7. SOCIAL AND ECONOMIC CONSIDERATIONS

During the several years it takes to build a modern power plant, construction activities affect local land use, businesses, housing, public services, and visual character (aesthetics). Perturbations of this sort are felt particularly keenly in rural areas unaccustomed to industrial impacts. Once construction crews depart, the predominant impact changes: aside from air and water quality considerations mentioned earlier, the plant generates substantial local tax revenues.

A. Direct Land Use

Land owned by Maryland utilities and committed to existing or proposed generating sites is shown in Table 7.1. The pole-miles of transmission lines and approximate acreage (including easements) of transmission corridors (through 1974) appear in Table 7.2. Totaling these tables shows that 53,086 acres are dedicated to existing and proposed generation and transmission: this is approximately 0.8% of the total land area in Maryland. In addition, the Power Plant Siting Program plans to acquire about 7,000 acres of potential plant sites over the next ten years as part of its Site Acquisition Program (cf. Chapter 3). Thus, by 1985, the generation and transmission of electric power will use about 0.9% of the State's total land, exclusive of related mining, fuel processing, and ash disposal. Land requirements for ash disposal are shown in Table 7.3.

Land used for a power plant or a transmission line need not be exclusively devoted to these functions. Recreation is frequently a compatible secondary use (1-3). For example, power plants situated on large tracts, and particularly those with extensive shorelines, ordinarily occupy only a portion of the site. Land/water interfaces are attractive for recreational activity, and utility companies throughout the United States have voluntarily offered portions of their plant sites for public recreational use. Picnicking, camping, swimming, boating, fishing, golf, hiking, and wildlife management have for many years been pursued on utility properties in other states (1-3). Agriculture is another possible secondary land use for power plant sites. A preliminary investigation of the Stillpond Neck site in Kent County concluded that crop farming and dairy farming would be compatible with areas adjacent to this proposed nuclear power plant site (5). Co-locating an advanced wastewater treatment (AWT) plant and power plant, as has been discussed for the Dickerson plant enlargement, can convey several advantages. These include (1) sharing of existing rail tracks and switching equipment; (2) the use of treated effluent from the AWT as a

TABLE 7.1

UTILITY-OWNED LAND SET ASIDE FOR EXISTING AND PROPOSED POWER PLANTS IN MARYLAND

Utility and Plant	Acres of Existing Plant Sites	Acres of Proposed Plant Sites
Baltimore Gas and Electric Co.		
Calvert Cliffs	1,140	
Gould Street, Wagner, Riverside, Crane, Notch Cliff	443	
Perryman		708
Brandon Shores		375
Conowingo Power Company		
Conowingo Dam	7,510*	
Canal Site		680
Potomac Electric Power Co.		
Dickerson	1,003.13	
Morgantown	426.83	
Chalk Point	1,148.79	
Douglas Point		1,440
Potomac Edison Company		
Point of Rocks		829
Black Oak		1,395
Southern Md. Electric Cooperative		
St. Mary's County		300
Easton Utilities Commission		
City of Easton		32
Delmarva Power and Light		
Vienna	296	
Maryland Power Plant Siting Program		
Elms		1,001
TOTALS:	11,967.75	6,760

*Includes dam and associated reservoirs

Sources: Public Service Commission of Maryland, 1975 Ten-Year Plan; J. Reynolds, Baltimore Gas and Electric Co.; Pat Foltz, PEPCO; A. DiZebba, Philadelphia Electric Co. for Conowingo Dam; E. Hobbs, Delmarva Power and Light Co.; K. Perkins, Maryland Department of Natural Resources, Power Plant Siting Program.

TABLE 7.2

POLE MILES OF TRANSMISSION LINES AND UTILITY-OWNED ACREAGE FOR EXISTING AND PROPOSED TRANSMISSION CORRIDORS IN MARYLAND
(as of December 31, 1974)

Utility	POLE MILES — Line Voltages: 500 kv	230 kv	133 kv	115 kv	69 kv	Existing Corridors (Acres)	Proposed Corridors (Acres)
BG&E	195.95	187.99 91.61[d]	15.30 155.74[c]	333.15		9,620	1,198.30[a]
PEPCO	(future)	329.97		26.38		5,234	763
Conowingo	24.06	1.7* 18.0 (app.)	2.1**			925	157.5
Susquehanna	24.0 7.0	15.0 25.0	4.5			930 267[b]	no new acreage
Delmarva		4.0	72.0		364.0	6,260[b]	
Pot. Edison	90.37	58.34	253.12			6,200	
Southern Md.					230.8	2,798[b]	
TOTALS (Existing pole miles and acreage):	334.38	597.0	347.02	359.53	594.8	32,234	2,118.8

Sources: J. Reynolds, BG&E; Pat Foltz, PEPCO; R. Bryson, Conowingo Power Co; A. DiZebba, Philadelphia Electric Company; O. L. Wallace, Allegheny Power Company; Southern Maryland, Electric Cooperative personnel.

*220 kv **132 kv

[a] Land held for future transmission either on existing rights of way or newly acquired

[b] Easements granted by local jurisdictions, not utility-owned

[c] 19.9% or 31.04 miles to be underground

[d] 9.1% or 8.41 miles to be underground

TABLE 7.3
ASH PRODUCTION FROM 1972
OPERATIONS OF MARYLAND POWER PLANTS*

Generating Station (Utility)	Fly Ash Collected[a] (1000 tons)	Bottom Ash Collected[a] (1000 tons)	Paid Disposal of Fly and Bottom Ash (1000 tons)	Land Fill Disposal of Fly and Bottom Ash (1000 tons)	Amount of Ash Sold[b] (1000 tons)
Morgantown (PEPCO)	78.3	8.7	87.0	0	0
Wagner (BG&E)	113.6	2.1	107.7	72	8
Chalk Pt. (PEPCO)	144.3	16.0	160.3	0	0
Dickerson (PEPCO)	150.4	16.7	167.1	0	0
Crane, C.P. (BG&E)	3.2	6.2	3.2	0	6.2
Riverside (BG&E)	-	-	.017	0	0
Vienna (DELMARVA)	3.0	1	0	4	0
Westport (BG&E)	0	0	0	0	0
Gould St. (BG&E)	-	-	.029	0	0
R. P. Smith (APSCO)	-	-	32.1	0	0
Mt. Storm (VEPCO)	352.0	100.0	452.0	0	0
Benning Rd. (PEPCO)	17.0	2.0	19.0	0	0
Potomac River (PEPCO)	81.2	9.0	90.2	0	0
Possum Pt. (VEPCO)	0	0.1	0.1	0	0
Buzzard Pt. (PEPCO)	.0008	0.0	.00008	0	0

*Source: Reference 4.

[a]If compacted to a density of 80 lb/cubic foot, the total ash produced in one year (1.1 million tons) would cover 21.1 acres to a depth of 30 ft.

[b]Typical selling price: $1.00-$1.50/ton.

source of makeup water for the plant's cooling towers; (3) the availability of standby electrical power for the AWT to ensure its fail-safe operation; and (4) the use of the plant's boilers to burn sludge and solid waste from the AWT (7).

Multi-purpose use of plant sites in Maryland is being practiced at Calvert Cliffs and is incorporated into plans for the proposed Douglas Point. At Calvert Cliffs, settling ponds with a total area of 100 acres have been constructed for the disposal of dredge spoils. After stabilization, ninety of these acres will be used for agriculture, and ten acres will be planted with food grains for waterfowl. The Visitor's Center at Calvert Cliffs (a restored tobacco barn) and its displays have attracted 120,000 persons in two years. The construction of nature trails is also envisioned. The possibility of industrial multipurpose use of the site has been a concern voiced in Calvert County. That is, the entire 1,000-acre site is zoned industrial, while only 10% of it is occupied by the power plant. At this writing there have been no steps taken towards major industrial or commercial development at this site (11).

PEPCO is proposing that 130 acres of the 1,440-acre Douglas Point site be devoted to a buffer zone around the plant (river-edge, road, and boundary screening), 870 acres remain in an undisturbed state for wildlife preservation and nature study, and that 150 acres be managed for public recreation and education (Figure 7.1) (8).

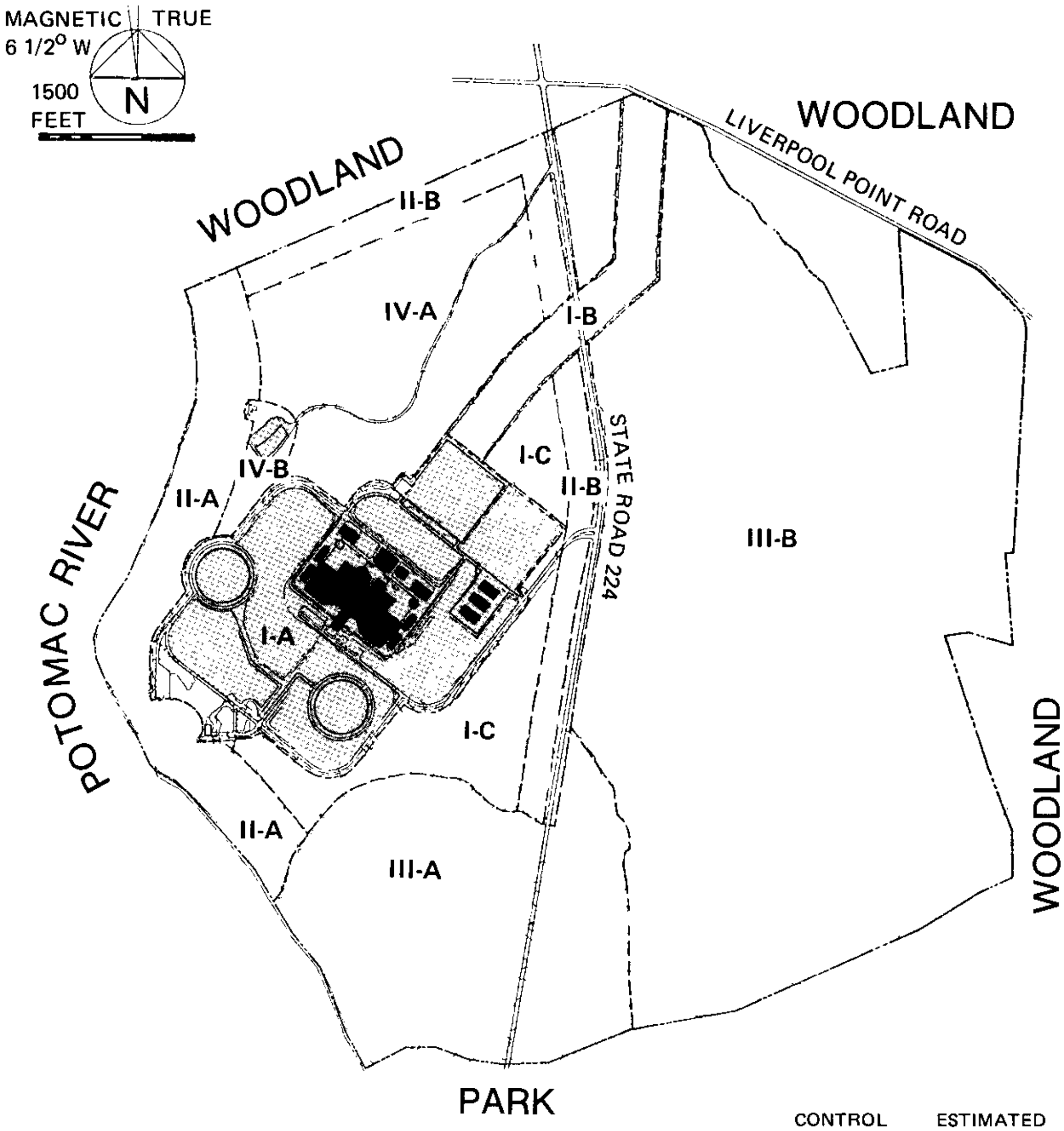
At the Conowingo Dam, Susquehanna Power Company constructed public recreation facilities and Visitor Information facilities. The Company estimates the value of the land held for fishing, wildlife, and recreation at the Dam site at $2.72 million (9).

