

CHAPTER 5

CONSUMER IMPACTS AND PROTECTION

Introduction

The fundamental issue with respect to electric industry restructuring is the potential impact on Virginia consumers. Unfortunately, the Staff, and no one else, can confidently predict the resulting impact at this time. Because of the technical complexity of the industry and because of the significance of the organizational and infrastructure changes required for substantial restructuring, the associated consequences are too uncertain for any meaningful prognosis.

Participants in the Commission's Cost/Benefit working group expressed a wide diversity of opinion with respect to the identification and evaluation of potential restructuring impacts. This group discussed a variety of issues including economic aspects of generation reliability, potential market power concerns, possible cost efficiency gains and losses, fuel and technology dependency, and pricing. Understandably, little consensus was reached on any of these issues.

Certainly, economic impact studies can and have been performed which sweep away many of the complexities through the imposition of simplistic assumptions. As a result, focusing on the results of these studies provides little usefulness for purposes of effective restructuring decisions. This chapter will summarize some of Staff's concerns with respect to certain of these studies, the results of which have been frequently cited in public forums.

As a result of the uncertainty surrounding potential impacts, any restructuring transition model should recognize the development of adequate consumer protection measures as integral to the public interest. Consistent with the Staff's recommendation that a transition process should be evolutionary, each stage of the process may require development of new protection measures. For example, deregulation of generation would require new consumer price protections. Introduction of full retail access would likely require substantially more consumer protections.

Other chapters of this report examine restructuring issues related to system reliability, the environment, and potential market power. Although these issues obviously present potentially large consumer impacts and underlie the need for consumer protection, this chapter attempts to limit redundancy with respect to these concerns.

Competitive Benefits

There is little debate that a truly competitive market structure is vastly superior in economic efficiency in comparison to a regulated market. Such efficiency includes market allocation efficiencies with respect to resource inputs (i.e., raw material, labor and capital) and product output, as well as "production" efficiencies in the manufacturing and distribution processes. Competitive markets are driven by consumer demand and profit-seeking suppliers. Since profit can be increased by lowering costs and/or increasing market share, competitive markets spur supplier innovation, frequently in the form of technology development and creative service offerings aimed at improving cost efficiency or better meeting the needs of customers. Therefore, to the extent sufficient competitive influences are present in the market, consumers as a whole realize both cost efficiency benefits and increased service options.

While the potential competitive benefits that a restructured electric industry may offer cannot be specifically defined in advance, the Staff does not wish to understate these potentially powerful positive

consumer impacts. One can simply observe the substantial cost cutting and downsizing of Virginia's investor owned electric utilities over recent years in response to the "threat" of competition and the variety of pricing and service options that have accompanied deregulation of the telecommunications industry. However, while recognizing these potential competitive efficiency benefits, two critical and fundamental questions remain with respect to electric industry restructuring:

- Can a cost effective electric industry market structure be developed that provides sufficient levels of competition and associated efficiency benefits while maintaining physical system integrity?
- If so, will a competitive market structure adequately serve non-economic public interest goals for electric service?

Competitive Concerns

As discussed extensively in other chapters of this report, there are several difficult obstacles to overcome in moving toward a more competitive industry structure. Significant concerns, including potential reliability impacts and market power, arise from the current industry organization and infrastructure, the physical and economic characteristics of electricity, and the essential social nature of this energy service, which has limited practical substitutes. The interrelated nature of these fundamental concerns and underlying industry factors adds further complexity to restructuring efforts. However, each of these issues must be adequately addressed for successful restructuring. While a detailed discussion of these issues will not be repeated in this chapter of the report, it must be recognized that because of their complexity and number, these obstacles cannot be removed quickly or inexpensively. In fact, the Staff believes it is premature to conclude with absolute certainty that these concerns can be effectively resolved in a publicly acceptable manner.

The significant costs associated with industry restructuring often do not receive the attention deserved. Such costs include both direct costs and indirect or opportunity costs. While these potential costs cannot be quantified any more accurately than potential competitive benefits at the present time, they should be recognized and subjectively evaluated. As competitive restructuring proceeds further along the spectrum of options (i.e., from expanded competition in the wholesale generation market to full retail customer choice), associated costs are likely to grow exponentially.

