

Chapter 8

From Luxury to Necessity: The History of Electricity Regulation in the District

A. Background

Electricity was introduced into the City of Washington well before the creation of both PEPCO and the Commission.



The first commercial use of electricity was street lighting based on “arc” technology. An “arc” lamp generates light by having current flow through air (could be an inert gas) between two carbon rods or electrodes. “Arc” lighting was well suited for street lighting because it was super bright and capable of lighting a large area. It was also cheaper to light streets than the predominant use of gas or oil lamps.

The first demonstration of “arc” technology in the District occurred in 1872.¹ A decade later, in 1882, the City Commissioners contracted for the installation of ten new arc-based electric street lamps that were suspended over F Street between the Treasury Department and Ninth Street, N.W.² Seeing that this new type of light worked, the City installed 100 more lamps over the next few months.³

Meanwhile, in 1879, Thomas Edison demonstrated the first “commercially practical incandescent light.”⁴ While “arc” lighting produced dangerous UVA rays that were a fire hazard due to excessive heat and sparks, incandescent lighting was better suited for diverse uses, and it had low enough wattage to be installed in homes.⁵ For many years thereafter into the 1920s, street lighting used both “arc” and incandescent lighting.

The D.C. transportation system was a principal user of electricity. As Washington expanded beyond the city limits, the horse drawn streetcar system, which began in 1862 and was provided by five railway companies, had difficulty climbing the hills north of Florida Avenue, Northwest. In its place, in 1888, four new railway companies were incorporated for the purpose of providing an electrified streetcar (called trolley car) system that was powered by overhead lines. In 1896, Congress mandated that an underground system replace streetcar service within the original City limits.

¹ Potomac Electric Power Company History at <http://www.fundinguniverse.com/companyhistories/potomac-electric-power-company-history/p.1>

² “Electric Lighting. A Handsome Display on F Street by the Heisler Company,” *The Washington Post*, July 3, 1882, p. 3.

³ “Estimates for City Lighting,” *The Washington Post*, Oct. 16, 1895, p. 12.

⁴ http://en.wikipedia.org/wiki/Thomas_Edison, p. 5.

⁵ Beck, William, *100 Years of Matchless Service: Potomac Electric Power Company 1896-1996*, Washington, D.C. 1996, p. 9.

Also, in 1896, PEPCO was first incorporated in Virginia,⁶ and its customers were almost entirely commercial: mainly streetcar companies that needed electricity as a source of power as they shifted from horse drawn to electrified “trolley car” systems. In the same year, Oscar T. Crosby, PEPCO’s first President, was successful in getting the D.C. Commissioners to allow PEPCO to extend its lines into the District, hoping lower rates would follow from competition with the then-dominant United States Electric Lighting Company.⁷ Crosby then secured PEPCO’s place in the D.C. market by obtaining a street lighting contract with the City after losing the bid, but winning it on appeal in court.⁸ PEPCO and United States Electric Lighting Company ultimately merged in 1898.

When the Commission was created in 1913, PEPCO was owned by the Washington Railway and Electric Company (WRECO) that had taken over the company in 1902. PEPCO had 20,581 meters in service and nearly 8,000 street lamps. Excluding its railway operations, PEPCO had nearly \$2 million in revenue and its connected load was about 43,000 kilowatts.⁹ The principal sources of revenue were commercial lighting (72 percent), commercial power (16 percent), and street and park lighting (10 percent).¹⁰

It is evident that in 1913, residential electricity usage in the District was virtually non-existent.¹¹ In fact, there is no mention of it in the statistics for PEPCO in the Commission’s Annual Reports until 1929. Instead, among households, coal was the primary heating source in the District. But by the 1930s, the majority of U.S. households in urban areas used electricity for lighting and a myriad of new appliances and the District was no exception.

“New levels of convenience, efficiency and leisure time were achieved with the advent of electric appliances. In the early 1900s PEPCO sold electric fans, toasters, irons and the like directly to customers. In the mid-1920s, with electric power still a novelty, PEPCO sent home economists into communities to educate consumers and ease the transition to the electric age.”¹²

⁶ PEPCO’s 1995 Annual Report

⁷ PEPCO has never had a franchise agreement in the District of Columbia but there is No. 2777-A Certificate of the Incorporation of the Potomac Electric Power Company in the District dated April 28, 1896 that is shown in Appendix 5.2.

⁸ Potomac Electric Power Company History at <http://www.fundinguniverse.com/companyhistories/potomac-electric-power-company-history/p.1>

⁹ 1913 PUC Annual Report, pp. 165-166.

¹⁰ Ibid.

¹¹ Nationally, only about 15 percent of urban areas had electricity for lighting and other household purposes.

¹² PEPCO’s 1995 Annual Report, p. 6.



B. Importance of Electricity to the District

PEPCO's 1995 Annual Report contains a summary of its first 100 years – 1896 – 1995 that presents a vivid overview of the impact of its role in the provision of electricity in the life of the City.

“Since its incorporation on April 28, 1896, Potomac Electric Power Company (PEPCO) has powered the development and growth of the nation’s capital. For a century the company’s energy and services have enabled technological, social and economic change that transformed Washington from a small, country town to the magnificent capital of a great nation Over the past 100 years, electricity has evolved from a luxury for the few to a necessity of life, powering home comfort and convenience, area infrastructure and business productivity... Throughout the century, electricity and the technological advances it made possible have led to an almost ceaseless improvement in the quality of life. Arc lighting, the first major commercial use of electricity in Washington, sparked a burst of business and social activity during once-quiet evening hours. Soon thereafter, electric lighting brightened home and hearth, as incandescent light bulbs made residential use practical. New levels of convenience, efficiency and leisure time were achieved with the advent of electric appliances.... More recently the information and entertainment revolution has penetrated living rooms as televisions, VCRs, and personal computers have become commonplace.”¹³

The purpose of this Chapter is to describe how the Commission, as the regulator of PEPCO, has contributed to these achievements. In fact, PEPCO's accomplishments and their impacts on the City could not have occurred without the guiding hand of this vital District Government agency.

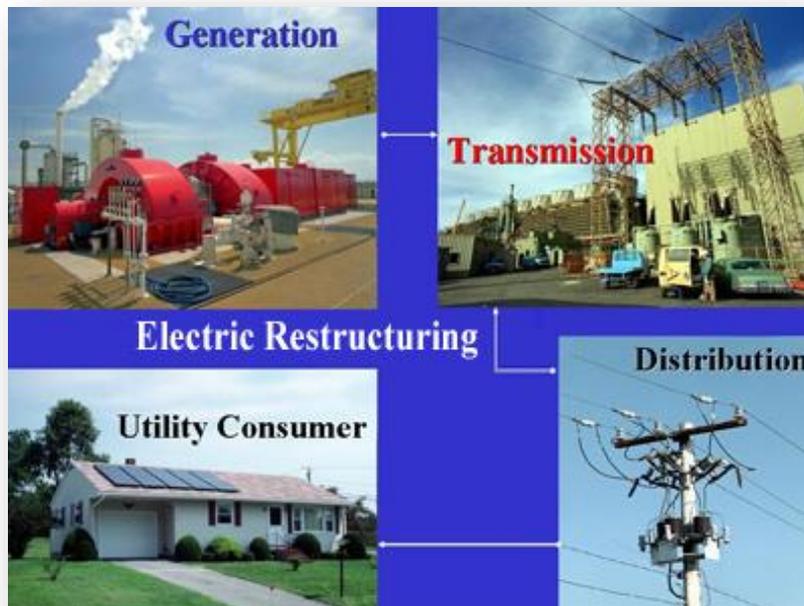
C. Electricity Regulation Goals

From 1913 through the year 2000, PEPCO was the sole electric utility company serving the District. PEPCO was also the monopoly electric utility company serving major parts of Montgomery and Prince Georges counties in Maryland and until 1986, nearby parts of Virginia. The company was what is called “vertically integrated” in that it owned generation plants where the electricity was produced (only two of these plants were located in the District), transmission lines that brought the electricity from PEPCO's generation plants to PEPCO's facilities in its service territory, and a distribution system located within its service territory

¹³ PEPCO's 1995 Annual Report, pp. 6-7.

composed of substations, feeder lines, etc. that serve residential, government, and business customers.

In 1999, the D.C. Council passed the Retail Electric Competition and Customer Protection Act of 1999 that authorized the Commission to consider a PEPCO request for approval to sell its generation plants and open the retail generation market to competition. Effective January 2001, electricity rates were “unbundled” into generation, transmission, and distribution so all business, residential, and government customers could choose their retail generation and transmission supplier while PEPCO remained the sole monopoly distribution company. While customers who choose a competitive generation and transmission supplier pay the supplier for transmission, the supplier pays PEPCO because it remains the monopoly owner of the transmission lines and services in its service area.



In 2013, the Commission’s Centennial year, electricity cases accounted for more than half of the Commission’s docket. They addressed each of the Commission’s objectives or goals as follows:

1. Ensuring Just and Reasonable Rates - A PEPCO rate case was underway, with a sizable share of the requested revenue increase attributed to the smart meter program and reliability improvement initiatives. In addition, PEPCO had also completed the deployment and activation of “smart meters” that would enable customers to track their usage on an hourly or frequent basis, as desired, so they could minimize their bills by reducing or shifting their usage from periods when electricity rates are relatively high to when they are relatively lower.
2. Promoting Energy Efficiency and Preserving Environmental Quality - The

Commission promoted energy efficiency and the preservation of environmental quality by processing nearly 400 Renewable Portfolio Standards applications, tracking the status of solar applications, and reporting to the D.C. Council on Annual Compliance Reports.

3. Fostering Competition - While licensing nearly 40 new competitive electricity suppliers, the Commission received numerous complaints regarding a few existing competitive electricity suppliers. The Commission listened to consumers' complaints at a public hearing, undertook an investigation, and ordered the most egregious violator to provide monetary compensation to several hundred customers who had been victimized by the company's misleading business marketing practices. The Commission also began the process of tightening its electricity supplier rules.
4. Improving PEPCO's Electric System Reliability - The Chairman and staff participated in Mayor Vincent Gray's Task Force that drafted legislation calling for the undergrounding of 60 overhead feeders over a 7 to 10-year period that promises to be a "game changer" by reducing the number of outages that are both storm-related and non-storm related (the latter are called "blue sky" outages). PEPCO's system reliability performance had degraded over a number of years due to its aging overhead and underground infrastructure that needed accelerated maintenance and replacement. Meanwhile, the Commission tracked the number of outages each month and the company's quality of service performance on an annual basis, and conducted independent inspections of 200 manholes each year.

D. How the PSC Has Met Those Goals

1. Ensuring Just and Reasonable Rates

The approval of electricity rates during the 101-year period can be divided into 4 stages - The Early Years, The Sliding Scale Arrangement, Rate of Return Regulation, and Economic & Social Ratemaking. The Promotion of Energy Conservation and Introduction of Competition are addressed under Economic & Social Regulation.

a. The Early Years

When the Commission was created in 1913, the price of electricity for residential service in the District of Columbia had been set by Congress in 1899 at a flat rate of 10 cents per kilowatt hour (kwh) plus a \$1.00 minimum charge. The tariff for the rates was called Schedule A.¹⁴ Combining the minimum charge and per kwh charge with an estimated usage of 15 kwh per month translates to an average rate per kwh of about 16 cents. The primary use of electricity was for lighting but there were very few residential customers.¹⁵

¹⁴ Schedule A established rates primarily for lighting and was restricted to residential service only.

¹⁵ In 1915, PEPCO filed a new Cooking and Heating Schedule H. The Commission-approved rate design was a minimum charge of \$1.00 plus 10 cents per kwh for the first 10 kwh and then 3 cents per kwh thereafter. See 1937 Public Utilities Commission (PUC) Annual Report, p. 74. Schedule H continued through 1938.

The Commission did not immediately change this rate because it first needed to value PEPCO's physical property and assets per paragraphs 6-8 of the public utilities law. In fact, that process took many years. The Commission began the valuation of PEPCO and WRECO in 1914. In 1916, the Commission held 43 days of hotly contested hearings. In 1917, the Commission approved a valuation of PEPCO's assets within the District of \$10.25 million as of July 1, 1914 and \$11.2 million as of December 31, 1916 in Order No. 208, issued on May 2, 1917 in Formal Case (F.C.) No. 47.

In anticipation of rendering a decision on the value of PEPCO's assets, the Commission opened an investigation into PEPCO's rates, tolls, charges and schedules by initiating F.C. No. 61 on January 26, 1917. On July 13, 1917, the Commission issued Order No. 223, establishing a 7 percent allowed rate of return for PEPCO and reducing PEPCO's revenues by \$320,000. This translated into a reduction in Schedule A rates to a 75 cents minimum charge, 8 cents per kwh for less than 60 kwh of usage and 5 cents per kwh for usage greater than 60 kwh.¹⁶ The Commission ordered the reduction despite the fact the wholesale cost of coal used to generate electricity had increased and PEPCO had added a 15,000 kilowatt (kw) generation unit to its D.C.-based Benning Road generation station. Rather, the reduction reflected the Commission's determination that PEPCO's parent company, WRECO, was not contributing its fair share of the costs, which placed an unfair burden on PEPCO ratepayers. The Commission also reduced the rates for streetlamps by 10 percent.

The valuation process did not end with Order No. 208. PEPCO filed a notice of dissatisfaction and petitioned for a retrial, which the Commission declined. PEPCO then filed suit in the Supreme Court of the District of Columbia to set aside the findings. It was not until March 1920 that the Court rendered its decision, sustaining the valuation findings of the Commission. PEPCO appealed the decision to the D.C. Court of Appeals.

Meanwhile, on May 28, 1920, PEPCO filed a petition asking the Commission to amend rates applied to wholesale customers because of the rising cost of coal. PEPCO later added a request to amend the rates for other retail classes of customers. On September 3, 1920, the Commission issued Order No. 388 in F.C. No. 85, wherein it approved a PEPCO revenue increase of \$400,000. The residential rate was increased to 8.5 cents per kwh for monthly usage less than 60 hours and 5.5 cents per kwh for monthly usage greater than 60 kwh.

On November 7, 1921, the D.C. Court of Appeals reversed the valuation decision of the Supreme Court of the District of Columbia. The Commission appealed the matter to the U.S. Supreme Court, which accepted the case. However, in 1923, the U.S. Supreme Court decided that it did not have jurisdiction to pass on the valuation issues, so it remanded the case back to the Supreme Court of the District of Columbia for retrial. In the interim, the Commission had approved 3 successive rate reductions; 5 percent each in 1921, 1922 and 1923. However, the 1923 reduction was held in abeyance pending a final decision in the valuation case.

b. Sliding Scale Approach to Setting Rates

¹⁶ This form of rate design is called a declining block rate, which means the average price falls as usage increases. It is used to stimulate usage or consumption, which was certainly the goal at the time.

On February 12, 1924, the Supreme Court of the District of Columbia approved a settlement agreement among the parties (Consent Decree) in the valuation case. PEPCO's property was revalued as of January 1, 1925, at an amount of \$32.5 million, including Maryland property that was higher than the value approved in Order No. 208 in 1917. PEPCO's allowed rate of return was set at 7.5 percent. If the rates thereafter yielded a rate of return in excess of 7.5 percent, one-half of the excess would be used to reduce rates,

“thereby providing a sliding scale of rates under provisions of paragraph 18 of the act creating the Public Utilities Commission, advantageous to the public and company alike; that is to say, by way of example, if the return for any one year should amount to \$100,000 over and above the 7.5 per cent on the base ascertained as aforesaid then the rates for the succeeding year to be charged the public shall be automatically reduced by the filing of new rate schedules to absorb \$50,000 of such excess during such year. If the average return for any consecutive 5-year period falls below 7.5 per cent on the base ascertained as aforesaid, or if the average return for any consecutive 3-year period falls below 7 per cent on the base ascertained as aforesaid, or if the return for any consecutive 12-month period falls below 6.5 per cent on the base ascertained as aforesaid, the Commission shall promptly increase rates so as to yield 7.5 per cent on the base ascertained as aforesaid.”¹⁷

Thus, this Consent Decree utilized a “sliding scale formula” for the division of an escrowed amount totaling \$5.888 million as of December 31, 1924 between ratepayers and PEPCO shareholders, which represented the difference between “the rates actually collected and those which were prescribed by Order No. 223,”¹⁸ subject to several adjustments for taxes. The ‘Boston’ sliding scale approach, which adjusts rates whenever the company's earnings fall below or exceed the prescribed rate of return, was sanctioned in the original Act creating the Commission and continued to be used as the method for setting rates for many years to come.¹⁹

According to Order No. 2796, issued July 22, 1944 in F.C. Nos. 335 and 338, per an investigation of the sliding scale arrangement, during the year 1924, when the Consent Decree was issued, PEPCO's residential rates were “well above the national average.” For example, the cost of 100 kwh consumption for residential service in the District of Columbia was \$9.24 in 1924 as compared with the average cost of \$6.18 for comparable consumption in 150 cities having a population of 50,000 or more. As a result of the new rate schedules ordered into effect as of January 1, 1925, the difference between the cost of PEPCO's service and the national average cost was substantially reduced. However, the cost for 100 kwh consumption for residential service in the District of Columbia in the year 1925 was \$7.02, while the average cost for 150 cities having a population of 50,000 or more was \$6.00.”²⁰

In sum, the analysis in Order No. 2796 indicated the annual rate reductions under the sliding scale arrangement resulted in rates that were more comparable with national averages.