Joint uses of transmission rights-of-way include parks, hiking-, biking-, and horse trails, green belts and wildlife management (2, 3). BG&E allows use of rights-of-way by adjacent property owners for a variety of recreational, residential, commercial and industrial uses (10). Agriculture, but not recreational activities, will be permitted on the 1,310 acres of transmission corridors associated with Calvert Cliffs (11). Establishment of transmission corridors creates habitats for some species although it wipes out cover needed by others. In southern Maryland forests, for example, tree clearing results in the loss of about one squirrel/acre (assuming surrounding areas are at maximum carrying capacity); but the resulting edge areas and openings are favorable for deer, rabbit, and quail (3).

Community use of plant sites and transmission rights-of-way has been satisfactory where there is cooperation between area residents and the utility involved.

FIGURE 7.1

LAYOUT OF THE PROPOSED DOUGLAS POINT PLANT, SHOWING PROVISIONS FOR RECREATION AND WILDLIFE HABITATS



	USE ZONES	CONTROL ZONE (S)	ESTIMATED ACREAGE
I	POWER GENERATING/TRANSMISSION		290
	A. GENERATING STATION	1,2	200
	B. TRANSMISSION RIGHT-OF-WAY ON-SITE	3	30
	C. UNDEVELOPED RESERVE	3	60
II	PERIMETER BUFFER		130
	A. RIVEREDGE SCREENING	3	50
	B. ROAD & NORTH BOUNDARY SCREENING	3	80
III	PROTECTED WILDLIFE		870
	A. IMPROVED MARSH HABITAT	3	180
	B. UNDISTURBED LAND	3	690
IV	PUBLIC USE		150
	A. RECREATION	3	140
	B. ECOLOGICAL/EDUCATION CENTER	3	10
	SITE TOTAL		1440

SOURCE: REFERENCE 8

B. Indirect Land Use Effects

The construction and operation of a power plant have distinctly different influences on a community's economy. Most construction phase impacts stem from the influx of workers. Table 7.4 projects the labor requirements for construction of the Dickerson and Douglas Point plants.

TABLE 7.4

PROJECTED AVERAGE NUMBER OF CONSTRUCTION WORKERS FOR TWO PROPOSED PEPCO PLANT SITES IN MARYLAND

	Year of Construction						
Site	First	Second	Third	Fourth	Fifth	Sixth	Seventh
Dickerson (1,700 MWe, coal-burning)	225	850	1,250	1,250	840		
Douglas Point (2,200 MWe, nuclear)	300	1,050	1,780	2,300	2,030	1,380	560

Source: Reference 12

Data compiled during construction of Calvert Cliffs make an interesting case-history (11). In predominantly rural Calvert County, the major impacts were in the areas of labor, housing, and traffic. Several hundred local residents were employed in a variety of unskilled or semiskilled jobs at the plant during the construction phase. Wages filtered into the local economy, and unemployment dipped to 3.6% in 1970, as opposed to 6.2% in 1960. An unsettling effect of the high wages at the plant ($6.50/hr minimum for construction workers) was depletion of the local labor pool for agriculture and lumber mills. The job experience encouraged local workers to move into the Baltimore-Washington labor markets rather than return to lower-paying agricultural jobs when construction let up. A number of local lumber mills reportedly have gone out of business due to a shortage of local labor (11). It appears, in hindsight, that businesses in Calvert County could have captured a bigger share of the $800,000 weekly plant construction payroll if they had been prepared to accommodate major purchases by plant workers and had arranged with contractors to supply materials (11).

Construction workers strained the County's already limited housing supply. Rents shot up two-to threefold, forcing such County employees as teachers to seek housing elsewhere -- and to demand higher pay. It is unclear if rents will moderate when construction is completed.

A locally severe transportation impact occurred during the peak of construction, when 2,650 workers commuted to the plant. During shift changes, a knot of vehicles overloaded the single road passing the plant. Heavier traffic and heavy vehicles also boosted the County's road maintenance costs.

Some impact of a kind predicted elsewhere did not materialize at Calvert Cliffs. That is, an environmental study of a potential power plant site in Kent County (5) recently estimated that the influx of workers and their families would cost the County $411,750/yr in extra services during construction of a nuclear plant, and $110,250/yr thereafter. However, the experience at Calvert Cliffs was that there was only a minimal rise in public services and school expenditures during construction. Social service caseloads did increase perceptibly due to problems of displaced low-income families and increased alcoholism (construction workers accounted for about 15% of those treated).

When fully operational, Calvert Cliffs staff should hover around 200, too few to significantly impact County resources, but enough to help local economies (i.e. the permanent work force for a 2,000-Mwe nuclear plant is estimated to spend $800,000/yr in retail sales) (5).

For a fossil fuel plant comparable in size to Calvert Cliffs, Table 7.4 shows that 1,250 workers would be involved during peak construction. Hence, impact on County services should scale down (by approximately one-half) accordingly.

A positive impact of Calvert Cliffs is greater tax revenues for Calvert County -- between $12 and $14 million annually when the plant hits full operation. This amounts to twice the County's 1974 budget (11). Projection of these revenues has spurred planning of major capital improvements in the areas of health care, recreational and municipal buildings, civic projects, and the probability of lower tax rates for County residents.

Taxes paid by utilities to Maryland counties are given in Table 7.5. Projected annual tax revenues from new generation planned for 1985 are shown in Table 7.6.

Although they have a lesser impact during construction, fossil fuel plants have a greater impact once on-line. Coal-fired plants require transportation of large quantities of fuel to, and scrubber feed, sludge, and ash from, the site. Rail, barge, or truck traffic can be a source of continuing nuisance. For example, the proposed expansion of Dickerson (two 850-Mwe units) would produce the equivalent of 128 or more eighteen-ton truckloads of fly ash per day to be hauled away.

TABLE 7.5

PROPERTY AND CAPITAL STOCK TAXES PAID TO SELECTED[a] MARYLAND COUNTIES BY PEPCO AND BALTIMORE GAS AND ELECTRIC COMPANY FOR FISCAL YEAR 7/1/74 - 6/30/75

County	Utility Tax Payments to County (Millions of Dollars)	Utility Tax Payments as % of 1974-1975 County Operating Budget
Baltimore City	19.502 (BG&E)	1.6%
Anne Arundel	3.242 (BG&E)	2.02%
Baltimore County	6.862 (BG&E)	2.5%
Calvert	0.418[b] (BG&E)	5.8%
Charles	3.730 (PEPCO)	19.6%
Harford	1.566 (BG&E)	3.6%
Montgomery	6.737 (PEPCO)	
	0.084 (BG&E)	1.68%
Prince George's	7.185 (PEPCO)	
	0.791 (BG&E)	2.15%
All Maryland	36.112 (BG&E)	
	17.652 (PEPCO)	

[a]Counties where utility tax payments amount to at least 1% of the County budget

[b]Does not include Calvert Cliffs

Source: F. Barega, Potomac Electric Power Company; H. Lentz, Baltimore Gas and Electric Company; Budget Officers of the various counties

TABLE 7.6

PROJECTED ANNUAL TAX REVENUES FROM NEW GENERATING PLANTS BY 1985

Plant	County	Projected In-Service Date	Estimated* Annual Property and Capital Taxes (Millions of $)
Calvert Cliffs	Calvert		
Unit 1		1975 (on-line)	6.0
Unit 2		1977	6.0
Chalk Point	Prince George's		
Unit 3		1975	3.3
Unit 4		1980	3.3
Brandon Shores	Anne Arundel		
Unit 1		1980	3.1
Unit 2		1982	3.1
Dickerson	Montgomery		
Unit 4		1982	10.0

*Estimated from taxes paid on existing plants of comparable size

If fuel oil is used for flame stabilization of the boilers, as in the existing Dickerson units (8% of the total heat input to the boilers), approximately 40 oil-truck deliveries per day could be necessary (12).

C. Groundwater Use

Most power plants draw on groundwater* for boiler-or feedwater-makeup, or scrubber makeup. Excessive withdrawals can lower the water table in an unconfined aquifer or reduce the artesian head in a confined aquifer. Areas in southern Maryland depend on groundwater for municipal supply, making it particularly important for power plant withdrawals to be matched to aquifer recharge capabilities. To avoid impacting the shallow aquifers tapped by domestic users, the usual practice is for power plants to drill deep wells. This strategy is not foolproof, however, since withdrawals from deeper aquifers can draw down shallower ones if the intervening strata allow seepage. Problems can be detected before they get out of hand by drilling observation wells around the plant. Calvert Cliffs, for example, uses 0.6 million gallons per day for reactor makeup. This water is drawn from the Aquia formation, which is separated from the shallower deposits by impervious strata. Water table fluctuations are monitored by a recorder in an observation well by BG&E (14). The State Water Resources Administration evaluates the impact of groundwater withdrawals and issues permits which prohibit the user from depleting supplies in nearby wells (23).

D. Aesthetics

Powerhouses, tall stacks, storage tanks, switchyards and transmission lines, and perhaps coal piles and cooling towers, form a complex that can be visually prominent even at a distance. Contrasts with undeveloped surroundings tends to heighten an impression of intrusion. Maryland's terrain is too mild to afford chances for gross screening, although selected vistas can be helped in this way. For example, shoreline screening is a permit condition for Brandon Shores (15), intended to soften the view from the water, and over the water from Baltimore.

Visual impact is subjective and thus defies quantification. To most observers, nuclear plants have a less objectionable effect than fossil units -- the former presenting a more compact appearance with curved pressure shells instead of a welter of stacks and plumbing. Nuclear, but not fossil fuel, plants were considered compatible with recreational camps at both Stillpond Neck and Calvert Cliffs (5, 11).