As discussed in the *Market Structure* and *Market Power* Chapters of this report, the existing vertically integrated electric system must be functionally unbundled to allow for increased competition. The vertical integration of most utilities, with respect to management planning and operation, provides for specific economic efficiencies which could be lost as a result of restructuring.

For example, the vertical integration of generation and transmission facilities allows utilities to optimize trade-offs between the two functions. These trade-offs are largely associated with the fact that transmission and generation are substitutable in many respects. Integrated utilities typically recognize this substitutability by installing the least cost combination of transmission and generation capacity and by coordinating the operation and maintenance of these facilities. This ability and similar economies between transmission and distribution could be reduced or lost entirely as a result of restructuring.

The impact of such losses are largely unknown. However, such losses may be significant. Professor John Kwoka, Jr., George Washington University, estimates that the economies associated with vertical integration are substantial (27 percent or greater).³¹ This study compared the fundamental cost structures of vertically integrated utilities with unbundled utility operations. Like all economic studies, a healthy

dose of skepticism is appropriate with respect to specific results. However, the fundamental point is valid in that existing vertical efficiencies would be placed in risk.

Functional unbundling requires investment in new market structures such as ISOs and power exchanges or pools. Since physical facilities will remain as part of an integrated system, a large investment in new information systems will be required to adequately reconcile individual economic transactions with physical system operations. While these systems are critical to efficient market operations, the massive data collection and processing will be burdensome in that electric service involves the continuous provision of service, the cost of which may vary dramatically across the hours of the day. For example, in order to introduce customer choice at all levels in Great Britain, the estimated cost of the required information systems is approximately \$1.5 billion. This system is designed to use customer load profiles for residential customers. If the system were designed for the collection and processing of real time data for these customers, including the purchase of real time metering technology, the total required investment would increase significantly.

Obviously, the cost of collecting and processing data for small residential and commercial consumers is much greater on a relative usage basis than for large customers. These costs would offset, in part, any expected market efficiency benefits for these consumers. As is the case in Great Britain, one mechanism for reducing the cost burden is to apportion aggregated usage data for smaller customers based on predetermined customer load profiles. Of course, any divergence between such estimated market data and actual physical system operations results in lost market efficiency and creates increased opportunities for sophisticated players to game the system. Clearly, the Staff does not know the degree to which lost efficiencies associated with using aggregated data would offset the cost savings associated with reduced data collection and processing. However, such a practice would limit the ability of small customers to react to and realize the efficiency benefits of real time costs and pricing.

In addition to data collection and processing costs for system reconciliation, substantial marketing and advertising costs would be incurred by new middlemen serving as market facilitators and charged to consumers through transaction fees. Again, such costs are likely to be larger on a relative basis for lower usage consumers. Additionally, since markets operate on information and the ability to efficiently evaluate and react to that information, full retail customer choice would likely require a significant consumer education effort, especially for small unsophisticated consumers.

The Staff is of the opinion that competitive restructuring will likely require substantial new investment in transmission infrastructure.³² Existing transmission congestion and constraints which provide unacceptable levels of market power to existing power plants and utilities must be reasonably alleviated. Dissimilar to Great Britain, the United States transmission grid was not built as an interstate highway system. Ironically, from a physically integrated system perspective, some of this new transmission investment may or may not be economically cost efficient, but it would be necessary to ensure sufficient competitive access for generators in order to prevent market

power abuse. This potential paradox arises from the dichotomy of a competitive generation market and the continued regulation of the transmission system as a common carrier.

Another potentially significant direct cost of restructuring is the possible higher financing costs associated with new power plant investment. Because of the large capital investment, financing costs are a substantial component of the carrying charges of a power plant. Under traditional regulation, vertically integrated utilities have been able to execute highly leveraged financing with low-cost risk-adjusted debt and equity as a result of the security provided by regulated returns. In view of the large capital requirements, the long economic life of power plants, and the risks of competitive markets, the Staff is

concerned that financing costs may increase significantly and may present a competitive barrier to new market entrants.

Finally, in a competitive market, generators, marketers, and consumers will be increasingly driven by the individual profit motive, possibly to the detriment of the interconnected system. The voluntary cooperation that has traditionally existed between utilities would likely deteriorate substantially. Therefore, while costs of economic regulation would be reduced, significant new regulation in establishing, monitoring, and enforcing rules and standards of conduct would be required. Some of these functions may be performed by reliability councils or new organizations such as ISOs. However, federal and state regulators would have significant and challenging new responsibilities to ensure the development and maintenance of sufficient competition, the prevention of system abuse, and the adequate protection of consumers. While regulatory efforts would take an entirely new direction and shift some responsibilities among parties, the Staff does not believe that regulatory costs would necessarily be reduced. It is quite possible that such costs could actually increase.

