Electric Power Generation in Maryland

This section describes the utilities, facilities, and institutions that currently make up the power generation and transmission system in Maryland. These descriptions reflect the restructuring of the electric utility industry in Maryland that went into effect in 2000.

Sales and Generation

Electric Generating Capacity in Maryland

There is currently more than 11,900 MW of generating capacity located in Maryland. This capacity is owned principally by the traditional utility companies; however, in response to electric industry restructuring, these utilities have either sold their power generation facilities or transferred these assets to affiliates. Conectiv and PEPCO, for instance, have announced the sale of their Maryland generating facilities to independent power producers who will continue to operate those units. Table 2-1 lists the generating capacity in the state by owner; plant locations are shown on Figure 2-1.

The power plant owners listed in Table 2-1 fall into four general categories:

- Affiliates of traditional utility companies, such as Allegheny Energy Supply, Conectiv Energy, Constellation Power Source, and Constellation Nuclear. These generating companies run the power plants that were originally built and operated by investor-owned utilities.

- Publicly owned electric companies, including the municipal systems of Berlin and Easton. These systems operate small units that are used to meet peak demand for the towns they serve. Southern Maryland Electric Cooperative (SMECO), a rural electric cooperative, also owns a generating unit.

- Independent power producers (IPPs) such as AES Enterprise, Mirant, Panda Energy, and Reliant Energy. These companies have either built or purchased generating capacity in Maryland, but have never been involved in transmission or distribution of power in the state. Operators of waste-to-energy facilities — BRESCO and Montgomery County’s Resource Recovery Facility — fall within the IPP category, as do the two landfill gas recovery projects, Gude Landfill and Brown Station Road Landfill.

- Self-generators, which include industrial facilities or institutions that operate their own power plants to economically meet their needs for electricity. These self-generators sell the power they may produce in excess of their own facility needs. The self-generators in Maryland include large industrial facilities — Bethlehem Steel, Domino Sugar, and Westvaco — as well as the cogeneration facility at the Eastern Correctional Institution.
### Table 2-1  Current Generating Capacity in Maryland

<table>
<thead>
<tr>
<th>Owner</th>
<th>Plant Name</th>
<th>Major Fuel Type</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES Enterprise</td>
<td>Warrior Run</td>
<td>Coal</td>
<td>180</td>
</tr>
<tr>
<td>Allegheny Energy Supply</td>
<td>R.P. Smith</td>
<td>Coal</td>
<td>114</td>
</tr>
<tr>
<td>Berlin</td>
<td>Berlin</td>
<td>Oil</td>
<td>8</td>
</tr>
<tr>
<td>Bethlehem Steel</td>
<td>Bethlehem Steel</td>
<td>Natural Gas/Blast Furnace Gas</td>
<td>169</td>
</tr>
<tr>
<td>BRESCO</td>
<td>BRESCO</td>
<td>Waste</td>
<td>57</td>
</tr>
<tr>
<td>Conectiv Energy</td>
<td>Vienna*</td>
<td>Oil</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>Crisfield</td>
<td>Oil</td>
<td>10</td>
</tr>
<tr>
<td>Constellation Nuclear</td>
<td>Calvert Cliffs</td>
<td>Nuclear</td>
<td>1,721</td>
</tr>
<tr>
<td>Constellation Power Source</td>
<td>Brandon Shores</td>
<td>Coal</td>
<td>1,298</td>
</tr>
<tr>
<td></td>
<td>C.P. Crane</td>
<td>Coal</td>
<td>397</td>
</tr>
<tr>
<td></td>
<td>Gould Street</td>
<td>Oil/Natural Gas</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>Notch Cliff</td>
<td>Natural Gas</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>Perryman</td>
<td>Oil/Natural Gas</td>
<td>348</td>
</tr>
<tr>
<td></td>
<td>Riverside</td>
<td>Oil/Natural Gas</td>
<td>251</td>
</tr>
<tr>
<td></td>
<td>H.A. Wagner</td>
<td>Coal/Oil/Natural Gas</td>
<td>1,011</td>
</tr>
<tr>
<td></td>
<td>Westport</td>
<td>Natural Gas</td>
<td>134</td>
</tr>
<tr>
<td>Easton Utilities</td>
<td>Philadelphia Road</td>
<td>Oil</td>
<td>68</td>
</tr>
<tr>
<td>Exelon Generation Co.</td>
<td>Conowingo</td>
<td>Hydroelectric</td>
<td>512</td>
</tr>
<tr>
<td>MD Dept. of Public Safety and Corrections</td>
<td>Eastern Correction Institution Cogeneration Facility</td>
<td>Wood</td>
<td>5</td>
</tr>
<tr>
<td>Mirant</td>
<td>Chalk Point</td>
<td>Coal/Natural Gas</td>
<td>2,350</td>
</tr>
<tr>
<td></td>
<td>Dickerson</td>
<td>Coal/Natural Gas</td>
<td>913</td>
</tr>
<tr>
<td></td>
<td>Morgantown</td>
<td>Coal</td>
<td>1,491</td>
</tr>
<tr>
<td>Montgomery County</td>
<td>Resource Recovery Facility</td>
<td>Waste</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Gude Landfill</td>
<td>Landfill Gas</td>
<td>3</td>
</tr>
<tr>
<td>Panda Energy</td>
<td>Brandywine</td>
<td>Natural Gas</td>
<td>230</td>
</tr>
<tr>
<td>Prince George’s County</td>
<td>Brown Station Road</td>
<td>Landfill Gas</td>
<td>2</td>
</tr>
<tr>
<td>Reliant Energy</td>
<td>Deep Creek Station</td>
<td>Hydroelectric</td>
<td>19</td>
</tr>
<tr>
<td>Southern Maryland Electric Cooperative</td>
<td>SMECO</td>
<td>Natural Gas</td>
<td>84</td>
</tr>
<tr>
<td>Tate &amp; Lyle</td>
<td>Domino Sugar</td>
<td>Oil/Natural Gas</td>
<td>10</td>
</tr>
<tr>
<td>Westvaco</td>
<td>Luke Mill</td>
<td>Coal</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>11,956</strong></td>
</tr>
</tbody>
</table>