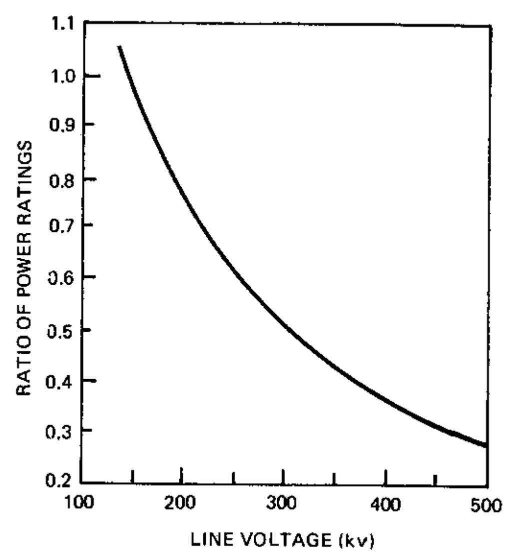
---

*Impact of surface water withdrawals is treated in Chapter 5.

The several options for reducing transmission line visual impact include undergrounding, aesthetic tower design and use of trees for screening (although flatness limits opportunities for this in the most populous portions of the State). Underground installation might appear the most direct method for eliminating unsightly transmission corridors, but, as shown in Figure 7.2, the power-carrying capacity of underground cables will not handle large loads -- and a multiplicity of small capacity cables leads to excessively wide corridors. Aesthetic considerations must be at a premium, moreover, to outweigh the high cost of undergrounding, since the ratio of underground-to-overhead-transmission line costs range from 6:1 to 15:1, independent of real estate costs (18). BG&E plans to underground only 16% of its proposed future high-voltage lines (cf. Table 7.2).*

FIGURE 7.2

RATIO OF UNDERGROUND TO OVERHEAD CABLE POWER CARRYING CAPACITY*



SOURCE: REFERENCE (16).

*THERMAL LIMIT ASSUMED FOR OVERHEAD LINES.

Some may recall the smaller, less obtrusive, transmission lines and wonder why they have been replaced by more towering structures. The answer can be seen from trade-offs between tower voltage and number of structures per mile, shown in Table 7.7. The visual impact of high voltage lines is not

---

*New <u>distribution</u> lines up to 33 kv are required to be underground necessarily greater than their load-carrying equivalent at low voltage, since fewer structures per mile are involved (cf. Table 7.7). Even a relatively small number of poles may be regarded as distracting from a rural landscape, however (11).

TABLE 7.7

REPRESENTATIVE PHYSICAL, ELECTRICAL AND COST CHARACTERISTICS OF OVERHEAD TRANSMISSION LINES[a]

Voltage (kv)	Loading (kw)	Thermal Limit [a] Loading (kw)	Structures (per mile)	Structures (per 100,000 kw miles)	Single Circuit Right-of-Way Width (feet)	Single Circuit Right-of-Way Acres (per mile)	Capital Cost[b] (Thousands of 1971 dollars per mile)
69	22,500	–	19	84	100	12	–
115	60,000	–	8.5	14	100	12	–
138	90,000	420,000	8	8.9	100	12	97 - 184
161	90,000	–	7.5	8.3	125	15	–
230	150,000	980,000	7	4.7	125	15	128 - 237
500	3,000,000	2,470,000	4.5	1.5	200	24	155 - 307

[a]Source: Reference (17).

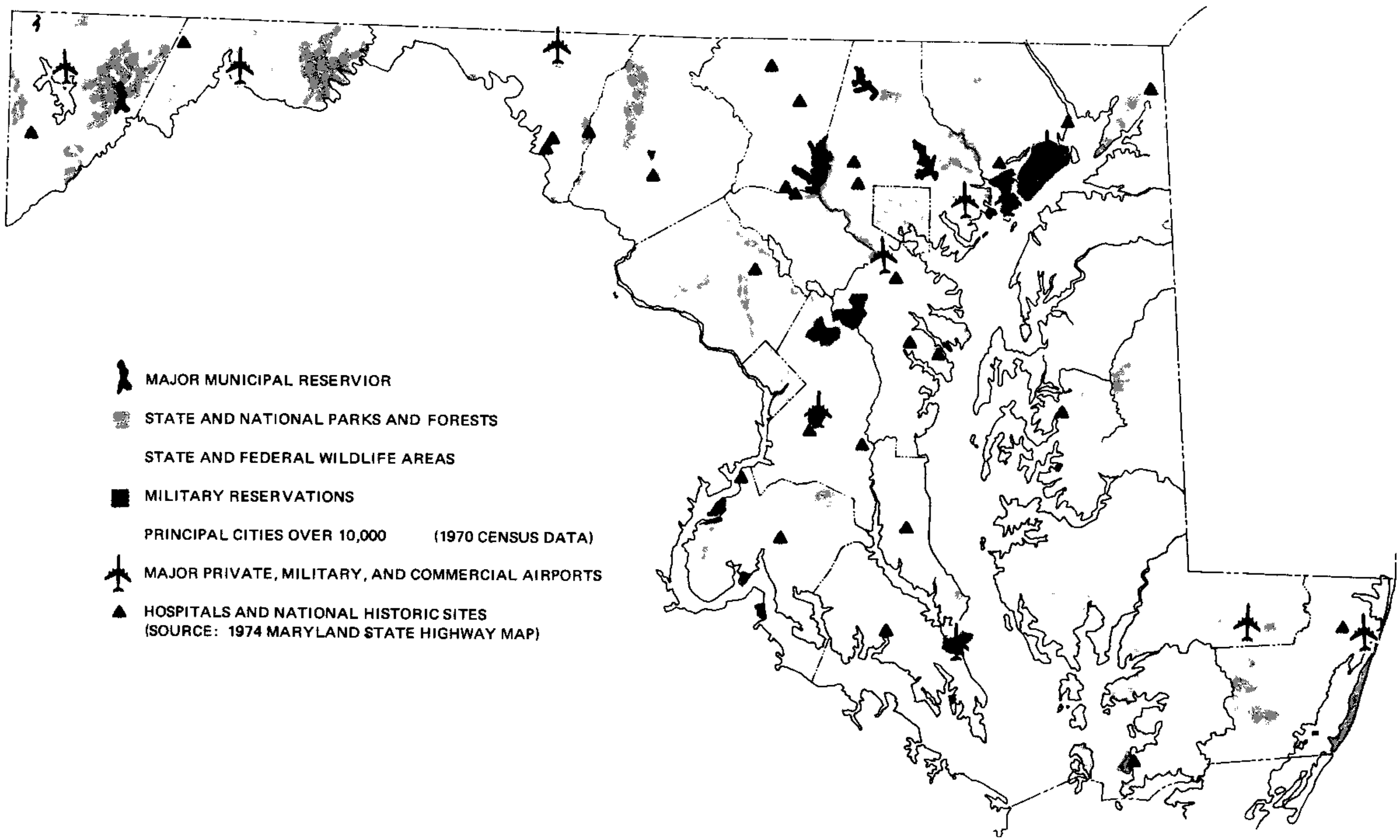
[b]Source: Reference (16).

The number of pole miles of 230-kv transmission line in Maryland increased more than 250% from the end of 1971 until the end of 1974 (230 miles to 597 miles) (20). The number of pole miles of 500-kv transmission lines increased from 262.5 to 334.38 (127%) in the same period, while the number of pole miles of 115-kv and 138-kv lines has remained relatively constant (cf. Figure 3.1). This trend reflects the siting of large stations at locations remote from their load centers (the 115-kv network being for distribution rather than the long-distance transfer of power).

An issue for which there is no ready answer is how does one gauge the impact of a proposed plant or transmission line on some nearby historic, scenic, archaeological, geological, or other site of cultural significance. The sampling of such sites, including State and national parks and forests and national historic sites, given in Figure 7.3, indicates that there is hardly a locality in Maryland where this kind of consideration would not come into play. Models have been suggested as an aid for systematically treating the complex trade-offs between economics and land use. These include a Resource Management

FIGURE 7-3.

FEATURES WHICH MUST BE CONSIDERED IN SITING OF POWER PLANTS



Model (21) and a "dimensioning analysis," developed by Oak Ridge National Laboratories (22), which assesses social impacts of power plants by using 14 descriptors to analyze patterns of impact on impact recipient groups. Additional investigation is necessary before these pioneering efforts can become reliable tools for decision making.

E. Conclusions

A survey of land in Maryland dedicated to existing and proposed power generation and transmission indicates that only 0.9% of the land area in the State will be set aside for that purpose by 1985. It is not possible, at the present time, to provide a complete analysis of the socioeconomic impacts of the construction and operation of a power plant. In the case of the Calvert Cliffs nuclear plant, investigations determined that construction of the plant produced sometimes severe dislocation of the County's housing, labor and traffic, but also stimulated the local economy with an infusion of payroll and tax dollars. This study has provided the basis for some recommendations which could reduce the impact of construction on the County.

F. REFERENCES

1. "Considerations Affecting Steam Power Plant Site Selection," Energy Policy Staff, Office of Science and Technology, 1968.

2. "Engineering for Resolution of the Energy-Environment Dilemma," National Academy of Engineering, Washington, D. C., 1972.

3. "Environmental Guidelines," Western Systems Coordinating Council, December 1971.

4. "A Critical State-of-the-Art Review of Engineering Aspects of Power Plant Thermal Discharges," report prepared by Hydronautics, Inc. for EPA and Maryland Power Plant Siting Program, draft, December 1973.

5. "Preliminary Investigations of a Potential Power Plant Site in Kent County, Md.," prepared by Engineering-Science, Inc. for the Maryland Power Plant Siting Program, June 1974.

6. Study conducted by the Marine Science Center of Oregon State University for Pacific Gas and Electric Company, 1974.

7. Phone communication with H. Herrmann, PEPCO Dickerson Project Engineer, May 7, 1975.

8. "Environmental Report, Construction Permit Stage, Douglas Point Generating Station Units 1 and 2," Appendix 2-B, Vol. 3, 1973.

9. Annual report of the utility for year ending December 31, 1974 to the Maryland Public Service Commission.

10. Personal Communication from F. Jeffers, Baltimore Gas and Electric Company, April 1, 1975.

11. "Review of Socio-Economic Impacts of the Calvert Cliffs Nuclear Power Plant," Howard Needles Tammen and Bergendoff for the Maryland Power Plant Siting Program, Department of Natural Resources, January 1975.

12. "Power Plant Site Evaluation Report - Dickerson Site," Addendum to PPSE 3-1, prepared by the Johns Hopkins University Applied Physics Laboratory for the Maryland Power Plant Siting Program, January 1974.

13. "Nuclear Plants in Maryland," Governor's Task Force on Nuclear Power Plants, Annapolis, Maryland, December 1969.

14. Personal communication from J. W. Stout, Jr., Baltimore Gas and Electric Company, March 13, 1974.

15. "Power Plant Site Evaluation - Brandon Shores Sites," PPSE 1-2, report prepared by Johns Hopkins University, Applied Physics Laboratory for the Maryland Power Plant Siting Program, November 1972.

16. Nicol, J., et al., "Underground Power Transmission," RP78-8, prepared by A. D. Little, Inc. for the U. S. Dept. Interior and the Edison Electric Institute, New York, October 1971.