While several states are moving rapidly forward with restructuring plans, the Staff is not aware of any plan which fully and adequately addresses the many complex issues involved in restructuring. In other words, even when these plans are implemented, they will still be works-in-progress, not final determinants of successful restructuring. Circumstances in Virginia, where average rates are significantly lower than those in certain of the fast moving states, would indicate that the margin for error is much smaller and, therefore, added caution is appropriate.

Appendix No. 2 (pages 1 through 4) provides average rate³³ comparisons on a state-by-state³⁴ basis for total retail customers as well as for each retail customer class. The states are ranked in ascending order of weighted-average rates from lowest to highest. For example, when rates for all retail consumers are averaged, Idaho is ranked first with the lowest average rate of 3.81¢/kWh; Hawaii has the highest ranking with average rates of 11.78¢/kWh; and, **Virginia ranks 20th with total average rates of 5.99¢/kWh.** On a customer class basis, Virginia's **average residential rates rank 22nd** at 7.58¢/kWh; **commercial rates rank 12th** at 5.86¢/kWh; and, **industrial rates also rank 12th** at 3.90¢/kWh.

These rate comparisons also reflect insertions of the average rates for Virginia's five investor owned electric utilities and total U.S. average rates.³⁵ In comparison with U.S. average rates, Virginia's total average rates are lower by 16 percent. On a customer class basis, **Virginia's average residential, commercial, and industrial rates are lower than national averages by 15 percent, 25 percent, and 20 percent, respectively.** The four largest of Virginia's five investor owned utilities (i.e., Virginia Power, AEP-Virginia, APS, and Kentucky Utilities), which directly serve roughly 85 percent of all electric consumers in the State, have average rates significantly below national averages.

In fact, the total average rate of the State's largest provider, Virginia Power which is generally considered the highest cost utility among these four, is 12 percent lower than the national average. Virginia Power's average rates for residential, commercial, and industrial consumers are lower than the national averages by 9 percent, 24 percent, and 17 percent, respectively. The average rates of State's second largest provider, AEP-Virginia which is one of the lowest cost utilities in the Country, are lower than national average rates as follows: total retail - 36 percent; residential - 38 percent; commercial - 40 percent; and, industrial - 28 percent.

Virginia's favorable rate comparisons with national averages underscores the Staff's concerns that a competitive market may lead to a rate leveling effect of market prices across large geographic regions. Under these circumstances, customers (especially small commercial and residential) of low cost utilities in Southwestern Virginia such as AEP-Virginia and Kentucky Utilities, face significant risk that market

prices could exceed regulated rates.

Further exacerbating the Staff's concern with respect to long-term consumer price impacts in a restructured industry, is the inability of the Staff to conclude that the total average cost of today's most efficient new generation facilities ("long-term marginal cost") is less than the existing average embedded production costs of several of Virginia's utilities. Since long-term market equilibrium prices in a truly competitive market should approach the "long-term marginal cost" and since regulated rates are based on average embedded cost, the issue arises as to how long-term price reductions will be produced by a restructured industry.

Certainly, new technology developments or efficiency improvements could reduce long-term marginal costs and prices. On the other hand, any unresolved market power influences could allow for prices in excess of marginal costs. Because of numerous unpredictable factors like these, the impact of restructuring on consumers cannot be estimated with any reasonable degree of certainty.

Public Interest Issues

While truly competitive markets tend to maximize economic efficiency, they are less effective in meeting non-economic public interest goals. Economic efficiency is certainly a valid and important objective for the electric industry, but it is by no means the only critical goal. For example, because electric service is a crucial component of the general public's standard-of-living, quality-of-life, and economic interests, a traditional objective of regulation has been the provision of universal and reliable service at generally uniform, affordable, and stable rates. Regulation has traditionally attempted to recognize these communally important aspects of the electric system and to provide an impartial equity-oriented determination for the sharing of system costs and benefits.

