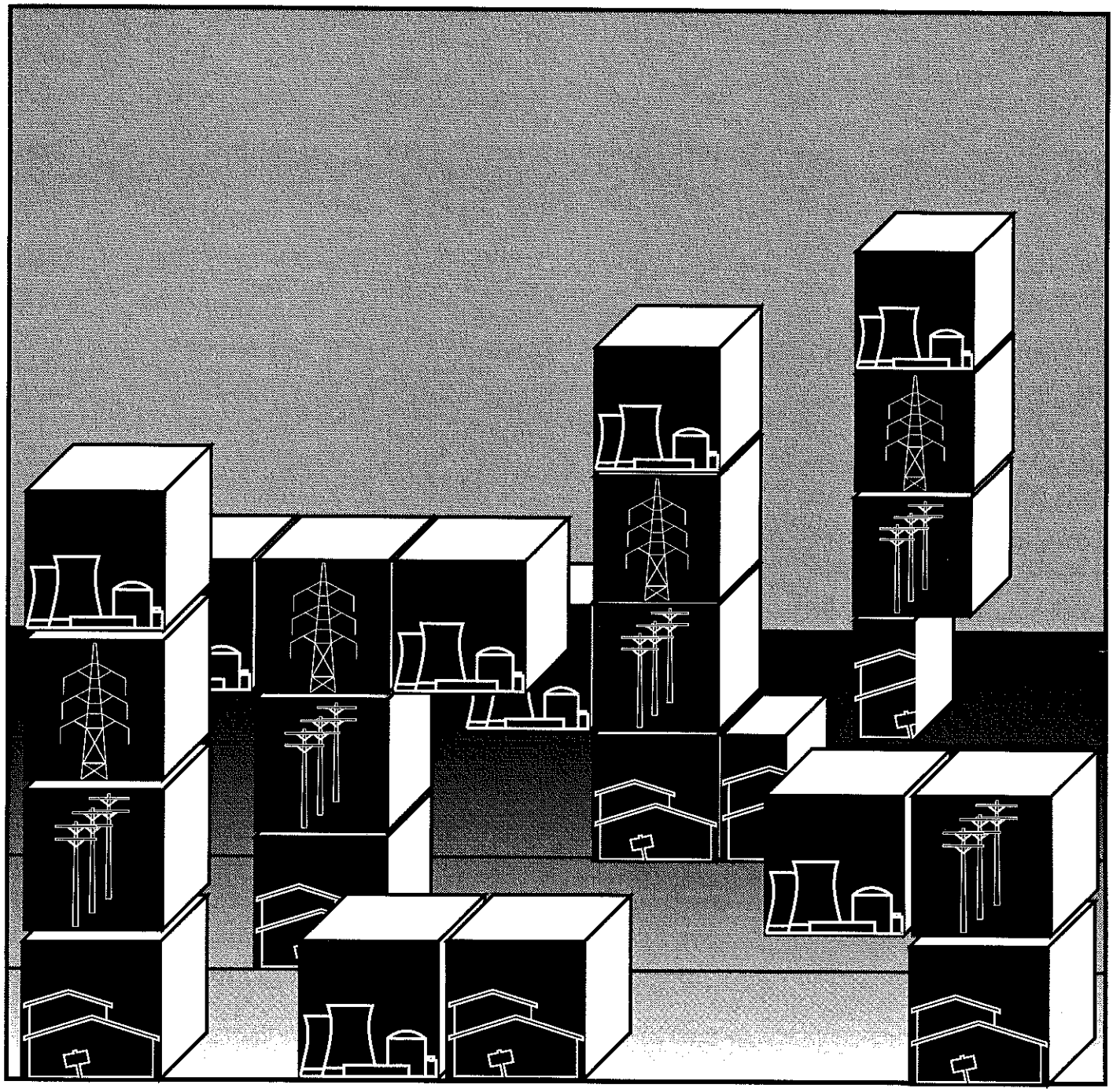
Structure of the Northwest Electricity Industry: Alternatives and Implications

95-15



Northwest Power Planning Council

August 21, 1995

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August 21, 1995

To interested parties:

The Council invites comment on the enclosed Council staff issue paper 95-15, "The structure of the Northwest Electricity Industry: Alternatives and Implications." The premise of this issue paper is that over the next 5 to 10 years or even less, it is likely there will be changes in how the utility industry in the Northwest is structured and regulated in response to competitive pressures at both the wholesale and the retail levels. This paper identifies and describes those structural and regulatory characteristics the Council's staff finds are important to achieving the benefits of competition at both the wholesale and retail levels and achieving the goals of the Power Act. The paper concludes by making several recommendations for the competitive model staff believes is more likely to evolve in this region.

Written comment may be submitted to Steve Crow, Director of Public Affairs, Northwest Power Planning Council, 851 SW Sixth Ave, Suite 1100, Portland, OR 97204-1348, or fax comments to (503) 795-3370. Comments may also be sent by electronic mail to comments@nwppc.org. Opportunities for oral comment will be provided at the September Council meeting and Work Session meetings. Please call the Council's public affairs division at 1-800-222-3355 or (in Portland) 222-5161 to arrange a time for oral comment. All comment should be submitted by October 2, 1995.

The Council plans to use the comments received on this paper in formulating elements of the 1996 Plan. The Council welcomes reactions to the analysis presented in the paper and the proposed recommendations. For those interested, the appendices referenced in the paper (Publication 95-15A) may be obtained by calling the Council.

Very truly yours,

Edward W. Sheets

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Staff Issue Paper:

Structure of the Northwest Electricity Industry

Alternatives and Implications

Introduction

The electricity industry in the United States is in the midst of a transition from an industry of vertically integrated regulated monopolies to one of more open competition. The transition is well advanced with respect to wholesale competition.[1] The Energy Policy Act of 1992 and the recent Federal Energy Regulatory Commission (FERC) notices of proposed rule making (NOPR) on open access transmission and stranded investment define fairly clearly the steps the Commission is taking to facilitate wholesale competition in the generation of electricity.[2]

The transition to retail competition is just getting under way.[3] Several states have inquiries, collaboratives, regulatory proceedings or pilot projects under way to try to determine if and how best to implement retail competition.[4] It would appear that the Northwest, with its generally low electricity rates, would not be particularly fertile ground for retail competition. Still, most observers believe that some degree of retail competition will come about in the Northwest as well. Already, the availability of low wholesale power prices has prompted several industrial customers to seek direct access to that market.[5]

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[1] Wholesale competition refers to competition among power suppliers (utilities, independent power producers, brokers, marketers) to meet the power needs of those who re-sell power to retail consumers.

[2] Federal Energy regulatory Commission, Docket Nos. RM95-8-000 and RM94-7-001, "Promoting Wholesale Competition through Open Access Non-discriminatory Transmission Services by Public Utilities, Recovery of Stranded Costs by Public Utilities and Transmitting Utilities; Proposed Rule making and Supplemental Notice of Proposed Rulemaking," March 29, 1995.

[3] Retail competition refers to competition among power suppliers to meet the needs of retail consumers. Since serving a retail consumer usually requires the local utility to transmit or wheel power over its distribution system from the producer to the consumer, retail competition is frequently referred to as retail wheeling.

[4] These include California, New York, Rhode Island, Massachusetts, and Michigan. The Washington Utilities and Transportation Commission has an inquiry underway in which structural issues have been raised.

[5] "Puget Files Interim Tariff to Stem Customer Departures,"*Clearing Up,* No. 675, May 29, 1995, p. 10.

The premise of this issue paper is that over the next 5 to 10 years or even less, it is likely there will be changes in how the utility industry in the Northwest is structured and regulated in response to competitive pressures at both the wholesale and the retail levels. How the industry is structured and regulated can affect the degree to which the potential benefits of competition are achieved and how they are distributed. Structure and regulation also affect the degree to which the region can be assured of an adequate, efficient, economical and reliable power supply; appropriate levels of development of cost-effective conservation and renewable resources; and protection of environmental quality. In other words, the structure and regulation of the region's utilities affect the goals of the Northwest Power Act. This paper identifies and describes those structural and regulatory characteristics the Council's staff finds are important to achieving the benefits of competition at both the wholesale and retail levels and achieving the goals of the Power Act. Key findings and recommendations include:

- Whether or not there are benefits to a comprehensive restructuring of the industry, such a restructuring in this region is unlikely because the transition problems involved and the differences among the various parties may preclude finding common ground.

- A more likely model for this region is one in which the current basic structure is retained with robust wholesale competition and areas of retail competition in particular circumstances.

- Unbundling of products, services and rates at the retail level is important to pursue both as a competitive response and in the interest of efficiency.

- Greater time differentiation in rates is a good idea, in principle, for the same reasons. Ongoing experiments and projects should be evaluated to see whether the benefits justify the costs. If justified, more time differentiation should be introduced into rates.

- Greater market segmentation should be pursued as a competitive response. This does, however, raise issues of potential cross-subsidies if there is not adequate competition for all market segments and, consequently, the possible need for greater regulatory oversight.

- The continuation of vertically integrated utilities in a mixed competitive environment raises concerns about self-dealing and cross-subsidies between monopolistic and competitive parts of utilities. This will also require regulatory oversight.

- The establishment of an "independent grid operator" to operate the region's transmission systems should be actively considered as a way to satisfy the FERC's requirements for functional unbundling and comparability and to achieve greater transmission efficiency.

- Efficient transmission pricing that reflects congestion costs is important to efficient decisions about generation and transmission. Means of achieving this should be pursued.

- The region needs to move forward on how it will deal with stranded investment. Uncertainty about stranded investment is a barrier to competition at the wholesale and retail levels.

- A new mechanism for funding and implementing conservation, renewable resources, and research, development and demonstration should be considered. None of the models considered in this paper will support these activities at levels that might be desirable. The question of what the region might be forgoing in these areas will be addressed in the 1996 plan. If the region believes that significant benefits will be lost, then alternative methods for securing these resources need to be devised.