17. "Report to the Vice President and to the President's Council on Recreation and Natural Beauty," Working Committee on Utilities (C. E. Bagge, FPC, Chairman), Washington, D. C., December 1968.

18. Personal communication from J. W. Dorsey, Maryland Public Service Commission, March 11, 1974.

19. "Summary Data and Comparative Measures, 1969, 1970, 1971," Engineering Division, Public Service Commission of Maryland, September 1972.

20. F. L. Jeffers, Baltimore Gas and Electric Company; J. J. Scoville, Potomac Electric Power Company; O. L. Wallace, Allegheny Power Company; R. Mitchell, Southern Maryland Electric Cooperative, February 1975.

21. "Economic Considerations in Power Plant Siting in the Chesapeake Bay Region, Phase II Report: PPRP-2, prepared by the Johns Hopkins University Department of Geography and Environmental Engineering for the Maryland Power Plant Siting Program, July 1974.

22. Peelle, E., "Social Impacts of Nuclear Power Plants," <u>Trans. Nuclear Soc.</u>, Vol. 18, June 1974, p. 58.

23. Personal communication from A. Schiffman, Md. Water Resources Administration, October 3, 1975.

EXHIBIT A

ELECTRIC POWER CONSUMPTION IN MARYLAND

AND THE UNITED STATES

prepared

by

The Electrical Energy Forecasting Unit,
Division of Planning Research Programs,
Maryland Department of State Planning

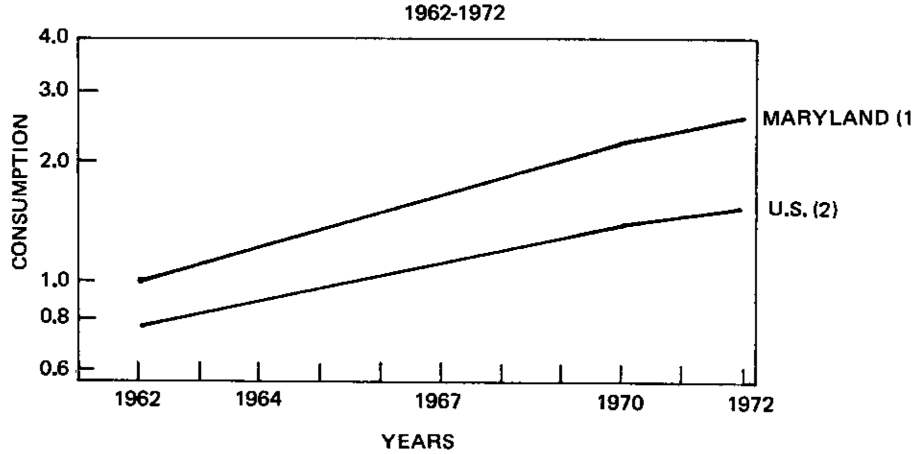
ELECTRIC POWER CONSUMPTION IN MARYLAND AND THE UNITED STATES[1]

INTRODUCTION

With the arrival of the "energy crisis," the need for a clear understanding of our current and prospective electric power requirements becomes crucial. For decades, electricity consumption, both in Maryland and the nation, grew steadily with accompanying increases in population, personal income, industrial output, and the introduction of innovative types of energy-intensive devices. Thus, without significant changes in our underlying socioeconomic structure, it was possible to obtain reasonably accurate projections of future energy needs simply by extrapolating the historical growth trends of the past. Figure A.1 shows, for example, how electric power consumption in Maryland and in the United States has grown during the last ten years.

FIGURE A.1

ELECTRICITY CONSUMPTION
IN
MARYLAND AND U.S.
1962-1972



1 MARYLAND FIGURES ARE SHOWN IN TENS OF BILLIONS OF KILOWATT-HOURS.
2 U.S. FIGURES ARE SHOWN IN TRILLIONS OF KILOWATT-HOURS.

---

[1]Prepared by the Electrical Energy Forecasting Unit, Division of Planning Research Programs, Maryland Department of State Planning.

Recently, however, it has become increasingly apparent that the underlying conditions in energy markets are changing significantly. On one hand, fossil fuel shortages, particularly petroleum shortages, threaten to spur electricity demand to levels which would not have occurred were petroleum available in sufficiently abundant quantities. Conversely, higher electricity prices, new environmental requirements, declining birth rates and energy conservation efforts will tend to have a countervailing impact that will restrict certain types of growth which were often unrestrained in the past.

Consequently, the task of making reliable projections of future electric power needs is likely to be more complex than it has been historically. The demand forecasting effort which has been undertaken in conjunction with the State's Power Plant Siting Program will develop parametric statistical models and other estimation methods for use in forecasting future electricity demand growth throughout the State and for individual utility service areas. Because of the forthcoming hearing on the proposed development of the Douglas Point site, the PEPCO service area has been chosen as an initial study focus for demand forecasting.

This chapter describes electric power trends and developments in Maryland and the United States in recent years. In addition, some tentative indications as to where we may be headed in the future are suggested. Future electricity consumption will, to a large extent, depend upon such underlying factors as price and income levels, population and economic growth, and conservation efforts which may promote interfuel substitution. Consequently, estimating growth in the demand for future electricity is a rather elusive process. It will be dependent upon changes in the key underlying factors such as those above, and how they are influenced by public policy.

Power Consumption

Electric power consumption has grown at an exponential rate in recent decades, both in Maryland and nationwide. While energy consumption (e.g. gasoline, fuel oil, coal, natural gas, propane, etc.) has grown at an average annual rate of about 5% which amounts to a doubling every 20 years, electricity consumption has grown even faster. The production and distribution of electric power is, accordingly, consuming an increasing amount of our nation's primary energy resources. While there is now considerable dispute over what rate of growth can be expected (and particularly what rate is desirable) in the future, the electric utility industry reports that nationwide demand was up about 9% in 1973 -- a rate at which total demand would double every eight years. (See Table A.1.)

TABLE A.1

ELECTRIC ENERGY SALES IN MARYLAND AND THE U. S.
1962-1972

	U. S. (Billions of kwhr) Residential	U. S. (Billions of kwhr) Non-Residential*/	Md. (Millions of kwhr) Residential	Md. (Millions of kwhr) Non-Residential*/
1962	226.4	549.7	3,145	6,879
1963	241.7	589.1	3,425	7,491
1964	262.0	628.3	3,789	8,307
1965	281.0	672.4	4,227	9,081
1966	306.6	732.4	4,792	10,220
1967	331.5	775.5	5,196	11,209
1968	367.7	834.6	5,990	12,268
1969	407.9	899.3	6,700	13,497
1970	447.8	943.6	7,483	15,004
1971	479.1	987.4	7,919	16,311
1972	511.4	1,066.3	8,406	17,005
Average Annual Growth Rate	8.5%	6.8%	10.3%	9.5%
1990*/	1,749.3	3,318.4		
Projected Rate	7.1%	6.5%		

*/As projected by Electric World 9/15/73.

Source: Electric World, 3/15/73 and 9/15/73; and Annual Reports of Electric Utilities in Maryland.

Over the longer term, the consumption of electricity has doubled approximately every ten years, and the Federal Power Commission and the Edison Electric Institute have predicted that this historic growth trend will taper off only slightly over the next two decades.

Electric energy sales in Maryland and the U. S. from 1962 through 1972 are shown in Table A.1. It can be noted that demand growth in Maryland has outpaced the national average, and electricity sales in 1972 were two and one-half times that in 1962.

Demand Forecasting

Many factors contribute to the growth in residential and non-residential demand for electric power. Consequently, it is preferable to treat major categories individually in developing aggregate market forecasts. For example, while our preliminary statistical studies have shown that income distribution and housing characteristics have a significant impact on residential electric power demand, they are not equally relevant in estimating non-residential demand. Similarly, while factors such as the price of coal (a substitute for purchased electric power in some industrial applications) and the type of industry located in a given region are obvious considerations in estimating non-residential demand, they would not be expected to have a profound direct impact on residential power requirements. Some variables such as the price of electricity and climate conditions would, of course, be expected to affect both residential and non-residential demands, but, even then, not necessarily in the same proportion. For these reasons, residential and non-residential forecasts are being developed independently.

Statistical factors to be considered in constructing residential and non-residential electricity demand forecasting models are listed in Tables A.2 and A.3.

Residential Electricity Requirements

During the last 20 years, residential electricity sales in the United States have grown at an average rate of over 9%/yr. From 1950 to 1970, the population of the U. S. increased by about 35% and per capita income increased by almost 170%. At the same time, however, residential electricity consumption rose by more than 500%. It is estimated that during this period about three-fourths of the growth in residential electricity use was attributable to rising consumption per household, while only about one-fourth was due to an increase in the number of homes served. On the average, the typical American home, which used less than 2,000 kilowatt-hours (kwhr) of electricity in 1950, consumed over 7,000 kwhr in 1970.

Residential use of electricity in the PEPCO service area averaged 8,912 kilowatt-hours (kwhr) per metered household in 1973. This average annual volume represented an increase in residential consumption of about 109% per home as compared with consumption ten years earlier. In addition to this increase, there has also been an 18% increase in the number of metered residential customers in the PEPCO area during the period. This represents a 147% increase since 1963, or an average annual growth rate of about 9.5% for residential sales.

Assuming a stable load factor over the period, the implication is that PEPCO's residential generating requirements have been doubling every eight years. Actually, however, since a utility's generating capabilities must be geared to meet the system's peak demand rather than simply the average annual load, it is possible that, over any given period, the required increase in production capacity may be either more or less than growth in total sales. In PEPCO's case, the 1963 peak

TABLE A.2

STATISTICAL FACTORS CONSIDERED IN DEVELOPING RESIDENTIAL ELECTRIC ENERGY DEMAND FORECASTS

Price of Electricity:

- Average Residential Price
- Incremental Residential Rate

Price of Natural Gas:

- Average Residential Price

Income:

- Average Per Capita Income
- Percentage of Households with Income Under $3,000
- Percentage of Households with Income Above $15,000

Size of Market:

- Population
- Metered Customers

Climate:

- Heating Degree Days
- Cooling Degree Days
- Relative Humidity

Housing Characteristics:

- Percentage of Units in Multiple Family Apartments
- Percentage of Units Constructed in Last Ten Years
- Percentage of Population in Urban Areas
- Percentage of Population in Rural Areas

Major Appliance Stocks:

- Percentage of Homes with Electric Heat
- Percentage of Homes with Central Air Conditioning
- Percentage of Homes with No Air Conditioning
- Percentage of Homes with Electric Water Heaters

TABLE A.3

STATISTICAL FACTORS CONSIDERED IN DEVELOPING NON-RESIDENTIAL ELECTRIC ENERGY DEMAND FORECASTS

Price of Electricity:

- Average Non-residential Price
- Incremental "Commercial" Rate
- Incremental "Industrial" Rate

Price of Alternative Fuels:

- Average Price of Coal
- Average Price of Fuel Oil
- Average Price of Natural Gas

Size and Growth of the Non-residential Market:

- Total Earnings
- Rate of Economic Growth

Nature of Economic Activity:

- Percentage Accounted for by Agriculture
- Percentage Accounted for by Mining
- Percentage Accounted for by Government Services
- Percentage Accounted for by Wholesale and Retail Trade
- Percentage Accounted for by Service Industries
- Percentage Accounted for by Manufacturing
  - a) % Primary Metals Industries
  - b) % Chemical Industries
  - c) % Petroleum Refining
  - d) % Paper Products Manufacturing
  - e) % Textile Industries

Percentage of Housing Units in Multiple Family Dwellings Which May be Master-Metered Under Non-residential Rates

Climate:

- Heating Degree Days
- Cooling Degree Days
- Relative Humidity

generating requirement of 1,534,000 kw occurred in July, and in 1973 the peak occurred in August and amounted to 3,680,000 kw. Therefore, the Company's peak load increased by 140% over the decade, implying an average annual peak growth rate of 9.1%, just slightly less than the rate of growth in total consumption.