By comparison, competitive markets are impersonal, volatile, and tend to create winners and losers. The concept of equitable sharing is not the focal point of a competitive market. Those with the most information and the greatest ability to interpret and react to that information tend to win. Those with less information and more limited response capabilities tend to lose. Both the supply and demand sides of a market have individual winners and losers on a relative basis.

For example, competitive markets typically experience both capacity excesses and shortages³⁶ over time. During periods of capacity shortages, the product or service is rationed by increasing prices to what the market will bear. Those customers willing and able to pay the most would receive service. Since the most likely time of generation capacity shortages would be on the coldest days in the winter or the hottest days in the summer, low income residential consumers who heat or cool with electricity could face a dilemma.

Of course, it is not clear that most residential or small commercial customers would even be able to make a conscious choice with respect to such circumstances unless they invest in technology that can receive and respond to instantaneous pricing and usage information. Alternatively, the market may offer a flat rate per unit pricing option to small consumers. However, such an option would likely carry a significant pricing premium because of the cost risks assumed by the supplier in serving such extremely weather-sensitive load. At the same time, competitive market allocation and cost efficiencies achieved through demand response to cost based pricing signals would be lost for these customers.

Further, to the extent that insufficient system load responds to pricing changes in a timely manner when capacity is fully utilized, firm load would have to be interrupted to protect the system from collapse. It is most probable that this load would be that of residential and small commercial consumers due to public

and economic interests as well as practical limitations. Closing large businesses and taking workers off the clock would be publicly and economically unacceptable. Additionally, from a practical perspective, individual customer loads and designated power supplies cannot be compared on an instantaneous basis to determine who should be disconnected when curtailment is necessary.

As another example of potential public interest concern, suppliers or marketers will segment consumers in a competitive market. On the one hand, market segmentation allows for developing and targeting a similar customer group with services or pricing options that better fit the needs of that group. Unfortunately, this practice also presents the possibility that certain customer groups may be defined as "undesirable" perhaps based on geographical location, neighborhood, or income level. Certainly, allegations of this nature occasionally have been suggested with respect to financial lending institutions, insurers, and even retailers. To the extent such categorization occurs, it can have a substantial and unfavorable consequence in terms of pricing for members of that group. It is particularly unfortunate that frequently, the criteria used to define such customer groups does not perfectly correlate to the "undesirable" trait. For example, many low income people are financially responsible, but may be considered high risk for non-payment simply because of the neighborhood in which they reside or their level of income.

While conceptually complex, there is a global public interest issue which must be acknowledged with respect to competitive restructuring. To capture economic efficiency, a competitive market drives suppliers to operate on the edge. In pursuit of profit, generation suppliers would attempt to optimize maintenance expenditures and capacity reserves with minimal cushion for forecast error. A just-in-time generating unit maintenance philosophy could replace traditional preventive maintenance programs. Likewise, investment in underutilized expensive capacity reserves would be minimized. This is characteristic of all truly competitive markets. In fact, this is a key working mechanism by which competitive markets produce substantial efficiency benefits. In the electric industry, individual suppliers could be encouraged to push the envelope even further, relying on the reliability of the combined integrated system to provide a backstop. If all suppliers were to adopt this strategy, and certainly there might be strong economic incentives providing encouragement, the reliability of the entire interconnected grid may deteriorate.

With respect to electric generation, the edge may be defined by the adequacy of available capacity to satisfy the demand of an extremely weather-sensitive load. This load can depart substantially from normal expectations from day to day and year to year. On a short-term basis, the peak load may be as difficult to predict as the weather. In other words, the edge is constantly moving and somewhat unpredictable. Combining the variability and unpredictable nature of this load with the inability to practically store electricity and the competitive economic pressures for suppliers to minimize investment in capacity cushions, it appears to the Staff that the conditions would be ripe for suppliers to miscalculate and drive off the edge on occasion. The market would respond economically to such occurrences, but hardly prevent future events. The question is how frequently such events would occur and whether such events and their frequency are publicly acceptable as trade-offs for economic efficiency gains. Once again, the Staff cannot answer that question.

In any event, while a truly competitive market may address service, reliability, and pricing issues in an economically efficient manner, the results may not always be publicly acceptable in light of the unique social aspects of electric service. To the extent such is the case, some form of governmental intervention would be required. However, with each intervention, the market would lose competitive efficiencies.