* Conectiv has announced the sale of its Vienna Station to NRG Energy.
**Table 2-2  Proposed Generating Capacity Additions in Maryland**

<table>
<thead>
<tr>
<th>Owner</th>
<th>Plant Name</th>
<th>Major Fuel Type</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allen Family Foods</td>
<td>Hurlock Cogeneration Plant</td>
<td>Poultry Litter</td>
<td>4</td>
</tr>
<tr>
<td>Baltimore County/ ZAPCO Development Corp.</td>
<td>Eastern Sanitary Landfill</td>
<td>Landfill Gas</td>
<td>4</td>
</tr>
<tr>
<td>Duke Energy North America</td>
<td>Frederick Energy Facility</td>
<td>Natural Gas</td>
<td>620</td>
</tr>
<tr>
<td>Mirant</td>
<td>Dickerson Addition</td>
<td>Natural Gas</td>
<td>740</td>
</tr>
<tr>
<td>Old Dominion Electric Cooperative</td>
<td>Rock Springs</td>
<td>Natural Gas</td>
<td>1,100</td>
</tr>
<tr>
<td>Orion Power Holdings</td>
<td>Kelson Ridge</td>
<td>Natural Gas</td>
<td>1,650</td>
</tr>
<tr>
<td>Prince George’s County</td>
<td>Brown Station Road Landfill</td>
<td>Landfill Gas</td>
<td>4</td>
</tr>
<tr>
<td>University of Maryland College Park</td>
<td>Trigen – College Park</td>
<td>Natural Gas</td>
<td>27</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>3,830</strong></td>
</tr>
</tbody>
</table>

In addition to generating capacity in place, there are plans by numerous developers to add over 3,800 MW of new capacity at various locations. While most of these will be fueled by natural gas, one, the Hurlock Cogeneration Plant, will use poultry litter as the source of energy. Another small generating facility, the Brown Station Road project, represents an expansion of an existing plant that burns landfill gas to produce electricity and steam. Table 2-2 shows proposed capacity additions in Maryland.

**Electricity Distribution**

Four major utilities sell and deliver most of the electricity in Maryland. In addition, several publicly owned utilities serve small towns and rural areas of the state. The following paragraphs describe each of these distribution utilities.

**Investor-Owned Utilities**

**Allegheny Power** (AP), the electric distribution affiliate of Allegheny Energy, serves approximately 1.4 million customers in a 29,000-square-mile service territory with a population of 2.9 million. In Maryland, AP serves 209,000 customers in a 2,500-square-mile area. Industrial sales account for more than 50 percent of AP retail sales in Maryland, in large part due to the electricity requirements of Eastalco Aluminum Company. AP also serves three Maryland municipal electric distribution systems — the cities of Hagerstown, Thurmont, and Williamsport — at wholesale. The AP system peak was 7,423 MW during the summer of 1999. The peak demand of the company’s Maryland customers at that time was 1,648 MW.

**Baltimore Gas and Electric Company** (BGE), an affiliate of Constellation Energy, is a combination gas and electric utility serving the metropolitan Baltimore area. The electric service is provided to a 2,300-square-mile area with an estimated population of 2.6 million and more than one million customers. In 1999, BGE’s system peak was 6,383 MW.
Conectiv Power Delivery, an affiliate of Conectiv, is a combination gas and electric utility providing electric service to most of the Delmarva Peninsula and to the Atlantic City, New Jersey area. Conectiv’s Delmarva Power and Light division is an area covering 5,700 square miles with a population of 800,000, consisting of the entire state of Delaware; portions of Maryland’s nine Eastern Shore Counties; Cecil County and a portion of Harford County; and the two Virginia Eastern Shore Counties, Accomack and Northampton. The Delmarva division serves approximately 455,000 customers (residences and businesses), and its retail sales in Maryland account for 30% of the company’s total electric sales. In 1999, the system peak for Conectiv’s Delmarva division, which occurred during the summer, was 3,216 MW. The peak demand of Conectiv’s Maryland customers during that time was 1,025 MW. Most of Conectiv’s generating units are coal-fired and are located in Delaware.