The distribution made here between energy demand or consumption over a period of time (kilowatt-hours) and system load or system demand at a moment in time (kilowatts) should be noted carefully. While there is often a substantial degree of correlation between the two, the latter is a more direct reflection of the generating capacity which is actually required to meet system needs. It can, however, vary substantially during the day and throughout the year. Moreover, while peak system load plus reserve margin dictates the maximum required generating capacity, it is not necessarily a sufficient basis on which to plan for and construct base load generating plants. This is particularly true where peaks are severe and energy interchanges with other systems or less costly peak generating facilities are feasible alternatives.

A substantial portion of these increases have been attributable to the widespread introduction of new residential energy uses such as air conditioners, television sets, clothes dryers and dishwashers. On the other hand, a considerable amount of the increase was inspired by shifts to electricity from other fuels as, for example, in space heating, water heating, and cooking, etc.

Some household electricity requirements, such as lighting, have increased relatively little, while others, such as air conditioning (a new energy use) and space heating (a substitute use), have grown enormously. As a consequence, lighting, which accounted for nearly 30% of residential electric power consumption nationally in 1950, now represents only 10% of total household demand. At the same time, space heating and air conditioning, which together account for over 30% of current residential use, amounted to only about 5% 20 years ago.

The typical annual electric energy requirements for major household electric appliances and equipment are listed in Table A.4. Some of these, of course, vary according to local climates. As shown there, electric space heating is, by far, the largest component of the total power demand in a typical all-electric home. Water heating and air conditioning come next, followed by food freezers, refrigerators and clothes dryers. The total amount of energy used for each of these purposes depends upon the number of households which actually have installed the specified appliances. For example, space heating still accounts for less total residential electricity consumption than refrigeration because less than 10% of all

American homes are electrically heated, while virtually all are equipped with one or more refrigerators.

TABLE A.4

TYPICAL ELECTRIC ENERGY REQUIREMENTS
IN THE U. S.

Type of Equipment	kwhr Per Year
Electric Space Heating	16,003
Electric Water Heating	4,219
Electric Range	1,175
Clothes Washer	103
Electric Clothes Dryer	993
Food Freezer (15 cu. ft.)	1,195
(Frostless)	1,761
Central Air Conditioning	3,600
Window Air Conditioner	1,389
Dishwasher	363
Television (B&W)	362
(Color)	502
Refrigerator (14 cu. ft.)	1,137
(Frostless)	1,829

Source: Edison Electric Institute

Table A.5 shows the percentage of homes in the U. S. and in Maryland which were equipped with each of these major appliances in 1960 and 1970. The figures indicate that there is a high degree of correlation between State and national electricity demand patterns, though it is noteworthy that Maryland homes have shown a lower propensity toward electric space heating, water heating, and cooking than the national average. On the other hand, there is considerably more air conditioning in the State than there is nationwide. While there have been substantial increases during the last decade, the table also indicates that there is considerable room for future electricity demand growth if saturation levels continue to increase in the future.

TABLE A.5

RESIDENTIAL ELECTRIC EQUIPMENT, THE U. S. AND MARYLAND COMPARED

(Percentage of Housing Units with Specified Equipment)

	U. S.		Maryland	
	1960	1970	1960	1970
Electric Space Heating	1.8%	7.7%	0.3%	4.9%
Electric Water Heating	20.4	25.4	13.2	17.1
Electric Cooking	30.8	40.6	22.9	29.2
Clothes Washer	73.7	71.1	75.3	71.6
Electric Clothes Dryer	11.9	29.4	10.3	28.6
Food Freezer*/	18.4	28.2	16.7	26.7
Dishwasher	-	18.9	-	26.7
Two or more T.V. sets*/	9.9	28.7	16.4	40.0
Air Conditioning	12.4	35.7	14.9	50.6
Central Air Conditioning	1.9	10.7	2.0	23.5
Two or more room air conditioners	2.9	7.2	3.2	10.2
One room air conditioner	7.6	17.8	9.7	16.9

*/Saturation levels are close to 100 percent for refrigerators and one or more T.V. sets.

Source: U.S. Department of Commerce, Bureau of the Census, Census of Housing (1960 and 1970).

While residential electricity consumption has increased in all communities, Table A.6 shows that it varies substantially from one community to another within the State. To a large extent, this is reflective of differences in the local saturation levels of major electric appliances. As shown in Table A.7, for example, Baltimore County residents have less electric space heating and fewer electric water heaters, stoves, clothes dryers, dishwashers, and air conditioners than the residents of Prince George's and Montgomery Counties, while Baltimore City residents have even less electric equipment per household than the residents of Baltimore County.

These interarea variations are attributable to a complex set of economic factors such as those listed in Table A.2. In particular, income, the price of electricity, type of residence, and access to alternative fuels are each important consumption determinants. For instance, although income levels in Charles County are not exceptionally high, there is a relative preponderance of electric water heaters and stoves because natural gas mains are not accessible to many residences.

TABLE A.6

AVERAGE ANNUAL RESIDENTIAL ELECTRICITY CONSUMPTION PER HOUSEHOLD, 1971

Community	kwhr	Rate of Annual Increase in Last 5 Years
Baltimore	3,915	6.8%
Bethesda, Silver Spring, Wheaton	9,967	7.5%
Catonsville, Dundalk, Towson	6,928	6.9%
District of Columbia	5,249	6.6%
U. S.	7,380	7.0%

Source: Federal Power Commission, Typical Electric Bills, 1972; and Electric World, September 15, 1973, p. 48.

TABLE A.7

PERCENTAGE OF HOMES WITH MAJOR ELECTRIC APPLIANCES IN SELECTED MARYLAND AREAS, 1970

	Charles County	Prince George's County	Montgomery County	Baltimore County	Baltimore City
Space Heat	5.1	6.7	5.5	2.9	2.8
Water Heat	40.6	14.0	12.5	10.7	4.2
Cooking	41.7	27.4	40.3	25.2	5.2
Washing Machine	75.9	63.2	74.9	81.3	62.0
Clothes Dryer	39.9	33.1	45.1	24.7	7.2
Freezer	39.1	25.7	31.5	27.3	12.8
Air Conditioning	42.1	75.7	79.8	57.1	33.2
Dishwasher	17.1	36.5	59.5	30.7	9.1

Source: U. S. Department of Commerce, 1970 Census of Housing.

On the other hand, the fact that there are relatively few washing machines and home food freezers in Prince George's County is to some extent attributable to the fact that there are a comparatively large percentage of apartment housing units in the county.

Income and the price of electricity are other possible explanations of interarea demand differences. For example, electric rates have been comparatively high in Baltimore City, which at the same time has a comparatively low per capita income level. Table A.8 presents a comparison of typical monthly electric bills for the major utility systems in the State.

TABLE A.8

TYPICAL MONTHLY RESIDENTIAL ELECTRIC BILLS, 1972
(500 kwhr per month)

Baltimore Gas and Electric Co.	$15.30	
Potomac Electric Power Co.	10.35	(Md.)
	9.43	(D. C.)
The Potomac Edison Co.	10.63	
Delmarva Power and Light	13.19	
Chestertown Electric Light & Power Co.	13.27	
Easton Utilities Commission	14.83	
Conowingo Power Co.	9.92	
Hagerstown Electric Light Plant	10.63	
Southern Md. Electric Coop.	11.22	

Source: Federal Power Commission, Typical Electric Bills, 1972.

Non-residential Electricity Requirements

The electricity sales figures reported in Table A.1, above, tend to understate total electricity consumption because certain large manufacturing firms generate some of their own electric power requirements rather than purchasing all that they consume. For example, while U. S. manufacturing industries accounted for 55 to 60% of non-residential electricity purchases in the 1960s, they also generated an amount equal to another 15 to 20% on their own. In Maryland, where manufacturing establishments accounted for approximately 50% of non-residential purchases, they generated another 25 to 30% themselves.[1]

[1] In Maryland, primary metals industries, such as steel, accounted for most of the self-generated industrial power. Primary metals industries are also the largest consumer of purchased power in the State.

It is generally believed that, as in the recent past, this self-produced power in the future will continue to account for a progressively smaller portion of total industrial consumption. If this trend continues, utility company sales will have to increase in the future not only to keep pace with industrial growth, but also to replace internally produced power as these privately owned generating units become inoperative.

Tables A.9 and A.10 show the relative sizes and growth trends of the various economic sectors in the State and the Nation. While electricity consumption is essential to all of these sectors, manufacturing accounts for the great bulk of non-residential electricity consumption nationwide despite the fact that it produces only 30% of national earnings and 20% in Maryland. Including self-generated power, it is estimated that the manufacturing sector of our economy accounted for between 65 and 70% of non-residential electric power consumption in both the State[2] and the Nation during the 1960s. That percentage may be expected to decrease slightly in the future as manufacturing is projected to grow less rapidly than the rest of the economy. Nevertheless, there is no clear evidence that the relative situation is likely to change radically from the past.

TABLE A.9

PERCENT OF TOTAL EARNINGS DERIVED FROM MAJOR ECONOMIC SECTORS, MARYLAND AND THE U. S. COMPARED, 1969

	Maryland	U. S.
Agriculture, Forestry and Fisheries	1.6%	3.5%
Mining	0.1	1.0
Contract Construction	6.4	6.1
Manufacturing	19.5	29.1
Transportation & Utilities	6.0	6.9
Wholesale & Retail Trade	15.0	16.4
Finance, Insurance and Real Estate	4.2	5.2
Services	15.0	14.7
Government	32.3	16.9

Source: U. S. Department of Commerce, Bureau of Census, 1967 Census of Manufactures.

[2] It should be noted that this does not include the District of Columbia where the Federal Government is the major non-residential buyer.