The Council is seeking public comment on the analysis and preliminary findings. The analysis and findings of this paper, as modified in response to public comment, will be used by the Council in formulating the 1996 Power Plan.

The Council is also interested in public comment on the question of whether a regional process should be convened to explicitly consider how the electricity industry of the Northwest should be structured in face of competitive pressures and how such a structure might be implemented. If the response is positive, how best would that process be carried out and by whom?

Written comment may be submitted to Steve Crow, Director of Public Affairs, Northwest Power Planning Council, 851 SW Sixth Ave, Suite 1100, Portland, OR 97204-1348, or fax comments to (503) 795-3370. Comments may also be sent by electronic mail to comments@nwppc.org. Opportunities for oral comment will be provided at the September Council meeting and Work Session meetings. Please call the Council's public affairs division at 1-800-222-3355 or (in Portland) 222-5161 to arrange a time for oral comment. All comment should be submitted by October 2, 1995.

Analytical Approach

The approach used in this analysis was first to identify and describe several models for the restructured industry that could evolve or be adopted over the next 5 to 10 years. The objective was not necessarily to identify likely models, but rather models that incorporate most of the key features of the structural alternatives that are under consideration or have been implemented elsewhere in the United States and the world. For example, structural variants like the degree of integration or disintegration of the ownership of traditional utility functions (generation, transmission and distribution); the degree of retail market access; and the characteristics of the market (e.g., power pools versus bilateral contracts) were believed to be important differences to be captured in the models. In all cases, these models were applied in the context of the Northwest utility system.

Once the models were defined, an attempt was made to describe and analyze the performance of the models with respect to a number of key or evaluation factors. The factors used were:

Long-term reliability (adequate power supply, transmission capacity, distribution system capacity)
Are there adequate incentives inherent in the model for investments in new power supplies? New transmission system capacity? New distribution system capacity?

Short-term (operational) reliability of generation, transmission and distribution
Are there adequate incentives to ensure reliable operation? (adequate operation and maintenance, reserve margins, system voltage and frequency stability)

Operational efficiency
Are there adequate incentives inherent in the model to ensure efficient utilization of generation, transmission and distribution assets?

Consumer choice
To what degree does the model provide the consumer the opportunity to purchase the set of electricity services that most closely fits their needs?

Stability/predictability of prices
Does the model yield relatively stable and/or predictable prices?

Distributional effects
How are costs and benefits distributed among different customer classes; between stockholders and ratepayers?

Portfolio management
The possible benefits of maintaining a physically diverse resource portfolio (as opposed to diverse portfolio of financial instruments) will be identified in the analysis of alternative resource portfolios in the Council's 1996 plan. Assuming that resource diversity is still found to be beneficial, what are the incentives/disincentives in the model to achieving resource diversity?

External environmental effects
What are the incentives/disincentives in the model for accounting for external environmental costs not already incorporated in market costs or existing regulation?

Conservation
What are the incentives/disincentives in the model for investment in conservation by consumers; by utilities?

Renewables
What are the incentives/disincentives in the model for investment in renewables by consumers; by utilities?

Research, Development and Demonstration (RD&D)
What are the incentives/disincentives in the model for investment in RD&D?

Role of the Bonneville Power Administration
What role might the Bonneville Power Administration play in the model?

Transition issues
What issues have to be resolved to make the change to the proposed model?

Sustainability
What factors would make the proposed structure sustainable, i.e., under what conditions can a particular model persist? What factors would tend to make a model unsustainable and in what directions might it move?

From the analysis of the models and our understanding of the utility industry in this region, staff developed a description of what appears to be a *more* likely evolutionary path for the industry in the Northwest -- a path that might include elements from several of each of the models or entirely new elements. Clearly no one can know precisely how the industry will evolve, but there are elements that appear more likely than others. Key issues or problems were identified that should be addressed as the industry evolves in the Northwest.

The Models

Three models were developed in some detail. In developing these models staff leaned heavily on its understanding of the structure of the existing utility industry in the Northwest and on the alternatives that are being considered in the California restructuring proceedings. The choice of the former is obvious -- it is where we are starting. In the case of the latter models, they represent the possible directions of the largest electricity market in the West; they incorporate many of the key differences in industry structure; and they allowed us to learn from the extensive debate that has surrounded the California proceedings.[6] The models are described in detail in the appendices. In summary, the models are:

- "Coping" (Figure 1) -- a model that represents a modest evolution of the current system wherein utilities, regulators and others respond to competitive pressures in the context of the current industry structure and regulatory institutions. There is vigorous wholesale competition. Retail consumers, however, do not have access to alternative suppliers, although some seek access. Some utilities ask for stranded investment protection for vulnerable assets, but do not necessarily obtain it. There is some write-down of above-market assets.

- "The Pool Model" (Figure 2) -- a model that incorporates a mandatory pool structure in which an independent system operator (ISO) dispatches generation at market-clearing bid prices figure 3 shows an explanation of pool operation, taking into account transmission congestion the independent system operator runs the transmission systems of the transmission owners as a single system. This model does not require divestiture of the functional components of the utilities. Retail consumers do not have direct access to alternative suppliers, but the pool price is passed through directly to the consumer, eventually employing real-time pricing for all consumers.[7] The price consumers pay is the marginal cost on the system during any period. Retail consumers also have the ability to use financial instruments called "contracts for differences" to tailor their purchases to match their risk and other preferences (Figure 4). Generation is unregulated, while transmission is a regulated monopoly, regulated by FERC. Distribution remains a monopoly function regulated by state

[6] See, for example, Working Group Report, "Options for Commission Consideration," in Response to Decision 94-12-027 of the California Public Utilities Commission, February 22, 1995; California Public Utilities Commission, "Proposed Policy Decision Adopting a Preferred Industry Structure," May 24, 1995; California Public Utilities Commission, "Consumer Choice through Direct Access: Charting a Sustainable Course to a Competitive Electric Services Industry," Proposal and Recommendation of Commissioner Jesse J. Knight, May 24, 1995; Stalon, Charles and Eric Woychik, "What Model for Restructuring? The Debate in the Competitive Market Working Group," *The Electricity Journal,* July 1995, pp. 63-73; and many more.

[7] Real-time pricing is a system in which the consumer sees the actual or an approximation of the utility's marginal cost of serving a customer at any given time.

or local commissions. A uniform stranded investment policy is implemented, involving a split in stranded asset recovery from stockholders and ratepayers. The value of the stranded asset is defined by the difference between the pool price and the price necessary for full cost recovery. Stranded investment charges are recovered through a distribution-level charge.

- "Direct Access" (Figure 5) -- a model that is characterized by direct, bilateral power supply contracts between suppliers (generators, marketers, brokers, aggregators) and retail consumers. It requires divestiture of utilities into their functional components -- generation, transmission and distribution. An independent grid operator (IGO) operates the transmission system and dispatches an amount of generation adequate to ensure system reliability. The prices consumers pay will be set in contracts but will trend toward the system marginal cost. Generation is unregulated, while transmission is a monopoly regulated by FERC. Distribution remains a monopoly function regulated by state or local commissions. A uniform stranded investment policy is implemented, involving a split in stranded asset recovery from stockholders and ratepayers, with the value of the stranded assets defined by the market price of the asset as determined in the divestiture. Stranded investment charges are recovered through a distribution-level charge.

Common to all three models are increased market segmentation, unbundling of products and unbundling of rates. This means that consumers will have greater opportunity to tailor their utility services to meet their needs, paying for the services they use and not paying for those they don't. It also means that retail rate structures will separate fixed and variable charges to a greater extent than they typically do today. These characteristics will be most pronounced in the Pool and Direct Access models and least pronounced in the Coping model.

Also characteristic of all three models will be the use of performance-based regulation for investor owned utilities on the remaining monopoly portions of their businesses in an effort to encourage greater efficiency.[8]

Table 1 provides a side-by-side comparison of the three models for many of the key characteristics.

[8] Performance-based rate making establishes a performance goal, such as a price cap or a revenue-per-customer cap. The cap is adjusted over time, e.g., upward for inflation, downward for some productivity improvement targets, and so on. The stockholders and ratepayers share the benefits of better than target performance and the penalties of less than target performance according to some predetermined allocation.