**Potomac Electric Power Company** (PEPCO) provides service in metropolitan Washington, D.C., to more than 650,000 customers (479,000 Maryland customers) in a 640-square-mile area (575 square miles in Maryland) with a population of 1.9 million (approximately 1.4 million in Maryland). This service area includes the entire District of Columbia, and most of Prince George’s and Montgomery Counties in Maryland. PEPCO also sells electricity at wholesale to SMECO, which serves an area of 1,150 square miles in Calvert, Charles, St. Mary’s and a small portion of Prince George’s Counties in southern Maryland. PEPCO is unique among Maryland utilities in that it has no major industrial customers. In 1999, PEPCO’s system peak was 5,927 MW.

PEPCO and Conectiv have announced plans to merge.

**Publicly Owned Utilities**

Two types of publicly or member-owned utilities operate in Maryland — **municipal electric systems** and **rural electric cooperatives**. A municipal utility owns the local distribution facilities in a specific town or city,
generates electricity itself or buys wholesale power from another utility, and distributes it to local citizens. Rural cooperatives are customer-owned utilities, which were established during the 1930s to provide electricity to rural America. These cooperatives serve larger areas than do municipal utilities, are located in less populated portions of the State, and in some cases borrow most of their investment funds from the federal Rural Utilities Service.

Municipal systems in Maryland include those operated by the cities of Hagerstown, Thurmont and Williamsport, which buy their electricity from AP; the Town of Berlin, which buys most of its electricity from Conectiv and generates some electricity as well; and the Town of Easton, which is interconnected with Conectiv but has its own generating capacity. Rural electric cooperatives include SMECO, which owns one generating unit at PEPCO’s Chalk Point site; A&N and Choptank, which buy power from Conectiv; and Somerset, whose energy is supplied by the Allegheny Electric Cooperative in Pennsylvania. A&N and Somerset serve only a few hundred Maryland customers and operate mostly in neighboring states.

The electric distribution service areas of Maryland’s electric utilities are shown in Figure 2-2. Under restructuring, utilities provide distribution service within these areas, but consumers are able to shop for power from competitive suppliers.
Transmission and Power Pooling in Maryland

The Role of Transmission

Transmission facilities, consisting of high-voltage lines and transformers, play an integral role in providing electricity to Maryland consumers. Transmission serves at least four functions. First, the use of transmission enables generators to locate power plants in remote locations near inexpensive sources of fuel. For example, the high-voltage system allowed BGE, Conectiv, and PEPCO to import their ownership shares of the Keystone and Conemaugh coal units in western Pennsylvania; BGE to import its share of the Safe Harbor hydro units in central Pennsylvania; and Conectiv to import its share of the Peach Bottom and Salem nuclear units in central Pennsylvania and southern New Jersey, respectively. This function will change somewhat, since Conectiv and PEPCO are selling all or most of their generating capacity. The transmission system remains important as independent power marketers and other suppliers deliver the generation of the units formerly owned by PEPCO and Conectiv to serve Maryland consumers.

Another important function of transmission is to permit electricity providers to purchase power from others when that is less expensive than operating their own units. PEPCO is able to use the high-voltage system in western Maryland and western Pennsylvania to deliver its 20-year, 450 MW purchase from Ohio.
Edison, now a subsidiary of First Energy Corporation. BGE uses the high-voltage system in Maryland and Pennsylvania to purchase power from Pennsylvania Power and Light Company’s Susquehanna nuclear unit. The transmission system also enhances reliability by allowing access to available capacity resources from other generation owners in the event of an emergency. Finally, the transmission grid allows Maryland utilities to participate in spot energy markets, where price is set by matching supply and demand (see further discussion on page 12).

Figure 2-3 shows the high-voltage transmission grid in Maryland. The 500 kilovolt (kV) system is used by all Maryland transmission owners and by other PJM members in Pennsylvania and New Jersey. Figure 2-3 illustrates the connections between generating stations and load centers in and around Maryland. Constellation’s Calvert Cliffs nuclear plant is connected by two 500 kV lines to the Baltimore-Washington metropolitan area. PEPCO’s major generating facilities at Chalk Point, Dickerson, and Morgantown are connected to the Washington, D.C. metropolitan area through 230 kV lines. Conectiv’s load on the Eastern Shore is connected to its generation resources through 230 and 115 kV lines. Finally, AP’s system is connected to company facilities located in other states through the 500 kV and lower voltage lines from the AP systems in West Virginia and Pennsylvania.

The importance of the transmission system is underscored by the recognition that consumption of electricity in Maryland has historically exceeded the
amount of electricity generated in the state. For example, in 1996 Maryland consumers used about 63,000 gigawatt-hours (GWH; one GWH is equal to 1 million kilowatt-hours) and production of electricity in the state was 45.6 GWH. Net power brought into Maryland over the transmission system, therefore, was approximately 28 percent of the total annual Maryland electricity requirement.

**Transmission Organizations**

Maryland utilities have combined some of their operations to gain the efficiency and reliability benefits of inter- and intra-state coordination through membership in two organizations: Allegheny Energy Supply and the Pennsylvania-New Jersey-Maryland Interconnection (PJM). Allegheny Energy Supply operates as a single, large multi-state utility that integrates the operation of generating resources in several states, employing economic dispatch to schedule the output of its generating units to minimize the operating costs of the entire system. Under that approach, the company dispatches the lowest cost generating unit available to meet increments of load throughout the system. Under rules promulgated by the Federal Energy Regulatory Commission (FERC), as a transmission system owner Allegheny Energy Supply must also provide non-discriminatory access to its system at a single rate throughout the pool. (The FERC open access transmission orders requiring non-discriminatory transmission access are discussed later in this section.)