¹⁷ 1924 PUC Annual Report, p.47.

¹⁸ Ibid.

¹⁹ See paragraph 18 of the Act, which can be found in the Appendix to this book.

²⁰ Order No. 2796, pp. 5-6.

For example, “again using the 100 kwh consumption for comparative purposes, the cost of such residential service in the District of Columbia fell below the national average costs during the year 1930 and remained consistently and progressively lower in each succeeding year. For the year 1942, the cost of 100 kwh consumption for residential service in the District of Columbia was \$2.56, as compared with an average cost of \$3.80 for all cities having a population of 50,000 or more.”²¹

The first rate increase since 1920 occurred in 1948 in F.C. No. 379 when the Commission approved a \$2.75 million revenue increase out of a \$3.0 million request by PEPSCO. The increase was attributed to higher coal prices that decreased the company’s earnings and hence its rate of return.²² By Order Nos. 3397, 3402, and 3482, residential rates increased by 8.7 percent. Moreover, Schedule A was changed to Schedule R for “low voltage electrical service in individual residences or individually metered dwelling units in multi-family buildings where the use is primarily for residential purposes and for farm operations served through residential meters.”²³ Schedule R is still in effect today. The Commission also eliminated the off-peak discount on commercial schedules due to the development and growth of air conditioning and its impact on commercial lighting loads, which shifted the peak to all day periods in both winter and summer. Finally, the order rearranged, clarified, and changed some of the General Terms and Conditions such as prorating bills, service connection charges, and extension of service mains.

The decision to increase rates in Order No. 3397, issued on July 8, 1949 in F.C. No. 379 occurred just a few months after the Commission approved a modified sliding scale plan in February 1948.

“The Modified Plan is a method of regulating income of the Company at a reasonable level. It does not require an annual adjustment of rates, but provision is made for the consideration of rate adjustments under certain specified conditions. The Modified Plan permits the institution of a special proceeding at any time, by either the Company or Commission, when it appears that an adjustment of rates should be affected. Thus, it provides a means during periods of economic uncertainty of stabilizing the income of the Company at a more reasonable level than could be attained in the absence of the Modified Plan. B As an integral part of the Modified Plan, provision is made for the creation of a deferred credit account to which will be credited a portion of the annual earnings of the Company which may be in excess of the allowed return and against which will be charged amounts necessary to make up to the Company any annual deficiency by which the return earned is less than the basic return of 5.5%.”²⁴

In sum, the Modified Plan replaced the process of annual rate reductions when the Company earned more than its allowed rate of return with the creation of a deferred credit account that would provide customer refunds, the withholding of income, or the release of income previously withheld depending on whether the Company was over or under earning.

²¹ Ibid.

²² See page 5 of the attachment to Order No. 3397 issued July 8, 1948.

²³ See Order No. 3402 in F.C. No. 379, issued on July 19, 1948, on p. 9.

²⁴ Findings and Opinion in Support of Orders Nos. 3397 and 3402, P.U.C. No. 3481, F.C. No. 379, p. 8.

The change occurred because PEPCO successfully argued that the Sliding Scale plan was inequitable in that it did not provide an adequate adjustment mechanism when the Company was under-earning.

On October 4, 1954, PEPCO filed a request to abandon the Modified Sliding Scale Plan as part of a rate increase application that was docketed as F.C. No. 438. The Commission discontinued the Modified Sliding Scale Plan, effective December 31, 1954 in Order No. 4182, issued on April 6, 1955.

c. Rate Base Rate of Return Regulation

F.C. No. 402, opened on July 28, 1950, was the first electric rate case in which “Modern Regulation or Rate Base Rate of Return Regulation” was implemented. Previously, valuations of companies and the determination of rates of return were made in separate proceedings. Rate base rate of return regulation essentially combined the two. The method entails the derivation of a revenue requirement (RR), which is the amount of additional revenue the utility company needs in order to have an opportunity to earn its allowed rate of return. The formula used to calculate the revenue requirement is as follows:

$$\text{RR} = \text{Operating Expenses} + \text{Taxes} \\ + (\text{Rate Base} [\text{Original Cost}] - \text{Accrued Depreciation}) \times \text{Rate of Return}$$

Operating Expenses are calculated on the basis of historical or accounting costs and the Rate Base is the value of the utility company’s physical assets. Once the revenue requirement is determined, the second step is to allocate it across customer classes, and third, to design rates for each customer class that will yield that class’s revenue requirement responsibility.

In F.C. No. 402, PEPCO filed a request for a \$3.5 million increase in revenues to cover the cost of an aggressive construction program that included the addition of a generation plant in Alexandria, outside the Company’s service territory, but necessary, according to the company, to meet growing demand in D.C. and Maryland. This led several of the intervenors, namely Capital Transit and the Federation of Citizens Association, to argue for a jurisdictional cost allocation study to be used as a basis for allocating the costs of the new plant between D.C. and Maryland. The Commission rejected the use of a jurisdictional cost allocation study, noting in its decisional Order No. 3762, issued on February 12, 1951, that rates had been previously set on a system-wide basis, that the operation of PEPCO’s facilities is conducted on an integrated basis, which is economical and efficient, and hence “effective and equitable regulation requires consideration of system operations.”²⁵ Moreover, the Commission approved a \$2.6 million revenue increase.

The Commission approved two more rate increases in the 1950s, in F.C. No. 438 in 1955 and in 1959 in F.C. No. 464.²⁶ In contrast, the Commission approved two rate reductions in the 1960s; in F.C. No. 491 in 1963 and F.C. No. 511 in 1966. In F.C. No. 511, the entire reduction was applied to residential rates, over the objection of PEPCO.

²⁵ Order No. 3702, p. 6.

²⁶ See Order No. 4184 in F.C. No. 438 and Order No. 4525 in F.C. No. 464.

The decade of the 1970s was difficult for electric utility companies and their customers nationwide when the average price of electricity skyrocketed. The average price for residential customers nearly doubled. Never before had rates increased so much.

A combination of events occurring outside the electric industry and the end of technological progress within the industry were contributing factors. For example, nationally the demand for electricity was growing by 7 percent to 8 percent a year thanks to the continued proliferation of electrical appliances and air conditioning. Electric utility companies were having difficulty constructing enough capacity to meet the demand, which led to brownouts during hot summer days between 1967 and 1969. Coal was the predominant source of fuel for generating electricity, but by 1970, the public and Congress became concerned about its environmental effects. As a result, Congress passed the Clean Air Act of 1970, which caused many electric utilities to increase their dependence on oil, which burned more cleanly than coal. Yet, the energy crisis created by the 1973 Arab oil embargo, contributed to a substantial increase in the price of oil and hence the price of electricity.

Meanwhile, previously the higher costs of construction and fuel were offset by improved thermal efficiencies and economies of scale. These benefits slowed as metallurgical fatigue caused reliability to decrease and maintenance costs to increase and generating units larger than 1,000 megawatts endured greater failure rates than the smaller units so bigger no longer meant better. Nuclear plants were not the answer. Their upfront construction costs were huge, and they emitted thermal waste that required environmental laws to protect the environment and the public and increase operating costs. Besides, as customer usage slowed after the energy crisis, the utility companies no longer needed the larger plants.

A third source of upward pressure on utility costs and rates derived from increased interest rates that caused an increase in utility companies' borrowing costs. In the 1950s, interest rates hovered around 5 percent. In the 1970s and early 1980s, they rose to 15 percent or more. As a consequence, stock prices fell.

As a result, energy prices increased dramatically, and consumers responded by reducing usage and consumption. Nationally, the average annual growth in electricity usage in the 1970s was about 2 percent a year, compared to 7 percent to 8 percent a year previously.

The District was not immune to any of these factors and trends. Average monthly residential electricity rates rose from 2.62 cents per kwh (assuming 424 kwh of usage) in 1970 to 4.83 cents per kwh in 1980 (assuming 533 kwh of usage) while growth in usage slowed considerably. In the previous decade of the 1960s, residential electric usage had nearly doubled from 222 kwh a month to 424 kwh a month.

During the decade of the 1970s, the Commission approved 7 rate increases. The first occurred in F.C. No. 541. PEPCO filed an application to increase rates by \$24.9 million on February 27, 1969 and an emergency application to increase rates on an interim basis on August 5, 1969. The Commission refused to grant a 6.5 percent surcharge on an interim basis

until it held a hearing and further proceeding.²⁷ After the hearing, PEPCO renewed its emergency application, arguing it was having difficulty meeting existing demands exemplified by brownouts on August 18, 1969. On June 29, 1970, the Commission authorized a 5 percent interim increase, which meant an average 42-cent monthly increase for residential (standard R rate class) customers.²⁸

F.C. No. 541 is also noteworthy for several other reasons. First, the Commission approved seasonal rates, that is different rates for the winter and summer seasons. The rates for usage over 800 kwh per month were higher in the summer (1.9 cents per kwh) than in winter (1.2 cents per kwh). The summer season was defined as the billing months of June through October and the winter season was defined as the billing months of November through May. Second, due to increasing fuel costs, PEPCO had proposed a Fuel Adjustment Clause (FAC) for residential customers but the Commission did not approve the proposal in this case. Third, the impact of rates on the low-income was an issue for the first time. The D.C. City-wide Consumer Council, backed by several other intervenors such as CHANGE, Inc., the Washington Urban League, and the Capitol Hill Group Ministry, proposed exempting households with income less than \$5,500 a year for a family of 4 from the rate increase, but the Commission deemed the proposal to be unlawful on the grounds it would be discriminatory and unworkable and the amount of the increase of less than \$1.00 would not be an insurmountable financial burden for the low-income. Fourth, for the first time, the Commission accepted a jurisdictional allocation cost study because growth was faster in Maryland than in D.C. and hence, the Commission determined D.C. ratepayers' share of costs should be less than Maryland's share.

Fifth, the Commission addressed PEPCO's employment practices particularly as they related to minorities and women after the Washington Urban League raised the issue. With the assistance of the Equal Employment Opportunity Commission (EEOC), which was also investigating PEPCO's practices, the Commission proffered its own affirmative action plan for PEPCO. PEPCO challenged the plan in Court. The Commission "lost the battle, but won the war." That is, the Court overruled the Commission's affirmative action plan on the grounds PEPCO had not had an opportunity to weigh in on it during the proceeding, while affirming the Commission's authority and right to address the issue in its rate cases or other proceedings.

A year later, PEPCO filed a new rate increase application that the Commission docketed as F.C. No. 568. PEPCO requested a revenue requirement increase of \$24.7 million. The Commission approved a \$12.152 million increase, which was slightly less than half of the request. In this case, the Commission addressed the effect of electric utility operations on the environment and the Commission approved a FAC for the first time that appeared on customers' bills as a separate line item. With the rapid rise in fuel costs, the FAC enabled PEPCO to pass along the fuel costs to its customers more quickly as the costs were incurred rather than having to wait until the next rate case. The Commission also continued its investigation of PEPCO's employment practices, but in the end, it opened a separate proceeding (F.C. No. 576) for further exploration.

²⁷ See Order No. 5419.

²⁸ See Order No. 5436.

PEPCO filed a third rate increase request on April 30, 1973 that was docketed as F.C. No. 596. PEPCO asked for an additional \$44.4 million to cover the cost of increases in investment and operating costs which it deemed to be necessary to permit PEPCO to undertake a financing program to meet increasing demand for electricity in its service area. The Commission approved \$17.8 million. Although the Commission in its decisional order exempted residential customers using fewer than 400 kwh a month from the rate increase,²⁹ the rates for usage above 400 kwh that the Commission subsequently approved on December 3, 1973 in Order No. 5617 were higher than previous rates.

Moreover, the Commission approved, for the first time, a partial switch from a declining block rate structure to an inverted rate design structure for the residential class. In a declining block rate structure rates decline as usage increases. In an inverted rate structure, rates increase as usage increases. In F.C. No. 596, the Commission approved a declining block rate structure for all winter usage but applied a higher rate to summer usage above 400 kwh.

On December 20, 1974, PEPCO filed a fourth rate increase application, this time requesting \$50.83 million. The Commission docketed the case as F.C. No. 630. The Company claimed a substantial reduction in energy and capacity sales to the regional transmission organization, PJM,³⁰ and energy conservation's impact on retail sales have reduced PEPCO's earnings. This was the first electric rate case in which the newly re-constituted Office of the People's Counsel (OPC) participated on behalf of residential ratepayers. The Home Rule Act had created the office as a way to ensure consumers had a voice in Commission proceedings during a period of escalating rates.

In December 1975, in Order Nos. 5739 and 5748, the Commission approved a \$27.7 million rate increase and exempted residential usage below 450 kwh from the increase. The Commission also created, for the first time, a new All-Electric rate class. The All Electric rates were the same as the residential rates in the summer, but in the winter, the All Electric rate was lower than the residential rate for usage greater than 1000 kwh due to the fact this usage was off-peak. The Commission also directed PEPCO to conduct a study to determine whether apartments should be on the residential rate. The Commission initiated the concept of peak load pricing by giving PEPCO one year to install meters at the facilities of large power customers that would permit rate schedules that vary by time of day.

The next PEPCO rate increase request, for \$57.58 million, was filed on December 29, 1975 and the Commission opened F.C. No. 651 to litigate the request. In addition, PEPCO asked for an additional interim rate increase of \$24.0 million through a 12.89 percent surcharge on all customers except street lighting. The Commission did not approve any surcharge and in Order No. 5831, issued on October 20, 1976, the Commission approved \$29.4 million or about half of the request. The Commission also made changes in the way the FAC was calculated, which had the effect of reducing the amount of the charge. To ensure PEPCO was operating efficiently, the Commission ordered a management audit to be conducted by

²⁹ See Order No. 5614, p. 21.

³⁰ PJM is an acronym for Pennsylvania, Jersey, Maryland.

independent consultants “to determine the relative level of efficiency at which the Company operates.”³¹

Within a year of the Commission’s order in F.C. No. 651, on July 26, 1977, PEPCO filed a rate increase request, this time for \$45.5 million (that was later amended to \$44.8 million) claiming its earnings were being eroded by inflation and regulatory lag, thus it could not achieve its allowed rate of return. The new case was designated F.C. No. 685. The Commission approved \$5.783 million in proposed Order No. 6096, issued on June 14, 1979. The Commission, in its order, described the proceeding as “extremely long and complicated.”³² After receiving exceptions to its proposed order, the Commission issued a final Order No. 7000 on July 18, 1979 that raised the revenue requirement by \$100,000 to \$6.783 million, but that was still only 15 percent of the amended request. In the proposed order, the Commission protected low residential users by not imposing any rate increase on them as the Commission had done in the past. However, at the behest of Commission Staff, the Apartment and Office Building Association (AOBA), and the federal Government Services Administration (GSA), who argued there was no record evidence supporting such exemption, the Commission reversed itself and ordered an across the board increase on all rate classes.

Before the Commission rendered its decision in F.C. No. 685, PEPCO filed another rate increase application on February 15, 1979. The Commission docketed the case as F.C. No. 715. PEPCO asked for an additional \$15.464 million. In March, PEPCO amended the amount of its request to \$18.5 million. After the Commission issued its final order in F.C. No. 685, PEPCO further amended its request by increasing it to \$48.1 million over the amount approved in F.C. No. 685.

d. Economic & Social Ratemaking

The events of the 1970s ushered in an era of “economic and social ratemaking.” Since World War II, electricity had been viewed as a necessity, which meant consumers were not expected to be able to reduce their consumption significantly as prices rose.³³ However, for the most part, prices did not rise significantly until the 1970s. When that occurred, consumers in fact did respond to rising electricity rates by reducing their usage. In this context, D.C. regulators began to use rate design techniques to mitigate any adverse impact of rising rates by offering consumers opportunities to minimize their bills. Examples include the creation of seasonal rates that allowed rates to track costs, so off-peak usage in the winter was priced lower than on-peak usage in the summer. The Commissioners were sensitive to the impact of rising rates on the low-income, who were assumed to be relatively low users, and hence several of the rate increases were not applied to consumers whose monthly usage was below 400 or 450 kwh.³⁴ The creation of inverted rate structures that contained higher rates as usage increased recognized that low-cost base load units supply the initial demand for electricity and that high-

³¹ Order No. 5831, p. 41-42.

³² Order No. 6096, p. 1.

³³ Economist’s measure for this behavior is called the price elasticity of demand.

³⁴ In F.C. No. 596, effective December 8, 1973, the rate increase was not applied to usage below 400 kwh. In F.C. Nos. 630, 651, and 685, effective December 13, 1975, December 16, 1976, and July 24, 1979, respectively, the rate increases were not applied to residential usage below 450 kwh.

cost peaking units supply the electricity used during the on-peak summer periods. In so doing, it was also a mechanism for protecting the environment.