TABLE A.10

ANNUAL ECONOMIC GROWTH RATES,
MARYLAND AND U. S. COMPARED

		Percent Change			
		1950-59	1959-69	1969-80*/	1980-2000*/
Total Real Personal Income	Md.	4.7%	6.1%	5.0%	4.5%
	U.S.	3.6	4.8	4.5	4.2
Agriculture, Forestry & Fisheries	Md.	-3.4	3.2	-1.0	1.2
	U.S.	-3.7	1.4	0.1	1.3
Mining	Md.	2.6	-0.2	3.6	3.2
	U.S.	-	1.0	2.2	1.9
Contract Construction	Md.	2.7	5.4	3.9	4.2
	U.S.	3.9	4.5	4.0	4.1
Manufacturing	Md.	4.6	3.1	3.5	3.4
	U.S.	4.1	4.2	3.7	3.6
Transportation & Utilities	Md.	3.0	3.3	3.5	3.6
	U.S.	2.9	3.5	3.6	3.6
Wholesale & Retail Trade	Md.	3.9	5.8	4.7	4.3
	U.S.	2.9	3.7	4.5	4.1
Finance, Insurance & Real Estate	Md.	6.2	5.5	4.6	4.2
	U.S.	5.8	4.8	4.1	4.0
Services	Md.	4.6	8.7	5.6	4.9
	U.S.	5.1	6.1	5.4	4.8
Government	Md.	7.6	8.5	4.9	4.3
	U.S.	6.0	6.4	5.3	4.6

*/As projected in U.S. Water Resources Council 1972 Obers Projections of Regional Economic Activity in the U.S.

Table A.11 identifies those manufacturing industries with relatively large electricity input requirements per unit of output. As indicated by the comparative percentages of value added by manufacturing, Maryland's industrial base tends to be at least as dependent upon these power intensive industries as is the Nation as a whole. Primary metals and chemicals, the two largest industrial consumers of electric power, are especially important in the State.

TABLE A.11

SELECTED MANUFACTURING INDUSTRIES WITH RELATIVELY LARGE ELECTRICITY REQUIREMENTS PER $ OF OUTPUT

	Percentage of Value Added by Manufacturing (1967)		Projected Annual Growth Rate (1969-1990)	
	Md.	U.S.	Md.	U.S.
Textiles	0.6	3.1	1.0	2.8
Paper Products	3.5	3.7	4.3	3.8
Chemicals	11.1	9.0	3.7	4.1
Petroleum Products	N.A.	2.1	2.0	2.3
Stone, Clay & Glass Products	4.2	3.2	N.A.	N.A.
Primary Metals	13.9	7.6	2.4	2.1

Source: U.S. Department of Commerce, Bureau of Census, 1967 Census of Manufactures

It is, of course, difficult to assess the impact of growing shortages of fossil fuel supplies. On the one hand, there is little doubt that resulting energy conservation efforts will be considerably greater in the future. On the other hand, fossil fuel shortages could lead to enlarged industrial demands for new electric generating capacity.

Table A.12 illustrates that to the extent electricity and fossil fuels are substitutable for each other, the potential for electric demand growth in most industries is very substantial. In most industries electric power now accounts for only 10-20% of the total energy consumed. Historically, the relatively high cost of electricity as compared with the cost of other fuels has restrained industrial electric power demand.

TABLE A.12

INDUSTRIAL ELECTRICITY CONSUMPTION AS A PERCENTAGE OF TOTAL ENERGY CONSUMPTION IN SELECTED INDUSTRIES

Industry	Electricity as a Percentage*/ of Total Energy
Meat packing	10.9%
Canned fruits & vegetables	8.1
Distilled liquor	2.8
Soft drinks	7.4
Cigarettes	12.8
Cotton Mills	40.2
Sawmills	13.7
Papermills	8.6
Printing	25.7
Pharmaceuticals	16.3
Paints	11.0
Petroleum refining	4.4
Flat glass	6.3
Glass containers	6.7
Ready mixed concrete	2.8
Asbestos products	15.1
Steel mills	12.8
Primary aluminum	38.7
Metal cans	17.3
Farm machinery	10.5
Radio and television equipment	69.6
Motor vehicles	17.0
Aircraft	35.8
Shipbuilding	28.2
Sporting goods	21.4

*/ Total energy is defined as the kilowatt-hour equivalent for all fuels used for heat and power.

Source: U. S. Department of Commerce, Bureau of the Census, 1967 Census of Manufactures.

In the future, it is not inconceivable that higher fossil fuel prices, limited supply availability, and environmental pressures may serve to increase the electricity intensiveness of some industrial production functions.

Conclusion

In summary, during the last decade total electricity demand in the U. S. has increased by about 100%, while in Maryland consumption has gone up by about 150%. In both the U. S. and Maryland, residential requirements have been the fastest growing component of total electricity demand. Between 1962 and 1972, Maryland's residential electricity requirements increased at a rate of 10.3%/yr -- a rate equivalent to the doubling of demand every seven years.

Most projections indicate that these historic electricity growth rates may taper off somewhat in the future. Whether that is so, and to what extent, depends greatly upon whether energy conservation efforts substantially dampen growth rates or whether, in the face of apparent fossil fuel shortages, electric power will be called upon to fulfill general energy needs heretofore furnished by alternative sources. In that eventuality, the prevailing upward trend could continue well into the future.

EXHIBIT B

1975 TEN-YEAR PLAN

of

The Maryland Public Service Commission

PUBLIC SERVICE COMMISSION
of Maryland

MEMORANDUM TO THE CHAIRMAN January 3, 1975

FROM: John W. Dorsey, Chief Engineer

SUBJECT: 1975 TEN-YEAR PLAN

I. INTRODUCTION

According to Section 54B(b) of Article 78 of the Annotated Code of Maryland, the Chairman of the Public Service Commission, on an annual basis, shall forward to the Secretary, Department of Natural Resources, a Ten-Year Plan listing both possible and proposed sites, including associated transmission line routes, for the construction of new electric power plants within the State of Maryland, and for extensions to existing plants.

This Memorandum constitutes the 1975 Ten-Year Plan submission, as prepared by the Engineering Division of the Commission. This Plan is based upon data submitted by electric utilities operating in Maryland of their own individual ten-year plans to the Commission. This 1975 Plan spans the time period 1975 through 1984.

II. UTILITIES IDENTIFIED

The 17 retail electric companies presently operating in Maryland and subject to the jurisdiction of the Public Service Commission are listed in Attachment No. 1, by type of ownership: investor-owned, municipally-owned, and customer-owned.

The 1974 Plan listed 19 retail companies. Two of these no longer operate in the state. Customers and assets of the Monongahela Power Company within Maryland have been acquired by a sister company, Potomac Edison Company, effective May 31, 1974. The sale and transfer of the Maryland portion of the Stockton Light and Power Company to the Delmarva Power and Light Company of Maryland was consummated on July 31, 1974.

There are two non-retail electric companies owning generation property in Maryland. They are:

1) Pennsylvania Electric Company. This utility owns a hydroelectric plant on Deep Creek Lake, Garrett County, and an associated transmission line.

2) Susquehanna Power Company. This company, a wholly-owned subsidiary of Philadelphia Electric Company, owns the Conowingo hydroelectric plant on the Susquehanna River, Harford and Cecil Counties.

Of these 19 companies, only the seven utilities listed below have future power plant siting interests in Maryland. The remaining 10 retail companies are small or have little or no generation capacity. Those having future generation site interests are:

Baltimore Gas and Electric Company

Conowingo Power Company

Delmarva Power and Light Company

Easton Utilities Commission

Potomac Edison Company

Potomac Electric Power Company (PEPCO)

Southern Maryland Electric Cooperative

III. 1975 TEN-YEAR SITING PLANS BY COMPANY

General

Growth in consumer demand in Maryland for electricity during 1974 was significantly lower than what was projected by the utilities in their 1974 Plans. This is reflected in the utilities' current plans for the next decade by the deferral and stretch-out of new generation and transmission plant construction. The current plans are also indicative of the uncertainties that the electric utilities face in formulating long-range demand forecasts.

.1. Baltimore Gas and Electric Company

Units #1 and #2 of the Calvert Cliffs nuclear plant are now scheduled to become operational in January 1975 and in 1977, respectively. This represents a slight change in Unit #1 and a two-year stretch-out in the in-service date of the second unit.

In 1973 the Company was granted approval for the construction of two 610-Mw fossil-fueled steam units at Brandon Shores, Anne Arundel County. They are to go on-line in 1980 and 1982, respectively. In its 1974 Plan the Company intended to have them in service by 1977 and 1978, respectively.

An additional plant of 250 Mw is planned to be added to the Riverside station for summer peaking. Actual size of the individual units, kind of fuel, and date of initial construction are presently undetermined, although completion is expected by 1979.

Additional generation is also planned at the Perryman station. This extension will provide an additional 550 Mw power for peaking demand. Size of the units, type of fuel, and construction date are unknown at this time. In-service date for the initial 250-Mw capacity is 1983, with the remaining 300-Mw capacity a year later. The Perryman site consists of approximately 708 acres on Bush River, Harford County.

Specific sites for additional generating stations have not been listed nor identified by the Company.

.2. Conowingo Power Company

The Philadelphia Electric Company and its wholly-owned subsidiary, Conowingo Power Company, operate their facilities as if they were a single company. Presently, only 7% of Philadelphia Electric's installed capacity is in Maryland, being the Conowingo hydroelectric plant.

Until sometime after 1990, the Philadelphia Electric system will supply its load growth, including growth in Maryland, with generation installed in Pennsylvania. In the 1990's a new generating plant is presently planned which could be sited in the Conowingo Power Company territory. This site, designated the Canal site, is a 680-acre location owned by Conowingo.

The Canal site, located along the Chesapeake and Delaware Canal, is identified as a first alternate for nuclear generation. Prime site is in Lancaster County, Pennsylvania. If the Company cannot build a plant here, construction could start as early as 1976 or 1977 at Canal.

Either nuclear- or fossil-fueled generation is planned at the Canal site. The plant would be two units, each unit having an installed capacity between 1,100 Mw and 1,500 Mw.

Field construction at the Canal station may start as early as 1984 with on-line operation of the first unit between 1991 and 1995, and the second unit two years later. These dates represent a delay of nine years in their start-ups as stated in the Company's 1974 Plan.

.3. Delmarva Power and Light Company

The Company has no proposed generating station sites either through ownership or under option. Studies are continuing on potential plant sites in the lower eight Maryland counties on the eastern shore. No information is available on specific locations at this time.

.4. Easton Utilities Commission

On July 19, 1974, the Easton Utilities Commission filed an application for a Certificate of Public Convenience and Necessity with the Public Service Commission (PSC Case No. 6775) for the construction of a new generation plant. Known as Plant No. 2, it will be located on a 7-acre site within the city limits of Easton. This site, owned by the Town of Easton, is adjacent to an industrial park under development. Total capacity will be 48 Mw when completed.

Construction of Plant No. 2 is planned to begin in 1975 with completion of the first two units (11-Mw capacity for both units) in 1976. Additional units of 12-Mw and 24-Mw total capacities are scheduled for installation in 1978 and 1980, respectively. Prime mover of all units will be diesel engines fired by either No. 2 distillate oil or natural gas.