BGE, Conectiv, and PEPCO are members of PJM, which also includes many of the utilities in Pennsylvania, New Jersey, and Delaware. Pursuant to FERC’s open access transmission orders, PJM acts as an Independent System Operator (ISO), assuming responsibility for reliable operation of and efficient dispatch within the transmission grid. The ISO arrangements establish new governance procedures to open membership to different segments of the industry and assure that no one segment can dominate decisions of the ISO.

Under the old PJM arrangement, generating resources within PJM were operated under economic dispatch. As is the case for Allegheny (discussed above), PJM used hourly cost information on all generation within PJM and used this to schedule generation from the lowest cost unit available to meet increments of load. The central dispatch of PJM resources produced significant operating cost savings for member utilities and their customers over the years. Under the new PJM ISO agreement, the ISO administers a Pool Spot Energy Market (PX), instead of economic dispatch, to minimize overall operating costs. Under this approach, generating resources submit bids to the PX on a day-ahead basis. In each hour, the highest bid needed to serve loads becomes the market price and utilities purchasing energy from the PX at that hour pay that price. Similarly, all generating units selected to supply power in a given hour receive the market price established for that hour. A more complicated set of prices are paid whenever the transmission grid is congested. The PX prices under this approach should provide all member utilities with the proper economic incentives so that the operation of generating resources within the ISO is similar to that of the previous economic dispatch system.

The PJM ISO agreement also provides for members to achieve desired reliability levels at a lower cost using methods virtually identical to those in the original
PJM agreement. Such benefits in PJM have been realized through long- and short-term regional planning for the adequacy of reserves. Reserves required for the ISO as a whole are determined by assuring that generation resources are sufficient to satisfy demand on all but one day in 10 years. Once the appropriate level of reserves is computed, the reserves are allocated among PJM members on the basis of members’ load shapes and the reliability of their generating units. During the past few years, under this procedure BGE and the Delaware, Maryland, and Virginia portions of Conectiv used 18 percent reserve margins for planning purposes, while PEPCO used a 16 percent reserve margin. The reserve requirements of the PJM ISO are applicable only to “Load Serving Entities”. These reserve requirements may not be applicable to Conectiv and PEPCO, since they have announced the sale of all or most of their generating facilities.

Open Access Transmission

In 1996 and 1997, the FERC issued Open Access Transmission Rules requiring all utilities under their jurisdiction to file open access transmission tariffs or pricing in order to make their transmission systems available to all transmission customers, including the utilities’ own use of the grid, on a non-discriminatory basis.

Under the open access orders, the FERC required utilities to file non-discriminatory, open access transmission tariffs, to establish an open access same-time information system (OASIS) on the Internet to advise customers of transmission availability, to provide ancillary services of the kind necessary to effectuate transactions over the grid, and, finally, to expand the capacity of the grid if expansion is required to meet a request for transmission service. Whether the cost of grid expansion was to be assessed against the customer seeking transmission service or allocated among all users of the grid was an issue that would be decided when the transmission owner sought to increase its transmission rates to recover the cost of the expansion.

Regional Transmission Organizations (RTOs)

In December 1999, the FERC issued Order No. 2000, its final rule on Regional Transmission Organizations (RTOs). These are independent organizations charged with operating the grid over extended geographic areas and assuming responsibility for tariff administration, reliability, and to assure non-discriminatory access to the transmission grid. FERC indicated that such organizations were necessary to extend the scope of the open access transmission rules and eliminate the remaining vestiges of discrimination, and FERC urged transmission owners to join such organizations. In its order, the Commission identified two major reasons that RTOs are needed. First, the Commission believed that these organizations will reduce operational and engineering inefficiencies present in the operation, planning, and expansion of the transmission grid. These inefficiencies may adversely affect reliability, impede the growth of competitive bulk power markets, make it difficult to manage congestion and parallel path flows, and make it difficult to accurately determine available transfer capability of the grid. The Commission also found that the existing system created continuing opportunities for discrimination or the perception of discrimination where transmission owners are seen to favor the use of the grid by their own power marketing subsidiaries. Among other things, RTOs would
improve efficiencies in grid management, improve reliability, remove opportunities for discriminatory transmission practices, improve market performance, and facilitate lighter-handed governmental regulation.

In its order, the Commission established four minimum characteristics and functions that a transmission entity must satisfy to be considered an RTO:

- independence;
- appropriate scope and regional configuration;
- sufficient operational authority; and
- responsibility for short-term reliability.

In its order, the Commission found that RTOs must at a minimum perform the following eight functions:

- tariff administration and design;
- congestion management;
- management of parallel flows;
- provision of ancillary services;
- maintenance of an OASIS and the computation of total and available transfer capability;
- transmission expansion and planning;
- market monitoring; and
- interregional coordination.