Economic Studies

A number of economic studies conducted over the last several years conclude that competition will

produce an overall decrease in the average cost of electricity for consumers. However, these studies typically assume that the electric industry will be truly competitive and fail to address a number of specific issues including many identified by the Staff in this report.

This report section comments on four of those studies: "Customer Choice, Consumer Value -- An analysis of Retail Competition in America's Electric Industry" - Citizens for a Sound Economy Foundation (CSEF); "The Economic Impact of Electric Utility Deregulation" - Patrick J. Howie, Regional Financial Associates; a study prepared for the North Carolina Coalition for Customer Choice in Electricity (NC4E) by Brubaker & Associates, Inc.; and "Electricity Prices in a Competitive Environment: Marginal Cost Pricing of Generation Services and Financial Status of Electric Utilities" - Energy Administration Agency, US Department of Energy (EIA). While each of these studies predict that restructuring will, on average, result in lower prices for consumers, none of the studies specifically address the implications of transmission constraints or other market power possibilities.

Customer Choice, Consumer Value An Analysis of Retail Competition in America's Electric Industry - Citizens for a Sound Economy Foundation (CSEF)

The CSEF study predicts that restructuring will lower prices for electricity by 13-26 percent in the short run and by 43 percent in the long-run. The study also predicts that restructuring would result in a 2.6 percent per year increase in the gross domestic product. While this study has been widely cited and circulated, it has also been subject to intense criticism. One critique prepared by Matthew I. Kahal for the Electric Consumers' Alliance³⁷ notes among other criticisms:

- The authors of the study have overestimated the amount of unexploited, inexpensive energy and consequently exaggerated the gains attainable from deregulation.
- The study greatly overstates a reasonable estimate of the price elasticity used in estimating economic gains from deregulation.
- The authors seriously erred in their quantification of generation embedded costs and in their equilibrium market prices. After correcting these errors, it is unclear whether deregulation provides any consumer savings.
- The authors seriously err in overlooking critically important state and local variations and rely on aggregated national data. Consequently, the study ignores the problem of regional winners and losers.
- The CSEF analysis of stranded cost is implausible and simply defies common sense.
- The study provides no real macroeconomic analysis, merely some back-of-the-envelope calculations which use crude rules of thumb in developing the startling prediction of a \$191 billion GDP gain.

The CSEF study has also been criticized by a number of others who generally conclude that the study greatly overstates the benefits of competition. The CSEF elasticity assumption of $-.97$, the fundamental assumption driving the study, reflects nearly perfect inverse price-consumption response. A one percent reduction in price would generate a one percent increase in consumption and vice-versa. Many believe this assumption greatly overstates the short-run price elasticity of electricity. For example, the EIA

study, relies on an price elasticity assumption of $-.15$ in the majority of cases within its study of deregulation.

Significantly lower elasticity assumptions would alone essentially invalidate the CSEF study. However, other major study deficiencies include a failure to recognize transmission constraints, significant calculation errors with respect to embedded cost savings, and no recovery of stranded cost. The Staff is hesitant to rely on this study to support a conclusion that restructuring will lower rates across the board for all customers.

"The Economic Impact of Electric Utility Deregulation" - Patrick J. Howie, Regional Financial Associates (RFA)

The RFA study predicts that deregulation will reduce average US and Virginia prices by 21 and 17 percent respectively. This study differs from the CSEF study in that it does consider individual state variations and concludes that there will be winners and losers from restructuring. The study states:

Those states with relatively high current prices stand to experience large price declines whereas those states with relatively low prices will see little benefit and may actually experience price increases.³⁸

The RFA study also notes that while some states will see a decline in absolute prices they will see an increase in prices relative to other states. These relative prices are, according to the study, important to a state's long-run economic growth. After analyzing these relative prices and other factors, the study concludes that twenty-one states will experience job losses as a result of deregulation. The RFA study indicates that restructuring would produce slight job growth (less than 1 percent) in Virginia. It should be noted, however, that the study does not present results on a utility specific basis to recognize regional differences within a state. Individual utility results would likely differ from the average results reported in the RFA study. This has significant implications for Virginia.