The Easton Utilities Commission requests that the requirement in Section 54B(a) of Article 78 mandating a 2-year minimum between application and construction be waived. A Black and Decker plant now under construction near Plant No. 2 will impose an additional 33% demand on the Easton system in 1975.

The Town of Easton still retains ownership of a

300-acre site outside of the city limits. Twenty-five acres of this property have been reserved for a generation site. However, no construction is planned for this site through 1984.

In 1983, Easton expects to have 22-Mw additional capacity from the Summit, Delaware nuclear station as its entitlement under an agreement with Delmarva Power and Light Company. Easton presently enjoys the benefits of interchange power with Delmarva through a firm interconnection and formal agreement completed in 1973.

.5. Potomac Edison Company

The Company owns two sites in Maryland for possible use as power generating stations. They are the 829-acre site at Point of Rocks, Frederick County, and a 1,094-acre location at Black Oak, Allegany County. Both sites are on the Potomac River.

The Point of Rocks site was purchased for a nuclear generation facility having an ultimate capacity of about 2,500 megawatts. There are no active plans at the present time to proceed with construction at this site.

Potomac Edison has no present plans to develop the Black Oak site for power generation during the 1975 - 1984 period.

.6. Potomac Electric Power Company

Construction of two 1,178-Mw nuclear-fueled generating units at Douglas Point, Charles County, is now planned to begin in 1980, representing a 5-year delay from the 1975 date in the Company's 1974 Plan. The first unit will be operational in 1985 and the second unit two years later. The 1974 Plan indicated in-use dates of 1980 and 1982, respectively.

There has been a 4-year stretch-out in the plans for an additional 800-Mw fossil-fueled unit at the Dickerson station. Construction of this unit is now expected to begin in 1978 with completion in 1982. The Public Service Commission has granted PEPCO a Certificate for this unit.

Two additional units at the Chalk Point station, Units #3 and #4, each of 630-Mw capacity are under construction. It is expected that Unit #3 will begin commercial operation in 1975 and Unit #4 in 1980.

A conflict between Federal and State regulations on air quality standards may delay start-up of Unit #3 at Chalk Point. PEPCO has requested emergency action from the State so that testing of this Unit may begin in December as scheduled.

According to PEPCO, requirements exist for a 1,000-Mw pumped storage hydroelectric plant (Company designation, Station "J") to be located on a 1,000-acre undesignated site in Western Maryland. The construction data are undetermined.

Plans for a 2,400-Mw nuclear-fueled station (Station "G") at an undetermined location have been deleted from the Company's Plans.

.7. Southern Maryland Electric Cooperative

The Cooperative owns a 300-acre site on the Patuxent River, St. Mary's County. This site, known as Della Brook Farm, is considered for possible future generation. However, no plans have been made for such use.

IV. PROJECTED GROWTH IN PEAK LOAD AND GENERATING CAPACITY

The growth in peak load and in installed generation capacity within Maryland, as projected by each utility over the ten-year period, 1975 - 1984, is summarized in Attachment No. 2. The listing of the utilities is by regional areas in the State. This arrangement allows demand and generating capacity by region to be readily compared. Numbers within parenthesis are the changes from the projections made last year.

The PEPCO data of Attachment No. 2 show the peak load and installed generating capacity for the entire Company system. PEPCO service territory includes the District of Columbia, a small part of Virginia adjacent to the District, as well as major portions of Montgomery and Prince George's Counties in Maryland. PEPCO has generation plants in the District, Virginia, Maryland and shares in the generation by stations in Pennsylvania.

Data on Baltimore Gas and Electric Company generation includes a proportionate share of the Keystone and Conemaugh mine-mouth plants in Pennsylvania.

The generating facilities of the Hagerstown Municipal Plant have a name-plate capacity of 20 Mw. These facilities are on a stand-by basis, and are used only for peaking when the Potomac Edison system is unable to supply full load. Present interconnection capability with Potomac Edison is 55 Mw. With an additional transformer to be installed in 1975, the inter-tie capacity will be boosted to 65 Mw.

Also listed on Attachment No. 2 are projections of the annual growth rate in peak load and generating capacity for each utility and for the state as a whole. These rates are averages, compounded over the ten-year period 1975 - 1984. Corresponding doubling times are also shown.

It should be noted that the individual utility load data do not sum to the state totals. Peak demand figures for Hagerstown and Southern Maryland are excluded from the state figures since their demand is included in the Potomac Edison and PEPCO data, respectively.

Several observations concerning these projections should be noted:

1) Areas of greatest projected peak demand for electricity continue to be in the Easton area (13.0%) and in Southern Maryland (11.0%). Apparently, restrictions in sewer service in Prince George's County is forcing Washington, D. C. suburban development into the northern portion of Charles County and the northwestern corner of Calvert County.

2) For the entire State (and including the District of Columbia) the peak demand for electricity is expected to increase at an average rate of 5.9% per year, equivalent to doubling time of 12 years. In-state generation capacity is expected to increase at 4.1% per year.

3) Peak demand for the two major metropolitan areas of the state, Baltimore and Washington, have the lowest growth rates, 6.1% and 5% per year, respectively. If the demand component represented by Southern Maryland were removed from the PEPCO data, the PEPCO figure would be still smaller.

PUBLIC SERVICE COMMISSION
of Maryland

V. COMPARISON OF 1975 AND 1974 BG&E AND PEPCO TEN-YEAR PLANS

Shown in Attachment No. 3 are the ten-year projections of the peak demand, installed generating capacity, and installed reserve margins for the Baltimore Gas and Electric Company and Potomac Electric Power Company as given in their 1974 and 1975 Plans. Differences between these projections are also listed for comparison purposes.

Current reserve margin estimates of BG&E to about 1979 are lower than they were last year. These reductions are primarily the result of new generation construction postponements.

In contrast, PEPCO is estimating higher reserve margins to 1978, occasioned by a slackening of peak demand. For 1975 the estimated margin is 41.5%, about double the previous year's estimate.

Attachment No. 4 is a summary of the projected annual growth rates in peak demand and installed generating capacity as predicted by the electric companies in their 1973, 1974, and 1975 Ten-Year Plans.

All utilities, with the sole exception of Conowingo Power Company, have lowered their estimated peak load growth rates from last year's estimates. Likewise the peak demand for the state is expected to grow at a somewhat lower rate (5.9%), continuing the trend from 1973. Peak state load was estimated to have a 7.6% annual growth in last year's Plans.

Principal changes in the current new generation planning from the 1974 Plans are as follows:

1) BG&E expects to add new peaking units at its Perryman and Riverside plants, with on-the-line operation anticipated in the early part of the 1980's.

2) Calvert Cliffs Unit #2 will not become operational until 1977, representing an additional delay of two years. Brandon Shores Units #1 and #2 will begin commercial generation in 1980 and 1982, respectively. The 1974 Plan scheduled these units to begin operation in 1977 and 1978, respectively.

3) PEPCO has imposed a 5-year delay in beginning construction of its Douglas Point nuclear station.

It is now slated to begin in 1980, with completion in the middle and late eighties.

4) Chalk Point Unit #4 will not become operational before 1980, a slippage of four years from the 1974 Plan.

5) Construction of PEPCO's 800-Mw addition (Unit #4) at Dickerson will not begin before 1978, with completion four years later. This is a 4-year delay.

6) Conowingo's plans for its large nuclear-or-fossil fueled station at the Canal site have been postponed. Construction is expected not to begin before 1984 at the earliest.

VI. COMPARISON OF ACTUAL AND PEAK DEMANDS

In their 1974 Plans the utilities estimated their peak loads for 1974. Attachment No. 5 compares these estimates with the actual demands as recorded on the systems. In all utilities, the estimates were larger than the actual loads, ranging from about 5% for Hagerstown to 16% for Potomac Edison. BG&E and PEPCO estimates were some 13% high, as was the figure for the state as a whole.

VII. POWER PLANT CONSTRUCTION SCHEDULES

Attachment No. 6 has been prepared to assist in visualizing the planning schedules for new electric generation facilities in Maryland. Dashed lines and blocks indicate indefinite construction and/or in-service dates of proposed new generation.

VIII. ASSOCIATED TRANSMISSION LINES

The transmission lines associated with the construction of new generating stations will generally operate at 115 KV and higher voltages and will require rights-of-way widths of 150 to 300 feet. Further specific definition of "associated transmission lines" with respect to Section 54B of Article 78 and of "transmission lines" with respect of Section 54A is usually not available until certificate application is filed with the Commission. However, general planning information regarding terminal points, voltages, and dates is contained in the 1975 Ten-Year Plans as submitted by the major companies.

IX. ADDITIONAL DATA INQUIRY

In the event that inquiry concerning this report or additional data requests are indicated, such as by other State agencies, the request should be directed to either this office or to Mr. Richard Hollis, the responsible engineer. His telephone number is (301)383-5982.

John W. Dorsey
Chief Engineer

JWD:RH:al

November 1974

ATTACHMENT NO. 1

RETAIL ELECTRIC COMPANIES OPERATING IN MARYLAND

Name	Address	Telephone No.
Investor-Owned		
Baltimore Gas and Electric Company	Gas and Electric Bldg. Baltimore, Md., 21203	234-5000
Chestertown Electric Light and Power Company	Chestertown, Md. 21620	1-778-3333
Conowingo Power Company	211 North Street Elkton, Md. 21921	1-398-1400
Delmarva Power & Light Co. of Maryland	P.O. Box 1739 Salisbury, Md. 21801	1-749-6111
Potomac Edison Co., The	Downsville Pike Hagerstown, Md. 21740	1-731-3400
Potomac Electric Power Co.	1900 Pennsylvania Ave., N.W., Washington, D.C. 20006	1-202-872-2449
Municipally-Owned		
Berlin, Mayor & Council of	P.O. Box 235 Berlin, Md. 21811	1-641-2770
Centreville, The Town of	Centreville, Md. 21617	1-758-0830
Easton Utilities Commission, The	11 S. Harrison St. Easton, Md. 21601	1-822-6110
Hagerstown Municipal Electric Light Plant	Hagerstown, Md. 21740	1-731-2600
St. Michaels Utilities Commission	St. Michaels, Md. 21663	1-745-9400
Thurmont Municipal Light Co.	P.O. Box 385 Thurmont, Md. 21788	1-271-7313
Williamsport, Mayor and Council of	Williamsport, Md. 21795	1-223-7711

RETAIL ELECTRIC COMPANIES OPERATING IN MARYLAND (Continued)

Name	Address	Telephone No.
Customer-Owned		
Accomack-Northampton Electric Cooperative	Parksley, Virginia 23421	1-804-665-5116
Choptank Electric Co-operative, Inc.	P.O. Box 430 Denton, Md. 21629	1-479-0380
Somerset Rural Electric Cooperative, Inc.	P.O. Box 270 125 E. Fairview St. Somerset, Pa. 15501	1-814-445-4106
Southern Maryland Electric Cooperative, Inc.	Hughesville, Md. 20637	1-274-3111

NOTE: The Baltimore Gas and Electric Company and The Easton Utilities Commission operate combination electric and gas utilities.