Coping --

The Current System -- Wholesale Competition / Functional Unbundling

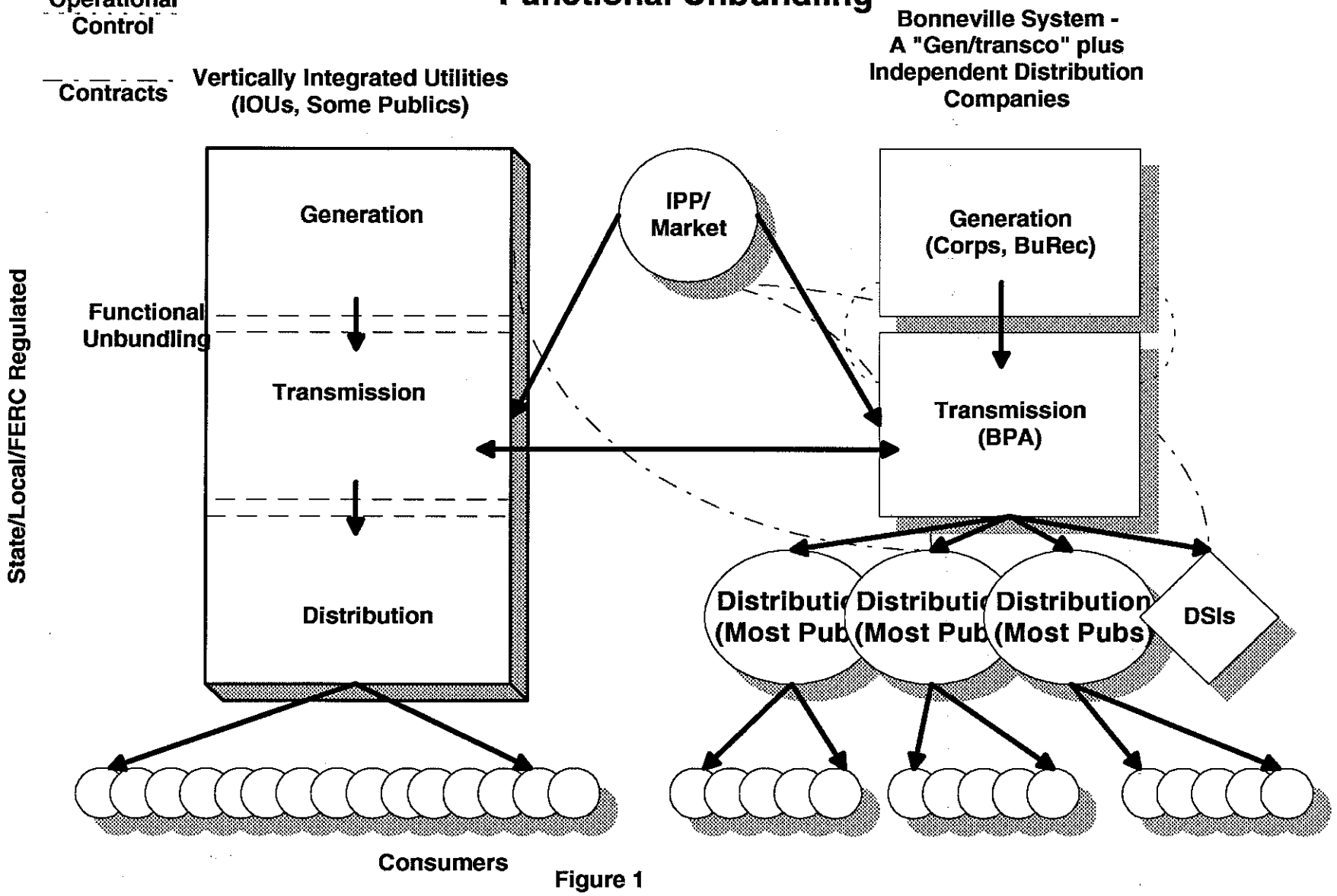


Figure 1

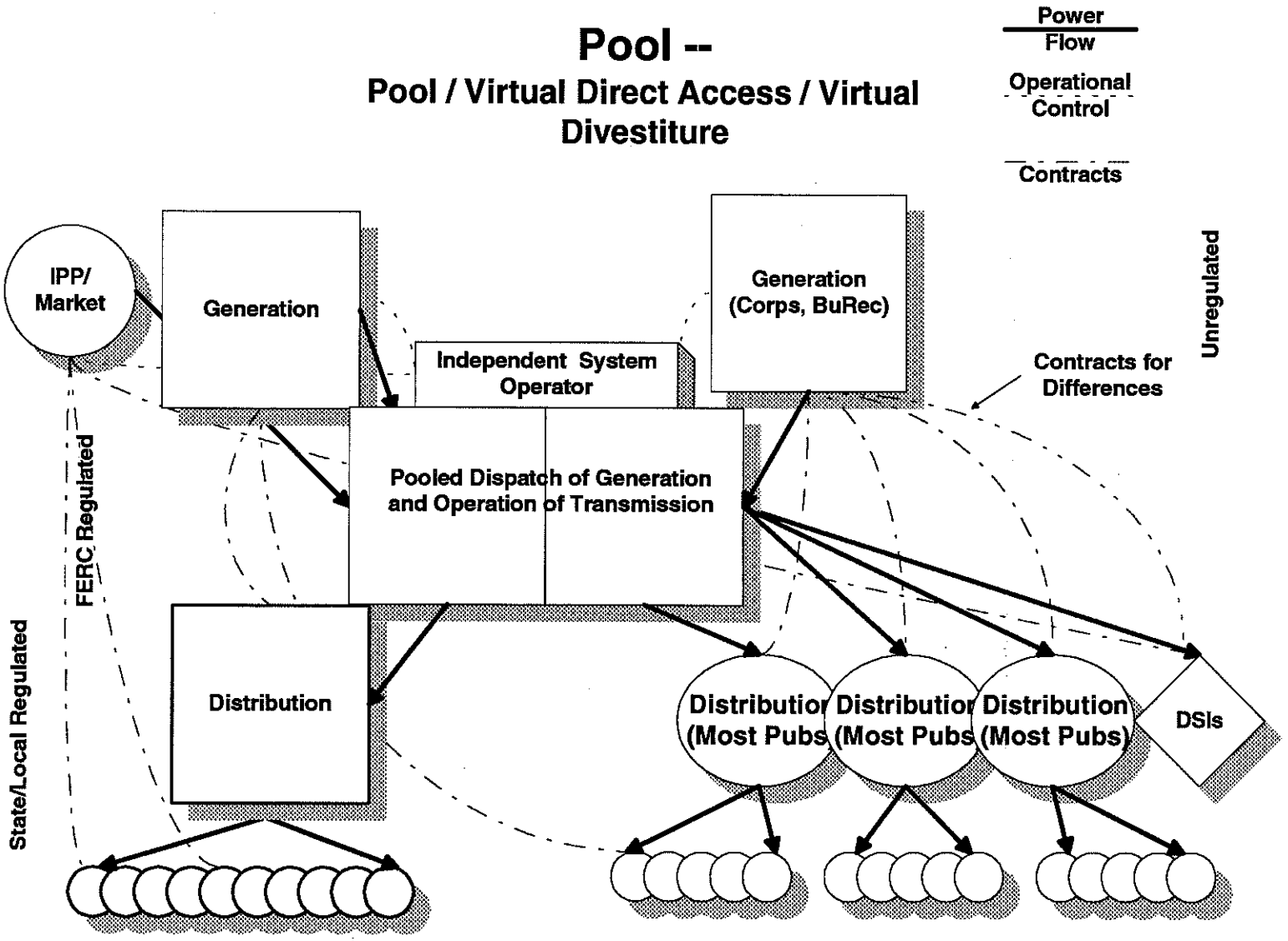

Pool --
Pool / Virtual Direct Access / Virtual Divestiture
Power Flow
Operational Control
Contracts
IPP/ Market
Generation
Generation (Corps, BuRec)
Independent System Operator
Contracts for Differences
Unregulated
FERC Regulated
Pooled Dispatch of Generation and Operation of Transmission
State/Local Regulated
Distribution
Distribution (Most Pubs
Distribution (Most Pubs
Distribution (Most Pubs)
DSIs

Figure 2

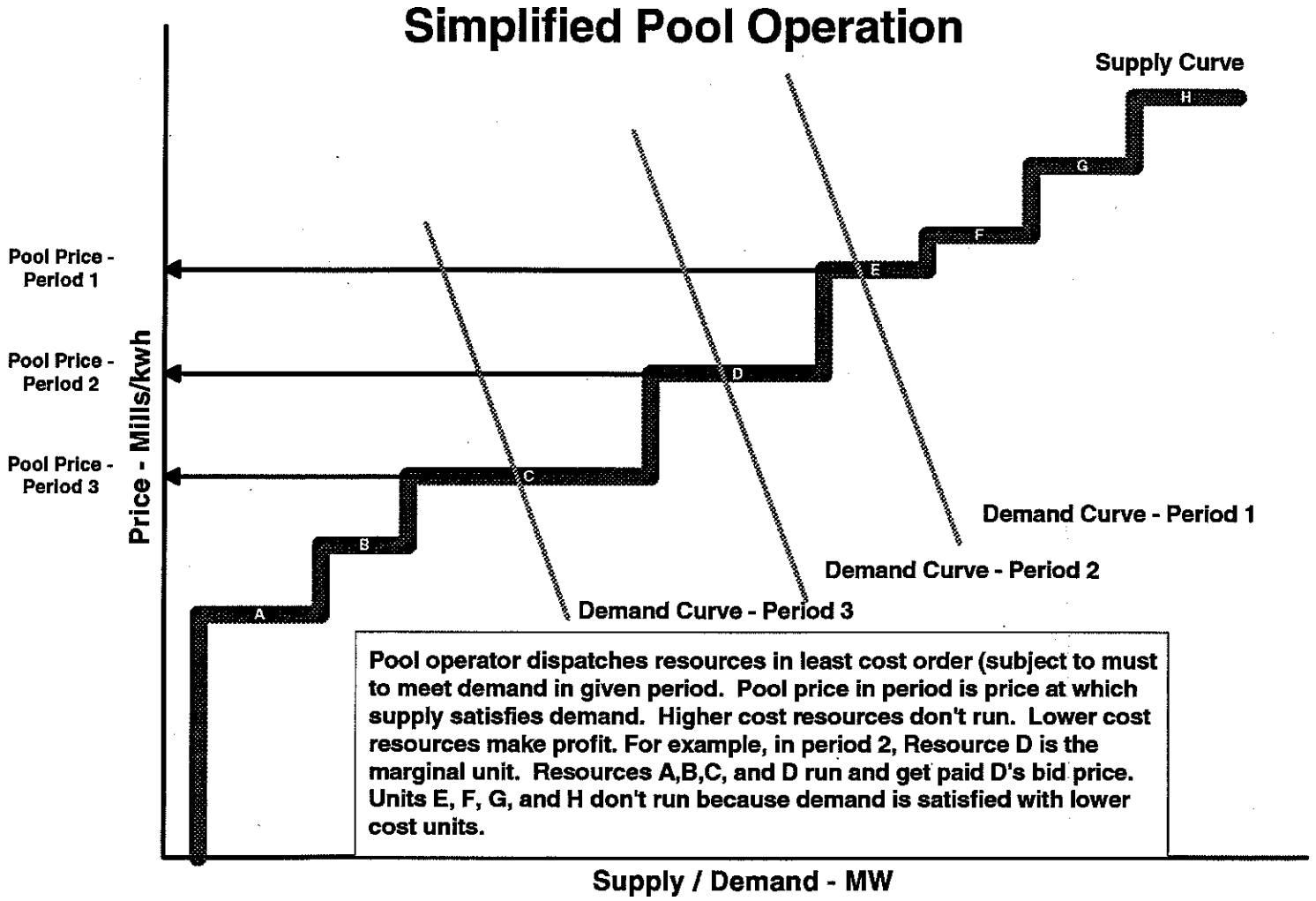
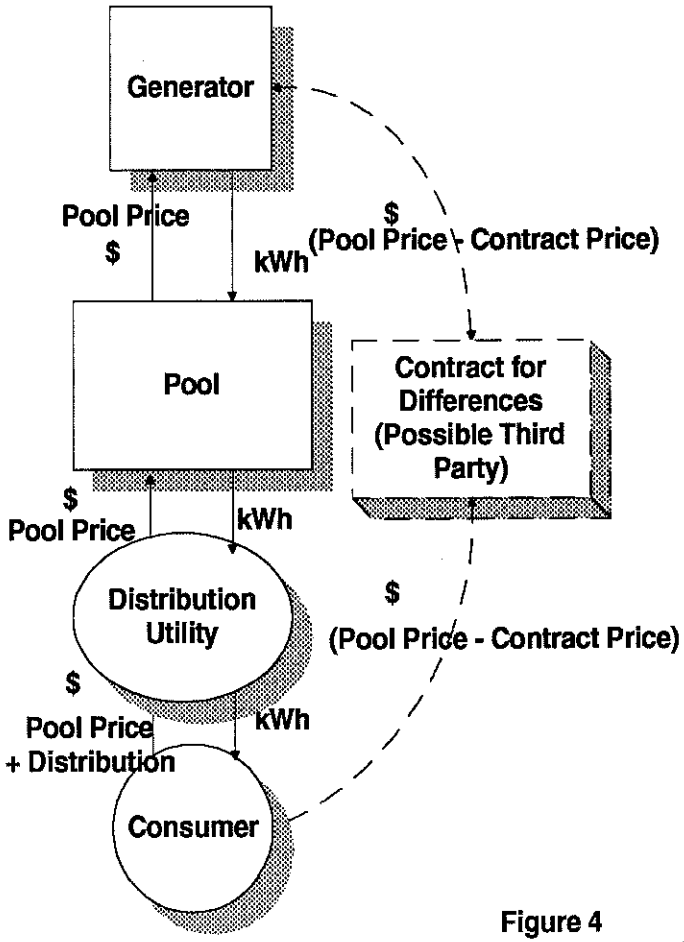