Transmission Reliability Concerns

The reliability of the transmission grid has been achieved, historically, by the voluntary compliance of transmission owners with the standards promulgated by the North American Electric Reliability Council (NERC) and the regional reliability councils throughout the United States. The PJM reliability standards are governed by the Mid-Atlantic Area Council (MAAC), which is essentially identical to PJM in terms of geographical boundaries. Since its founding in 1968, NERC has relied entirely upon voluntary efforts to achieve compliance with its standards. In the historical regulated environment, vertically integrated utilities cooperated closely with one another to manage flows on the grid, and voluntary compliance with reliability standards worked well. In the more competitive environment that reflects today’s bulk power markets, users and operators of the system are now competitors with little incentive to cooperate to assure compliance with reliability standards.

For this reason, the restructuring bills in the Congress include provisions that would grant FERC oversight authority of an organization such as the Electric Reliability Organization (ERO). Such an organization may submit to the Commission any reliability standard that it proposes to be made mandatory. NERC is remaking itself into the North American Electric Reliability Organization to attain ERO status once such legislation is enacted. The Gorton bill, S2071, has passed the Senate committee, and provides for reliability provisions of this type.
Another transmission reliability concern that is more controversial relates to proposals that would preempt local state control of the siting and approval of new transmission facilities. The restructuring bill sponsored by Senator Murkowski, S2098, includes a provision that would confer on the FERC the right to issue certificates of convenience and necessity to construct transmission facilities if those are required under a transmission expansion process approved by the Commission. Such federal preemption would proceed if the Commission finds that a state commission has withheld approval.

Electric Industry Restructuring

Retail Restructuring in Maryland

For many decades Maryland households and businesses have purchased electric service exclusively from their local utility company. Each utility served a defined geographic service territory, with both the obligation to serve and the right to be the exclusive provider in that area of retail electric service. In exchange for this monopoly status, the Public Service Commission (PSC) regulated the utility’s rates and terms of service. The PSC also has regulated or supervised other aspects of electric utility operation, including reliability, quality of service and integrated resource planning.

Regulated Monopolies

The regulated monopoly paradigm for electric service in Maryland and other states was premised on the belief that electric power was a “natural monopoly.” That is, because of scale economies in the production of power, and the potential inefficiencies associated with duplication of the network facilities, competition for electric service was deemed neither feasible nor desirable. This meant
that the public interest would be best served by granting electric utilities monopoly franchises, and in return regulating their rates and terms of service to ensure that the resultant monopoly status was not abused.

The monopoly paradigm in Maryland and elsewhere also fostered a vertically integrated industry structure. That is, electric service consists of three major functions or categories of products: 1) distribution and customer service; 2) transmission of bulk power; and 3) generation (sometimes referred to as “supply”). Approximately 90 percent of retail electric service in Maryland has traditionally been supplied by the four vertically integrated, investor-owned utilities described earlier in this section. In addition to the economies of scale, it was believed that the vertical integration of these three functions within a single utility provided additional efficiencies, thereby benefitting consumers.

Since the late 1980s, a growing number of experts and policymakers began to question the assumption that electric service - or at least electric generation - is a natural monopoly. The combination of reductions in capital requirements for new power plants and the growth of an independent power industry in the 1980s supported the notion that competition in generation was feasible and could be more efficient than a regulated monopoly structure. While generation is only one aspect of electric service, it is believed to represent about 60 percent (or more) of the total cost of providing electric service.

Competition in generation, however, could not take place without first overcoming a major institutional impediment — access to the transmission grid. A new entrant to the market can construct a power plant and generate power, but realistically it could not construct its own transmission grid to reach potential customers, nor would multiple transmission grids be desirable. Two major federal actions during the 1990s helped to overcome the transmission access problem. The 1992 Energy Policy Act allowed wholesale customers to apply to FERC for transmission access, and in 1996 FERC expanded this access concept further by requiring all jurisdictional utilities to provide wholesale open access on nondiscriminatory terms (Order Nos. 888 and 889). To the extent successful, open access was intended to ensure that at the wholesale level a utility could no longer use control over its transmission facilities as a means of limiting competition in generation.

Federal and State Activities

Progress at the federal level in achieving wholesale open access encouraged a number of states to explore introducing competition at the retail level. Not surprisingly, the first states to do so were those with the highest retail rates - California, New York, and the New England states. Beginning in 1999, the Mid-Atlantic states (Pennsylvania, New Jersey, the District of Columbia, Maryland and Delaware) either approved or began a phase-in of retail electric competition. A number of other states, in particular Arkansas, Illinois, Michigan, Montana, Nevada, Ohio, Oklahoma, Texas, and Virginia, have enacted legislation providing for retail competition, although in most of these states, retail competition has not yet been implemented.

With federal open access and the passage of retail competition legislation in California and certain Northeast states, in 1996, the PSC opened a generic docket to determine whether competitive restructuring would be appropriate for Maryland (Case No. 8738). After receiving extensive comments from the
parties and a Staff report, in December 1997 the PSC issued an order establishing a framework for introducing retail competition. The PSC recognized that competitive restructuring would require the resolution of numerous policy issues and technical implementation details. The PSC therefore established several Round Tables and working groups to address restructuring implementation issues that are generic to all Maryland electric utilities. The PSC also recognized that certain issues are inherently utility-specific and could be resolved only in litigated proceedings. It therefore docketed a separate case for each of the four utilities to investigate rate unbundling and stranded cost recovery and to develop a transition plan tailored to each utility.