For example, the average rates of AEP-Virginia are significantly lower than average Virginia rates. Consequently, the relative impact of restructuring within AEP-Virginia's service territory in southwestern Virginia may be quite different than the average impact seen in Virginia. In fact, AEP-Virginia's average rates are lower than those of states that will, according to the RFA study, be negatively impacted by restructuring. For example, average rates for the state of West Virginia are higher than those of AEP-Virginia. The RFA study predicts that average rates will increase by 0.2 ¢/kWh in West Virginia and that the state will experience a 2.66 percent decline in its jobs base. Therefore, a logical application of study results would indicate that customers located in AEP-Virginia's service territory would be likely to experience price increases under restructuring.

Given Virginia's favorable average rate comparison with national averages, the Staff is in fact concerned generally with the potential impact of price leveling on Virginia. In that sense, the Staff agrees with the RFA study's indications that there will be state and regional winners and losers. On the other hand, the Staff is concerned with the specific numerical results in that market power issues afforded by existing transmission constraints are largely assumed away and that the effects of stranded cost recovery are not included. In fact, the study acknowledges that the predicted economic benefits of deregulation would be postponed if stranded cost recovery is permitted.

North Carolina Coalition for Customer Choice in Electricity (NC4E) - Brubaker & Associates, Inc.

The NC4E study, prepared by Brubaker & Associates, Inc., examines the impacts of restructuring in North Carolina and is of interest because it focuses on the impact of restructuring on Virginia Power's North Carolina customers. An NC4E brochure, a copy of which has been provided to each member of the Virginia General Assembly, extracts from this study and indicates that annual savings to North Carolina consumers will approximate \$1 billion. This presentation, however, totally ignores stranded cost recovery and does not recognize transmission constraints. It also ignores stranded margins which were calculated by Brubaker and Associates for Duke and Virginia Power. Importantly, the existence of stranded margins for Virginia Power in the study would indicate that customers would be expected to see increased prices in a competitive market as opposed to savings.

Electricity Prices in a Competitive Environment: Marginal Cost Pricing of Generation Services and Financial Status of Electric Utilities - Energy Administration Agency, US Department of Energy (EIA)

The EIA study concludes that, over the short term, full scale competition could reduce electricity prices nationally by as much as 8 to 15 percent in the absence of stranded cost recovery. However, this estimate includes price reductions already realized from limited wholesale competition, supplier preparation for retail competition, and actions already taken by regulators. The study notes that areas with very low generating costs, such as regions with low-cost coal-fired suppliers, could see short-term price increases and estimates that deregulation will increase revenues for approximately 20 percent of all privately owned utilities. In the long run, the study estimates that overall prices will be 16 percent lower than they would have been under continued regulation.

The EIA study also addresses the financial implications of restructuring for existing suppliers and concludes that without stranded cost recovery suppliers will experience asset value reductions of \$72 to \$169 billion. This could, as noted in the study, cause a number of bankruptcies. This stranded cost figure reflects a netting of below and above market value assets. In other words, the stranded cost calculation nets the gains of winning utilities against the losses of losing utilities. The study notes that if the benefits to below market suppliers are excluded from the calculation, the stranded assets for high cost suppliers could be as much as 20 percent higher. If policy-makers allow full stranded cost recovery, the study notes that there will be little difference between competitive and regulated prices in the short term.

Although the results of the EIA study are conservative in comparison to other studies, the study expresses a number of caveats. First, it notes that a portion of the estimated competitive savings are attributable to wholesale competition and steps that have already been taken by suppliers. Consequently, a significant portion of the competitive savings projected by EIA may not be attributable to retail competition and will occur regardless of state actions. Second, the study notes:

It is assumed that effective competition among suppliers will exist in the restructured market (no individual company will be able to exert market power and manipulate the price of electricity), and that consumers will be presented with, and able to respond to, electricity prices that vary by time of use. In reality, the complex network structure of the electricity market may make this difficult to achieve, and the results discussed in the following chapter [Competitive Electricity Prices Projections] should be viewed as somewhat idealized.³⁹

Finally, the EIA study notes that there is considerable uncertainty about many issues that could influence prices that were not directly addressed in the study. The issues that were not addressed include: the influence of market power; relative prices for various classes of customers, efficiency improvements and cost reductions due to competitive pressures, the pricing of transmission and distribution services, changing incentives to build capacity, possible changes in the cost of capital in the generation market, technological innovation that may be induced by competition, and the likelihood of alternative competitive institutions among states. While this study like all of the above studies is predicated on the absence of market power on the part of suppliers and consumers, EIA recognizes the potential for market power and indicates that market power is an important concern

for legislators and regulators. Many of the issues identified by EIA, but not incorporated in their numerical analysis, are raised throughout the Staff's report.

