 percent of competitive demand for the phases of the proposed phase-in. It is unclear whether Salt River Project will be included in a solar portfolio standard, so solar capacity is shown with and without Salt River Project.

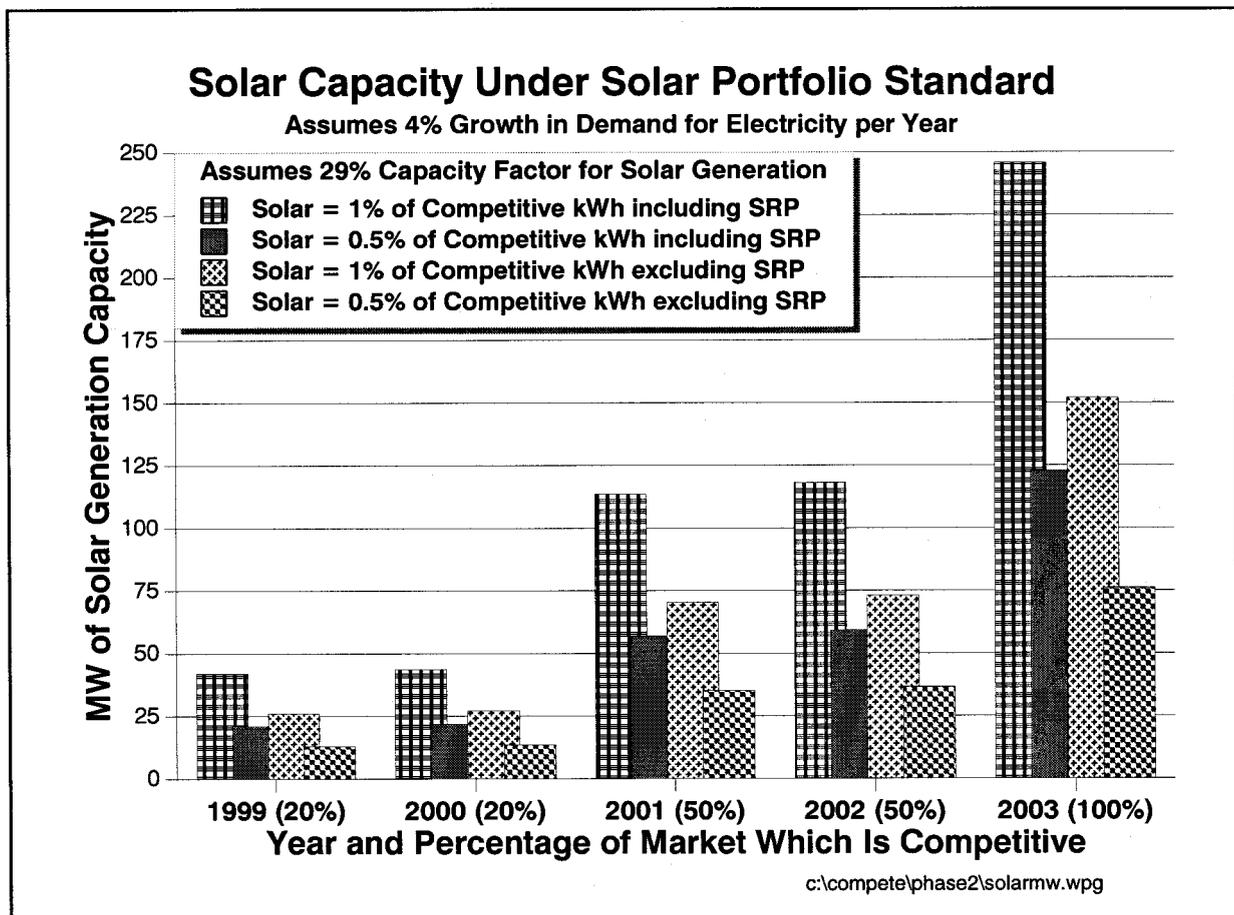


Figure 1

With a solar portfolio standard of 0.5 percent and with 20 percent of the market served competitively, about 21 MW of solar generation capacity would be needed if SRP is included; if SRP were excluded, solar generation requirements would be about 13 MW. With a solar portfolio standard of 0.5 percent and all of the market open to competition (including SRP) the

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need for solar capacity would be about 123 MW in 2003 (128 MW in 2004); without SRP it would be about 76 MW in 2003 (79 MW in 2004).

An upper bound to the capacity costs of solar power is shown in Figure 2. The upper bound represents the estimated costs of photovoltaic technology which is commercially available today; if other technologies are cheaper they would be used and the cost would be lower. It is assumed that photovoltaics cost \$6,000 per kW in 1996 and would decrease in cost at a real rate of 7 percent per year over the period 1996 through 2004. The present value of capital costs (discounted at a real rate of 3 percent per year) is as low as \$266 million if the solar portfolio standard remains at 0.5 percent of the competitive market, excluding Salt River Project. If the solar portfolio standard is higher or if Salt River Project participates in the solar portfolio standard, the present value of costs would be higher as shown in the figure.