Also, during this period, forward-looking economic principles such as Long-Run Incremental Costs (LRIC) and Marginal Costs (MC) began to be used in the design of rates, particularly for peak load and time of day (TOD) pricing. Marginal cost is defined as including “only the out of pocket costs of supplying an additional unity of output, whereas long run incremental cost includes the additional cost of capital investment required for the additional unit.”³⁵ The first case in which these concepts were introduced was in F.C. No. 630.³⁶ While the Commission embraced the concepts, it did not adopt their use immediately due to lack of adequate evidence. Instead, it directed PEPCO to conduct further empirical studies.

The actual estimation of long-run incremental or marginal costs was pursued further outside of rate cases in F.C. Nos. 680, 758, and 759. For example, on June 28, 1979, in Order No. 7002 issued in F.C. No. 680, the Commission approved TOD rates for PEPCO’s large general service customers that were derived on the basis of forward looking estimations of PEPCO’s marginal costs. The approved rates were to be implemented in the next rate case, F.C. No. 715. The Commission approved TOD rates for the 800 largest residential customers in F.C. No. 759 in Order No. 8160 that was issued on December 31, 1984. The new rates were implemented on a parallel billing basis for comparative purposes in 1985, with live billing commencing on January 1, 1986.³⁷

Meanwhile, pressure to raise rates did not abate as the 1980s began. The Commission approved 3 rate increases in a row; in 1980 in F.C. Nos. 715; in 1981 in F.C. No. 748, and in 1982 in F.C. No. 785.

Under the circumstances, there continued to be concern about the impact of these increases, particularly on the low-income. Thus, in F.C. No. 785, PEPCO proposed the creation of a targeted low-income discount program called the Residential Aid Rider (RAR). The Commission approved a 6 percent discount from the rates in the previous case in a pilot RAR program. The Commission also moved master-metered apartments onto the residential “R” rate but only on an experimental basis because it wanted PEPCO to track the data to ensure the owners were distributing the benefits to their tenants.³⁸

In 1987 and 1988, the Commission approved two rate decreases in F.C. No. 852 in order to implement the 1986 Tax Reform Act. The reductions were spread across the board among all rate classes.

The first rate reduction since the 1960s in a formal rate case occurred in F.C. No. 869. On January 4, 1988, PEPCO filed a request to increase rates by \$40.75 million. Over 60 percent of the request was for money needed to recover the costs of a long-term Ohio Edison

³⁵ Order No. 5739, issued November 12, 1975, p. 37

³⁶ *Ibid.*, pp. 36-39

³⁷ Parallel billing means the customer’s bill shows both the existing rates, which the customer pays, and the TOD rates so the two can be compared before new rates go into effect one year later.

³⁸ Order No. 7716 issued December 29, 1982

contract. Meanwhile, PEPCO had also sold its Virginia territory in 1986 so the District’s 8.2 per cent share of the \$21.4 million net gain from the sale reduced PEPCO’s revenue requirement by \$1.072 million. After taking into account all adjustments, in Order No. 9216, issued on March 3, 1989, the Commission concluded that PEPCO was “earning excessive revenues in the amount of \$14,553,000 and the ratepayers in the District of Columbia are entitled to a rate reduction of that amount on an annual basis.”³⁹

PEPCO filed 4 rate increase requests during the 1990s – F.C. No. 905 in 1990; F.C. No. 912 in 1991; F.C. No. 929 in 1993; and F.C. No. 939 in 1994. The first three cases were driven by the need to increase the company’s generation capacity after its reserve margin fell to 9 percent, which was far below the planned reserve margin of 16 percent. This gap put PEPCO at risk of not meeting customer demands during an especially hot summer.

For example, in F.C. No. 905, PEPCO sought recovery for the District ratepayers’ share of the costs of a new combustion turbine (CT) at its Dickerson plant and the need to recover the costs of 4 CTs at the Chalk Point generating plant. In F.C. No. 912, PEPCO sought recovery for a Station H CT, 1992 wage increases, and termination of Northern Virginia amortization costs associated with SMECO. PEPCO’s minority contracting practices were a major issue. When PEPCO filed the third rate increase request in 1993 (F.C. No. 929), it sought cost recovery for a 2nd CT at Station H, Ohio Edison contract purchases, a 1994 wage increase, Demand-side Management (DSM) programs, and a transmission line. PEPCO proposed a DSM surcharge, which the Commission did not approve.

PERIOD	DAYS	KWH-USED	AVG KWH PER DAY	% CHANGE
Dec 93	29	790	27.2	
Dec 94	29	650	22.4	17.6-

PERIOD	DAYS	KWH-USED	AVG KWH PER DAY	% CHANGE
Jan 94	35	1200	34.3	
Jan 95	35	1060	30.3	11.7-

F.C. No. 912 was also noteworthy for the fact the Commission required PEPCO, for the first time, to post its rates on the bills of its residential customers so they would understand how their amount on each bill is calculated.

Thirteen years passed before another PEPCO rate case was filed. However, major changes in electric rate regulation occurred during the period.

³⁹ Order No. 9216, issued March 3, 1989, p. 165

2. Mitigating the Impact of Rate Increases

Although the Commission had approved only 27 percent of the additional revenue that PEPCO had requested to finance its capital expenditures and non-fuel expenses, between 1970, when rates started rising, and 1995, the Commission took additional steps to protect electricity customers. We have already described the implementation of the low-income discount program (RAR). To make it clearer to the public that it was a discount program that would save income-qualified customers money on their electricity bills and hence attract more participants, PEPCO changed the name of the program in 1991 to Residential Aid Discount (RAD). Moreover, in many of the rate cases, the Commission exempted RAD customers from the rate increases.

3. Promoting Energy Conservation, Energy Efficiency, and Protection of the Environment

At the behest of the D.C. Council, in 2009, the Commission added to its mission statement the goal of “conserving natural resources and preserving the environment.” However, as this section makes clear, the Commission promoted energy conservation and efficiency long before, in fact as far back as the early 1970s. This section describes that journey.

The second important way in which the Commission sought to protect electricity customers was through the promotion of energy conservation. Apparently, as far back as 1962, the Engineer Commissioner, General Clarke, “requested that the Engineering Bureau collect information related to electric automobiles.”⁴⁰ In the 1970s, the Commission was in step with the nation. About the same time Congress created the Environmental Protection Administration (EPA), the Commission was approving the creation of higher summer than winter rates that better tracked electricity costs, an inverted residential rate structure that encouraged conservation as usage increased, and requiring PEPCO to report on its environmental program expenditures.⁴¹ Many of these changes in D.C. were at the behest of such groups as the Sierra Club, SHOCK,⁴² D.C. Power, the Washington Urban League, the D.C. Federation of Civic Associations, and the D.C. City-wide Consumer Council.

By the mid-1970s, energy conservation was a national goal. In 1978, Congress passed the National Energy Conservation Policies Act (NECPA), which all states and the District were required to implement. NECPA was designed to reduce the nation’s dependence on foreign oil by encouraging energy conservation through the establishment of, among other things, the Residential Conservation Service (RCS) program in which utilities were required to provide energy audits to residential customers to identify possible conservation measures and to provide assistance in arranging for financing, supply, and installation of conservation measures. Also, in 1978, Congress passed the Public Utility Regulatory Policies Act (PURPA), which established forward-looking economic principles as opposed to the traditional historical-

⁴⁰ Minutes of Commission Meetings, p. 4586

⁴¹ See F.C. No. 568.

⁴² SHOCK is an acronym for Students Hot on Conserving Kilowatts.

based accounting principles as the basis for determining a utility company's cost of service and rates. It also required utility companies to develop integrated resource plans that considered both cost-effective demand-side energy conservation programs and traditional supply side programs on an equal basis and it encouraged the use of seasonal and TOD rates to ensure costs and usage were aligned.

The Commission initiated a series of cases to implement these laws. In 1980, the Commission opened F.C. No. 743 by issuing a Public Notice requesting comments on the issues related to the conducting energy audits and financing and supplying energy conservation measures. In Order No. 7617, issued on July 16, 1982, the Commission approved an RCS program for the District.

The Commission implemented PURPA through a series of formal cases. Section 210 of PURPA required electric utilities to purchase energy offered by Qualifying Facilities (QF) that were defined as cogenerators and small power producers, at rates that were just and reasonable to consumers and which were based on the incremental cost that the utility would have incurred if it generated or purchased the supply. In F.C. No. 757, opened in 1980, the Commission approved a cogeneration tariff covering rates between PEPCO and QFs that was based on 100 percent of PEPCO's avoided costs as an incentive to spur competition at the generation level.⁴³ Avoided costs were defined as the incremental cost PEPCO would have incurred if it produced the energy itself rather than purchasing it from a QF. In F.C. No. 758, the Commission explored the use of marginal versus embedded cost principles in the determination of PEPCO's cost of service.⁴⁴ However, the Commission had previously approved seasonal rates for all customers in 1970 and TOD rates for large commercial customers in F.C. Nos. 680 and 715. The subject of F.C. No. 759 was the implementation of TOD rates for other than the largest commercial customers. As the marginal cost studies yielded rates several times higher than existing rates, which would have violated principles of gradualism, the Commission ultimately approved in the case TOD rates only for the 800 largest residential (single family) customers.⁴⁵

The Commission did not stop there. At the behest of Commissioner Wesley Long, who is also a Ph.D. Economist, on March 1, 1985, the Commission opened F.C. No. 834 to explore ways to promote energy conservation in the District. The Commission held several public hearings in which it received testimony from at least 12 national experts such as Amory Lovins and Jon Wellinghoff.⁴⁶

On March 16, 1988, the Commission issued seminal Order No. 8974 that required both PEPCO and Washington Gas to develop least cost integrated resource planning (IRP) programs derived by comparing on an equal basis the cost effectiveness of both supply-side and demand-side measures. The order required the companies to conduct free customer audits that replaced

⁴³ See Order No. 7793 issued on April 8, 1983 and Order No. 8019, issued May 3, 1984 in F.C. No. 757.

⁴⁴ See Order No. 7614, issued July 23, 1982 in F.C. No. 758.

⁴⁵ See Order No. 7793 & 7794, both issued April 8, 1983 and Order No. 8160 issued December 31, 1984.

⁴⁶ Amory Lovins is an environmental scientist and Chairman of the Rocky Mountain Institute. Jon Wellinghoff is the first Consumer Advocate in Nevada who subsequently became Chairman of the Federal Energy Regulatory Commission.

the RCS program, after studies found them to be ineffective and PEPCO and WGL were required to submit for approval pilot energy efficiency and load management programs every other year.

The Commission approved and PEPCO implemented programs for all residential, commercial, and government customers that indeed successfully “moved the market” as Washington Gas President Adrian Chapman indicated at the Centennial Anniversary symposium. Namely, the PEPCO rebates for residential compact fluorescent light bulbs, whose market price was \$25.00 a bulb, but with the rebate could be purchased for \$1.00, ultimately led to the proliferation of more efficient lighting in homes throughout the District as market prices declined to rebate levels. Bill savings were also documented in follow-up evaluations since lighting accounts for about 6 percent of residential usage. PEPCO’s commercial lighting program was equally if not more successful. A popular residential load management program⁴⁷ was called the Kilowatchers Club. Participants received a credit during each of the 5 summer months if they allowed PEPCO to cycle their central air conditioners on and off during peak usage periods on especially hot days.

ACCOUNT NO.		TYPE OF BILL		ACTUAL READING		
SERVICE ADDRESS		SERVICE PERIOD		DATE		
NO. 1	NO. 2	METER NO.	METER PRECEDING PERIOD	AMOUNT USED	DESCRIPTION	AMOUNT
5A	504448	10	17010	17650	PRIOR BILL AMOUNT	38.13
					PYMTS THRU NOV 27	38.14CR
					TOT BALANCE FORWARD	.01CR
					KILOWATCHERS - A/C	.00
					KILOWATT HOUR CHARGE	36.32
					FUEL COST ADJ.	.64CR
					DC GR ADJUSTMENT	1.18
					NET CURRENT BILL	36.84
					TOTAL ELEC CHARGES	36.83

PEPCO HAS SOME SUGGESTIONS ON HOW TO ENJOY THE HOLIDAYS--SAFELY. REMEMBER TO USE DECORATIVE LIGHTS THAT HAVE THE UNDERWRITERS LABORATORY (UL) SEAL OF APPROVAL. DON'T STRING ELECTRIC LIGHTS ON METALLIC TREES. ALSO, DON'T USE INDOOR LIGHTS OUTDOORS. AND MAKE SURE YOU NEVER USE MORE THAN 3 SETS OF LIGHTS FOR EACH EXTENSION CORD. SEASONS GREETINGS FROM PEPCO.

PERIOD	DAYS	ENERGY, KWHR	PER DAY	CHANGE, %
DEC 10	26	790	30.4	
DEC 11	27	640	23.7	22.0-

WINTER RATES IN EFFECT

AMOUNT DUE	DATE
DEC 23 91	DEC 23 91
37.20	36.83

AVG. FUEL COST PER KWH .00103330

SEE REVERSE SIDE FOR IMPORTANT INFORMATION *IF APPLICABLE

Polomac Electric Power Company P.O. Box 1815, Washington, DC 20007-2815 Telephone (202) 892-7500

Throughout the nearly 12 years of least cost planning, the Commission required PEPCO to justify the cost-effectiveness of each program before it was approved using an All-Ratepayers Test and after implementation to conduct post-program evaluations to estimate savings using econometric methods. The number of filings, studies and reports in F.C. No. 834 became so large, the Commission opened a new case, F.C. No. 917, when it considered PEPCO’s and Washington Gas’s second least cost plans in 1992. Thereafter, the company stepped up the implementation of its programs. By 1994, the Commission became concerned about the growing costs of the programs, thus in Order No. 10387 in F.C. No. 929, the Commission recommended possible elimination of some programs whose cost-effectiveness was marginal.

⁴⁷ Load management programs enable a utility company to reduce demand during peak usage periods. The Kilowatchers Club program was approved on an experimental basis in Order No. 8974.

A key question to be addressed was how were the programs to be funded. Initially, the Commission tracked the costs of the programs and addressed cost recovery issues in rate cases. For example, in 1990 in Order No. 9509 issued in F.C. No. 889, the Commission denied PEPCO recovery of some of the energy conservation expenses due to non-compliance and it reduced PEPCO's return on equity by 15 basis points for lack of commitment to energy conservation. However, the same order established cost recovery standards for existing, pilot, and prospective programs. A cost recovery mechanism was also addressed in F.C. No. 834, Phase III. In that case, the Commission issued Order No. 9714 on May 24, 1991 in which it concluded that, despite consensus among the parties and staff that an incentive mechanism was warranted, there was insufficient evidence in the record to decide on a mechanism.

Instead, the Commission deferred the matter to the ongoing PEPCO rate case, F.C. No. 905. The decisional Order No. 9868 in that case was issued a few months later on October 23, 1991. PEPCO had proposed an annual surcharge that included a provision for lost revenue sales due to demand-side management programs and a shared savings rider. The Commission approved an interim DSM Cost Recovery and Incentive Formula based on PEPCO's proposed method for calculating lost revenues and an alternative shared savings rider proposed by OPC. In addition, the Commission concluded that energy savings goals were necessary for the successful operation of the incentive mechanism. The Commission adopted an annual target of 1.5 percent as an energy reduction goal. The Commission also approved a reward system for energy savings achieved beyond that goal and a penalty system for failure to meet the annual target. The recovery of lost revenues or an incentive would be decided in the future in a base rate case, while whether lost revenues have occurred and whether the company should receive an incentive or penalty would occur outside a base rate case.⁴⁸

In F.C. No. 929, PEPCO proposed a surcharge once again plus a relatively new concept called an Electric Rate Adjustment Mechanism (ERAM) modeled after the California ERAM. The purpose of the ERAM was to provide PEPCO with an incentive to promote energy conservation that might reduce its sales and hence earnings by decoupling sales and costs so the company can recover lost revenues, which will thereby ensure the company can earn its authorized revenue requirement irrespective of its sales. In Order No. 10387, issued on March 4, 1994, the Commission affirmed its decision to address cost recovery issues in rate cases and denied PEPCO's proposed DSM surcharge, ERAM, and the recovery of lost revenues so the DSM programs continued to be funded through base rates.

In F.C. No. 917, the Commission ultimately approved an Environmental Cost Recovery Rider (ECRR) for PEPCO's recovery of past DSM expenditures that the Commission had approved and Clean Air Act (CAA) costs incurred after June 30, 1993. However, the ECRR was folded into base rates rather than shown on bills as a separate line item. PEPCO filed its first ECRR application on June 3, 1996. A true-up occurred once a year thereafter.⁴⁹

The establishment of the ECRR removed DSM as a contentious issue in rate cases. However, in the next rate case, F.C. No. 939, cost containment generally was a major theme.

⁴⁸ Order No. 9868, pp. 118-142.