After the issuance of the PSC’s framework, many observers believed that the restructuring of Maryland’s electric industry required new legislation. During 1998, a legislative Task Force was established to study restructuring issues and to make recommendations. The efforts of the General Assembly culminated in the Electric Customer Choice and Competition Act of 1999 (the “Restructuring Act”) which Governor Glendening signed into law in April 1999. Companion legislation also was enacted at that time reforming utility-related taxes to be compatible with the new industry structure.

Restructuring Legislation in Maryland

Maryland’s Restructuring Act is generally consistent with the PSC’s December 1997 framework for competition, but it addresses in some detail a number of policy issues which the PSC had assigned to Round Tables or had not otherwise resolved. The Act assigns the PSC considerable responsibility and authority to implement many of the Act’s provisions.

Both the Act and the PSC framework recognize that electric utilities historically have provided a combination of services to their franchise customers as a single “bundled” product. This bundled product includes both potentially competitive services (power generation) and the inherently monopoly services (distribution and transmission). Consequently, competitive restructuring requires an explicit “unbundling” of each of the competitive services from those which will remain regulated monopoly services so that consumers can “shop” or select the provider of the competitive service. Therefore, the utility must reorganize to separate its generation assets and business (which account for most of its total cost) from its “delivery service” business. Additionally, the utility must develop, subject to PSC approval, unbundled tariffs that specify separate charges for each of these different services. Once the rate and corporate unbundling are accomplished, competition may begin. Customers may purchase generation supply from any qualified supplier in the competitive market, but they will continue to purchase delivery service from their local utility, which will be regulated by the Maryland PSC.

In addition to unbundling and deregulating generation, the Restructuring Act incorporates the following key provisions:

- **Access to the competitive market for generation is scheduled to begin July 1, 2000 for residential customers and January 1, 2001 for nonresidential customers.**

- **Utilities are permitted to charge their customers transition fees to cover the above-market costs of their uneconomic generation assets (or purchase power contracts). The magnitude and recovery mechanism of these “stranded costs” are to be determined by the PSC.**
• To protect consumers from market uncertainties during a transition to competition, rates are capped for four years. Customers during this period may continue to purchase generation supply from their local utility at capped rates, referred to as “standard offer service.” Moreover, for residential customers during these four years the capped rates must be 3 to 7.5 percent lower than the rates they paid prior to deregulation. These protections help to ensure that customers are not harmed by deregulation for at least four years.

• A Universal Service program is established and funded at $34 million per year to assist low income customers with their electric bills.

• A Certificate of Public Convenience and Necessity (CPCN) continues to be required for each new generation and transmission project sited in Maryland.

• As discussed in more detail below, the Act contains a number of provisions concerning conservation programs, renewable resource development and other issues relating to environmental protection.

During 1999, each of the four major electric utilities reached a settlement in its respective restructuring transition case. All four settlements meet the requirements of the Restructuring Act and in certain respects provide additional benefits. The settlements accelerate the competition access date to July 1, 2000 for all Maryland customers of these four utilities. Capped rates and standard offer service for residential customers are extended from 2004 (required under the Act) to 2006 and 2008 for BGE and Allegheny customers, respectively.

The four Maryland utilities have taken different approaches to corporate restructuring. PEPCO and Conectiv are selling most of their generation assets to non-affiliated competitive generation companies (Mirant and NRG, respectively). BGE and Allegheny have retained their generation within the existing holding company structure, transferring those assets to their unregulated corporate affiliates. This will allow Constellation (BGE’s parent company) and Allegheny to be major participants in the Mid-Atlantic unregulated generation market.

Retail electric markets are expected to develop very slowly, particularly for residential and small commercial customers. In most states where competition has been introduced, only a very small percentage of customers have selected competitive suppliers, with most customers taking standard offer service from their local utility. Due to high costs and price spikes plaguing wholesale markets, even large business customers have not yet experienced the large savings from competition that some analysts had predicted.

Part of the current problem in unregulated electric markets stems from very tight supplies of generating capacity. Demand for power has been growing steadily in recent years, while installed generating capacity in most markets has lagged behind. However, within the past year, the introduction of competition (and the prevailing high prices) has resulted in numerous proposals to construct merchant plants to serve the market. As this capacity enters service during the next two to three years, the expanding supply should help moderate prices in generation markets. As this occurs, “shopping for power” will become increasingly attractive to consumers and retail markets can be expected to expand.
Retail Restructuring and Load Forecasting

Since the early 1980s and through the 1990s, PPRP has conducted independent long range forecasts of electric energy sales and system peak demands for each of the four investor-owned utilities operating in Maryland. These forecasts were relied upon for the “need” phase of certification proceedings and served to augment the analysis conducted by the utilities themselves regarding the adequacy of generating capacity and power supplies to serve the demand for electric power in Maryland. Following the enactment of the Electric Customer Choice and Competition Act of 1999, PPRP recognized that the historical approach used to monitor and assess the adequacy of generation capacity to serve Maryland’s electric power requirements needed to be modified to accommodate the new competitive industry structure. In particular, forecasting energy sales and peak demands for the individual utilities operating in the State was recognized as no longer an appropriate methodology given the changes brought about by the Act. To help ensure the adequacy of generation resources as well as available transmission capacity, PPRP is in the process of developing a statewide forecast of electric energy demand and peak loads.