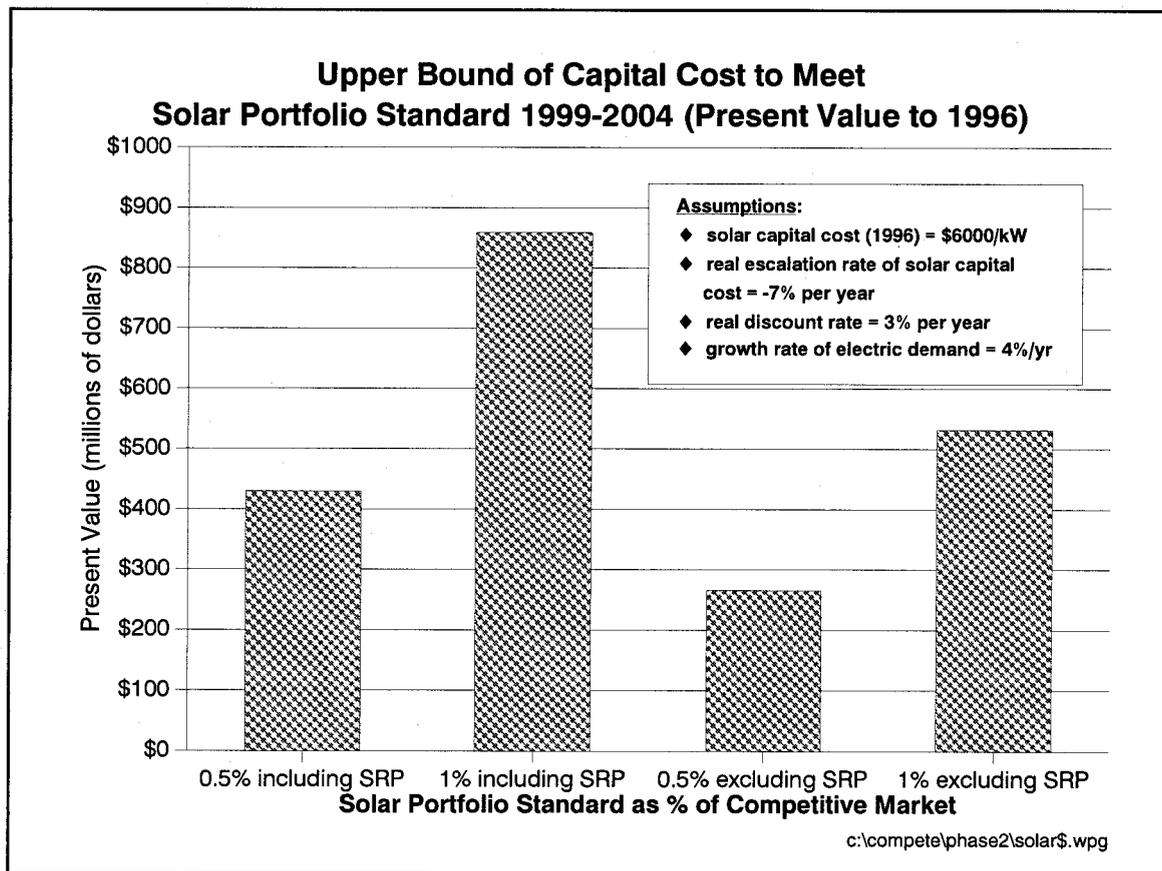


Figure 2

The percentage standard is consistent with the utilities' planned generating capacity additions. Planned capacity additions reported in the 1995 resource planing filings are summarized in Figure 3. By 2003, the year full competition is to start, the utilities have planned to add 377 MW of generating capacity; by 2004 they have planned to add 602 MW of generating capacity. These figures should be regarded as estimates, not as commitments, and may be significantly altered as more information becomes available and as competitive supply in the southwest materializes. Including SRP, a solar portfolio standard of 0.5 percent of competitive kWh sales would result in solar capacity additions of 128 MW by 2004, and a solar portfolio standard of 1 percent of competitive kWh sales would result in solar capacity additions of 256 MW by 2004.