⁴⁹ Order No. 10650, issued June 30, 1995

In its decisional order, the Commission concluded that PEPSCO properly included its pre-July 1993 DSM program costs in operating expenses and that the amounts of Energy Use Management (EUM) and DSM expenditures included in PEPSCO's rate base and operating expenses were appropriate and reasonable, however, it directed PEPSCO to "develop a comprehensive, systematic cost containment program that is both realistic and effective. The program must include innovative strategies to limit costs in: (i) construction; (ii) DSM implementation and financing; and (iii) employee reduction.⁵⁰

What has been the trend in electricity usage before and since the DSM programs? Data are available for consumption per customer in the standard R residential class between 1966 and 2013 as shown in Table 8.1 and the trend is shown in Figure 8.1. Between 1966 and 1989, when growth in the District was relatively slower than in Maryland and before most of the DSM programs were implemented, monthly residential electricity usage in the District increased nearly 80 percent from 318 kwh to 566 kwh. Between 1990 and 2000, when the DSM programs ended, monthly residential electricity usage was relatively flat – ranging between a low of 561 kwh in 1992 and a high of 633 kwh in 1994. Although, not all of this trend can be attributed to the DSM programs, it is possible that DSM programs mitigated increases in average electric usage that would have occurred due to a shift to electric heating by District residents. In fact, since the end of the DSM programs, average monthly residential electricity usage has increased somewhat, often ranging between the mid-high 600 kwhs and 734 kwh.

The 1989 Georgetown University/Dominion Energy complaint against PEPSCO regarding the rate to be paid PEPSCO for a 56 MW cogeneration plant on the campus of the university is another example of how the Commission has promoted energy efficiency and protected the environment. The case was docketed as F.C. No. 888. Cogeneration refers to a generation plant that produces electricity and heat energy that can be used to supply hot water, steam, space-heating and cooling. In so doing, the operating efficiency of the power plant is increased and the amount of greenhouse gas emissions is reduced.

There was considerable participation in all aspects of the case, including presenting testimony in the evidentiary and community hearings, conducting cross-examination, and filing legal briefs by ANCs, civic associations, and neighboring communities, particularly on the environmental impact of the proposed cogeneration facility such as impact of electromagnetic fields (EMFs), noise and the impact on the social configuration of the affected communities. On February 14, 1992, the Commission issued Order No. 9661 approving Dominion Energy/Georgetown's plans to construct the plant by granting it a Certificate of Public Convenience and Necessity. The parties settled the issue of the energy and capacity rates to be paid in a confidential Power Purchase Agreement (PPA). Moreover, the Commission established an appropriate environmental threshold for future cogeneration and independent power plants proposed for the District and the case became a hallmark decision that established principles and guidelines for distributed generation.⁵¹

⁵⁰ Order No. 10646, issued June 30, 1995, pp. 302 and 304

⁵¹ See Order No. 10366, issued January 14, 1994, for a brief summary of the case.

4. Introducing Competition

Due in part to the exhaustion of economies of scale that undermined the argument for the monopoly supply of electricity, the Federal Energy Regulatory Commission (FERC), which regulates wholesale electricity markets, began the process of opening the generation market to competition in 1994. Specifically, FERC allowed non-utility generators (NUGs), independent power producers (IPPs), and marketers to sell electricity to utility companies and required electric utilities to allow wholesale buyers and sellers to have comparable or non-discriminatory access to their transmission systems. With competition established at the generation level, some states also authorized retail competition by allowing NUGs, IPPs, and marketers to sell electricity not only to electric utilities, but also directly to retail customers while the electric utility companies continued to provide generation, transmission, and distribution services to retail customers.⁵² This new electric industry restructuring was called retail wheeling and subsequently retail competition or retail customer choice. A number of states established pilot programs to evaluate the results, while California, Massachusetts, and Rhode Island opened their entire retail electricity markets to retail wheeling.⁵³

In 1995, the Commission opened F.C. No. 945 to investigate whether retail electric restructuring and retail customer choice would be in the public interest.⁵⁴ After the Commission sought comments on a number of designated issues and monitored the activities in other states, Commission staff issued a Staff Report in the case on August 31, 1998 that laid out a plan for pursuing the issue in the District of Columbia. Not satisfied with the pace at which the Commission and staff were addressing the issue, Commissioner Edward M. Meyers worked closely with Councilmember Sharon Ambrose, Chairman of the Commission's oversight committee at the D.C. Council, in drafting electric industry restructuring legislation.

The Council passed the Electric Retail Competition and Consumer Protection Act of 1999. It is a comprehensive piece of legislation with broad impacts. For example, it authorized the Commission to allow PEPCO to sell (divest) its generation plants and in the same year PEPCO filed a request to sell its generating plants and power purchase agreements. On December 30, 1999 in Order No. 11576, the Commission approved PEPCO's request to sell its 5 generation plants that were located outside of the District. However, the Commission refused to allow the sale of PEPCO's 2 generating plants that were both located in the District on the grounds they were needed for peak load periods and hence were must-run units. PEPCO completed the sale of the 5 plants to Mirant Corporation for \$2.75 billion as of January 8, 2001 and PEPCO transferred ownership of the 2 D.C. plants to a newly created unregulated subsidiary, Potomac Power Resources that then engaged Mirant to operate the plants. The plants sold to Mirant accounted for over 90 percent of the electricity provided to D.C. customers.

⁵² Retail competition started in high-cost and rust-belt states that were facing excess capacity due to declines in the demand for electricity by industrial customers. Many large customers sought competition as a way to avoid paying for the retrofitting of dirty coal plants. Many states approved stranded cost recovery riders to ensure no customers such as large customers could avoid excess capacity or environmental costs.

⁵³ Recall, this would not be the first time that retail competition has existed in the electricity market in the District. In fact, PEPCO was first established in order to create a competitive environment with the US Electric Lighting Company with the goal of reducing prices.

⁵⁴ Order No. 10720

The sale of PEPCO's generation plants enabled PEPCO ratepayers to not have to pay any outstanding DSM costs and this reduced their rate burdens. In addition, PEPCO's customers shared the proceeds from divestiture on a 50/50 basis. For example, D.C. electricity customers received nearly \$100 million in divestiture sharing credits. That included credits to each residential customer amounting to about \$105 that was disbursed over 4 different time periods. The bulk of the financial benefit went to electricity customers in the form of a series of 3 rate reductions between January 1, 2000 and February 8, 2001. The first reduction reflected the elimination of the DSM surcharge that accounted for a 2 percent reduction in residential rates and a 3.5 percent reduction in commercial rates. The total reductions as of February 8, 2001 reflected a 7 per cent reduction for residential customers and a 6.5 per cent reduction for commercial customers. Thereafter, total rates were to be capped for four years until February 7, 2005 for all but RAD customers. RAD rates were to be capped until February 7, 2007.⁵⁵

Implementation of the 1999 Retail Electric Competition Act also entailed the creation of retail customer choice programs effective January 1, 2001 so all residential and commercial customers could choose their electric generation and transmission supplier while PEPCO continued to be the sole distribution company.⁵⁶ To enable customers to choose their generation and transmission supplier, rates were unbundled into generation, transmission and distribution on customers' bills so consumers could compare generation and transmission prices among suppliers, including PEPCO.⁵⁷ The Commission ruled that PEPCO would be the default generation and transmission supplier (called Standard Offer Service or SOS) for customers who did not choose a supplier.

However, in 2001, PEPCO requested approval of a merger with New Jersey-based Conectiv and the matter was docketed in F.C. No. 1002. The Commission approved the merger and one of the conditions for the approval was that the cap on PEPCO's distribution rates would be extended 30 months through August 7, 2007 for non-RAD customers and through August 31, 2009 for RAD customers. Thus, on February 8, 2005, in Order No. 13493 in F.C. No. 945, the Commission approved higher SOS generation rates and lower SOS transmission rates for non-RAD customers. After approving a competitive bidding process⁵⁸ for setting PEPCO's SOS generation rates in F.C. No. 1017, generation rates rose again in that case on June 1, 2006 and June 1, 2007. Yet, the Commission-monitored competitive bidding process resulted in generation rates declining after 2009, following the market from 11 cents per kwh in 2009 to 7 cents per kwh in 2014. This contributed an overall decline in retail rates, including nominal residential rates that decreased from 16.56 cents per kwh in 2009 to 13.44 cents per kwh in 2013. (See. Table 8.2.)

⁵⁵ Order No. 11576, issued December 31, 1999

⁵⁶ Ibid.

⁵⁷ Ibid., Order No. 11796 issued September 18, 2000, and Order No. 11845 issued December 5, 2000

⁵⁸ Under the competitive bidding, PEPCO issues bids for segments of its load (residential, commercial, etc.) twice a year (usually in December and January), and the Commission oversees the process, including witnessing the opening of the bids and engaging a market consultant to monitor the process.

The two pictures below show rates bundled (first sample bill) and then unbundled (second sample bill) on a residential customer's bill. It is also noteworthy to point out that the bills below also show that in 2000, the Commission required PEPCO to post monthly usage over the past 13 months so consumers could track their usage and make adjustments as needed to keep their bills affordable. By Order No. 12186, issued on September 19, 2001, the Commission approved a new concept, Price to Compare, which was to be introduced on residential customers' bills so they could compare their electric generation and transmission cost from PEPCO with offers by other electricity suppliers.



Polomac Electric Power Company

Account No:
Bill Issue Date:

Page 2 of 2

Additional Contact Information

PEPCO CUSTOMER SERVICE CENTERS

Location	Hours
Washington, DC	
1900 Pennsylvania Ave., N.W. *	8:30 am - 5:15 pm
2800 Martin Luther King, Jr. Ave., S.E. +	9:00 am - 5:00 pm
Maryland	
1610 Gaither Road*+ (entrance off of Rockville, Maryland W. Gude Dr.)	9:00 am - 5:00 pm
8300 Old Marlboro Pike* Forestville, Maryland	9:00 am - 5:00 pm

* After hours deposit boxes available for the payment of bills.
+ Cash payments are not accepted at these locations.

Information regarding rate schedules, including the actual seasonal rate, time of use, customer charge, fuel rate and how to verify the accuracy of your bill will be mailed upon request.

PAYMENTS

Pepco
P.O. Box 97274
Washington, DC 20068-7274

Pepco is regulated by the Public Service Commission of the District of Columbia (202) 626-5100. You may contact the commission if efforts to resolve a dispute with Pepco are unsuccessful.

Public Service Commission
1333 H Street NW
2nd Floor, West Tower
Washington, DC 20005

WRITTEN INQUIRIES

Pepco, Correspondence Section
1900 Pennsylvania Avenue, N.W.
Washington, DC 20068-0001

Office of People's Counsel
(202) 727-3071

Pepco's Taxpayer Identification No. 53-0127880
Visit our website at: www.pepco.com

Account Details

Services for Nov 29 to Dec 29, 2000:
Winter rates in effect

Distribution Services:

Minimum Charge	Includes First 30 KWH	2.01
Energy Charge	Next 370 KWH x 0.0467917	17.31
	Next 730 KWH x 0.0802917	58.61
Public Space Occupancy Surcharge	at 0.0018300 per KWH	2.07
DC Fuel Adjustment	at 0.0011778 per KWH	1.33
Delivery Tax	at 0.0070000 per KWH	7.91
Total Charges - Distribution		89.24

CURRENT CHARGES THIS PERIOD **\$89.24**

Energy Usage History

	Jan 00	Feb 00	Mar 00	Apr 00	May 00	Jun 00	Jul 00	Aug 00	Sep 00	Oct 00	Nov 00	Dec 00	Jan 01
DAYS	31	33	28	30	29	32	29	30	31	31	29	33	30
KWH	1440	2050	1130	610	540	760	1000	780	930	890	570	890	1130



Potomac Electric Power Company

Account No:
Bill Issue Date:

Additional Contact Information

PEPCO CUSTOMER SERVICE CENTERS

Location	Hours
Washington, DC 1900 Pennsylvania Ave., N.W. * 2806 Martin Luther King, Jr. Ave., S.E. +	8:30 am - 5:15 pm 9:00 am - 5:00 pm
Maryland 1610 Gaither Road *+ (entrance off of Rockville, Maryland W. Gude Dr.) 8300 Old Marlboro Pike* Forestville, Maryland	9:00 am - 5:00 pm 9:00 am - 5:00 pm

* After hours deposit boxes available for the payment of bills.
+ Cash payments are not accepted at these locations.

Information regarding rate schedules, including the actual seasonal rate, time of use, customer charge, fuel rate and how to verify the accuracy of your bill will be mailed upon request.

PAYMENTS

Pepco
P.O. Box 97274
Washington, DC 20090-7274

WRITTEN INQUIRIES

Pepco, Correspondence Section
1900 Pennsylvania Avenue, N.W.
Washington, DC 20068-0001

Pepco is regulated by the Public Service Commission of the District of Columbia (202) 626-5100. You may contact the commission if efforts to resolve a dispute with Pepco are unsuccessful.

Public Service Commission
1333 H Street NW
2nd Floor, West Tower
Washington, DC 20005

Office of People's Counsel
(202) 727-3071

Pepco's Taxpayer Identification No. 53-0127880
Visit our website at: www.pepco.com

Account Details

Services for Dec 29 to Jan 30, 2001:

Winter rates in effect

Distribution Services:

Minimum Charge	Includes First 30 KWH	0.56
Energy Charge	Next 370 KWH x 0.0124600	4.61
	Next 560 KWH x 0.0224300	12.56
	at 0.0018300 per KWH	1.76
Public Space Occupancy Surcharge	at -0.0004069 per KWH	0.39
DC Fuel Adjustment	at 0.0070000 per KWH	6.72
Delivery Tax		
Total Charges - Distribution		25.82

Generation Services:

Minimum Charge	Includes First 30 KWH	1.29
Energy Charge	Next 370 KWH x 0.0291217	10.78
	Next 560 KWH x 0.0526517	29.48
Total Charges - Generation		41.55

Transmission Services:

Minimum Charge	Includes First 30 KWH	0.15
Energy Charge	Next 370 KWH x 0.0052100	1.93
	Next 560 KWH x 0.0052100	2.92
Total Charges - Transmission		5.00

CURRENT CHARGES THIS PERIOD

\$72.37

Energy Usage History

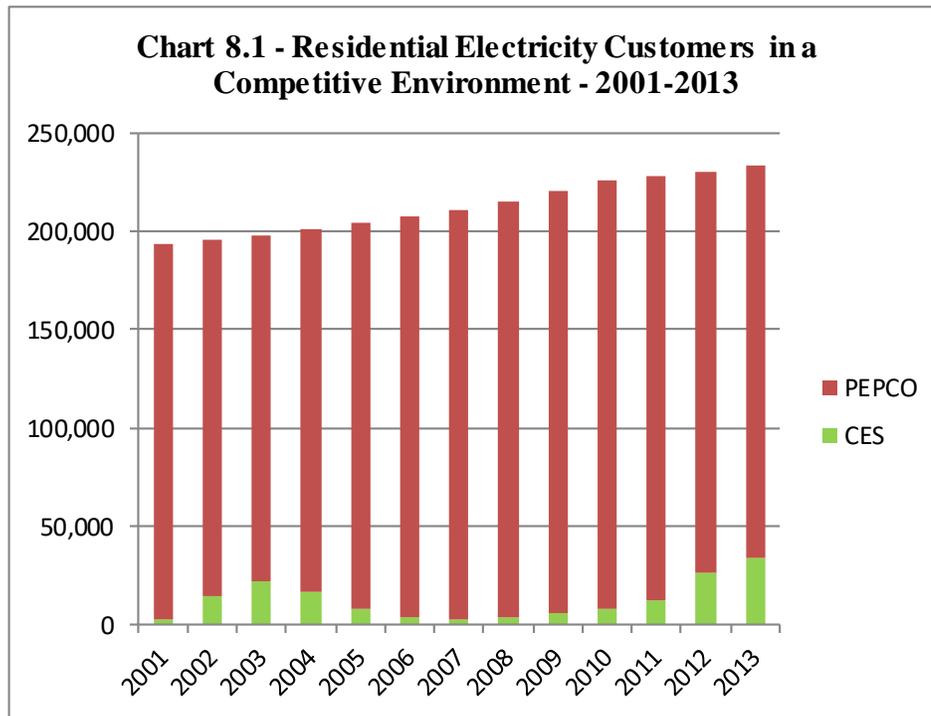
Price To Compare
Based on actual monthly usage

5.32 cents per kwh

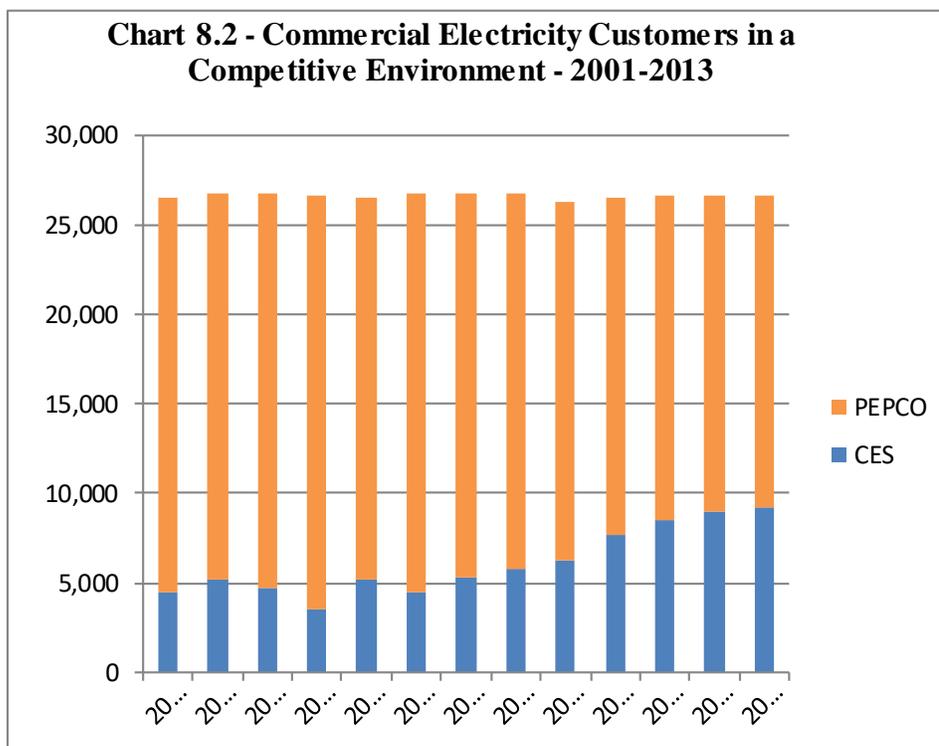
	Feb 00	Mar 00	Apr 00	May 00	Jun 00	Jul 00	Aug 00	Sep 00	Oct 00	Nov 00	Dec 00	Jan 01	Feb 01
DAYS	33	28	30	29	32	29	30	31	31	29	33	30	3
KWH	2050	1130	610	540	760	1000	780	930	890	570	890	1130	96

To implement the Act, the Commission also had to establish procedures for licensing competitive suppliers.⁵⁹ As of the end of 2013, the Commission had approved 131 competitive suppliers. Not all, however, actually provided service in the District. As of the end of 2013, 27 generation and transmission suppliers, including PEPCO, were serving customers in the District. All were serving commercial customers and 19 had residential customers.