The statewide forecast being developed will rely on an econometric approach similar to the general approach historically relied upon to forecast energy sales and peak demands for the individual utilities. Econometric equations will be developed for energy demands for the residential, commercial, and industrial sectors. The econometric equations will relate changes in economic, demographic, and other factors to changes in the demand for electric energy by each major customer segment. For example, the residential demand for electric energy (on a per-customer basis) will be related to changes in real (inflation-adjusted) income and prices, weather, the saturation of electric space conditioning appliances (air conditioning and electric heating), and other factors as may be determined to be appropriate (e.g., household size, the price of alternative fuels). Similar equations will be developed for the commercial and industrial customer classes employing those factors that affect energy usage in those sectors.

Total energy demand for the state will be projected for a 10-year period and allocated to the six regions in the state based on projected differential growth in such factors as income, population, and employment. (The six regions, determined by Maryland Department of Planning, are the Baltimore region, the suburban Washington region, Western Maryland, Southern Maryland, and the upper and lower Eastern Shore.) Peak demand (summer and winter) for each of the six regions within the state will also be projected. The regional peak demand projections will provide important information regarding the adequacy of generation resources as well as the adequacy of the transmission system. The forecasted peaks and energy demand will also provide valuable information to potential developers of generation projects within the state by identifying those regions where additional power supply resources will be needed.
Demand-side Management Under Restructuring

During the 1980s and most of the 1990s, Maryland utilities were actively engaged in demand-side management (DSM) programs as a means of deferring power plant construction and meeting growing customer demands. These programs have been very successful in reducing power plant needs in Maryland. The Maryland utilities estimate that by 1997 DSM was meeting approximately 10 percent of their total peak demands. At that time, they further estimated that over the ensuing 10 years (i.e., 1997-2007), increased load savings from existing and planned DSM programs could meet nearly one-third of the projected growth in peak demand.

Given expectations of competitive restructuring, utilities in the late 1990s began to phase out their conservation programs, although the existing load management programs largely remain in place. The principal purpose of the utility-sponsored conservation programs is to reduce the need for generation resources. However, under restructuring, utilities are exiting the generation business, selling their power plants to third parties or transferring them to unregulated affiliates.

The appropriate role of DSM in a restructured industry has been extensively debated as part of Maryland’s restructuring process. The PSC convened a DSM Working Group, but the participants did not reach consensus on most of the key issues. Most parties do agree that conservation programs need not be sponsored and undertaken by utilities but that the existing load management programs largely remain in place. The principal purpose of the utility-sponsored conservation programs is to reduce the need for generation resources. However, under restructuring, utilities are exiting the generation business, selling their power plants to third parties or transferring them to unregulated affiliates.

The Electric Customer Choice and Competition Act delegates oversight responsibility for conservation programs to the PSC, while specifically requiring that the introduction of retail competition “not adversely impact the continuation of cost effective energy conservation and efficiency programs.” To that end, the PSC in conjunction with the Maryland Energy Administration (MEA) must submit a report to the General Assembly identifying the status of such programs and recommending a funding level. In evaluating programs for funding, the PSC and MEA are required to consider impacts of each conservation program on employment, the environment, rates, and cost effectiveness.

The 1999 settlements reached in the utility-specific restructuring cases also address energy efficiency programs. Both the BGE and Potomac Edison settle-
ments, as approved by the PSC, include a provision establishing a Public Benefits Fund (PBF). The PBF permits a special surcharge of up to 1 mill per kWh (about $1 per month for the average residential customer) applicable to residential customers in order to fund cost-effective programs for energy efficiency, renewable resources, and aggregation technical assistance. The programs and specific arrangements for these two PBFs have not yet been defined. Moreover, the Maryland Energy Administration and PPRP have advocated that energy efficiency programs should be administered on a state-wide basis rather than on a utility-by-utility basis. A statewide program, if approved by the PSC and the General Assembly, would likely supersede the utility-specific PBFs created in the restructuring settlements.

As mentioned, the utilities for the present are continuing their load management programs. These programs have been well received by customers and have provided significant electric bill savings. Nonetheless, questions remain whether and how these load management programs can continue in a deregulated electric supply market. Certain types of load management should be able to easily survive the transition to competition. For example, competitive suppliers should be able to provide their large business customers with curtailable and/or time-of-use electric service (although the pricing and terms of service may differ from those prevailing under regulation). Utility appliance cycle programs, however, may not be feasible in a deregulated market and may have natural monopoly characteristics.

Utilities in Maryland are able to continue their load management programs, providing participating customers with bill credits or discounts, because the utility enjoys a corresponding benefit from PJM. Specifically, the utilities continue to operate as Load Serving Entities (LSE) within the PJM ISO. As such, they are subject to the installed capacity (ICAP) requirement, imposed by PJM, and they participate in the PJM installed capacity market. Since the ICAP requirement is based on the utility’s peak demand, the load management programs provide a capacity savings benefit to the utility. That is, PJM currently recognizes the peak load savings attributes of the programs and adjusts ICAP requirements accordingly.