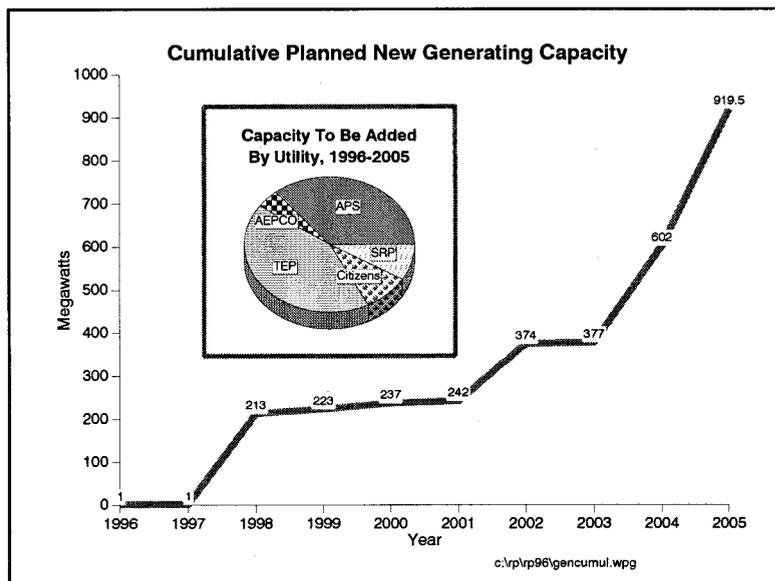


Figure 3

The solar portfolio standard is in addition to renewable resource goals for the year 2000 established in Decision No. 58643 (12 MW for APS, 5 MW for TEP, 1 MW for AEPCO, and 1 MW for Citizens). The costs of meeting these goals are being paid for by ratepayers; non-utility suppliers will not have access to these funds.

If a company selling electricity in the phase-in program fails to meet the solar portfolio standards in any year, the Commission may impose a penalty on that public service corporation up to \$0.30 per kWh for deficiencies in the provision of solar energy. In addition, if the provision of solar energy is consistently deficient, the Commission may void a public service corporation's contracts under the phase-in program.

There are four solar technologies that could meet the needs of competitors in the Arizona phase-in: photovoltaics, solar dishes, solar troughs, and solar central receivers. Most people familiar with the industry probably believe that photovoltaics and dish/Stirling will be the primary technologies of choice. However, the success of Solar Two in the California desert could mean that a 100 MW (or larger) solar central receiver could be built in the 1999-2002 time-frame. Finally, although the Luz solar trough technology is considered by some to be an outdated technology, solar trough systems could provide hundreds of Megawatts of solar capacity

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if the PV and solar dish manufacturers are unable to meet the market demand resulting from the Solar Portfolio Standard.

Photovoltaics:

There are a number of photovoltaic manufacturers with new and/or improved thin-film PV products that are currently building new plants, expanding old plants, or have opened new plants. They include manufacturers with access to significant financial resources to expand even more in future years. These include Siemens, Amoco/Enron, and United Solar Systems Corporation (USSC), which has Canon of Japan as its part owner. Both Amoco/Enron and USSC are adding 10 MW of new manufacturing capacity over the next year. If these plant additions allow these two firms to become the world price leaders, as many believe will happen, the next round of plant expansions could be "cookie cutter" versions of the 1996-97 plants or even larger (15-20 MW/year) facilities. Even if only part of the projected plant expansion in the 1996-98 time-frame occurs, there is a good chance that world PV manufacturing capacity could double from the 1995 level (80 MW/year) by the end of 1998. If the expected 1996 plant additions total 20 MW, the industry capacity would be 100 MW/year, but realistically, because of start-up delays and debugging of new equipment, the actual 1996 manufacturing output will probably be around 94-95 MW per year.

Expected photovoltaic manufacturing plant expansions are shown in Table 1.

Solar dish:

There are two manufacturers with dish/Stirling systems that are currently being field tested. They are Cummins Power Generation and Science Applications International Corporation (SAIC). If the field tests are successful, these systems could be commercially available in 1997 or 1998. In addition, an improved version of the McDonnell-Douglas system is being readied for testing and possible commercialization. Other major players, such as Detroit Diesel, are engaged in R & D in this dish system field.

Projections for dish/Stirling manufacturing economies of scale show that, in mass production, the dish/Stirling systems could produce electricity at 6 cents per kWh by the 2001-2005 time-frame.¹⁸

Estimated dish/Stirling manufacturing plant expansions are shown in Table 2. These estimates are based on the assumption that two manufacturers will start commercial sales in 1998 and that a third will start commercialization in 1999. Unlike photovoltaics, dish/Stirling is a new technology on the verge of commercial use. There is no historical data to form the basis of a projection.