The following Charts 8.1 and 8.2 show the extent to which residential and non-residential electricity customers have participated in the customer choice programs.



⁵⁹ Order No. 11796 and Order No. 11862



The variations in participation in the two graphs reflect changing market conditions. That is, participation has been higher when competitive suppliers' prices are lower than PEPCO's SOS prices and participation has been lower when competitive suppliers' prices are higher than PEPCO's SOS prices. Over the 12-year period, electricity suppliers' share of the residential market ranged less than 1 per cent at the outset to a high of nearly 15 per cent in 2013. Meanwhile, participation in the non-residential customer choice program has been much higher over the period ranging from 16 percent to 35 percent of the market.

The 1999 Act also required the Commission to promote energy conservation, particularly among the low-income. In Order No. 11876, the Commission established a Reliable Energy Trust Fund (RETF) to cover the cost of Commission-authorized universal service, energy efficiency and renewable resources programs. Renewable resources include solar, wind, geothermal and hydroelectric facilities that will contribute to a cleaner environment. These programs replaced the least cost planning programs whose cost-effectiveness could no longer be measured on the basis of avoided costs because PEPCO no longer owned or operated generation plants. The RETF programs were funded via a non-by passable surcharge that appeared as a separate line item on customers' bills beginning with the June 2001 billing cycle. All PEPCO customers paid the RETF surcharge except for the low-income RAD customers.

The 1999 Act also required fuel mix disclosures by retail electricity suppliers and a later Omnibus Act in 2004 required emissions disclosure and reporting. PEPCO included its fuel mix and emissions data in customers' bill inserts twice a year. The Commission was also

required to submit a fuel mix report to the Council every two years, beginning in 2003. The most recent report was filed on July 1, 2013. The Commission established initial requirements in Order No. 12065, issued on July 18, 2001.

Finally, the 1999 Act allowed the Commission to establish net metering regulations. Net metering allows residential customers who generate their own electricity from solar power to sell that power back to the grid and get a credit for the sale on their bill. If the home or business is net metered, the electricity meter will run backwards to provide a credit against what electricity is consumed so customers are billed only for the “net” energy use. The Commission issued Order No. 13501 and a final rulemaking on February 10, 2005. PEPCO followed by filing a net metering tariff. After a number of revisions, the Commission approved a final tariff on January 26, 2007 and the final rulemaking appeared in the D.C. Register on February 9, 2007. Further revisions were approved in a final rulemaking issued on June 25, 2008. However, the rules had to be amended again in 2009 to expand the size of eligible customer-owned generators from 100kw to 1,000 kw in compliance with the Clean and Affordable Energy Act of 2008. Amended rules were approved on June 11, 2010, causing PEPCO to have to submit a revised standard net metering contract. The Commission approved a revised contract on April 8, 2011 in Order No. 16300.

Meanwhile, on January 19, 2005, the D.C. Council enacted the Renewable Energy Portfolio Standard Act (REPS Act) which established a renewable energy portfolio standard (RPS) through which a minimum percentage of District electric providers’ supply must be derived from renewable energy sources beginning January 1, 2007, with an ultimate goal of reaching 11 percent by 2022. The Act also required the Commission to adopt regulations governing the application and transfer of renewable energy credits (RECs) to begin by January 1, 2006. On December 28, 2005, the Commission issued Order No. 13840 that adopted interim RPS rules containing compliance requirements for electricity suppliers, generator eligibility, rules regarding the creation and tracking of RECS and rules concerning the recovery of fees and costs. After issuing a Notice of Proposed Rulemaking (NOPR) and receiving comments, the Commission published final RPS rules in the D.C. Register on January 18, 2008. Calendar year 2007 was the first year of compliance for the District’s RPS program. The rules required electricity suppliers to file reports by May 1 of the following year. To facilitate the process, the Commission created a compliance form for the suppliers to file.

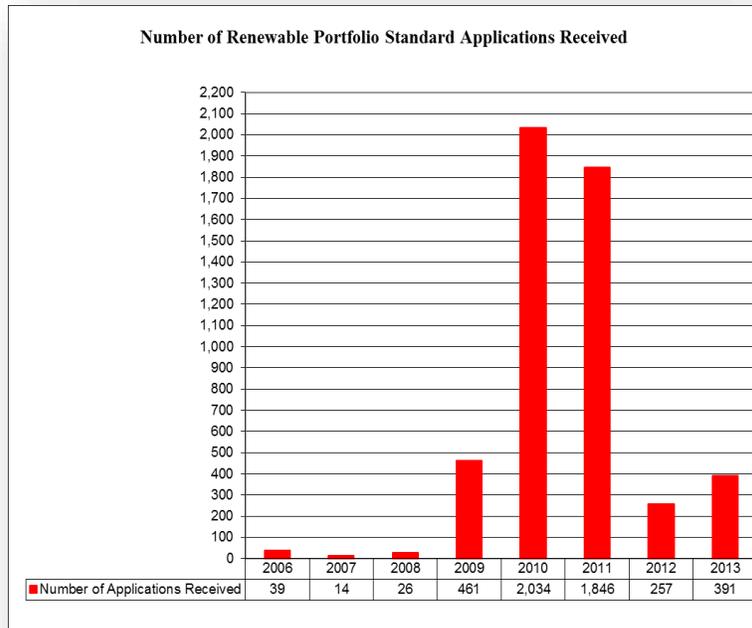
Following pressure from the DC solar community that was concerned about what they thought was a relatively low RECs prices because of competition from facilities located outside of the District, on August 1, 2011, the Council passed the Distributed Generation Emergency Amendment Act of 2011, which amended the REPS Act of 2004 by requiring the Commission to stop certifying solar energy facilities that were not located within the District or not in locations served by a feeder that served the District. The Act also required decertification of any solar facilities larger than 5 MW, regardless of the date certified. In compliance, the Commission issued Order Nos. 16528 and 16529, both dated September 9, 2011 that decertified facilities that were no longer eligible for the program.

The 2011 Act also increased the RPS solar requirements, altered the compliance payments for the solar requirement, and amended the requirements for solar thermal systems.

Thus, the Commission amended its RPS rules accordingly. The rules were finalized on March 23, 2012 when they appeared in the D.C. Register.

Chart 8.3 below shows the trend in the number of RPS applications received between 2006 and 2013. The sharp reduction between 2011 and 2012 reflects the impact of the 2011 Distributed Generation Act, which generally disallowed out-of-state solar energy systems.

Chart 8.3



Theoretically, a competitive market will yield a lower price than a non-competitive market so competition can be viewed as another vehicle for consumers to minimize their electric bills by giving them choices of suppliers, so they can shop for the best price. However, whether or not the market is deemed to be competitive depends on a number of conditions which may or may not exist in the real world.

One such economic condition is that no one supplier has market power so that it can set the price. This is a stricter condition than simply having more than one supplier in the market. In the first few years of the retail electric generation market in D.C., we had two competitive suppliers, but both were subsidiaries of larger utility companies. Over time, additional generation suppliers entered the market. Nonetheless, since the beginning in 2001, PEPCO has not had less than 85 percent of the residential market and less than 60 percent of the non-residential market based on number of customers.

The Commission is required periodically to review the process for providing SOS in the District and make any changes or adjustments to SOS based on this review. To this end, on February 1, 2013, the Commission issued Order No. 17064, seeking comments on a number

of designated issues, among them “Should PEPCO continue to act as the SOS provider or should the Commission choose another option for providing SOS?” Numerous comments were filed, but no decision had been made as of the end of 2013. In 2014, a proposed merger with Chicago-based Exelon has made the issue moot until a decision on the merger is rendered.

A second theoretical condition for a competitive market is perfect knowledge. In the real world, this often does not exist. Despite considerable time tracking and posting price and related information on the Commission’s website, on bills, and in educational materials distributed at public forums, in a few cases, competitive suppliers have been found to mislead prospective customers, many of whom are low-income. The most recent example is Starion Energy. After receiving complaints, the Commission opened an investigation in 2013, which was docketed in F.C. No. 1105. Starion and OPC ultimately submitted a joint stipulation agreement in which the company agreed to reimburse customers who had been led by its marketing agents. The Commission approved the agreement and is monitoring the compensation process.

Led by D.C. Councilwoman Mary Cheh, ward 3 representative and Chairperson of the Commission’s oversight committee, the Council passed a Clean and Affordable Energy Act of 2008 (CAEA) that became effective on October 22 of the same year. Among other things, the Act discontinued the RETF programs and created the Energy Assistance Trust Fund (EATF) to fund a variety of low-income programs, including RAD. The Act transferred the Commission’s responsibilities for the RAD program and its funding to the Mayor and the District Department of the Environment’s D.C. Energy Office and provided a statutory assessment to fund the program. The EATF surcharge was added to the bills of all non-RAD customers. In 2009 on an emergency basis and in 2010 on a permanent basis, the D.C. Council amended the CAEA by returning jurisdiction and responsibility over the RAD program to the Commission.⁶⁰

The CAEA also required the establishment of a Sustainable Energy Utility (SEU) to be administered by DDOE. The purpose of the SEU is to provide energy efficiency programs throughout the District. Funding for SEU projects is provided by ratepayers rather than taxpayers with the imposition of a Sustainable Energy Trust Fund (SETF) surcharge on the bills of all non-RAD customers.

The CAEA allowed the SETF to fund five energy efficiency programs costing up to \$6.0 million a year until the SEU became operational. On December 18, 2008, in Order No. 15139, the Commission approved a residential lighting & appliances program; a non-residential prescriptive rebate, a non-residential custom incentive program, a non-residential HVAC efficiency program and a non-residential building commissioning program. Those programs continued until 2011 when the SEU began its operations.

The CAEA also required the Commission to promulgate sub-metering rules for non-residential buildings. Final rules went into effect on November 11, 2011 when they appeared in the D.C. Register.

⁶⁰ The Residential Aid Discount Subsidy Stabilization Emergency Act of 2009 and the Residential Aid Discount Subsidy Stabilization Amendment Act of 2010. See Order No. 17575 in F.C. No. 1120 for a more detailed history.

5. Dynamic Pricing

Another strategy the Commission has explored for encouraging residential consumers to reduce their usage and thus minimize their bills is to allow PEPCO to offer rates that vary with real time costs such as weather, generator outages, transmission failures, over the course of the day and particularly during peak usage periods when such costs are relatively high. This concept is often referred to as dynamic pricing.

Although there had been early consideration of TOD pricing dating back to PURPA in the early 1980s, technological change, particularly as it relates to meters over the course of the ensuing 20 years, has made implementation of the concept worthy of re-consideration as the 21st Century began. The Commission addressed the issue of dynamic pricing in F.C. No. 1002. As background, in May 2001, PEPCO filed a joint application for approval of a proposed merger with Conectiv, a Delaware-based corporation that provided retail electricity service in Delaware, New Jersey, Maryland, and Virginia. The Commission docketed the filing in F.C. No. 1002. In February 2002, the parties filed a request for approval of a unanimous settlement agreement, which the Commission approved in Order No. 12395 on May 1, 2002. One of the conditions in the settlement agreement was that PEPCO would contribute \$2.0 million to support the development and implementation of a small customer smart meter pilot program in the District and PEPCO would not seek to recover any of the costs of the program in D.C. rates. From this order was born in 2005 the Smart Meter Pilot Program, Inc. (SMPPI), composed of representatives from PEPCO, the Commission, OPC, the Consumer Utility Board (CUB), and the International Brotherhood of Electrical Workers (IBEW) union. Commissioner Rick Morgan chaired SMPPI. Dr. Frank Wolak, Economics Professor at Stanford University, provided guidance to SMPPI in the design of the experiments.

In 2007, SMPPI “initiated PowerCentsDC to test the reactions and impacts on consumer behavior of smart prices, smart meters, and smart thermostats in the District of Columbia. In July 2008, 900 residential customers across the District began receiving electricity with one of three price plans for supply service: Critical Peak Pricing (CPP), Critical Peak Rebate (CPR), or Hourly Pricing (HP). Each customer received a smart meter that records power usage every hour, and those with a central air conditioner were offered a smart thermostat that automatically reduces air conditioning usage when power prices are high.”⁶¹ Customers with limited-income were specifically recruited to test their responsiveness to dynamic pricing.

As reported in SMPPI’s October 2010 final report, all customer participant groups reduced their usage during peak periods when the prices were relatively high and their reductions were greater than those achieved by a control group of non-participants.

During the SMPPI experiment, in 2009, Congress passed the American Recovery and Reinvestment Act (ARRA), also referred to as Federal Stimulus that provided funding for utility companies to implement smart grids. PEPCO applied for such funding. The D.C. Council required the Commission to determine if the investment would be cost effective. The

⁶¹ See PowerCentsDC Program Final Report, p. 1.

Commission approved the cost effectiveness of PEPCO's program in F.C. No. 1056. In 2010, PEPCO began deploying smart meters to all of its D.C. customers. That deployment was completed in 2012 and the smart meters were activated in that same year.

With the deployment of the smart meters completed, on October 7, 2013, PEPCO filed a new dynamic pricing proposal that was docketed in F.C. No. 1109. In 2014, the Commission denied the proposal in order to explore a number of related issues in a newly designated case, F.C. No. 1114.

6. Back to Rate Cases

Electric industry restructuring, including PEPCO's sale of its generation plants, did not end the era of traditional ratemaking. Although generation and transmission rates were approved outside of rate case, the latter was still needed for setting distribution service rates. Thus, there were 3 PEPCO distribution service rate cases between 2008 and 2013, F.C. Nos. 1053, 1076, and 1087.

In December 2006, PEPCO filed a request for approval of a \$50.50 million revenue requirement increase that was docketed in F.C. No. 1053. The company subsequently reduced the request to \$47.90 million. In the case, PEPCO proposed a decoupling mechanism called a Bill Stabilization Adjustment (BSA) as a means of accounting for variations in electricity consumption from test year levels. Thus, the proposed BSA would automatically increase or decrease distribution service rates depending on whether actual revenues per customer were below or above the Commission-approved level based on the test year data. Among other things, PEPCO also proposed cost recovery for its new Northeast Substation that was placed in service in August 2007.

In Order No. 14712, issued on January 30, 2008, the Commission approved a \$28.30 million distribution revenue increase, which was 59 percent of the \$47.90 million request. The Commission also approved D.C.'s share of the costs of the Northeast substation and deferred the BSA issue to a second phase of the case. On September 28, 2009, the Commission issued Order No. 15556, in which it approved a modified version of the BSA to account for variations in weather, customer responses to price changes, and energy efficiency programs. To reflect lower risk, the Commission also reduced PEPCO's return on equity (ROE) by 50 basis points. The effect of the BSA has been to reduce standard residential rates each year since implementation. However, the irony is that the purpose of the BSA was to remove the disincentive for PEPCO to offer energy efficiency programs, yet, by the time it was implemented, the CAEA had transferred jurisdiction over energy efficiency programs from PEPCO and the Commission to DDOE and the SEU.