Simplified Pool Operation
Supply Curve
H
G
F
E
D
C
B
A
Pool Price - Period 1
Pool Price - Period 2
Pool Price - Period 3
Price - Mills/kwh
Demand Curve - Period 1
Demand Curve - Period 2
Demand Curve - Period 3
Pool operator dispatches resources in least cost order (subject to must to meet demand in given period. Pool price in period is price at which supply satisfies demand. Higher cost resources don't run. Lower cost resources make profit. For example, in period 2, Resource D is the marginal unit. Resources A,B,C, and D run and get paid D's bid price. Units E, F, G, and H don't run because demand is satisfied with lower cost units.
Supply / Demand - MW

Figure 3

Contracts for Differences

Contracts for differences are financial instruments through which generators and consumers can protect themselves against market volatility and uncertainty



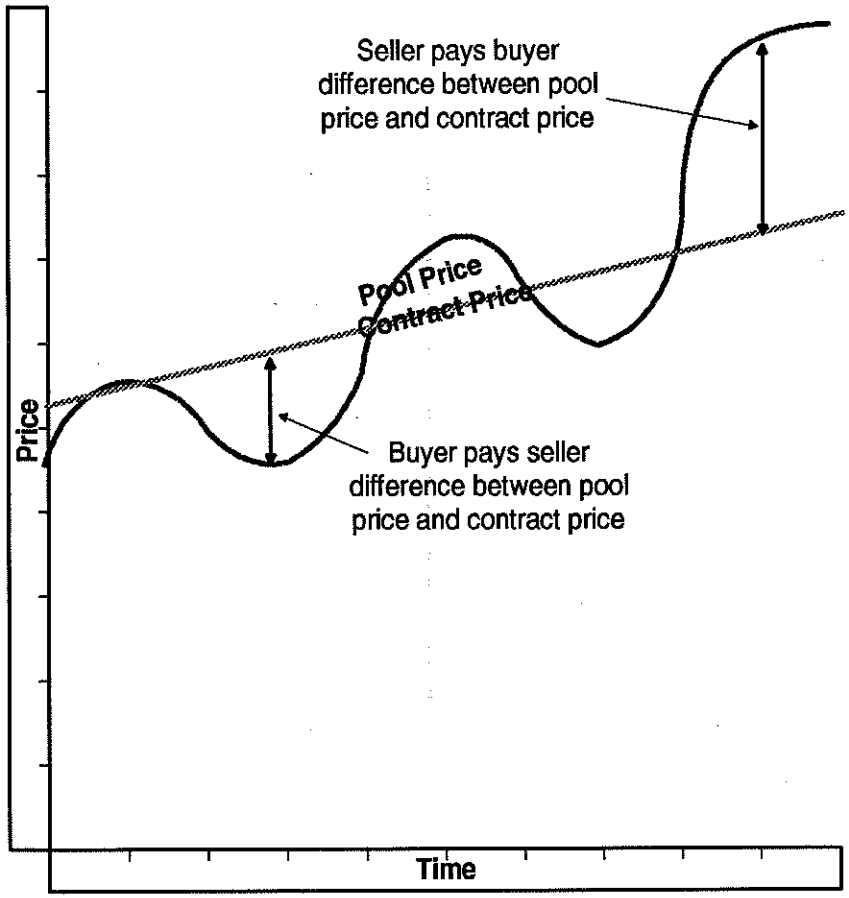


Figure 4

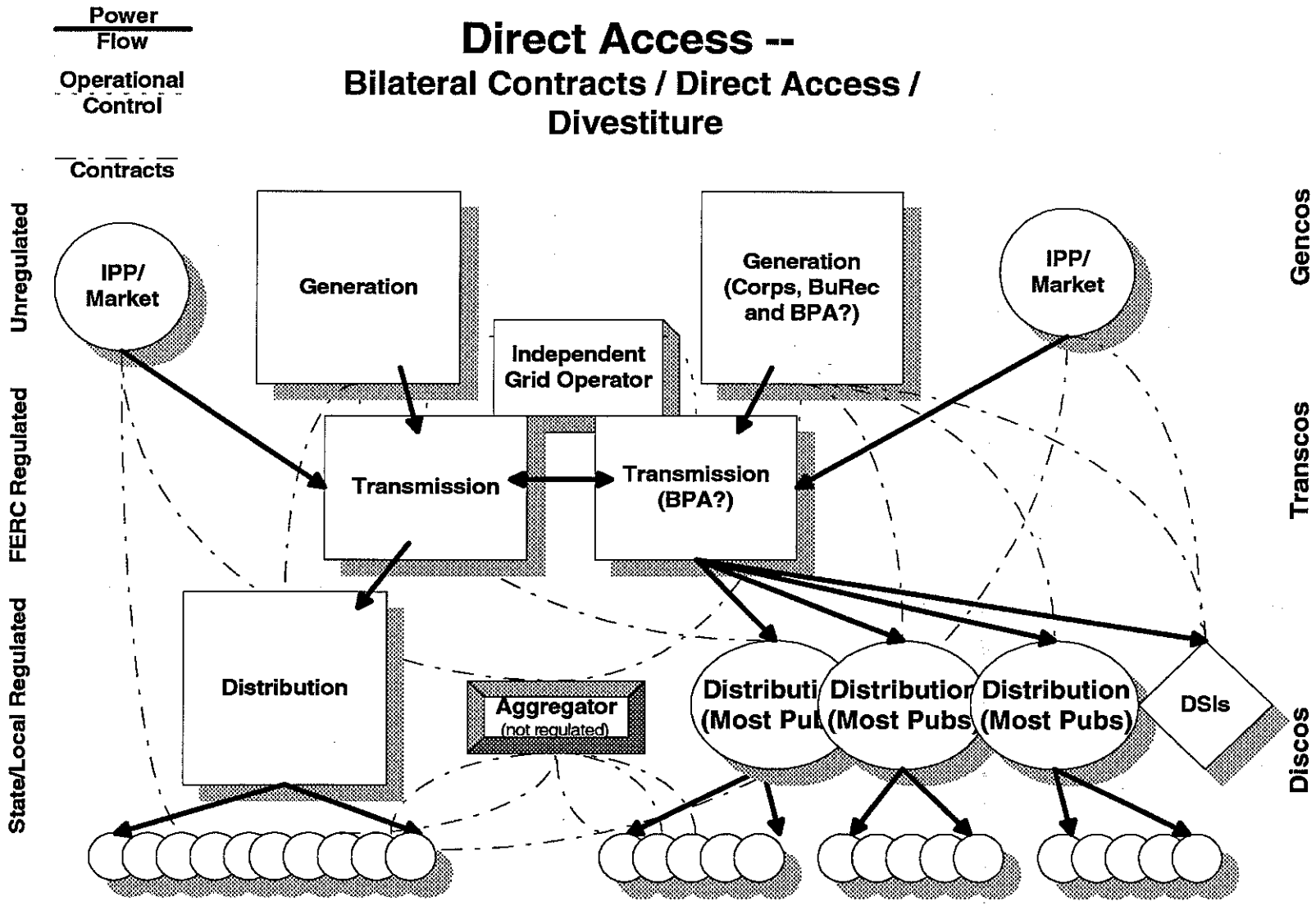

Power Flow
Operational Control
Contracts
Direct Access --
Bilateral Contracts / Direct Access / Divestiture
Unregulated
FERC Regulated
State/Local Regulated
IPP/ Market
Generation
Independent Grid Operator
Generation (Corps, BuRec and BPA?)
IPP/ Market
Gencos
Transmission
Transmission (BPA?)
Transcos
Distribution
Aggregator (not regulated)
Distributi (Most Pu
Distributior (Most Pubs
Distribution (Most Pubs)
DSIs
Discos