TABLE 1: Expected photovoltaic manufacturing plant expansions (note a)

Year	Photovoltaic manufacturer	Manufacturing capacity (MW/year)	Cumulative Expansions MW/year
1996	USSC (Troy, MI)	5 MW/year	5 MW/year
	USSC (Japan)	5 MW/year	10 MW/year
	Solarex (poly)	3 MW/year	13 MW/year
	BP Solar (Australia)	1 MW/year	14 MW/year
	BP Solar (India)	1 MW/year	15 MW/year
	Siemens (US)	3 MW/year	18 MW/year
	ASE Americas (US)	2 MW/year	20 MW/year
	BHEL (India)	.5 MW/year	20.5 MW/year
1997	SOLEC	5 MW/year	25.5 MW/year
	Solar Cells	2 MW/year	27.5 MW/year
	Amoco/Enron (VA)	5 MW/year	32.5 MW/year
	Astropower (DE)	5 MW/year	37.5 MW/year
	USSC (Russia)	3 MW/year	40.5 MW/year
	BP Solar (US)	2 MW/year	42.5 MW/year
	BP Solar (India)	1 MW/year	43.5 MW/year
	BP Solar (Australia)	1.5 MW/year	45 MW/year
	Siemens (US)	3 MW/year	48 MW/year
	ASE Americas (US)	2 MW/year	50 MW/year
	Solarex (poly)	3 MW/year	53 MW/year
1998	Global Solar (Tucson)	1.5 MW/year	54.5 MW/year
	Renewable Energy Sys. (Europe)	2 MW/year	56.5 MW/year
	Amoco/Enron (VA)	5 MW/year	61.5 MW/year
1997-1998	Misc. foreign manufacturers	20-30 MW/year	81.5-91.5 MW/year
???	Other possible expansions:		
	Alpha Solarco (China)	5-10 MW/year	86.5-101.5 MW/year
	Amoco/Enron (India)	10 MW/year	96.5-111.5 MW/year
	Amoco/Enron (Nevada Test Site)	10 MW/year	106.5-121.5 MW/year
	EPV (Arizona)	2.5 MW/year	109-124 MW/year

a) Plant expansion information is from three sources: 1) Paul Maycock, PV Energy Systems, listing, 5/96; 2) Telephone conversation between R. Williamson and Strategies Unlimited, 9-5-96; 3) General industry expansion announcements.

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TABLE 2: Estimated dish/Stirling manufacturing plant expansions (1997-2003)

Year	Organization	Units produced (note a)	Manufacturing Capacity (MW/year)	Total Manufacturing Capacity (MW/year)
1997	Manufacturer A	5-10	.125-.25	.125-.25
	Manufacturer B	5-10	.125-.25	.25-.5
1998	Manufacturer A	50-100	1.25-2.5	1.5-3
	Manufacturer B	50-100	1.25-2.5	2.75-5.5
1999	Manufacturer A	100-300	2.5-5	5.25-10.5
	Manufacturer B	100-300	2.5-5	7.75-15.5
	Manufacturer C	50-100	1.25-2.5	9-18
2000	Manufacturer A	200-500	5-12.5	14-30.5
	Manufacturer B	200-500	5-12.5	19-43
	Manufacturer C	100-300	2.5-5	21.5-48
2001	Manufacturer A	300-600	7.5-15	29-63
	Manufacturer B	300-600	7.5-15	36.5-78
	Manufacturer C	200-500	5-12.5	41.5-90.5
2002	Manufacturer A	400-800	10-20	51.5-110.5
	Manufacturer B	400-800	10-20	61.5-130.5
	Manufacturer C	300-600	7.5-15	69-145.5
2003	Manufacturer A	500-1000	12.5-25	81.5-170.5
	Manufacturer B	500-1000	12.5-25	94-195.5
	Manufacturer C	400-800	10-20	104-215.5

- a) Assumes that all units are a nominal 25 kW output. Assumes that Manufacturers A & B start commercialization in 1998 and Manufacturer C starts commercialization in 1999.
- b) The three most likely manufacturers to commercialize dish technology are Cummins Power Generation, Science Applications International Corp. (SAIC), and the owners of the McDonnell-Douglas technology.

Solar central receivers:

The Solar Two experiment in California is the second major U.S. test of concept for the solar central receiver technology. If this test is successful, it is probable that there will be a 60-100 MW solar central receiver built in the 1999-2002 time-frame. Since the economies of scale for central receivers favor 100+ MW installations, it is possible that after 2001 or so, multiple 100 MW central receivers could be built in the Southwest.

Solar troughs:

During the 1970s and 1980s, over 350 MW of solar trough systems were installed by Luz International in California. Although Luz International is no longer in business, the solar systems that were built by Luz are still operating, producing solar-generated electricity. The rights to the Luz technology are owned by a European firm and there is a Luz-type system being planned for installation in Mexico. So, this type of solar trough technology would be available for sale and installation if enough demand for solar electricity occurs in the late 1990s and beyond.

Based upon the installation time for the seven existing Luz systems, it is reasonable to expect that 40-80 MW per year of solar trough systems could be installed, starting in 1998. The potential for expansion after 1998 is substantial. If demand were high enough, 80-160 MW per year could be installed. It is anticipated that by 2001, the competing PV, solar dish, and solar central receiver technologies will surpass the economics of the solar trough technology. However, if those industries are unable to meet the increased market demand, the solar troughs could provide the solar capacity.