Less than 16 months after the Commission approved the rate increase in F.C. No. 1053, PEPCO filed another distribution rate increase request, this time for \$51.7 million in F.C. No. 1076. PEPCO subsequently reduced its request to \$44.5 million. PEPCO argued it required higher distribution rates to cover higher costs of capital, operations and maintenance expenses and capital expenditures to maintain poles, wires, and critical equipment as well as a need to invest in new "smart grid" technology. On March 2, 2010, the Commission issued Order No.

15710 in which it approved a moderate \$19.8 million distribution rate increase or less than half of the modified request. For customers who had not chosen a competitive generation supplier, this increase was at least partially offset by a subsequent reduction in PEPCO's SOS generation rates effective June 1, 2010. Together, total residential SOS bills increased by 2 percent or \$2.30 per month on average.

When PEPCO filed its next distribution rate increase request in 2011, docketed in F.C. No. 1087, it asked for \$42.1 million. During the course of the evidentiary hearings, the company reduced the request to \$39.75 million. The Commission approved \$24 million in Order No. 16930, issued on September 27, 2012, the 100th year of the Commission's Centennial. As a result of the decision, the typical residential bill would increase by \$2.60 per month. About one-third of the increase was attributed to implementation of Advanced Metering Infrastructure (AMI). The Commission reduced PEPCO's ROE from 10.75 percent to 9.5 percent and it rejected PEPCO's proposed Reliability Investment Recovery Mechanism surcharge on the grounds it would dramatically weaken Commission oversight of PEPCO's massive D.C. reliability improvement construction program at a time when serious doubts had been raised about the cost-effectiveness of the program. Meanwhile, also in 2012, the Commission approved lower electric generation rates. For the 85 percent of PEPCO's residential customers who are served by SOS, the net effect of both the distribution and generation rate changes was to decrease the total bill on average by approximately 2.9 percent.

a. Master Meter Apartment (MMA) Rates

As shown in Table 2.7, contrary to the national average (26 percent), the majority (62 percent) of D.C. residents live in rental housing and a large proportion of them are in Master Metered Apartments (MMAs). This is especially true for the low income. Thus, electricity rates charged to MMAs impact a significant share of District residents in that they are a component of their housing costs.

Electricity rates for MMAs have been an issue for over 40 years, dating back to F.C. No. 630 in 1975. The question at the time was should MMAs be charged commercial General Service (GS) or residential (R) rates? The Commission recognized that some MMA buildings have residential tenants and some MMAs have commercial tenants. Thus, in Order No. 5739, issued on November 12, 1975, it directed PEPCO to conduct a study of the apartment segment of the General Service (GS) class and submit the results within 6 months of its order along with any proposals to establish a new or changed classification of residential users and a new tariff. PEPCO had not completed the studies when it filed its next rate case, F.C. No. 685, so no Commission action was taken in that case. The Commission hired an agent Charles Schultz, to assist PEPCO with the study, which was filed in F.C. No. 685. He recommended MMA tenants remain on the GS rate schedule, but AOBA opposed the recommendation by arguing that all residential users in MMAs be billed on a multiple application of the Standard R residential rate schedule. The Commission ruled there was insufficient evidence to change the rate class of MMAs in Order No. 6096 issued on June 14, 1979.

AOBA raised the issue again in the next rate case, F.C. No. 748, using the same study filed in F.C. No. 685. PEPCO argued more recent load survey data indicated that the load profile for

MMA buildings was closer to that of residential customers than the GS rate class. In Order No. 7457, issued on December 30, 1981, the Commission once again, found problems with the underlying evidence, but Commissioner Wesley Long, a Ph.D. economist, dissented based on PEPCO witness Schmidt's testimony that MMAs are in the wrong customer class since their usage patterns were closer to the standard R residential than the GS class.

The Commission settled the matter in F.C. No. 785. This time, PEPCO stated that MMAs should be billed on the GS rate schedule, but it would not object if MMAs were placed on a multiple application of the standard R residential rate as AOBA proposed, provided any resulting revenue deficiency be recovered from other customer classes. The Commission was finally convinced by AOBA that MMAs reflected load consumption characteristics of the residential class and hence moved MMAs to the multiple application of the standard R residential class in Order No. 7716, issued on December 29, 1982. The Commission also accepted the stipulation between AOBA and PEPCO that the revenue deficiency of \$3.4 million would be recovered from all customer classes.

The issue of MMA rates reappeared 30 years later in PEPCO rate case, F.C. No. 1087. In Order No. 16930, AOBA challenged the customer charge applicable to MMAs, which was calculated by multiplying the customer charge by the number of units in the MMA. PEPCO conceded that this method does not reflect the cost of serving the customer. Although the Commission maintained the status quo for the MMA class rate design in Order No. 16930, issued on September 27, 2012, it directed PEPCO to present a class cost of service study showing the actual cost of serving MMAs in the next rate case. It also directed PEPCO to analyze MMA class returns and rate structures as a stand-alone class and to propose a separate rate classification and schedule for MMAs in the next rate case.⁶²

As 2013 closed, the issue was still being litigated in F.C. No. 1103, as no decision had been rendered in Order No. 17424 issued on March 26, 2014. In that case, PEPCO proposed a new rate schedule and rate design for a separate MMA class, while AOBA urged the Commission to retain the same basic structure of MMA rates, i.e., monthly charges billed on an average use per dwelling unit basis until a better MMA rate design would be presented in the next PEPCO rate case. AOBA opposed PEPCO's proposal on the grounds it would cause large disparities in rate impacts within the class due to the different sizes of MMA customers. The Commission found that since there was no load research or building unit distribution information on the record, no changes to MMA rates should be made in this case. However, the Commission also directed PEPCO to design better MMA rates that properly reflect their cost of service and report back to the Commission with an improved MMA rate design in the next rate case.

b. Trends in Residential Electricity Rates in the District – 1913-2013

This last section on the history of electricity ratemaking is devoted to a description of the trends in residential electric rates during the 101-year period 1913 and 2013.

Normally, average residential electricity prices or rates are constructed by dividing residential revenue by the number of residential sales measured in kwh. This approach enables one to make

⁶² See pp. 140-141.

comparisons across jurisdictions. However, because variations in revenue collections are a function of a number of factors such as weather, number of customers, etc., the results cannot be tied directly to the Commission's policy decisions in its rate cases and other proceedings. Since the purpose of this book is to focus on the impact of the Commission's decisions, we have constructed nominal and real residential electricity rates directly from the rate designs approved by the Commission back to 1913 in order to reflect and provide insight into the Commission's ratemaking policies and practices over the period. To our knowledge, no other Commission has ever done this.

The steps taken to derive the nominal and real price series are as follows:

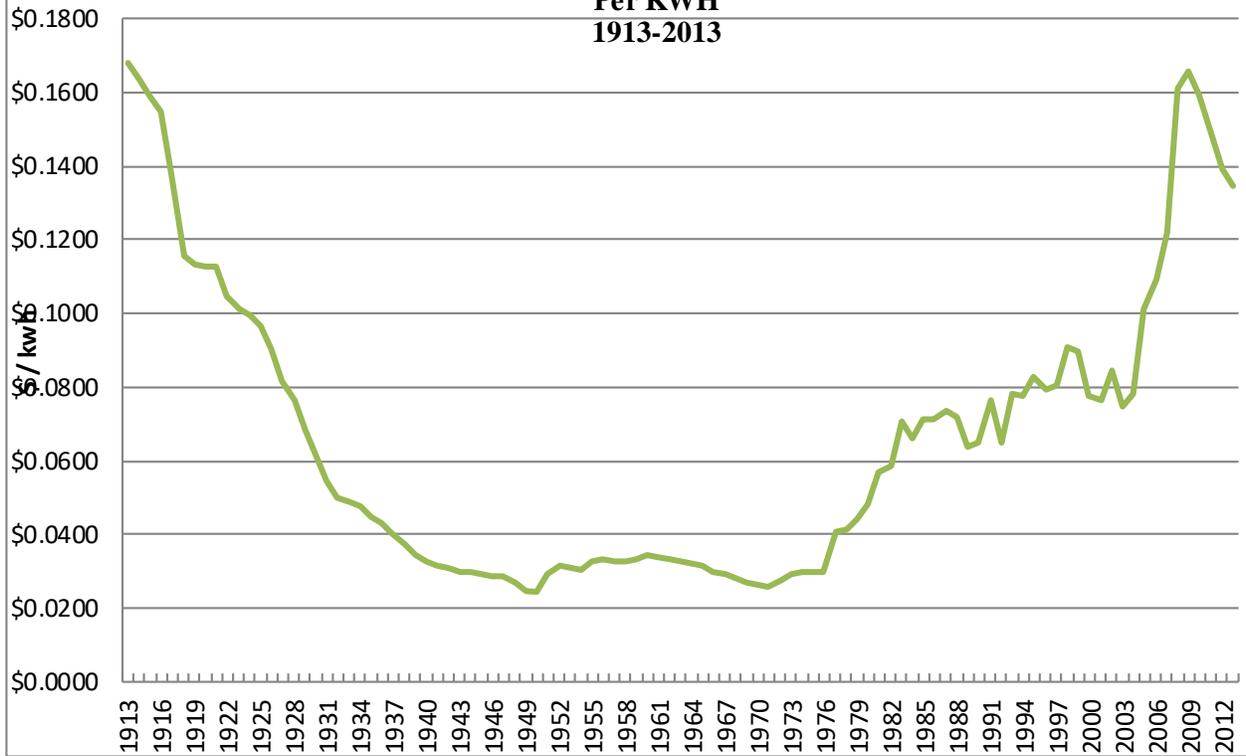
1. Compiled all rate case orders and compliance filings back to 1913.
2. Compiled the residential rate designs approved by the Commission from the rate case orders and compliance filings back to 1913. Some of the data were also found in Commission Annual Reports back to 1913. (See Appendix Table 8.1.)
3. Compiled monthly average residential usage data, when available, from PEPCO, Commission Annual Reports, and PEPCO's annual reports to the Federal Power Commission (1956 -1980). We had actual monthly residential usage from 1956 through 2013 from one or more of these sources. We had to estimate D.C. usage prior to 1956. To that end, we obtained average monthly residential usage between 1929 and 1945 from the Commission's Annual Reports, but the data were on a system-wide rather than D.C. specific basis. Assuming during this period, that D.C. consumption paralleled the service territory, we calculated the annual average growth rate for that period and used it to back-cast D.C. average residential monthly usage to 1913. (See Table 8.1)
4. Since the Commission approved seasonal winter and summer rates beginning in 1970, we compiled winter and summer usage data from 1970 to 2013.
5. Multiplied the rate designs by the monthly average residential usage to obtain a nominal price series.
6. Adjusted the nominal price series by adding the Fuel Adjustment Clause (FAC) data from 1977 to 1999 when the FAC was eliminated as part of PEPCO's sale of its generation plants and electric industry restructuring.
7. Converted nominal prices to real prices in 2013 dollars by applying the U.S. CPI-U – U.S. City Average.⁶³

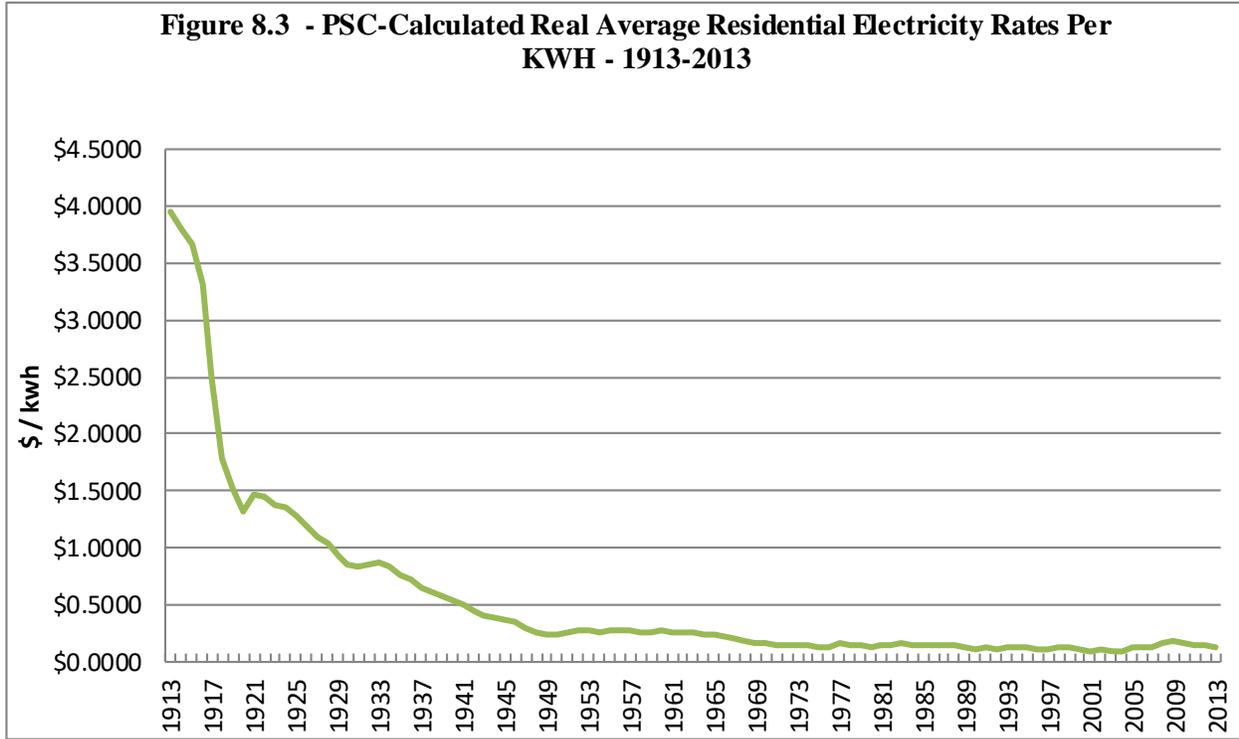
The results can be found in Table 8.2 and Figures 8.2 and 8.3. They show the trend in nominal and real average residential electricity rates in the District between 1913 and 2013 as calculated from Commission-approved rate designs.⁶⁴ Specifically, the trend in nominal rates was downward until the 1970s. Since then, nominal rates have steadily risen, and particularly after electric industry restructuring and the introduction of competition in 2001. However, after adjusting for inflation, there has been a significant decline in average real residential electricity rates in the District throughout the 101-year period.

⁶³ The U.S. CPI was used because there was no single D.C. area CPI for the entire 1913-2013 period. For the years when we had both D.C. and U.S. CPI-U data, we graphed both measures and they were virtually the same.

⁶⁴ These base rates exclude taxes, surcharges, and other fees.