Figure 5

Table 1 -- Comparison of Model Characteristics

Characteristic	Coping Model	Pool Model	Direct Access Model
Generation: Ownership	Mix of vertically integrated utilities, federal facilities, independent power producers	Mix of vertically integrated utilities, federal facilities, independent power producers	Generating companies, federal facilities -- utilities divest generation assets
Dispatch	Economic dispatch on individual utility basis; Wholesale contracts; Spot market for short term transactions	System-wide economic dispatch (mandatory pool) by independent system operator (ISO) on the basis of bid prices; Market clearing price on half-hourly basis	Contract dispatch with spot market for short-term transactions; Independent grid operator (IGO) dispatches small amount of generation for system balancing and stability
Regulation	Wholesale competition; Generation for retail customers regulated by state/local regulators using performance-based methods	Wholesale competition (to sell into the pool)	Competition for retail and wholesale customers
Transmission: Ownership	Mix of vertically integrated utilities and federal facilities	Mix of vertically integrated utilities and federal facilities	One or more independent transmission companies -- utilities divest transmission assets
Operation, Planning, Expansion	Operation by individual owners with coordination with other systems; Open, non-discriminatory access; Planning and expansion coordinated through regional transmission associations	Coordinated operation of all systems by ISO; Assuring open, non-discriminatory access; Planning and expansion coordinated by ISO	Coordinated operation by independent grid operator, assuring open, non-discriminatory access; Planning and expansion carried out by system owners through regional transmission associations
Regulation	FERC (open access, comparable tariffs) using performance-based methods (for investor-owned)	FERC (open access, comparable tariffs) using performance-based methods (for investor-owned)	FERC (open access, comparable tariffs) using performance-based methods (for investor-owned)

Table 1 -- Comparison of Model Characteristics (cont.)

Characteristic	Coping Model	Pool Model	Direct Access Model
Distribution: Ownership	Mix of vertically integrated utilities and local distribution utilities	Mix of vertically integrated utilities and local distribution utilities	Many independent distribution companies
Regulation	State/local regulators using performance based methods (for investor-owned)	State/local regulators using performance based methods (for investor-owned)	State/local regulators using performance based methods (for investor-owned)
Rates: Retail Structure	• Trend toward unbundled fixed/variable rate components • Some real-time pricing	Unbundled fixed/variable rate components, pass through of pool energy price (plus transmission); phased in real-time pricing.	Unbundled fixed/variable rate components from each of Genco, Transco, Disco; real-time pricing available
Basis	Energy and capacity generally based on embedded costs	Energy and capacity marginal cost based	Energy and capacity trend toward marginal cost
Consumer: Market access	Through utility only	"Virtual direct access" -- consumer receives pool price; individual risk, stability preferences through contracts for differences	Direct contractual access to generators or indirect through aggregators (including distribution companies)
Treatment of stranded investment:	Utilities seek stranded investment tariffs	Stranded investment defined in relation to pool prices and recovered in distribution-level charge	Stranded investment determined through divestiture of generation assets and recovered in distribution-level charge

It is important to emphasize that none of these models is meant to be a prediction of what the future structure of the industry will be. The purpose of these models is instructive not predictive. The actual outcome may involve elements of several of the models as well as elements we have not thought of. These models are also not likely to be end states. The industry and its structure will undoubtedly continue to evolve in response to technological, economic, social and political change. There is, for example, a fourth model that has not been developed in any detail, but which might well be a viable model 10 or more years in the future. This model, which we have called "Off the Grid," suggests that continued development of small-scale generation, storage and end-use technologies might result in a future in which utilities might no longer be relevant or at least not central to the provision of electricity as they are today.

Analysis of Alternative Industry Models

Each of the three models is described and analyzed in detail in the appendices. Copies of the appendices can be obtained from the Council by ordering issue paper 95-15A. A side-by-side comparison of the key points of the analysis is presented in Table 2. The analysis is summarized in the following paragraphs:

Long-term Reliability

Each of the models will probably result in a power system that is adequate or reliable over the long-term. In all of them, there will be greater risk in the development of new generating resources. This will result in higher financing costs for generation. In the Coping Model, utilities may be unsure of their customer base, but the obligation to serve is intact. Utilities will try to minimize risks, but will ultimately make sure there are resources to serve load. This will be made easier by the further development of the wholesale market and financial risk mitigation instruments like futures contracts. In the Pool Model, the development of new generation depends on pool prices rising to provide sufficient incentives for development. Contracts for differences will be a mechanism by which developers and consumers can mitigate their respective risks in relying on the pool price. In the Direct Access Model, new resource development will be dependent on consumers being willing to contract at prices sufficient for cost recovery. Again, risk mitigation instruments like futures contracts will be prevalent.

Transmission and distribution remain monopolies in all models. There should be no reduction in the incentives for needed investment and, if necessary, FERC can order transmission expansion.

Short-Term Reliability

There is some concern in the Coping Model that pressures to reduce rates in response to competitive uncertainty could result in some actions or lack of actions that compromise reliability. Individual utility reserve margins will be reduced, but the growing wholesale spot market should mitigate this concern. Because many utilities are still vertically integrated, there is some concern about cost cutting in transmission and distribution being used to subsidize unregulated wholesale generation. There also may be some concern that divestiture of transmission assets could be forced in the future, perhaps serving as a disincentive to maintenance investment. However, the unbundling of retail rates (charging separately for these services) should mitigate cost pressures on transmission and

distribution. Moreover, utilities recognize that reliability is a service characteristic valued by customers.

In the Pool Model, a systemwide pool should provide adequate generating reserves. The system operator can select the lowest cost reserves bid to the pool whether they are generation or load reduction. Real-time pricing also allows consumers to contribute to reliability by being able to respond to price signals. The degree to which they are able to do so, however, is uncertain. In the Direct Access Model, consumers can contract directly for the degree of reliability they wish. The grid operator also contracts for reserves for system reliability.

In Pool and Direct Access models, transmission and distribution are regulated monopolies. Regulators will provide incentives for reliability.

Operational Efficiency

The power system has historically operated at a high level of efficiency. The coping model, which adds a competitive wholesale market, will increase that efficiency although not to the degree of the models with greater generation competition.

Both the Pool and Direct Access models should ultimately yield high levels of efficiency in the utilization of generation resources, assuming there actually is sufficient competition. If there is not adequate competition, either model can be gamed. In the pool model, the integrated operation of the combined generation and transmission system by the independent system operator should be very efficient. The pool and independent system operator provide a means of establishing congestion pricing on the transmission system, providing efficient signals for generation and transmission expansion. Because it is not clear how transmission constraints would be reflected in pricing in the Direct Access model, it is not clear that the same level of efficiency in the use of generation and transmission would be achieved.

Prices in both the Pool and Direct Access models will ultimately be marginal prices. This happens automatically in the Pool and should tend toward marginal pricing in the Direct Access model. The pool also offers immediate price transparency. In the Direct Access model, getting to efficient operation may be more messy, involving greater transaction costs, at least initially. Experience in other markets indicate that mechanisms for price discovery and, hence, efficient operation will develop quickly.

The Pool model incorporates real-time pricing. To the extent consumers can act in response to real-time price signals, this should lead to more efficient system utilization. Time-differentiated pricing is also expected in the other models, although perhaps not to as great an extent. Unbundling of products and pricing, common to all models, should improve efficiency to the extent utilized.

Consumer Choice

The Coping model will provide more consumer choice than has been historically available. Greater market segmentation and unbundling of products will allow consumers to better match needs. The Pool model provides greater consumer choice in the sense that consumers can choose to respond to real-time price signals. Consumers may also enter into contracts for differences to match their risk

or volatility preferences or even to support specific kinds of resources. The Direct Access model may provide the highest level of consumer choice as the market tries to provide differentiated products. One can imagine having the opportunity to choose power from specific kinds of resources, different levels of reliability and so on.

Price Stability/Predictability

The Coping Model should yield the greatest price stability and predictability at the retail level. (Wholesale prices in all models are likely to be volatile). To the extent that this model retains embedded-cost pricing, rates will be slower to decline in periods of declining marginal costs and slower to rise in periods of increasing marginal costs. Both the Pool and Direct Access models feature marginal cost pricing. It will be more volatile than average-cost pricing. There will, however, be financial instruments, like contracts for differences and futures, by which consumers (and suppliers) can manage the volatility and achieve a reasonable degree of predictability.

Distributional Effects

The Coping model retains vertically integrated utilities that are also actively engaged in wholesale markets. This raises the issue of core customers potentially subsidizing the wholesale business. There is also the possibility of special deals to retain vulnerable customers shifting costs to other customers that do not have options.

In the Pool Model, all customers see the same energy prices and all producers get the same pool marginal price. Even though there is not divestiture of generation, transmission and distribution, the pool avoids concerns about subsidies from the monopoly parts to the competitive parts because there is no incentive for anyone to bid less than their marginal operating cost. The Direct Access avoids the issue by complete divestiture. In the Direct Access, there is the possibility that some customers would for some time be able to get "better deals" because they can better afford the transaction costs associated with finding those deals. This will only be true if mechanisms of price discovery are slow to develop. When prices are transparent, the ability to make significantly better deals goes away.

In all models, there will be some transfers from stockholders to ratepayers to the extent that assets are written down in value either directly or through decisions about treatment of stranded investment.