Table 3 summarizes the projections of the solar electric industry yearly manufacturing capacity. We conclude that there will be ample capacity among the manufacturers of photovoltaics, solar dish, solar trough, and central receiver technologies to accommodate the Arizona Solar Portfolio Standard.

TABLE 3: Estimated solar industry yearly manufacturing capacity in MW (1996-2003)

Year	Photovoltaics (note a)*	Solar Dish	Solar Trough	Central Receiver	Total
1996	94-95	--	--	--	94-95
1997	110-120	.25-.5	--	--	110.25-120.5
1998	130-135	2.75-5.5	40-80	--	172.75-220.5
1999	155-165	9-18	80-160	??	244-343
2000	180-200	21.5-48	80-160	60 ?	281.5-468
2001	230-250	41.5-90.5	80-160 (note b)	60-100	411.5-500.5
2002	260-290	69-145.5	80-160 (note b)	60-100	469-695.5
2003	300-400+	104-215.5	80-160 (note b)	100-200+	584-975.5

- a) Actual PV production is shown as less than installed capacity (from Table 1) because it generally takes six months to one year to get a plant started up and increased from a single shift to two or three shifts.
- b) It is expected that, by 2001, both PV and solar dish costs will be much lower than those of solar troughs, so solar troughs would only be selected if the PV or dish industry could not meet demand.

Spot Markets and Independent System Operators. The literature indicates that independent system operators may be necessary to efficiently and fairly use the transmission network, in part as a counter to the market power of incumbent utilities. Further, spot markets in electricity are likely to develop beyond their current embryonic state. The proposed rule enables the Commission to investigate spot market developments and independent system operators, to support the development of a spot market and independent system operator, and to work with other entities to help establish spot markets and independent system operators. Establishment of spot markets and independent system operators will take considerable effort and

may be accomplished in several ways including a quasi-governmental agency or an industry-supported organization. For example, independent system operators could emerge from current power pooling arrangements and regional transmission groups. Further, an independent system operator and spot market are likely to cover a multi-state region and Arizona-specific organizations may not be viable.

Spot markets are likely to establish themselves without significant regulatory input. Already there have been developments of spot markets in standardized contracts at major interchange points (e.g., Palo Verde, California-Oregon border, and Mid-Columbia). Power marketers have taken great interest in spot market development as reflected in the activities of the Power Marketing Association. In addition, there have been, for years, spot market purchases and sales among utilities using nonstandardized contracts. A futures market has been established by the New York Mercantile Exchange.

In-State Reciprocity. The Commission does not have regulatory jurisdiction over some Arizona electric utilities, most notably municipal utilities. Therefore, the phase-in excludes those non-jurisdictional utilities from opening up their service territories to competition and from competing for customers in the service territories of regulated utilities. These same restrictions apply to the regulated utilities which are not explicitly required to participate in the phase-in. However, an Arizona electric utility, subject to Commission jurisdiction, which is not required to open up its territory to competition may voluntarily participate in this phase-in program if it makes its service territory available for competing sellers, if it agrees to all of the requirements of this phase-in program, and if it obtains a Certificate of Convenience and Necessity. Thus, Columbus Electric Cooperative could voluntarily participate in the competitive program, but Salt River Project could not.

The proposed rule also requires the Commission to pursue legislation to address the role of electric utilities of Arizona municipalities.

Rates. Traditional regulatory review of rates is not appropriate in a competitive market. Prices in competitive markets will tend to be held down by two forces: 1) competition among suppliers, and 2) technological, marketing, and organizational innovations, especially in distributed generation, that lower the cost of generating electricity.

Rates resulting from competition will reflect the different types of services demanded by consumers. The preferences of buyers and sellers vary greatly.¹⁹ For example, some buyers want long term stable prices, some want to leave their options open and desire only short term contracts, and some are willing to play the variations of market prices over the long term. Some consumers can tolerate interruptible service and some need firm service. Further, some consumers' demand for electricity may depend crucially on unpredictable fluctuations in their business such as world copper prices. Consequently, customized contracts will vary greatly in

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pricing provisions, terms, and other details. Therefore, contracting on a case by case basis is necessary to reflect the parties' tolerances for risk and desires for stability, and to reflect parties' desires for the term of service and for the type of service.²⁰ The resulting variations in rates, terms, and conditions might mistakenly be viewed as "discrimination," but they actually reflect ordinary business arrangements and variations in consumer desires. Finally, buyers may vary in their bargaining ability, but as they become more knowledgeable and employ agents, disparities in bargaining ability will diminish.