The future of the utility load management programs, however, is uncertain. Proposals have been made by certain PJM stakeholders to terminate the current ICAP requirement as being unnecessary. If this occurs, then the benefits to Maryland utilities of the load management programs may be reduced or even eliminated. This could reduce their incentive to continue the programs.

**Maryland’s Protection from a California-Style Energy Crisis**

The electric power crisis that developed in California in 2000, following implementation of electric utility industry restructuring in early 1998, has raised questions regarding Maryland’s potential exposure to a similar crisis. California’s problems have included power supply shortages culminating in rolling blackouts in portions of the state, more than three-fold increases in some customers’ power bills, and serious financial difficulties for the state’s investor-owned utilities.
Four important factors differentiate Maryland from California:

- **Maryland, unlike California, did not mandate divestiture of generating assets.** In California, the utilities were required to divest themselves of most generating assets, with power generated from the undivested assets required to be sold into the newly formed California Power Exchange (PX). The utilities’ power supply obligations to satisfy Standard Offer Service then had to be met through short-term purchases from the PX. In Maryland, BGE and Allegheny Power have transferred their assets to affiliates; PEPCO and Conectiv have voluntarily divested generation assets but have entered into long-term power supply (buy-back) arrangements at reasonable rates from the purchasers of the assets. The continued ownership of generation (BGE and Allegheny) and the contractual purchase arrangements (PEPCO and Conectiv) insulate the utilities from unpredictable market fluctuations during the four to eight years of transition into a competitive electricity market.

- **The PJM Interconnection, which has operated for decades as a regional power pool and within which the Maryland utilities operate, maintains a reserve capacity obligation to help ensure system reliability and adequacy of generation capability to serve the region. The newly formed California Independent System Operator does not maintain a reserve obligation but rather operates a reserve market.**

- **Significant growth in power demands in California, combined with California’s failure to expand generating capacity for the past decade, has contributed importantly to the crisis in California. The current reserve margin in the PJM is satisfactory, and planned capacity additions over the next three years will dramatically increase the reserve margin by the summer of 2004 to a level well in excess of what is needed to meet reliability and power supply requirements.**

- **California’s generating resource mix includes a substantial hydroelectric component.** Drought conditions prevailing in 2000 and extending into 2001 have served to substantially reduce the amount of energy available from those resources, located predominantly in California and the Pacific Northwest. California typically relies on hydroelectric power for between 15 and 20 percent of its energy requirements, with the remainder served principally by units fueled with natural gas. In contrast, approximately 90 percent of Maryland’s electricity requirements are served from a combination of coal and nuclear resources, with hydroelectric power comprising less than 2 percent of Maryland’s usage. The prevailing drought conditions in California, combined with high natural gas prices, have contributed to energy shortages and increased generating costs in California. Maryland’s exposure to these conditions, however, is negligible due to the state’s generation resource mix.

The combination of PJM effectiveness, increasing power supplies in the region, generating mix considerations, and physical generation assets plus long-term power supply contracts, assure rate stability in Maryland and the adequacy of supply for the period extending through at least the end of the four- to eight-year transition.
Restructuring and the Certificate of Public Convenience and Necessity (CPCN)

Competitive restructuring has changed the approach to construction of new power plants in Maryland in important ways. In the decade prior to restructuring, most new generating capacity in Maryland was constructed by utilities at their existing power plant sites. (Two notable exceptions are the AES Warrior Run plant near Cumberland and the Panda-Brandywine plant in Prince George’s County.) Restructuring has, for all practical purposes, ended regulated utility power plant construction, but it has encouraged the development of non-utility capacity. Most of the post-restructuring new capacity is in the form of very large merchant power plants, constructed to serve the deregulated wholesale and retail markets in the Mid-Atlantic region. A much smaller amount of new capacity (but consisting of numerous projects) takes the form of self-generation or cogeneration projects, which are installed within a customer’s facility.

An important issue in the restructuring debate was whether the existing process for granting a CPCN should be retained for new power plants in a deregulated market. If so, should the PSC jurisdiction over certification continue? Opponents argued that the CPCN framework is no longer needed and is a relic of a regulated industry. Those favoring continuation of the CPCN pointed out that the comprehensive and coordinated review, which was required under the CPCN framework, was necessary to protect Maryland’s environment and local communities.

The Customer Electric Choice and Competition Act resolved the debate over the power plant CPCN requirement. The Act retains this requirement, including PSC jurisdiction, with one important change. It deletes the requirement that the Commission determine whether the proposed plant is “needed” to meet present and/or forecasted power demands. This “need” review is considered unnecessary in a deregulated market because merchant plants are constructed to serve the entire regional market, not just Maryland or a specific distribution utility service area. Moreover, unlike the situation under regulation, an unregulated competitive entity constructing a merchant plant has no ability to impose on customers the costs of excess or uneconomic capacity. The owners of merchant plants can charge customers no more than the prevailing market price.

The “need for power” requirement under the Act, however, is retained in two circumstances. Transmission facilities which require a CPCN requirement remain subject to a need for power review. A power plant is also subject to need for power review if the plant developer seeks to use the power of condemnation in connection with the project.