Portfolio Management

In each of the models there is a disincentive for utilities or generators to maintain a diversified generation portfolio if it entails near term cost penalties. In the Pool and Direct Access models, consumers could negotiate a portfolio of their choice through contracts for differences in the Pool and direct contracts in the Direct Access. In the Pool Model, however, the connection between the consumer's choice and the portfolio is indirect. Alternatively, the pool regulator could establish portfolio standards for the pool and pay for them through some overall pool surcharge or other mechanisms. Some observers view this as an advantage of the Pool Model, others see it as one of the disadvantages.

Environmental Considerations

In none of these models do utilities or other suppliers have an incentive or a regulatory requirement to take into account environmental costs that are not incorporated into existing regulation. Unless all are required to incorporate those costs, competitive pressures will prevent them from doing so on an individual basis. The Pool and Direct Access models do allow consumers to purchase what they might consider to be a more environmentally friendly power supply, through contracts for differences in the Pool and direct contracts in the Direct Access. The Pool could be a point at which environmental charges or adders could be added, e.g., less environmentally responsible resources could be assigned an environmental cost adder in the bidding. Again, some people view this as an advantage of the Pool Model, others see it as one of the disadvantages.

Conservation, Renewables and RD&D

In all of the models, some conservation, renewable resource development and research, development and demonstration (RD&D) will be accomplished. In none of the models, however, is it possible to support these activities through utility programs to the degree that may be in the region's best interest. In the Coping Model, the uncertainty about the security of the customer base means that the rate impacts of conservation, above market-price renewables and RD&D are perceived as disincentives. The lack of financial flexibility associated with the high capital cost of conservation and renewables (i.e., risk that these costs could be stranded if customers leave) is also a disincentive. There could be some use of a conservation tariff rider that puts the costs of conservation in a non-bypassable distribution charge.

The fact that there are vertically integrated utilities in the Coping Model creates a disincentive to conservation -- the concern is that conservation will impede cost recovery on generation. This link is indirect in the case of the Pool Model but might still be a factor. The unbundling of rates into fixed and variable components reduces the lost revenue concern for utilities, but also reduces the consumer incentive to participate in conservation (although unbundling rates provides a more accurate price signal).[9] In the Coping Model, utilities continue some conservation -- typically very low capital cost conservation, conservation that can defer distribution system investments and conservation with high customer service/retention qualities.

In the Pool and Direct Access models, the distribution utility is merely passing through an energy charge. Distribution utilities should be indifferent to whether or not they do conservation, except where it can yield distribution system benefits. Some distribution utilities could see conservation as a value-added, for-profit service to provide their customers. Third party energy service companies could also enter the market. Increased use of time-of-day and real-time pricing could be an incentive for consumers to undertake some demand side management activities, such as peak shaving and load shifting. The unbundling of rates, however, reduces consumer incentive to conserve. In addition, the Pool retains a link between the distribution function and generation, albeit indirect, that could be a disincentive to conservation. Regulators could require and/or provide incentives for the distribution utilities to provide conservation services or, in the case of the Pool, a pool charge could be imposed to provide some support for conservation.

[9] Retail rates today, at least for residential and small commercial accounts, typically recover a significant amount of the utility's fixed costs in the kilowatt-hour charge. Unbundling the rates into fixed and variable components will reduce the amount of savings a consumer will see from a conservation investment. Unbundling rates, however, provides a more accurate signal and would eliminate or greatly reduce the utility's lost revenue problem.

As far as renewables are concerned, the Pool or Direct Access models may offer some advantages. Consumers could exercise choice for renewables through contracts for differences in the Pool and direct contracts in the Direct Access. The pool regulator could also establish a renewables requirement or incentive.

In any of the models, RD&D beyond that which might yield utilities competitive advantage will suffer. There will likely be research on more efficient operation of gas turbines. However, there will probably not be demonstrations of more energy-efficient building technologies.

Role of the Bonneville Power Administration

In the Coping Model, the role of the Bonneville Power Administration will be much constrained from its recent role in conservation, renewables and environmental stewardship because it is fully exposed to wholesale competition. With time, the reduction of Bonneville's high fixed-cost burden and/or increasing cost of competitive generation could help it regain some flexibility. Because Bonneville is a major owner of transmission, in addition to a marketer of power from federal resources, it, like other transmission owners, will be under pressure to demonstrate that it, in fact, is providing non-discriminatory open access to its transmission. There could ultimately be pressures to either sell off its transmission or forego its role as marketer of federal power.

In the Pool Model, Bonneville gets to bid federal resources into the pool. As long as Bonneville retains responsibility for marketing of federal resources, it could not perform the role of independent system operator. In the Direct Access Model, Bonneville would have to actually divest its transmission or generation functions. In either of these models, however, the resolution of stranded investment would mean that Bonneville could be the marketer of very competitive resources. Preference could be accommodated with contracts for differences in the Pool Model and contract preferences in the Direct Access Model.

Transition Issues

The Coping model involves only a modest evolution from where we are now -- some modification of utility regulation, rate structures and services. There will be some write-down of assets and stranded investment arguments.

Both the Pool and Direct Access models require resolving stranded investments and potential renegotiating or abrogating existing contracts, all of which will be difficult and contentious. In addition, the Pool Model requires the creation of the Independent System Operator and ceding of control of generation and transmission to that operator. This may be somewhat difficult. The Direct Access Model requires divestiture -- a process that is guaranteed to be difficult. It also requires that new market mechanisms and vehicles for price discovery be developed. This does not, however, appear to be a problem.

Sustainability

The Coping model may be sustained if competitive pressures do not intensify. For example increasing gas prices reduce the pressure of competitive power supplies. Conversely, decreasing marginal costs will intensify competitive pressures and could be destabilizing, pushing this model

toward more competition. If utilities and regulators go overboard in trying to retain vulnerable customers, the resultant rate increases on core customers could also be destabilizing, pushing in the direction of more competition. FERC could be a destabilizing influence if it does not perceive that it is achieving its goals of open wholesale competition through requirements for functional unbundling and comparability. It could pressure transmission owning utilities to divest themselves of transmission. Finally, what happens elsewhere in country could impact things here. For example, "successful" restructuring in California could increase pressures for retail competition here.

The sustainability of the Pool and Direct Access Models hinges on their delivering on the claims for the benefits of competition. In either model, rising marginal prices resulting from, for example, sharply rising gas prices, would create pressures for a return to embedded cost pricing. Some fear that the Pool could be used for implementing non-market purposes, e.g., to fund conservation and renewables. If this were to occur to excess, it could create pressure for a bilateral competitive model. Others fear that the benefits of competition in the Direct Access Model might be limited, at least at the outset, to those larger customers who have the ability to seek out and strike better deals. If this were to occur and persist, it could create pressures either to move to a pool type model or back to a less competitive model.

In all models, development of low-cost on-site generation and storage technology pushes the models toward an "off the grid" model, in which the utility is much less central to the electric system. We do not, however, expect this in a 10-year time frame.

Table 2A - Comparison of Model Performance

Evaluation Factor	Coping Model	Pool Model	Direct Access Model
Long-term reliability	Reluctance to undertake long-term investment in generation as result of uncertainty about customer base, offset by development of wholesale market; Increased cost of capital; Continued obligation to serve	Depends on pool prices rising to level sufficient to permit recovery of cost of new generation; Contracts for differences (CFDs), financial instruments available to offset risk; Broader customer base would dampen effect of utility specific demand variations; Increased cost of capital	Depends on market prices rising to point where customers willing to contract for price sufficient to recover cost of new generation; Financial instruments to offset risk; Increased cost of capital
Short-term reliability	Concerns that cost-cutting may compromise reliability; Reduced reserve margins offset by spot market; Unbundling of charges may mitigate pressure on transmission and distribution; Reduced willingness to invest in transmission because FERC may force divestiture of transmission	Pool provides generating reserves; Real-time pricing allows consumers to respond to price signals of potential shortages; T&D effectively separate from generation, regulated to acceptable levels of reliability	Consumer can contract for degree of generation reliability desired; T&D completely separate from generation, regulated to acceptable levels of reliability
Operational Efficiency	Generally high but perhaps not as high as models with more direct generation competition; Open transmission access, RTAs improve efficiency; Unbundling products and prices improve asset utilization	High efficiency in operation of generation (assuming sufficient competition) and transmission through ISO; Unbundled services and pricing; Real-time pricing at system marginal cost improves efficiency of asset utilization	High efficiency in operation of generation assuming adequate competition and mechanisms for price discovery; Prices will tend to marginal price; Unbundled services and pricing and, to the degree offered, real-time pricing improves efficiency of utilization; Open transmission access, RTAs improve efficiency

Table 2B - Comparison of Model Performance (cont.)

Evaluation Factor	Coping Model	Pool Model	Direct Access Model
Consumer choice	Increasing from historic levels -- greater customer segmentation, unbundled products to match needs	High level of consumer choice to manage loads in response to real-time prices, enter into contracts for differences to match risk preferences or support specific resources	High level of consumer choice as market tries to provide differentiated products
Price stability/predictability	Greater price stability than other models; Risk management instruments available	More volatile prices with mitigation through CFDs and other financial instruments	More volatile prices with mitigation through specific contract terms and financial instruments
Distributional effects	Concerns about cost shifts from wholesale business to retail, from vulnerable customers to core, from ratepayers to stockholders to degree assets are written down; Time-dependent costs allocated more equitably where time of day rates or real-time pricing offered.	Cost shifts through stranded investment treatment; Consumers see marginal price; Time-dependent costs more equitably allocated through real-time pricing	Cost shifts through stranded investment treatment; If market mechanisms and price discovery are slow to develop, "better deal" for some, at least temporarily; Time-dependent costs allocated more equitably where time of day or real-time pricing offered.
Portfolio Management	Limited ability for utility to play portfolio manager role if there is a near-term rate impact	Limited incentive for generators to develop diversified portfolio; Consumers can negotiate CFDs for portfolio of choice; Regulator could establish portfolio standards	Limited incentive for generators to develop diversified portfolio; Consumers may contract for degree of portfolio diversity they desire.

Table 2C - Comparison of Model Performance (cont.)