The phase-in provides for a streamlined rate setting process consistent with Constitutional requirements. In particular:

- ◆ For the reasons outlined above, market based rates for competitively provided services are deemed to be just and reasonable in the phase-in.
- ◆ Companies selling competitive services must file tariffs describing their services, including terms and conditions and maximum rates for those services. The services may not be provided until the Commission has approved the tariffs.
- ◆ A company holding a Certificate may price its competitive services at or below the maximum rates specified in its filed tariff, provided that the price is not less than the marginal cost of providing the service. Short run marginal cost would apply in cases where the term of service is shorter than the time period before new capacity is needed to provide the service; long run marginal cost applies in cases where the term of service goes beyond the date when new capacity is needed to provide the service. The minimum price provision is included to reduce the chances that incumbent utilities will subsidize sales to consumers at rates below marginal cost from revenues from captive customers. To be fair to all sellers, we propose that the minimum price provision apply to all sellers and not just incumbent utilities.
- ◆ Competitively negotiated contracts customized to individual customers which comply with approved tariffs in this phase-in program do not require further Commission approval. However, all such contracts for one MW or more whose term is one year or more must be filed with the Director of the Utilities Division as soon as practicable until full competition is implemented. Then contracts do not have to be filed.

Service Quality, Consumer Protection, Safety, and Billing Requirements. To limit risk to smaller consumers and to reduce transaction costs for consumers, most of the existing rules for electric service are incorporated into the competitive rules.²¹ In addition, the rule requires that if a consumer is switched to another supplier without permission (the equivalent of slamming in telephone service), the consumer must be switched back to the previous supplier and the company that did the switching is responsible for all costs of resuming service from the previous supplier. Each supplier is to ensure that bills rendered on its behalf include the

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telephone numbers for billing, service and safety inquiries and the Commission's telephone number for consumer services questions. Each supplier must also ensure that billing and collection services rendered on its behalf comply with Commission rules on billing.

The proposed rule also requires any provider of service to consumers to give at least 30 days notice if it is no longer obtaining any of the services needed to render service to consumers. This notification will inform consumers of the need to find another supplier.

Recognizing that system reliability and safety must be maintained at a high level, the proposed rule provides that the Commission set up a working group to monitor and report annually on system reliability and safety. The rule indicates that representatives from Staff, utilities, consumers, and other suppliers will be included in the working group. The working group is to recommend to the Commission ways to improved system reliability and safety. The working group starts immediately and continues its work in an on-going manner.

All suppliers and all incumbent utilities must follow system reliability standards and practices established by the North American Electric Reliability Council and the Western Systems Coordinating Council.

Because a consumer may be served by several suppliers (e.g., a distribution company, a generation company, and a transmission company), the rule requires that all suppliers of a particular consumer have access to the meter readings pertaining to that consumer, regardless of who does the meter reading. Meter testing may be requested by a supplier to ensure accurate measurement of service. Protocols for metering will be developed through a workshop on unbundled services.

Finally, because the transition to a competitive marketplace will require consumer education, the rule indicates that incumbent utilities and other suppliers shall provide notification and informational materials to consumers about competition and consumer choices as directed by the Commission. This information can be developed by the Commission and other parties prior to the commencement of competition.

Reporting Requirements. To evaluate the phase-in, it is necessary to collect timely data on progress of the market. The rule lists the data to be filed semi-annually to assist the Commission in assessing the competitive market. Starting with the reporting year of 2004, reports are to be filed annually instead of semi-annually. Information may be confidential, but should still be filed. The Staff or the Commission may issue reports with aggregate statistics based on confidential information that do not disclose data pertaining to a particular seller or purchases by a particular buyer.

The phase-in also requires that the Director of the Utilities Division be notified if any

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tariffs are discontinued.

In addition to the above reporting requirements, public service corporations participating in the phase-in are required to participate in Commission workshops or other forums whose purpose is to evaluate the phase-in or to assess market issues.

Administrative Requirements. The rule indicates that a company may propose additional services at any time by filing a proposed tariff with the Commission describing the service, maximum rates, terms and conditions. The service cannot be provided to consumers until the tariff has been approved by the Commission.

Similar to the telecommunications rules [A.A.C. R14-2-1115(C)(4)], contracts negotiated under the phase-in will not be open to public inspection or made public except on order of the Commission, or by the Commission or a Commissioner in the course of a hearing or proceeding.

The rule indicates that the Commission may consider variations or exemptions from the terms or requirements of any of the rules upon the application by an affected party. This provision enables the Commission to apply common sense procedures where the rules do not anticipate unusual situations.

Finally, the rule indicates that the Commission may develop procedures for resolving disputes. The nature of these disputes is currently vague; however, it is anticipated that the Commission may wish to employ alternative dispute resolution methods after some experience with competition is obtained.