Consideration of the results of the above studies and their underlying assumptions reinforces the Staff's opinion that the complexity of the electric utility system and the numerous factors affecting prices make it virtually impossible to predict the economic impacts of restructuring with any degree of certainty. However, there are important issues raised by certain of these studies. For example, the EIA study and the RFA study note that there will be winners and losers under restructuring and indicate that prices may actually increase in areas served by low-cost producers. This is of particular concern for the portions of Virginia that are served by low cost suppliers.

Three of the utility systems serving Virginia were recently ranked among the top ten investor owned-utilities with respect to competitive efficiency.⁴⁰ This study which found a close correlation between price and overall productive efficiency ranked AEP, APS and Kentucky Utilities numbers one, four and seven respectively out of ninety-four utilities. Virginia Power was ranked twenty-seventh.

Given the results of this study, it appears that it is possible, and perhaps probable, that at least three of the utility systems serving Virginia will be among the winners in a restructured industry. As a result, the customers of these utilities may see higher prices. This may also pose a concern with respect to economic development since, as noted in the RFA study, relative electrical prices may be important to long-run economic growth. Southwestern Virginia, which has traditionally suffered from a lack of economic development, may find it even harder to compete if the prices charged in the service territories of AEP-Virginia and Kentucky Utilities (the Old Dominion Power Company) are relatively higher as a result of restructuring.

The potential negative implications of restructuring for Southwestern Virginia could be compounded by the possibility that increased competition will increase reliance on natural gas fired electric generation. Natural gas units are likely to be the units of choice in the future. As noted in the EIA report, gas technologies are generally cheaper to build and there is generally lower financial risk associated with the shorter lead times of such units. Given current technologies and environmental considerations, coal will become less and less the fuel of choice for generation, at least with respect to new plant investment. Consequently, Southwestern Virginia may be negatively impacted by restructuring since much of its economy is based on the coal mining industry.

Consumer Protection Measures

In recognition of the complex and significant obstacles to effective restructuring, the Staff, in this report, recommends a deliberative and evolutionary restructuring process if the General Assembly decides to

pursue such a course. Since consumer impacts cannot be accurately predicted, it is critical that adequate consumer safeguards are established for each step of the process. Competition will bring unscrupulous operators as well as legitimate competitors.

Initial consumer protection from potential market power concerns may take the form of rate caps or freezes as competitive structures (e.g., ISOs and power exchanges) are developed to allow for increased competition among generators. The introduction of increased generation competition will require the further establishment of rules or regulations governing standards of conduct for suppliers in order to protect the integrity of the interconnected grid.

If restructuring proceeds to include full retail competition, consumers will need vastly expanded protections. Since certain consumers may be unable or unwilling to choose a supplier, a supplier of last resort will need to be established to ensure that service is available for all consumers. This supplier is likely to be the local distribution utility during a transition period, but other options may be considered after markets fully developed. Because some customers may be considered "undesirable" the provision of a supplier of last resort may have to be continued indefinitely. It should be noted that after the transition period, the prices of the supplier of last resort cannot be regulated. Consumers will have to pay either the specific contracted price or the market price for supplies obtained from the wholesale spot market as needed. Special funding mechanisms may be appropriate for suppliers of last resort since the need for such a program may be driven by societal needs of specific consumer groups (e.g., low income consumers, retirees, etc.). Options for establishing a supplier of last resort are discussed in greater detail in the *Market Structure* chapter of this report.

Additionally, a mechanism needs to be developed to ensure that marketers and suppliers are financially solvent and technically reliable. This may require establishment of a state registration process. It is likely that during the transition process, extended rate caps and freezes will need to be maintained at least until reasonable evidence exists that market power concerns have been alleviated. Standards governing marketing and advertising practices should be established to prevent misleading or deceptive practices. Requirements for standardized billing formats should be considered to ensure sufficient information for consumer analysis. Additional protection measures will need to be developed to prevent the unauthorized switching of power suppliers ("shocking" as termed by the Virginia Citizen Consumers Council). Rules for customer deposit requirements, late payment charges, and service disconnection procedures must be established. Priority of claims on partial consumer payments among the distribution, transmission, and power supplier companies must be determined.