Evaluation Factor	Coping Model	Pool Model	Direct Access Model
Environmental considerations	Limited ability to account for environmental costs beyond those captured in regulation; Some utilities may offer "green" rates	No ability for generators to account for environmental costs beyond those captured in regulation; Consumers may enter into CFDs for "green" resources; Regulator could establish environmental standards for resources bid to pool	No ability for generators to account for environmental costs beyond those captured in regulation; Consumers may enter into contracts for "green" resources
Conservation	Utilities maintain some conservation -- very low capital cost and customer service /retention benefits; Limited by rate impact concerns; Ownership of generation disincentive to conservation; Unbundling rates reduces rate impact and customer incentive to conserve	Utility maintains some conservation -- distribution system benefits, for-profit customer service; Although link is indirect, continued ownership of generation may be disincentive; Unbundled rates reduce rate impact and customer incentive; real-time pricing provides conservation incentive; Regulators may require or provide incentives for conservation; Third party DSM services will be offered	Distribution company generally indifferent to conservation except that which reduces distribution costs; May offer conservation as for profit customer service; Unbundled rates reduce rate impact and customer incentive; Regulators may require or provide incentives for conservation; Third party DSM services will be offered
Renewables	Difficult for utilities to invest in above-market price renewables; Some may offer "green" rates	Difficult for utilities to invest in above-market price renewables; Consumers can support renewables through CFDs; Pool could establish renewables requirements or incentives	Difficult for utilities to invest in above-market price renewables; Consumers can contract for renewable resources

Table 2D - Comparison of Model Performance (cont.)

Evaluation Factor	Coping Model	Pool Model	Direct Access Model
RD&D	Limited to that which yields competitive benefit; Public good RD&D sharply reduced	Limited to that which yields competitive benefit; Public good RD&D sharply reduced; Pool could provide incentives	Limited to that which yields competitive benefit; Public good RD&D sharply reduced
Role of Bonneville	Constrained role with respect to conservation, renewables, etc., until fixed costs reduced	Responsibility to repay debt on federal projects means most likely role as bidder into pool; Preference could be handled through CFDs	Could be marketer of power from federal system or operator of transmission system, but not both; Preference accommodated through contract terms
Transition issues	Modest evolution of current regulation, rate structures and utility services; some write-down of assets; some stranded asset treatment	Creation of pool and independent system operator; Stranded investment treatment; Abrogation/renegotiation of existing contracts; Technology for real-time pricing	Divestiture; Stranded investment treatment; Development of market mechanisms; Abrogation/renegotiation of existing contracts
Sustainability -- sustainable if:	Marginal costs stabilize or rise; Vulnerable customers accommodated without big impacts on core customers; FERC "functional unbundling and comparability" requirements successful	Sufficient competition; Marginal costs do not rise significantly above average cost; Pool structure not used excessively for non-market purposes; Timely introduction of real-time pricing	Sufficient competition; Marginal costs do not rise significantly above average cost; Market mechanisms develop quickly; Perception that benefits distributed equitably

A "*More Likely*" Model for the Northwest

As the foregoing analysis indicates, each of the models considered has some advantages, each has some disadvantages. All are likely to result in a power system that is generally as adequate, efficient, economical and reliable as that we have now. Some may be able to improve on the that standard. Each has different distributional effects. None can be expected to deliver on the so-called "social functions" (enhanced environmental quality, conservation, renewables, some RD&D) comparable to recent history without the creation of specific mechanisms to accomplish these functions. Some models are better able to support such mechanisms than others.

It is also unlikely that any one of the above models will actually be adopted. It is particularly unlikely that a comprehensive restructuring of the industry, such as the Pool or Direct Access models will occur, at least not in a deliberate way, even though there may be advantages to such restructuring. The reasons are fairly apparent. Even if there were consensus among the affected parties in the region about the desirability of the change, the transitional issues associated with either of these models are significant. Divestiture, as required in the Direct Access Model would be a difficult process. The creation of a single mandatory pool and an independent system operator organization ought to be less daunting, but it still represents a significant step.

The politics of such a restructuring make it much more difficult. In the Northwest, we have one federal power marketing agency; two other federal agencies owning most of the hydroelectric generation; over 100 publicly owned utilities; six investor-owned utilities; four state utility commissions; four state legislatures; several Direct Service Industrial customers of the Bonneville Power Administration; numerous other major industrial customers; a number of federal, state and tribal organizations concerned about the implications of any restructuring for fish and wildlife; environmental and consumer interest organizations and other interests too numerous to mention. Each of these groups and many of the individual member organizations are likely to have a different take on how different structures affect their interests and the public good.

The last major change in the regional power system was the passage of the Northwest Power Act. That was the product of six years of negotiations and numerous false starts. The major players in this process had a compelling, although, as it turned out, mistaken, common interest -- the ability of the Bonneville Power Administration to back the development of major new power plants. There does not appear to be a compelling interest here. Unlike California, competitive pressures in the Northwest are relatively smaller and unevenly distributed. Some areas have relatively high rates and some pressure for significant change. Others have relatively low rates and relatively small pressure for change.

By the same token, it does not seem likely that the Coping Model will be sustainable. There are areas where there are greater incentives for consumers to seek retail competition, and there are suppliers both inside the region and outside who believe they would benefit from the ability to serve a competitive retail market. We expect both groups to seek some degree of retail access. Many expect continued technological development that will facilitate competition. There is also the possibility of significant restructuring elsewhere in the West. There may be momentum imparted to change here by change elsewhere. Presuming things go reasonably well in the California restructuring (a very large

assumption), there may be some tendency to look over the fence and want what they have. Retail competition could come as a result of piecemeal decisions by local utility boards or state commissions or through much greater use of the mechanism of municipalization. Finally, some believe the FERC may force some restructuring in the form of divestiture of transmission assets if it feels that it functional unbundling and comparability have not achieved its goal of wholesale competition. PacifiCorp has floated a proposal for a single-owner, single-operator transmission system in anticipation of such pressures.

In light of the above, staff concludes that a more likely model for the Northwest is a further evolution of the Coping Model, which incorporates wholesale competition along with elements of retail competition under area-specific conditions. In some areas, there may be no retail competition. In others, retail competition may be significant. There may be significantly greater use of municipalization (where the municipality serves as an aggregator of retail loads) to provide access for groups of retail customers to the wholesale market. This mixed competitive system will evolve generally in the context of the current industry structure, i.e., some vertically integrated utilities, a large number of publicly owned distribution utilities and a federal "Genco-Transco," the Bonneville Power Administration.

Cautions and Recommendations for a More Competitive Northwest Electricity Industry

On the assumption that the electric utility industry of the Northwest is going to evolve into a mixed competitive system as described above, staff have attempted to derive some cautions about that model and recommendations about how that competition might best be structured, based on the analysis of the alternative models.

Recommendation: Unbundling Products, Services and Rates

Unbundled products, services and rates are common elements of each of the competitive models analyzed. Such unbundling is already well established in wholesale markets. Staff believes that unbundling is a logical response to threats of retail competition in the Coping Model and a characteristic of competitive retail markets in the other models. For those utilities responding to competitive threats, unbundling allows utilities to separate out in their rates the costs of those products provided by the monopoly portion of the business -- transmission and distribution -- and those provided by what could become the competitive part of the business -- generation. This allows consumers an accurate picture of the costs they might actually avoid in a competitive retail market. More importantly, unbundled products, services and rates are more efficient. They allow consumers the ability to tailor their consumption to their needs and to see a more accurate signal of the costs than is available in today's typically bundled rates. If consumers can adjust their consumption accordingly, it will ultimately result in lower costs for consumers as well as for the overall power system. We believe that utilities will ultimately move in this direction. Most of those with whom we have consulted on the models concur. Utilities and their governing or regulatory boards should be encouraged to move in this direction so sooner rather than later.

Recommendation: Consider Greater Use of Time-Differentiated Pricing

For many of the same reasons, greater time differentiation in rates is a good thing in principle. It provides consumers the opportunity to make choices about how and when they use electricity and better information about the true costs of the power products they use. One form of time-differentiated pricing, seasonal pricing, is already common in the Northwest. This is a simple form of time-differentiated pricing that reflects the significant seasonal variations in power costs in this region. Implementing seasonal pricing requires no special metering. If there are still utilities that do not employ season pricing, they should consider doing so.

In the Pool Model, the goal was to implement real-time pricing for all customers within a few years. Real-time pricing was a means of providing consumers "virtual" direct access to the power market. There is, however, no point in giving consumers more information about prices than they are able to act upon or that costs more to provide than it saves through increased efficiency. Real-time pricing and responding to it has a cost -- the time-of-day metering and telecommunications capability to inform customers of prices, and the technology required for the consumer to respond to the signals. The deployment of these technologies can be bootstrapped along with a number of other applications: remote meter reading, automated billing and the provision of demand management or even telecommunications services that have cost-saving and/or revenue-generating capability. This will reduce the cost of providing real-time pricing, as will further technological development. Still, real-time pricing may not be justified for many customers. Right now, there does not appear to be a great deal of difference between on- and off-peak costs. This may change over time. There are probably customers who could benefit from more time-differentiated pricing and benefit the system in the process. Several utilities in this region and elsewhere have projects under way to evaluate time-of-day pricing. Time-of-day rates and, ultimately, real-time pricing should be carefully evaluated and, where justified, implemented as quickly as possible.

Recommendation and Caution: Greater Market Segmentation -- More Regulation?

In a more competitive future, we expect utilities and their competitors to segment their markets more finely. This is true whether there is retail competition or just the possibility of it. In many instances, the purpose is commendable -- to provide consumers with products and services that are appropriate to their situation. This should be pursued. At the same time, however, market segmentation raises increased risk of cross-subsidization -- that costs attributable to one market segment will be spread to others. A special case of market segmentation is "special deals" made to retain vulnerable or mobile customers. This is a time-honored tradition and may well be justified by the circumstances. But, it may inequitably spread costs to consumers that have fewer options, i.e., no competitive alternatives. The potential for cross-subsidization in each of these instances could be a serious concern. It raises the possibility of a mixed competitive market requiring more regulation rather than less.