NOTES

1. Our 1995 report contains a large bibliography: *Report of the Working Group on Retail Electric Competition*, filed in Docket No. U-0000-94-165. In addition, see the papers in Western Regional Transmission Association, Transmission Pricing Workshop, May 14 and 15, 1996, Boise, Idaho; and David Berry and Barbara Keene, "Contracting for Power," *Business Economics*, October 1995: 51-54.
2. *Report of the Working Group on Retail Electric Competition*, Arizona Corporation Commission, Docket No. U-0000-94-165, October 1995, pp. 1-4.
3. Charles Bayless, "Less is More: Why Gas Turbines Will Transform, Electric Utilities," *Public Utilities Fortnightly* 132 (December 1, 1994): 21-25; Thomas Casten, "Electricity Generation: Smaller is Better," *The Electricity Journal* 8 (December 1995): 65-73; *The Electric Industry in Arizona: Staff Report on Resource Planning*, Arizona Corporation

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Commission, Docket No. U-0000-95-506, 1996, Section 3.4.

4. On falling prices and successful and unsuccessful business strategies in deregulated industries, see: Mercer Management Consulting, *The Impact of Deregulation*, prepared for the Edison Electric Institute, Washington, D.C., 1995.

5. For the purposes of the competitive rules, utilities in the existing rules are defined as electric service providers supplying the relevant services described in each paragraph of the existing rules.

6. Harry Trebing, "Achieving Coordination in Public Utility Industries: A Critique of Troublesome Options," *Journal of Economic Issues* 30 (June 1996): 561-570.

7. James Meeks, *Antitrust Concerns in the Modern Public Utility Environment*, National Regulatory Research Institute, Columbus, Ohio, NRRI 96-12, 1996.

8. Joseph Schumpeter, *Capitalism, Socialism and Democracy*, New York: Harper and Row, 1942, 1950; James Utterback, *Mastering the Dynamics of Innovation*, Boston: Harvard Business School Press, 1994; Peter Drucker, "The Information Executives Truly Need," *Harvard Business Review* (January/February, 1995): 54-62.

9. On the potential for distributed generation, see:

American Solar Energy Society. *Progress in Solar Energy Technologies and Applications*, Boulder, Colorado: 1994. Richard Balzhiser, "Technology -- It's Only Begun to Make a Difference." *The Electricity Journal* 9 (May 1996): 32-45. Charles Bayless, "Less is More: Why Gas Turbines Will Transform Electric Utilities," *Public Utilities Fortnightly* 132 (December 1, 1994): 21-25. Harry Brown and F. Samuel Stuber, *Reliability of Natural Gas Cogeneration Systems*. Report to Gas Research Institute, 1992. Stuart Brown, "Here Come the Pint-Size Power Plants." *Fortune* 133 (April 1, 1996): 64C-64P. Thomas Casten, "Electricity Generation: Smaller is Better." *The Electricity Journal* 8 (December 1995): 65-73. K.C. Choi and Thomas Jarboe, "Mass Customization in Power Plant Design and Construction." *Power Engineering* 100 (January 1996): 33-36. Steven Collins, "Special Report: Gas Turbine Powerplants." *Power* 138 (June 1994): 17-31. Thomas Damberger and Virginia Prue, "Fuel Cells for Energy Generation at Medical Centers." Presented at the 1993 World Energy Congress, Atlanta, Georgia, 1993. John Douglas, "Solid Futures in Fuel Cells." *EPRI Journal* 19 (March 1994): 6-13. Energy and Environmental Analysis, Inc. *Current Status and Projected Trends in Industrial Cogeneration*. Washington, D.C.: Gas Research Institute, 1993, GRI-93/0467. Frank Felder, "Integrating Financial Thinking with Strategic Planning to Achieve Competitive Success." *The Electricity Journal* 9 (May 1996): 62-67. Gas Research Institute, Sector Summary, *Industrial Sector*, August 1995. H. Lawrence Goldstein, "Small Turbines in Distributed Utility Application: Natural Gas Pressure Supply Requirements." Golden,

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Colorado: Center for Energy Analysis and Application, National Renewable Energy Laboratory, NREL/SP-461-21073, 1996. Thomas Hoff and Christy Herig, "Managing Risk Using Renewable Energy Technologies." In *The Virtual Utility: Accounting, Technology and Competitive Aspects of the Emerging Industry*," edited by Shimon Awerbuch and Alistair Preston. Norwell, Massachusetts: Kluwer Academic Publishers: forthcoming. *Independent Power Report*, "Enron Capital Inks Pact to Sell to Kaiser Permanente from Fuel Cells," January 26, 1996: 4-5. Douglas Smith, "Fuel Cells Hold Promise for Electric Power Generation." *Power Engineering* 98 (February 1994): 14. Brooke Stoddard, "Fuel Cell Update: Coming to Market." *American Gas* (June 1993): 16-19.