Many small users may lack the knowledge and sophistication necessary to make informed decisions when contracting for electric supplies. Therefore, it may be appropriate to establish consumer education and information programs if retail competition is deemed appropriate in Virginia. Such programs could be administered through utilities or public agencies and may require special funding mechanisms.

The above consumer protection measures may do little to protect the customers of low cost utilities subsequent to a transition period if prices increase as a result of restructuring. One possible measure for protecting such customers is to allow such customers to continue to purchase supplies at capped or embedded cost rates from their current utility over an extended transition period. Transition periods of this nature would also provide additional time for the development and maturation of competitive market structures, information technologies, consumer protection measures, and consumer education programs.

Conclusions

The ultimate impact of restructuring on Virginia consumers cannot be predicted with any degree of certainty. Several complex technical issues and significant market power concerns present obstacles that cannot be overcome quickly or inexpensively. If a truly competitive market structure can be developed, long-term economic efficiency benefits may be realized from a total system perspective. In the near term, competitive benefits may be offset by the recovery of stranded costs. In fact, the recovery of stranded costs over an abbreviated transition period could actually serve to increase rates over the short term.

Given Virginia's current embedded rates, the margin for error may be relatively small. It also appears to the Staff that certain regions of the state (especially Southwestern Virginia) which are served by low-cost utilities may be especially at risk of market prices that are higher than regulated rates. Additionally, it is likely that any competitive efficiency benefits would not be realized proportionately by all types of customers. The playing field for large and small consumers would not be level with respect to the availability of information and ability to react to that information, as well as the relative transaction cost burden. Finally, it is not clear that a competitive market would adequately satisfy traditionally important non-economic public interest goals such as universal and reliable service at generally uniform, reasonable and stable rates.

Many restructuring studies examining economic impacts predict lower average prices and greater economic development, but are driven by assumptions that fail to consider the multitude of factors that will ultimately make such determinations. However, several studies do suggest that a competitive market will produce both winners and losers among the states, and imply by logical extension that varying impacts could be expected on different regions within a state.

Because of the complexity of restructuring and the inability to know how such restructuring would impact consumers, it seems logical to Staff that any transition process should proceed in a deliberative and cautious manner. It is essential that at each stage of the process, appropriate consumer protection measures are considered and implemented.

³¹ John E. Kwoka, Jr., "Vertical Integration and Its Alternatives for Achieving Cost Efficiency in Electric Power," George Washington University, March, 1996.

³² To the extent new transmission facilities are required, additional right-of way condemnations would also be necessary potentially raising a certain amount of public ire.

³³ The rate shown for each state is the weighted-average 1996 revenue per kWh for investor owned electric utility operations within that state as reported by Edison Electric Institute ("EEI") in their Winter 1997 publication of Typical Residential, Commercial and Industrial Bills of Investor-Owned Utilities.

³⁴ Nebraska and Alaska are omitted since no data for these states are reported by EEI.

³⁵ It should be noted that average U.S. electricity prices generally compare favorably with prices of the nation's major international economic competitors as detailed on pages 5 and 6 of Appendix No. 2.

³⁶ As discussed in the Reliability Chapter, a major concern of the Staff is the ability of a competitive market to maintain a publicly acceptable level of generation capacity reserves. Due to the public importance of reliable electric service, it is likely that electric utilities with regulatory encouragement have traditionally maintained capacity reserves at levels above what a market might consider economically efficient. While load curves may flatten and peak loads decline in response to better pricing signals, there is little doubt that reserve levels will also decline in a competitive market. In response to potential competition, utilities are currently reducing targeted reserves from traditional levels of 18 to 20 percent to 12 to 14 percent.

³⁷ Matthew I. Kahal, "The CSEF Electric Deregulation Study: Economic Miracle or the Economists' Cold Fusion?," Electric Consumers' Alliance, December, 1996.

³⁸ Patrick J. Howie, "The Economic Impact of Electric Utility Deregulation," at 1.

³⁹ Energy Information Administration, "Electricity Prices in a Competitive Environment -- Marginal Cost Pricing of Generation Services and Financial Status of Electric Utilities -- A Preliminary Analysis through 2015," August, 1997, at 14.

⁴⁰ Hossein Haeri, M. Sami Khawaja and Matei Perussi, "Competitive Efficiency: A Ranking of U.S. Electric Utilities," Public Utilities Fortnightly, June 15, 1997, at 30-31.