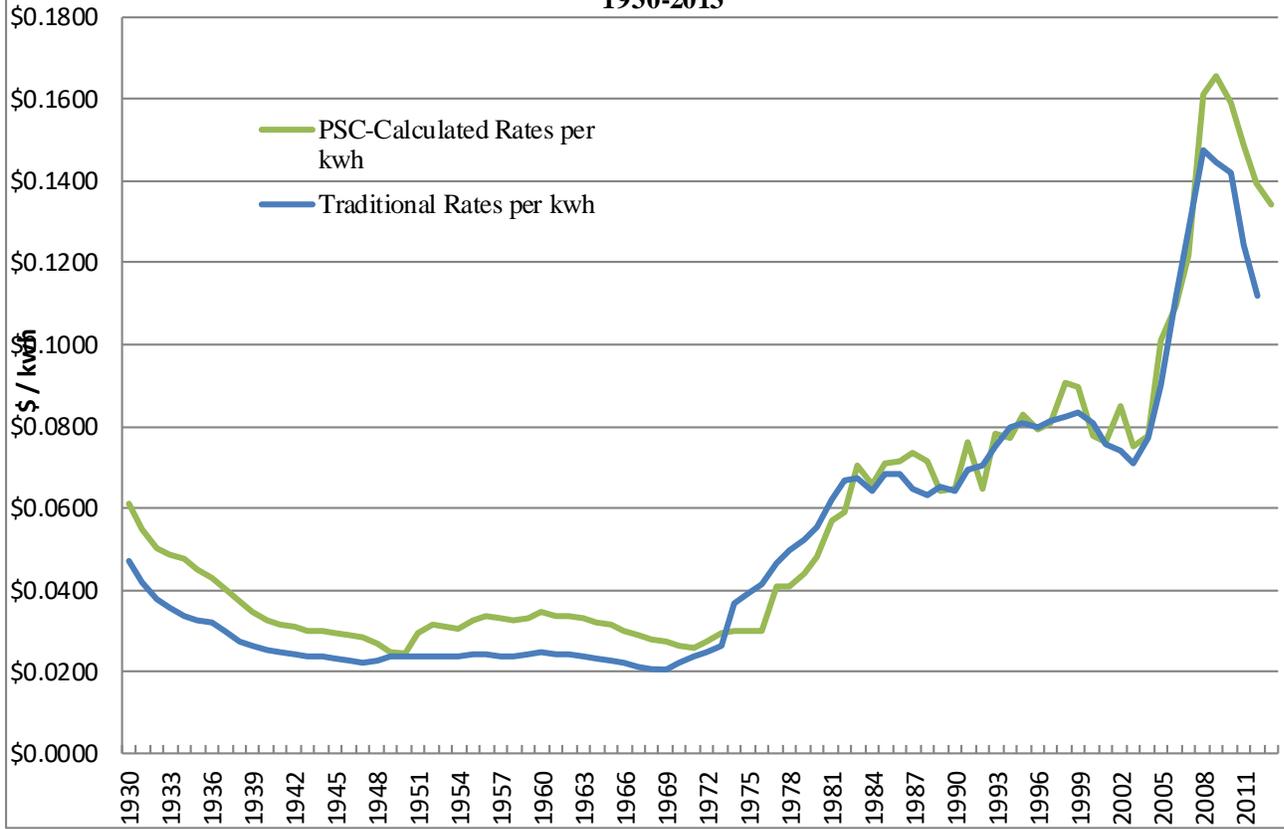
**Figure 8.2 - PSC-Calculated Nominal Average Residential Electricity Rates
Per KWH
1913-2013**



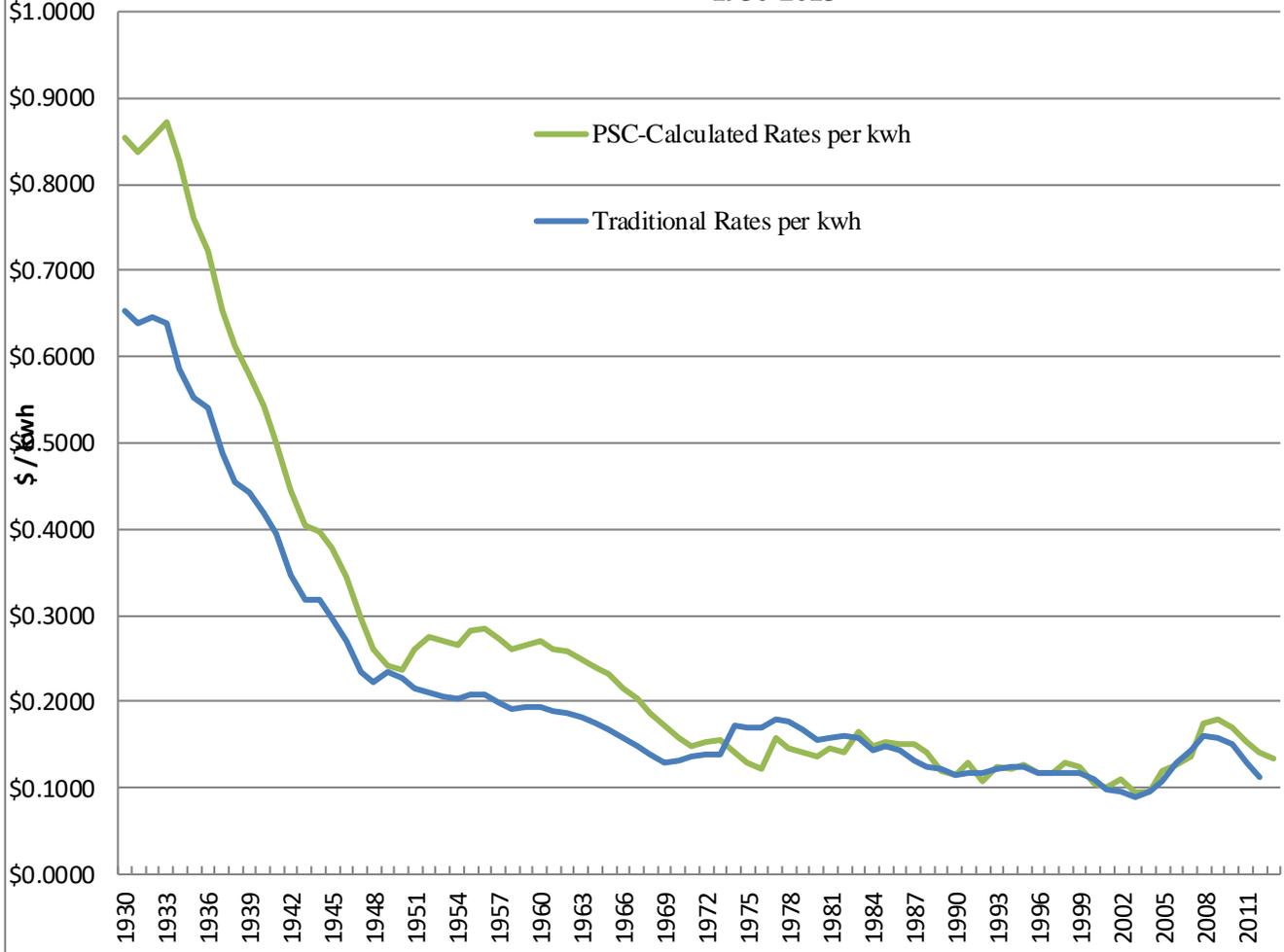


Tables 8.3 (in nominal dollars) and 8.4 (in 2013 constant dollars) and Figures 8.4 and 8.5 permit a comparison of the PSC-constructed rates with the traditional measure of residential electricity prices. The traditional measure goes only back to 1930, so that is where these tables and graphs begin. The traditionally constructed price series shows not only the same trend as the PSC-constructed series, but the results are quite similar in each year.

**Figure 8.4 - Average Nominal Residential Electricity Rates Per KWH - Two Methods
1930-2013**



**Figure 8.5 - Average Real Residential Electricity Rates Per KWH - Two Methods
1930-2013**



7. Ensuring Safe, Reliable, and Quality Electric Service

In 2013, ensuring safe, quality, and reliable electric service is of paramount importance. The purpose of this section of the Chapter is to look back to how the Commission has addressed this aspect of its mission since the agency's inception.

In its early years, the Commission devoted its time to the establishment of electricity regulations to ensure the accuracy of meters and that they were located properly with respect to safety, accessibility, and proximity to other meters. The rules also covered testing procedures, fees to be charged for testing, factors for calculating monthly bills, and the range in variations of voltage on lighting and power circuits to be maintained.⁶⁵ The rules were subsequently amended in 1917 and 1925 to cover the frequency of testing both direct current

⁶⁵ See F.C. No. 29, Order No. 139 issued January 30, 1915.

and alternating current meters.⁶⁶ In 1916, the Commission approved regulations in F.C. No. 54 that established standards for testing new meters after conducting a voltage survey to ensure PEPCO was maintaining voltage on its lines within the Commission's specified limits. However, there were relatively few customer complaints regarding the accuracy of electric meters compared to gas meters because there were relatively few electric customers, electric meters tend to run slow over time, and they are generally more accurate than gas meters. According to the Commission's 1917 Annual Report, special consideration was given to stray electrical currents after inspection of underground pipes and cable conditions, in Georgetown, Chevy Chase Lake, Brightwood, and Eckington. In that same year, the Commission also provided to the D.C. Commissioners its opinion on the adoption of the National Electric Safety Code.⁶⁷

In 1919, after receiving many complaints, the Commission established rules for the extension of service mains.⁶⁸ These rules stipulated who should pay the cost of the extension – the customer, PEPCO, or both and how the costs to each party should be determined. Not surprisingly, consumers often challenged these rules in the ensuing years because the cost was often a burden, particularly to residential customers.

Congress mandated electrical lines on major thoroughfares should be underground within the boundary of the City of Washington well before the Commission was established. By the time the Commission was created, the issue it faced was requests to extend underground conduit within the City limits. In fact, one of the first formal electricity cases was F.C. No. 59, which covered the proposed extension of underground conduit on 6th Street, N.E., between H and Florida Avenue. Requests for approval of undergrounding projects beyond the City limits came from PEPCO, community organizations, and individual citizens. The key issue was who should pay and how much. In considering these requests, the Commission often communicated with the D.C. Electrical Engineer. More often than not, the Commission denied the requests due to the overall cost.

Originally, electric reliability was not an issue like it has been in the 21st century since many households and businesses did not have access to electricity. For this same reason, major storms such as the July 1913 heat wave and tornado and the 1922 Knickerbocker snow storm had an adverse impact on transportation systems, but they did not cause many power outages because the grid had not yet been established. Nonetheless, on October 7, 1920, the Commission established an electric reliability standard by requiring PEPCO to file daily reports on interruptions of service of 10 minutes or more within 48 hours of the occurrence when the interruptions involved equal or greater equipment than one outgoing substation feeder panel.⁶⁹

As the demand for electricity grew, reliability meant ensuring PEPCO had adequate capacity to meet its peak load. To that end, the Commission played a significant role in the build-out of PEPCO's system because each major project required Commission approval.

⁶⁶ See Order Nos. 202, issued February 27, 1917, and 545 issued January 24, 1925.

⁶⁷ See page 216 of PUC Minutes of Meetings, 1915-1917 Volume.

⁶⁸ See Order No. 368, issued on March 23, 1920 in F.C. No. 78.

⁶⁹ See Minutes of Commission Meetings, Volume 1920-1922, p. 76, and P.U.C. No. 1845.

There are many references in the Minutes of Commission Meetings to the certification to the D.C. Commissioners or Engineer Commissioner that PEPCO's proposed construction of generation and substations and additions thereto were "necessary to public convenience and welfare."⁷⁰

PEPCO's two oldest generation plants were located at Benning and Buzzard Point in the District. The Benning Plant was built in 1906, before the Commission was created and the Buzzard Plant was built in 1933. The first mention of the installation of generation capacity in the Commission's Minutes was in 1917, when PEPCO installed a new 15,000 KW steam turbine at the Benning Plant and the construction of 3 new substations at Deanwood, the War Department at 6th & B Streets, NW, and a U.S. Government office building at 18th & D streets, NW. PEPCO completed the work at Benning in 1918 and immediately began construction of a similar unit there. In 1939, a 50,000 KW unit was added at Buzzard Point and it was put in service in 1940. Given the rapid increase in load, a second 50,000 KW unit was added in 1942, after a one-year delay in construction due to the war (called a national emergency in the Minutes.) In 1951, after documenting that peak load exceeded capacity, the Commission approved the modernization of the old Benning plant and the work was completed in 1952.

Until the 1960s when the PUC numbered docketing system was eliminated, the Commission addressed these matters in P.U.C. No. 2477 so it was easy to track them even though no orders had been issued. Also, in the 1960s, interconnection with Baltimore Gas & Electric (BG&E) and PJM enabled PEPCO to increase its ability to serve its growing load in the suburbs beyond its own generation capacity and through purchase power contracts.

The ability to ensure reliable electric service, even with interconnection to PJM and the national grid, was not assured as evidenced by the Northeast Blackout in 1965. That major event served as a red flag to utility companies and state regulatory commissions. The Commission's Chief Engineer served on a regional Task Force assigned to provide recommendations for the future. Chairman Washington and three staff members attended several meetings. Chairman Washington's response was also to survey government installations and hospitals in D.C. regarding the status, if any, of their standby generation capabilities. After learning the D.C. Board of Commissioners was considering the same approach, the Commission worked with the Director of Civil Defense to distribute a questionnaire the Commission had drafted to 20 D.C. facilities. Thirteen responses were received. Meanwhile, Chairman Washington also sought information from PEPCO on its ability to meet current demand in D.C., the feasibility of adding peaking facilities, and the scheduling of them in its present system.⁷¹

By the 1980s, adding generation capacity was a hot issue, as described in the Chapter on the Role of Public Input. In 1988, PEPCO filed an application with the Commission to add two combustion turbines to the Benning Plant to maintain reliable service. The Commission docketed the matter as F.C. No. 877 to determine if the project was in the public interest. However, the neighboring River Terrace community strenuously opposed the project on the

⁷⁰ These certifications were usually docketed in P.U.C. No 2477 and no orders were issued.

⁷¹ See Minutes of Commission Meetings, pages 5381-5510.

grounds the operation of the turbines would have adverse environmental impacts and would be a health risk for the neighboring residents. The Commission never approved the project.

Despite the failure of the Benning Road project, PEPCO did need added capacity as the company's reserve margin had fallen to about 9 percent, which was well below the 16 percent planning margin. Thus, between 1991 and 1994, the Commission approved PEPCO's request, and hence the cost, to add combustion turbines to several of its plants that were located in Maryland in a series of rate cases; specifically, in F.C. Nos. 905, 912, and 929.

Although PEPCO did not need to add any more generation capacity until it sold its plants in 2000, there was a need to undertake a number of both underground and overhead transmission projects to ensure electric reliability, particularly after Mirant, the company to whom PEPCO sold its plants, shutdown the Potomac River Plant in August 2005 in order to comply with environmental ordinances imposed by the City of Alexandria, Virginia where it was located. The Potomac River Plant was needed for peak load reliability so the Commission, through Chairman Agnes Alexander Yates' leadership, was successful in getting the U.S. Department of Energy to require Mirant to re-open the Plant and to keep it open until several alternative transmission projects were completed.⁷² After holding formal and community hearings in F.C. No. 1044, the Commission granted PEPCO a Certificate of Public Convenience and Necessity (CPCN) to construct four new transmission lines – two 69 kV overhead and two 230 kV underground transmission lines. As planned, the two overhead lines were completed in 2006 and the two underground lines were completed in 2007.

The Commission approved two more PEPCO transmission projects before the end of the Commission's first Centennial year, 2013. In F.C. No. 1073, the Commission issued Order No. 15553 on September 23, 2009, that ruled PEPCO had sufficiently demonstrated the reasonableness, safety, and need for two 230 kV underground transmission circuits between the Benning Road station in D.C. and a PEPCO substation in Seat Pleasant, Maryland. The Commission monitored PEPCO's construction through quarterly report filings by PEPCO and the project was completed in 2012. In that same year, the Commission approved PEPCO's plan to upgrade a 138 kV and a 230 kV underground transmission circuits between Buzzard Point in D.C. and the Seat Pleasant, Maryland substation. With the completion of this project, PEPCO would be able to implement its plan to retire the Buzzard Point Plant. The project was also necessary to meet the North American Electric Reliability Corporation (NERC) reliability standards for bulk electric system facilities. The Commission allowed the company to proceed with construction, subject to obtaining the necessary permits from other D.C. agencies in Order No. 16820, issued on June 21, 2012 in F.C. No. 1095. In 2012, PEPCO retired both the Benning Road and Buzzard Point Plants.

a. Electric System Reliability and Storm Restoration

Storm restoration first became a public issue for PEPCO and the Commission in September 1952, when a tropical storm with two baby tornadoes and 70-100 mile per hour winds hit PEPCO's service territory. Many homes relied on electricity not only for lighting, but also for televisions and household appliances, such as refrigerators, washing machines, and

⁷² See F.C. No. 1023

at least window air-conditioners. PEPCO estimated several thousand customers in Maryland and D.C. were without power for varying lengths of time – ranging between 1 and 4 hours after an underground power line failed, leaving the 6th precinct police station without power. Neighborhoods particularly hurt included Silver Spring, Bethesda, Takoma Park, Maryland, and southeast D.C.

The media widely covered the impact of Hurricane Hazel, on October 16, 1954, which felled many trees and even some roofs were blown off. Over 1,000 PEPCO wires were downed and over half of PEPCO's customers lost power at some time during or after the storm in D.C., Maryland, and Virginia, with the latter two jurisdictions more widely damaged because most of their power was distributed by overhead lines. About 7,000 customers in D.C., mostly in northwest where the lines were also above ground, were without power. PEPCO called it the worst destruction in its history.⁷³ Using workers borrowed from other utilities, PEPCO restored power to all customers in the District by October 19 and in Maryland by October 21.

As a follow-up to the storm, consideration was given to undergrounding overhead lines, but the estimated cost of ten times that of overhead lines and the impact on rates deterred any action. The Commission did monitor PEPCO's repair work as briefly alluded to in Minutes of its Meeting on June 3, 1955.⁷⁴

Hurricane Agnes, on June 22, 1972, challenged PEPCO's (and WGL's and C&P's) infrastructure and customers. There was severe damage to underground cables and trunk lines; falling trees and limbs and short circuits in equipment caused flooding. However, most of the many thousands of homes that lost power were restored by the next day.

In response to a high volume of complaints about numerous power outages after severe storms on June 27 and June 29, 1978, the Commission initiated F.C. No. 703, "In the Matter of the Review of Procedures and Practices of the Potomac Electric Power Company for Coping with Service Outages and Other Emergencies Resulting from Natural Phenomena." The Commission undertook an investigation into whether PEPCO's restoration efforts favored some geographic areas of the city, the length of time it took PEPCO to restore service, and the adequacy of PEPCO's restoration procedures. On July 21, 1978, the Commission held an informal hearing in which citizens, businesses, and organizations were invited to relate their experiences and recommend remedial action. Thereafter, the Commission staff conducted an investigation. On April 24, 1981, the Commission issued Order No. 7296, in which it closed the case after reporting the results of its investigation that included a random sampling of 700 customer complaints. No bias or geographic preference was found.