10. Michael Kisechnick, "Working Assets Overview of the New Hampshire Retail Competition Pilot," presented at the Direct Access Working Group, San Diego, California, June 7, 1996.

11. Because of possible utility data limitations, we will interpret this requirement to pertain to either coincident or non-coincident peak demand. Our preference is to apply this provision in terms of coincident peak demand, but as a practical matter, most information may pertain to non-coincident demand. Further, utilities may have to estimate the demand actually served in the competitive market. Careful estimates will be acceptable in meeting this provision of the rule.

12. Brendan Kirby, Eric Hirst, and James Vancoevering, "Identification and Definition of Unbundled Electric Generation and Transmission Services," Oak Ridge National Laboratory, ORNL/CON-415, 1995; Eric Hirst and Brendan Kirby, "Electric-Power Ancillary Services," Oak Ridge National Laboratory, ORNL/CON-426, 1996; and Brendan Kirby and Eric Hirst, "Ancillary-Service Costs for 12 U.S. Electric Utilities," Oak Ridge National Laboratory, ORNL/CON-427, 1996.

13. Introduction of competition into previously regulated industries, such as airlines and trucking, does not appear to have incorporated explicit stranded cost recovery mechanisms. The Interstate Natural Gas Association of America (INGAA) notes that in the gas industry competition was introduced before recovery of stranded cost was fully determined by regulatory commissions. INGAA: "Comparison of Gas and Electric Industry Restructuring Costs," Report No. 96-2, Washington, D.C.: August 1996.

14. The *Arizona Republic* ran a series of stories on restructuring on July 21, 1996. On page A14, the headline regarding stranded investment recovery is "Customers who switch electric firms likely to pay heavy fines." The article itself states: "State rules to allow electric ratepayers to choose among competitive power providers are expected to impose hefty fees on customers who leave their local utility." If consumers regard stranded investment recovery as "heavy fines" it may be difficult to sustain such recovery.

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15. A study which found negative stranded investment is: Paul Chernick, Susan Geller, Rachel Brailove, Jonathan Wallach, and Adam Auster, *Estimation of Market Value, Stranded Investment, and Restructuring Gains for Major Massachusetts Utilities*, prepared by Resource Insight, Inc. for the Massachusetts Attorney General, April 17, 1996.

16. See Section 3.4.3 of *The Electric Industry in Arizona: Staff Report on Resource Planning*, 1996, filed in Docket No. U-0000-95-506.

17. Arizona Department of Commerce Energy Division, *Arizona Energy Data Quarterly Report*, Fourth Quarter 1995, July 1996: p. 18.

18. *Solar Thermal Electric Technology Rationale*, U.S. Department of Energy, August 1990, p. 39.

19. C. Douglas Bowman, "Innovative Rates: Four Customers, Four Solutions," *Public Utilities Fortnightly*, January 15, 1996: 25-28; C. D. Whelan, "Energy as a Strategic Input to the Productive Process," in *Vision 2001: Energy & Environmental Engineering*, Proceedings of the 18th World Energy Engineering Congress, Atlanta, Georgia, November 1995; Remarks of Phyllis Kessler, Conference on Implementing Retail Access, Power Marketing Association, Arlington, Virginia, June 7, 1996.

20. David Berry and Barbara Keene, "Contracting for Power," *Business Economics*, October 1995: 51-54; David Berry, "Risk Management through Contracting," presented at the Tenth NARUC Biennial Regulatory Information Conference, Columbus, Ohio, September 11, 1996.

21. In promoting safety and service quality, we note the following. First, the Commission does not mandate specific utility employment levels in specific jobs such as safety-related jobs. Second, Arizona Public Service Company and Salt River Project have adopted system reliability indices. However, it is unclear whether such broad indices will be useful in identifying consumer perceptions about reliability of service in a competitive environment with multiple suppliers and unbundled services.

Third, preventive maintenance will be important to achieving reliable service quality. Utilities often have inspection, replacement, and maintenance plans for their facilities, but requiring formal Commission review and approval of such plans may be very burdensome for the Commission and electricity suppliers.

The rule anticipates occasional power outages and requires electricity suppliers to work cooperatively to re-establish service. Further, customer bills are required to indicate the toll free telephone number to call if service outages occur. The rule adopts R14-2-208(D)(5) which requires notification of the Commission of significant service interruptions. Operationally, "significant" is all outages involving 100 or more customers for one hour or longer (for APS

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1000 customers for 4 hours).

Safety requirements for power lines are found in ARS Sections 40-360.41 to 40-360.45. Under A.A.C. R14-2-101, utilities are required to report to the Commission accidents involving personal injury (involving off-site medical attention) and property damage of at least \$5000, and to report, within 24 hours, accidents which result in death. Finally, the rule applies the Commission's existing construction standards and safety provisions from R14-2-208(F).