Caution: Vertical Integration Plus Competition -- More Regulation?

The "more likely" model we have posited anticipates the continuation of the vertically integrated utility. There is not divestiture or quasi-divestiture as in the Direct Access and Pool models, respectively. These vertically integrated utilities are already active in the competitive wholesale market, and several can be expected to be active competitors where retail access is allowed. This raises issues of self-dealing and cross-subsidization between the regulated and unregulated parts of

the businesses. For example, the regulated part of a utility might, when buying wholesale power, pay a higher wholesale price to its unregulated corporate relative than it would pay elsewhere. The result would be higher profits to the unregulated part of the utility and higher costs to the customers of the utility's regulated monopoly component. It would also give an unwarranted advantage for the utility in its wholesale competition with other utilities and independent power producers. This is already a major concern of regulators. Similarly, where retail competition exists, there is the potential for utilities moving costs from the generation portion of their business into the monopoly portion of their business, giving them an advantage in the competition for retail customers. It is not always easy for a regulator to recognize whether the price of a transfer between subsidiaries, which may have unique terms and conditions, is equivalent to an arms-length transaction between unrelated parties. It again raises the possibility of a more competitive market requiring more regulatory oversight rather than less.

Recommendation: An Independent Grid Operator

Both the Pool and Direct Access models called for the establishment of an independent grid operator (in the Pool model this was called the independent system operator and had broader responsibilities). While these models proposed quite different approaches to structuring wholesale and retail competition, both included an independent entity with responsibility for operating the transmission systems and dispatching sufficient resources to maintain system stability. Even if there is only limited retail competition, an independent grid operator is still a good idea. There are at least two reasons for this. First, a truly independent grid operator achieves, by definition, the functional unbundling desired by the FERC to ensure non-discriminatory open access. There are many who believe that no transmission owner can, even with the best intentions, avoid favoring its own generation in the operation of its transmission unless the decisions about transmission operation are out of its hands. An independent grid operator accomplishes this.

Second, operating the entire system as one, regardless of ownership of the parts of it, can yield operational efficiencies. If the FERC eventually pressures transmission owners to the point they divest themselves of their transmission assets, the value of the "independence" of the grid operator is reduced but the value of operating the entire system as a system remains. Certainly operation of the region's transmission systems is already very well coordinated and the regional transmission associations will improve that coordination further. But additional efficiencies could be wrung out of the system by a single independent operator.

Recommendation: Efficient Transmission Pricing is Important

Whether we are talking about wholesale competition only or wholesale and retail competition, efficient pricing of the transmission system is important. By efficient transmission pricing we mean pricing for use of the transmission system that provides accurate signals of the costs imposed by congestion on the system. These price signals can inform decisions about expansion of the transmission system, location of new generation and even conservation and demand management. Without such signals, we can have over investment in transmission, generation or both.

Some of the more interesting analysis in the California restructuring debate was the analysis in support of the pool model with an independent system operator provided by Professor William Hogan

of Harvard University and others.[10] They noted that if there is congestion on the transmission network, the grid operator may have to dispatch more expensive generation to serve a load that would otherwise be served with less expensive power. The incremental cost of that more expensive generation defines the cost of congestion. This is key to encouraging efficient investments in transmission and generation. We don't know that a pool and independent system operator is essential to achieving efficient transmission pricing. We do believe that efficient pricing is important. The regional transmission associations are an appropriate forum for deciding how to achieve efficient pricing and the independent grid operator is the appropriate entity to implement it.

Recommendation: Resolve the Stranded Investment Issue -- (Get the "Deer out of the Headlights")

Much of the disfunction in the Coping Model and, potentially, the more likely model as well, has do with the uncertainty about how stranded investments will be treated.[11] As suggested by the FERC in its Notice of Proposed Rulemaking (NOPR) on stranded investment, this uncertainty is a major barrier to implementing competition.[12] FERC was referring to investment stranded as a result of wholesale competition. In this region, Bonneville has responsibility for most of the investment potentially stranded by wholesale competition. Bonneville needs to resolve its stranded investment policy as quickly as possible if it is to compete fairly in the wholesale market.

It is no less true that the uncertainty surrounding stranded investment is a barrier to equitable retail competition. Northwest utilities do not have a large retail stranded investment problem relative to, say, California.[13] Moreover, each utility's situation is different. It seems that if there is to be fair retail competition within the region there needs to be relatively consistent treatment of stranded investments throughout the region and, preferably, throughout the West. What will be considered stranded investments, how they will be valued, how they will be shared among stockholders and ratepayers, and how they should be recovered (e.g., distribution charge) need to be resolved. The existence of publicly owned utilities for whom the ratepayers are the stockholders make this particularly challenging. We encourage state regulators and local utility boards to consult with one another and to initiate stranded investment proceedings.

Recommendation: Devise a New Mechanism for Conservation, Renewables, and RD&D

A common characteristic of each of the models studied, and the more likely model, is that they are unlikely to support the development of conservation, renewables and RD&D to the level that might be desirable. Already there is some indication of utilities backing off on their conservation initiatives beyond that which would be justified by the current low avoided cost. In general, each of these

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[10] See, for example, Hogan, William W., "A Competitive Electricity Market Model," (Draft) Center for Business and Government, John F. Kennedy School of Government, Harvard University, Oct. 1993.

[11] By "stranded investment" we mean *past* investments which were judged prudent at the time they were made but which cannot compete in the open market. Current and future investments made in full knowledge of the potential competitive market should not qualify as stranded investment.

[12] "We cannot successfully and fairly encourage the development of competitive wholesale markets as envisioned by the Open Access NOPR until we have made provision for electricity suppliers to seek recovery of existing uneconomic costs (primarily generation) which they have already incurred (i.e., those that could not earn a reasonable return in a competitive market).....the Commission learned from its experience in the restructuring of the natural gas industry that these types of transition costs must be addressed at an early stage if we are to fulfill our regulatory responsibilities in moving to a competitive market." Federal Energy Regulatory Commission, Op.Cit., pp. 141-142.

[13] It should be noted, however, that resolution of Bonneville's stranded investment problem will pass a potential stranded cost from Bonneville to its customers.

models will be oriented toward minimizing rate impacts and undertaking investments that yield competitive advantage and risk as little capital as possible. The risk of losing customers in a competitive environment orients utilities toward resources that have a relatively high proportion of variable costs that can be displaced. Some conservation can yield competitive advantage, but conservation is almost all capital. Unless the consumer is willing to share substantially in the cost, only the most inexpensive conservation will avoid risking capital. Unbundling of rates is the right thing to do from the standpoint of economic efficiency, but it will reduce the consumer incentive to conserve. Opening up competition so that some consumers can exercise choice for "green resources" may capture some conservation, but most people do not believe that large numbers of consumers will choose "green resources" if they cost more.

A legitimate question is whether society ought to be willing to invest in capital intensive energy conservation when utilities in general are not. This is a debate in which the Council wishes to engage the region. In the 1996 Plan, the Council will estimate the benefit that would be foregone by not undertaking such conservation. In general, society has in the past been willing to undertake such long-term investments when it was clear there was a public benefit and the private sector was unwilling or unable to do so.

The case for renewables is somewhat different. There are some renewable resources that are competitive today, but they are usually capital-intensive and suffer from the same capital risk handicap as conservation. Other renewables, like wind and solar, are not quite cost-competitive. Nevertheless, there are two reasons for undertaking such resources: to reflect the value of environmental benefits that are not reflected in the cost of power and to maintain and advance renewable resource industries at a viable level until renewable resources become cost-effective. Unless there is a market for green resource packages, it is unlikely these resources can be developed by utilities. Again, the question is should society as a whole be willing to undertake these investments at a modest level when the industry is not?

The arguments for RD&D are essentially the same. That which yields competitive advantage will get done. That which is of a public good nature will not.[14] Examples we can think of are largely in the areas of conservation and renewables. For example, the Residential Standards Demonstration Program and Energy Edge Program demonstrated energy-efficient building technology. Arguably, it was in the competitive interest of builders and designers to offer more efficient buildings and some, in fact, were doing this. However, to get rapid, widespread adoption of these cost-effective building technologies, it was necessary to carry out demonstrations that achieved broad involvement in energy-efficient design and construction. The demonstrations were supported by utilities even though the utilities themselves could not capture all the benefits. We also note that cooperative utility-sponsored RD&D through the Electric Power Research Institute has fallen off in volume. Should society as a whole support such RD&D?

If the answers to these questions are yes, there are a number of ways these activities can be supported, at least at a modest level. It is worth noting that both the California restructuring proposals, as well as proposals developed in other states, concluded that special mechanisms were required for continuing support for conservation, renewables and RD&D that is unlikely to be

[14] Public goods are those for which an individual cannot capture all the benefits.

accomplished by the competitive industry.[15] Any mechanism should be implemented in such a way that the costs affect each competitor equally and cannot be by-passed in the competitive environment. This probably means some fee levied at the distribution level. This might require legislative action in all four states. There would also have to be an implementation mechanism devised that assured relatively equitable distribution of the benefits of such a fee. The Council will be examining the evidence in support of the need for such mechanisms and the alternatives in greater detail in the 1996 plan. The Council encourages utilities, state government, the Bonneville Power Administration and others to begin work in this area.

[15] See the California Public Utilities Commission majority and minority proposals, Op. Cit, pp. 70-76 and Section VIII A.2.b., respectively; Wisconsin Electric Company, "*Wisconsin Electric's View of a More Competitive Electric Industry,*" Milwaukee, Wisconsin, March, 1995, p. 16; "Independent Principles of the Massachusetts Electric Industry Restructuring Roundtable," J.A.M.S. Endispute, 73 Tremont St., Boston MA, July 17, 1995, pp. 6-8.