ATTACHMENT NO. 2

PROJECTED TEN-YEAR GROWTH IN PEAK ELECTRIC
DEMAND AND IN INSTALLED GENERATING CAPACITY IN MARYLAND
1975 - 1984 PERIOD, IN MEGAWATTS

Region	1975		1976		1977		1978	
	Peak Load	Gen. Cap.	Peak Load	Gen. Cap.	Peak Load	Gen. Cap.	Peak Load	Gen. Cap.
Baltimore Metro								
BG&E[1]	3,640(-230)[2]	4,432	3,910(-240)	4,447	4,180(-270)	5,342	4,450(-310)	5,342
Washington Metro								
PEPCO (Entire System)[4]	3,625(-655)	5,131	3,806(-854)	5,131	3,996(-994)	5,131	4,196(-1,214)	5,131
Western Maryland								
Hagerstown	46(0)	20	48(0)	20	51(0)	20	54(0)	20
Potomac Edison[3][4]	744(-88)	139	939(-87)	139	990(-119)	139	1,045(-128)	139
Southern Maryland								
Southern Maryland	195(-38)	0	220(-50)	0	243(-65)	0	270(-85)	0
Eastern Shore								
Accomack	1(0)	1	1	1	1	1	1	1
Berlin	N/A	4		4		4		4
Conowingo	77(-3)	0	85(-1)		93(0)		101(0)	
Delmarva	357(-31)	258	375(-52)	258	398(-72)	258	425(-92)	258
Easton	29(0)	34	33(0)	45	37(0)	45	42(0)	57
STATE TOTALS	8,473(-1,007)	10,019	9,149(-1,234)	10,045	9,695(-1,455)	10,940	10,260(-1,744)	10,952

(1) Generation in Penna. included.

(2) Numbers in parentheses indicate changes from 1974 Plan figures

(3) Data are for 1974/75, 1975/76, etc. winter seasons.

(4) Includes all customers, including Sales for Resale.

ATTACHMENT NO. 2, (Continued)

	1979		1980		1981		1982	
	Peak Load	Gen. Cap.	Peak Load	Gen. Cap.	Peak Load	Gen. Cap.	Peak Load	Gen. Cap.
BG&E	4,730(-360)	5,592	5,000(-430)	6,202	5,290(-500)	6,202	5,590(-570)	6,812
PEPCO	4,406(-1,454)	5,131	4,626(-1,664)	5,761	4,858(-1,852)	5,761	5,101(-1989)	6,561
Hagerstown	58(0)	20	61(0)	20	65(0)	20	69(0)	20
Potomac Edison	1,104(-156)	139	1,167(-181)	100	1,236(-158)	100	1,310(-183)	100
Somerset								
Thurmont								
Williamsport								
Southern Maryland	300(-110)		330(-145)		365(-170)		405(-215)	
Accomack	1	1	2	1	2	1	2	1
Berlin		4		4		4		4
Centreville								
Chestertown								
Conowingo	108(-1)		119(+1)		129(+1)		139(0)	
Choptank								
Delmarva	455(-114)	258	487(-138)	258	521(-167)	258	557(-200)	258
Easton	48(0)	57	55(0)	81	62(0)	81	70(0)	81
St. Michaels								
STATE TOTALS	10,852(-2,085)	11,202	11,456(-2,412)	12,427	12,098(-2,676)	12,427	12,769(-2,942)	13,840

ATTACHMENT No. 2, (Concluded)

	1983		1984		Average Overall Growth %/year		Doubling Time Years	
	Peak Load	Gen. Cap.	Peak Load	Gen. Cap.	Peak Load	Gen. Cap.	Peak Load	Gen. Cap.
BG&E	5,890(-640)	7,062	6,200	7,362	6.1	5.8	11.7	12.3
PEPCO	5,356(-2,124)	6,561	5,624	6,561	5.0	2.8	14.2	25.4
Hagerstown	73(0)	20	74	20	5.4	0	13.1	-
Potomac Edison	1,389(-217)	100	1,475	100	7.9	-3.6	9.1	-
Somerset								
Thurmont								
Williamsport								
Southern Maryland	450(-300)		500		11.0		6.6	-
Accomack	2	1	2	1	8.0	0	9.0	-
Berlin		4		4		0		
Centreville								
Chestertown								
Conowingo	150(0)		161		8.5	-	8.5	-
Choptank								
Delmarva	596(-236)	258	638	258	6.7	0	10.7	-
Easton	78(0)	103	87	103	13.0	13.1	5.7	5.6
St. Michaels								
STATE TOTALS	13,461(-3,217)	14,109	14,187	14,409	5.9	4.1	12.1	17.2

ATTACHMENT NO. 3

TEN-YEAR PROJECTIONS OF PEAK ELECTRIC DEMAND, INSTALLED CAPACITY AND RESERVE MARGIN, 1974 AND 1975 TEN-YEAR PLANS OF BALTIMORE GAS AND ELECTRIC COMPANY AND POTOMAC ELECTRIC POWER COMPANY

	1975			1976			1977			1978		
	Peak Load MW	Gen. Cap. MW	Res. Margin %	Peak Load MW	Gen. Cap. MW	Res. Margin %	Peak Load MW	Gen. Cap. MW	Res. Margin %	Peak Load MW	Gen. Cap. MW	Res. Margin %
Baltimore Gas & Electric												
1975 Plan	3,640	4,432[2]	21.8	3,910	4,447	13.7	4,180	5,342	27.8	4,450	5,342	20.0
1974 Plan	3,870	5,287[2]	36.6	4,150	5,301	27.7	4,450	5,931	33.3	4,760	6,561	37.8
Difference	-230	-855	-14.8	-240	-854	-14.0	-270	-589	-5.5	-310	-1,219	-17.8
Potomac Electric[1] Power Company												
1975 Plan	3,625	5,131[2]	41.5	3,806	5,131	34.8	3,996	5,131	28.4	4,196	5,131	22.3
1974 Plan	4,280	5,210[2]	21.7	4,660	5,840	25.3	4,990	5,840	17.0	5,410	6,640	22.7
Difference	-655	-79	19.8	-854	-709	9.5	-994	-709	11.4	-1,214	-1,509	-0.4

(1) Entire System

(2) In 1975 PEPCO will buy 200 MW of capacity from BG&E. These figures ignore this transaction.

ATTACHMENT NO. 3, (Continued)

	1979			1980			1981		
	Peak Load MW	Gen. Cap. MW	Res. Margin %	Peak Load MW	Gen. Cap. MW	Res. Margin %	Peak Load MW	Gen. Cap. MW	Res. Margin %
Baltimore Gas & Electric									
1975 Plan	4,730	5,592	18.2	5,000	6,202	24.0	5,290	6,202	17.2
1974 Plan	5,090	6,561	28.9	5,430	6,561	20.8	5,790	6,961	20.2
Difference	-360	-969	-10.7	-430	-359	3.2	-500	-759	-3.0
Potomac Electric Power Company									
1975 Plan	4,406	5,131	16.5	4,626	5,761	24.5	4,858	5,761	18.6
1974 Plan	5,860	6,640	13.3	6,290	7,818	24.3	6,710	7,818	16.5
Difference	-1,454	-1,509	3.2	-1,664	-2,057	0.2	-1,852	-2,057	2.1

ATTACHMENT NO. 3 (concluded)

	1982			1983			1984		
	Peak Load MW	Gen. Cap. MW	Res. Margin %	Peak Load MW	Gen. Cap. MW	Res. Margin %	Peak Load MW	Gen. Cap. MW	Res. Margin %
Baltimore Gas and Electric									
1975 Plan	5,590	6,812	21.9	5,890	7,062	19.9	6,200	7,362	18.7
1974 Plan	6,160	7,461	21.1	6,530	8,361	28.0	-	-	-
Difference	-570	-649	0.8	-640	-1,299	-8.1	-	-	-
Potomac Electric Power Company									
1975 Plan	5,101	6,561	28.6	5,356	6,561	22.5	5,624	6,561	-
1974 Plan	7,090	8,996	26.9	7,480	8,996	20.3	-	-	-
Difference	-1,989	-2,435	1.7	-2,124	2,435	2.2	-	-	-

ATTACHMENT NO. 4

COMPARISON OF PROJECTED ANNUAL GROWTH RATES
IN PEAK DEMAND AND INSTALLED GENERATING CAPACITY
AS PRESENTED IN THE
1973, 1974, AND 1975 TEN-YEAR PLANS
PERCENT PER YEAR

	1973 Ten-Yr. Plan (1973-1982)		1974 Ten-Yr. Plan (1974-1983)		1975 Ten-Yr. Plan (1975-1984)	
Region	Peak Load	Gen. Cap.	Peak Load	Gen. Cap.	Peak Load	Gen. Cap.
Baltimore Metro						
BG&E	6.8	8.0	6.8	7.3	6.1	5.8
Washington Metro						
PEPCO	10.3	10.6	7.3	6.3	5.0	2.8
Western Maryland						
Hagerstown	5.5	0	6.1	0	5.4	0
Potomac Edison	7.1	0	8.2	(-3.6)	7.9	(-3.6)
Southern Maryland						
Southern Maryland	15.1	-	15.8	-	11.0	-
Eastern Shore						
Conowingo	10.4	-	8.3	-	8.5	-
Delmarva	11.8	0	10.0	0	6.7	0
Easton	9.3	6.0	15.7	12.2	13.0	13.1
Entire State						
Percentage	9.4	9.2	7.6	6.5	5.9	4.1
Years to Double	7.7	7.9	9.5	11.0	12.1	17.2

ATTACHMENT NO. 5

COMPARISON OF ACTUAL AND
PROJECTED PEAK DEMANDS
FOR 1974
MW

Region	Actual Peak Demand	Projected[(1)] Peak Demand	Difference Amount	Difference % of Actual
Baltimore Metro				
BG&E	3,190	3,610	420	13.2
Washington Metro				
PEPCO (Entire System)	3,502	3,960	458	13.1
Western Maryland				
Hagerstown	40.9	43	2.1	5.1
Potomac Edison[(2)]	681[(3)]	790	109	16.0
Southern Maryland				
Southern Maryland	179.4	201	21.6	12.0
Eastern Shore				
Conowingo	66.7	73	6.3	9.4
Delmarva	319	353	34	10.7
Easton	18.6	21	2.4	12.9
Entire State[(4)]	7,777	8,807	1,030	13.2

(1) As shown in utilities' 1974 Ten-Year Plans.

(2) For 1973-1974 winter season.

(3) Per Phone call from C. C. Wolf, Director of Engineering, Potomac Edison, 12/6/74.

(4) Hagerstown and Southern Maryland data excluded in this summation.

ATTACHMENT NO. 6

TIME SCHEDULES FOR IMPLEMENTING
NEW ELECTRIC GENERATING PLANTS IN MARYLAND
1975 TEN-YEAR PLANS