During the investigation of the 1978 storms, two violent thunderstorms occurred in late August and early September 1979 that caused thousands of customer outages in upper northwest D.C., and Montgomery and Prince Georges Counties in Maryland, but no formal investigation was undertaken.

⁷³ PEPCO was not the only utility adversely impacted by the storm. C&P had 6,500 phones knocked out in the DC area, and 1,000 were still out 24 hours after the storm.

⁷⁴ See Minutes of Commission Meetings, p. 3959 and P.U.C. No. 1845/16.

PEPCO has described the Flag Day (June 14) thunderstorm in 1989 as the “worst storm in the company’s 93-year history in terms of the number of customers affected, number of customer calls, and the damage to the distribution system.”⁷⁵ Its overhead distribution system was totally destroyed and 150,000 customers in Maryland and D.C. lost power. PEPCO received nearly 100,000 customer calls. According to PEPCO, about 44 percent of the damage was in the District, causing 663 tree complaints, 44 feeder lockouts and six substation shut downs.⁷⁶ Because PEPCO had to “rebuild” its overhead distribution system, the company took 6 days to restore service to all of its customers, although 96 percent were restored in 4 days. During that period, PEPCO implemented a community outreach program that included the distribution of dry ice that was well-received. As PEPCO’s report indicated, the company received many compliments for its restoration efforts.

Only a few years later, in 1994, OPC filed a petition for an investigation of PEPCO and its manual dump plan (and WGL) after severely cold weather between January 16 and 21, led PEPCO to conduct electric power brownouts and rolling blackouts to prevent electric power shortages. The Commission conducted its investigation in F.C. No. 936, ultimately affirming, without criticism, PEPCO’s and WGL’s forecasting and public information procedures.

However, public dependence on electricity significantly increased over the ensuing decade, quite possibly due to the proliferation of computers, so customer patience for extended outages during and after Hurricane Floyd in 1999 was far lower than in 1989 and 1994. It took PEPCO 3 days to restore service to 10,000 D.C. customers after a severe ice storm hit the Washington area on January 14-15, 1999, and the Commission received numerous complaints.

The Commission responded by opening F.C. No. 982 in order to investigate PEPCO’s restoration processes and practices in accordance with D.C. Code 43-501 that requires every public utility doing business within the District of Columbia to furnish service and facilities reasonable safe and adequate and in all respects just and reasonable. Special focus of the Commission’s inquiry was on customer relations and company planning and preparedness to identify any improvements that could be achieved in the future. The Commission convened a public hearing on January 21, 1999 to receive testimony from PEPCO on the matter. Meanwhile, PEPCO engaged PHB Hagler Bailly, a management consulting firm, to conduct a comprehensive assessment of its emergency communications and response plans and its performance during the storm.

Soon after PEPCO filed those reports, Hurricane Floyd hit the District on September 16, 1999 so the Commission asked PEPCO to explain whether the updated plans were effective during this second storm. PEPCO filed its report on October 22, and subsequently OPC filed comments and Staff filed a Report. On February 10, 2000, the Commission issued Order No. 11604, noting that PEPCO’s storm restoration performance after Hurricane Floyd was an improvement over the ice storm and PEPCO’s T&D performance was better than the industry average. However, it directed the Productivity Improvement Working Group (PIWG) composed of PEPCO, OPC, and Commission staff, to work together to examine related issues such as PEPCO’s emergency staffing resources; additional T&D reliability measuring criteria,

⁷⁵ *The Flag Day Downburst—PEPCO’s Response*, June 1989, pp. 1 & 13.

⁷⁶ *Ibid.*, p. 7.

outage documentation, and reporting indices; revised standards; and best practices. This assignment was a significant turning point for the group, which had been formed in the early 1980s to address the performance of PEPCO's generating plants. But, in 2000, PEPCO sold its plants and promised to concentrate on its distribution system, so the Working Group was given a new focus on electric distribution reliability.



PIWG Meeting in 2008

b. Manhole Incidents and Aging Infrastructure



From left to right, Chief Engineer, Dr. Joseph Nwude; Commissioner Agnes Yates; and Acting Chairman Ed Meyers, on a Manhole Inspection in Georgetown.

Signs of trouble in PEPCO's underground distribution system appeared during the winter of 2000 when a number of fires, explosions, and incidents of smoke emanating from manholes occurred in the Georgetown and downtown sections of the District that triggered PEPCO and Commission investigations of the causes. The Commission initiated F.C. No. 991 for its investigation. Both reliability and safety issues were at stake as the manhole covers were blowing off, endangering traffic and pedestrians alike. PEPCO hired consultants and the Commission engaged Stone & Webster (S&W), an engineering consulting firm, to conduct an independent assessment of the company's underground distribution system in the affected areas. S&W concluded that overloading (those instances when there is too much demand placed on the system) caused cable and splice failures that led to the smoke, fires, and explosions. In addition, several incidents were caused by crowded manholes and the presence of older style equipment. This finding is consistent with the fact that at least some of this infrastructure may have dated back over a hundred years to the City's electrified streetcar system that began in 1888, predating the creation of both PEPCO and the Commission. The next major underground infrastructure project in which PEPCO participated was likely the building of the Metro subway system in the 1960s, but that was over 40 years earlier.

Both short-term and long-term solutions were implemented. In the short-run, the Commission directed PEPCO to install slotted manhole covers that proved to be effective in reducing the number of explosions.⁷⁷ The long-run solution was to rebuild the underground system in Georgetown. PEPCO, the other utilities, and the District Government, with some Commission monitoring and oversight, worked together beginning in 2003 to rebuild the

⁷⁷ Order No. 11716 issued June 16, 2000.

underground electrical, gas, telephone and water facilities in Georgetown. The project was completed in 2007. For preventive maintenance and safety purposes, the Commission also engaged Siemens Power Transmission & Distribution, Inc., the successor to S&W, to monitor and conduct independent inspections of manholes in other parts of the District and to report its findings to the Commission every year thereafter.



Far right, Deputy Executive Director for Regulatory Analysis, Dr. Joseph Nwude
Conducting a Manhole Inspection

While the number of reportable incidents did decline, the Commission was also concerned about the safety of PEPCO workers who had to respond to manhole incidents. For example, the Commission opened an investigation into an underground manhole explosion that occurred on May 10, 2007 at New Jersey Avenue and K Street, N.W. as F.C. No. 1058 after a PEPCO worker was burned. The cause of the explosion was attributed to a primary joint failure due to deteriorated insulation. The incident validated the need for continued monitoring of PEPCO's manhole inspection program. In addition, the Commission required PEPCO to provide further information on its safety procedures for manhole inspections, including identifying hazards, and barriers and safeguards to be used to eliminate, minimize or control the hazards as well as the methods used to ensure compliance with the safety procedures by all employees at risk.

c. Back to Storm Restoration

Meanwhile, the PIWG proposed, as required by Order No. 11604, and the Commission approved in Order No. 12574, issued on October 22, 2002, reporting standards for service outages and restoration performance service outage and restoration performance standards. The standards contained definitions of major and non-major outages, with the former threshold level being 10,000 or more customers without power.

These reporting standards proved to be useful the next year, 2003, when 4 major storms hit. The first occurred on June 11 and 13 when nearly 21,000 D.C. customers lost power at its

peak. On four days in late August, a series of thunderstorms knocked out power to about 18,000 D.C. customers at its peak. Massive damage occurred to PEPCO's system during Hurricane Isabel on September 18-19, wherein 538,000 or 76 percent of its customers, including 135,000 D.C. customers, lost power. PEPCO's system was severely damaged, as 19 of its 13 kV distribution substations shut down. It was the worst outage to date in PEPCO's history. On November 13th, another storm caused over 10,000 D.C. customers to lose power.

PEPCO restored power to all D.C. customers within a day or two for three of the four storms, but it took PEPCO 10 days to restore power to all of its customers and 9 days to restore power to all D.C. customers after Isabel, much to the chagrin of many. Moreover, PEPCO had taken longer to restore service to its customers than electric utility companies serving neighboring jurisdictions that were also hard hit by the storm. In addition, many citizens were upset with the failure of PEPCO's communications during the extended outages. The Commission held a community hearing on November 13 and an informational hearing on November 14.

Meanwhile, PEPCO engaged James Lee Witt Associates to review its response to the August storms and Hurricane Isabel and to determine how the Company could better respond to customer needs during such critical times. The Witt Report blamed overloading and hence failure of PEPCO's new Outage Management System (OMS) that had been installed and activated in November 2002 to provide storm status, a summary of active complaints, priority customers and facilities, and crew status so PEPCO could provide geographical area-based restoration estimates. PEPCO filed the report, which became known as the Witt Report, on January 12, 2004. After receiving public comments on the Witt Report, on September 15, 2004, the Commission issued Order No. 13381, determining that the amount of time PEPCO took to restore power was reasonable given the widespread damage to its system and it accepted the recommendations of the Witt Report. However, the Commission also directed PEPCO and the PIWG to submit a report on a comprehensive tree management program since much of the damage during the storm was due to downed trees and limbs. Correction of flaws in PEPCO's OMS system had already been implemented in May 2004. The Commission ordered a review of both PEPCO's underground and overhead distribution system and the development of Storm Restoration Performance Standards for major outages. The Commission monitored PEPCO's and the PIWG's progress on these initiatives by requiring the filing of quarterly reports. These initiatives were completed by 2007.

d. Smart Grid Technology to Reduce Restoration Times



F.C. No. 1056 - Funding for Smart Grid

One of the major federal initiatives to stimulate the U.S. economy after the Great Recession of 2007 was Congress's passage of the American Recovery and Reinvestment Act (ARRA), which became law in February 2009. Among other things, the law authorized the U.S. Department of Energy (USDOE) to award grants amounting to up to 50 percent of the cost to deploy smart grid technologies called Advanced Metering Infrastructure or AMI. AMI provided two-way communications between customers and the utility companies and that feature could be used to reduce restoration times after storms because the utility company would be able to identify the cause more readily and, in some cases, restore service remotely. The D.C. Council approved the implementation of AMI in D.C. subject to Commission approval that the project, with the federal funding, would be cost effective. Meanwhile, PEPCO applied to USDOE for the funding and on October 29, 2009 was awarded \$44.6 million for AMI deployment. On December 17, 2009, in Order No. 15629, the Commission certified the cost effectiveness of the program. PEPCO began phasing in the deployment of new AMI meters in October 2010. By 2012, the deployment was completed and the meters were activated for two-way communications.⁷⁸

e. Undergrounding as a Long-Run Solution to Minimize Outages

One of the recommendations of the Witt Report was that PEPCO more aggressively seek opportunities for public-private partnerships, as in the case of communities that wanted

⁷⁸ For more details, see F.C. No. 1056.

to share the costs of undergrounding.⁷⁹ In fact, undergrounding the electrical system has a long history in the District. In 1888, Congress mandated that the electric distribution system be underground within the City limits.⁸⁰ The boundary for the City limits covered Georgetown and the area between Florida Avenue and the Potomac and Anacostia rivers and includes the central business district, Capitol Hill, DuPont Circle, Logan Circle, Shaw, and Southwest.⁸¹ The underground system was first used for the electrified streetcar system that was in place by the beginning of the 20th century. It subsequently formed the basis for electric streetlighting in the downtown area.

As the population migrated beyond the City limits, streetcars and then homes and businesses were served principally by overhead electrical lines. According to the Minutes of Commission meetings, in 1917, the D.C. Commissioners asked the Commission to address the question of the need for extending PEPCO's underground conduit on Champlain Avenue, from Kalorama Road to Euclid Streets. The Commission opened F.C. No. 60, held a formal public hearing, and approved the extensions in Order No. 222 issued on June 29, 1917. During the 1920s & 1930s, the Commission began getting requests for extensions of the underground system, not only from PEPCO or the Committee on Extension of Underground Mains in Advance of Street Paving, but also from private citizens and businesses. The question was whether electric consumers should pay a portion of the cost to convert from overhead to underground service. For example, in 1929, the Commission directed PEPCO to obtain feedback from citizen associations as to whether they would be willing to approve or object to the expenditures necessary to underground overhead lines on Montello Avenue, N.E. and on Buchanan, Varnum, and Allison Streets, N.W. PEPCO estimated the cost to the company would be \$20,370.44 and the cost to the property owners would be \$1,831.20. In the alternative, PEPCO submitted applications for permits to renew and relocate poles and the aerial system on the streets.⁸² The Commission did not order the undergrounding of the lines until it obtained from the D.C. Electrical Engineer the cost of the proposed change. Once received, the Commission approved the undergrounding on the northwest streets.

The Commission also was asked to approve such conversions by PEPCO as part of efforts to replace poles on major thoroughfares. More often than not, the Commission denied the request to underground lines instead of renewing or relocating poles because the project was not deemed to be cost effective. The Engineer Commissioner was a key player in the decision-making process given his dual role as a member of the D.C. Board of Commissioners.

⁸³

After Hurricane Hazel, the question of undergrounding overhead lines arose anew, but the cost was estimated to be about 10 times the cost of the overhead system, and that would have had an adverse effect of boosting rates.

⁷⁹ Witt Report at 5

⁸⁰ See section 34-1901.01 of the D.C. Office Code.

⁸¹ Mayor's 2013 Task Force Report, p. 114.

⁸² P.U.C. No. 2767/1 - Minutes of Commission Meetings, 1928-1932 Volume, pp. 135.

⁸³ *Ibid.*, p. 151

In the mid-1960s, there were two events where undergrounding lines was considered. The first began in 1962 when a new school was to be built in Far Northeast and there was a need to change the right of way for a high voltage transmission line. The Executive Secretary and Vice Chairman toured the area where the 69KV line was proposed in order to seek a suitable route for the relocation of the line. Chairman Washington also instructed the Executive Secretary to notify the Northeast Business & Professional Men's Association of the plans and request their position on them. The Businessmen Association sent a letter saying the line should be placed underground from the Benning Plant to the District line. General Duke wanted the line put underground, but the \$1.0 million cost⁸⁴ was of concern. The economics of the matter, however, was overtaken by a legal question – did the Commission have the authority to render a decision on the matter. Chairman Washington believed the Commission had the authority based on Section 56 of the Commission's statute pertaining to health, safety, and welfare, while the D.C. Corporation Counsel rendered two opinions (one dated August 14, 1964 and the second dated November 8, 1965) claiming otherwise.

While that dispute was ongoing, in 1965, Senator Bible sent a letter request to the Commission to underground poles and wires carrying electric and telephone equipment throughout the District. General Duke said a zoning issue needed to be solved first because overhead and underground equipment are zoned differently. The Chief Engineer prepared a report and the matter was referred to the D.C. Commissioners because all permits for construction were issued by them.

The Commission considered adding the issue to a PEPCO rate case, but eliminated it before the order designating issues was released. Instead, in 1966, the Commission directed PEPCO to furnish the location of all overhead and underground lines of 33 kV or higher, to note whether the costs were in the present rate base, to identify any special community problems that could be envisioned if the lines were relocated and why each problem could not be resolved. The Commission had to pressure PEPCO repeatedly to provide the information, but the company finally complied with the request. Once the information was received, the Commission planned to meet with the Commissions in Maryland, Pennsylvania, New Jersey, and Delaware, because they all had similar cases before them. PEPCO supplied the information for all of the District. It indicated in Far Northeast alone, there were 19 circuit miles that would need to be undergrounded and the cost would be \$1.248 million. By the time Chairman Washington left office, no action had taken place. Chairman Avery did not take any follow-up action. He was concerned that there would be a windfall to one person for the Far Northeast project that also required participation by the National Capital Planning Commission because the line would be rerouted through park service property.

With the service restoration problems encountered during and after Hurricane Isabel, the Commission decided to re-consider the feasibility of undergrounding lines in the District. The first step was to open a proceeding, F.C. No. 1026 by issuing Order No. 13993 on December 3, 2003, initiating an investigation into the feasibility of undergrounding overhead lines. PEPCO conducted a study, with recommendations, which was filed on September 30, 2004. The study indicated the cost to underground PEPCO's entire system would be

⁸⁴ Minutes of Commission meetings, p. 5465

prohibitive at an estimated \$4.0 billion (in 2004 dollars). Instead, PEPCO recommended selective undergrounding as a viable option for further consideration.

After receiving comments on the report, on December 6, 2005 the Commission issued Order No. 13830, declining to order PEPCO to convert all of its overhead lines to an underground system. However, the Commission did direct PEPCO to conduct a cost and feasibility study of undergrounding selected feeders in areas prone to power outages. On June 5, 2006, PEPCO submitted its report. After another round of comments was requested and received, on February 12, 2007, the Commission issued Order No. 14209, requiring PEPCO to address whether converting overhead lines to an underground system in communities and neighborhoods susceptible to power outages would lead to better, more reliable and less outage prone electric service. PEPCO filed its response on April 27, 2007.

As the next step, the Commission then decided to conduct its own independent study. To that end, after issuing an RFP in 2008, in 2009, the Commission engaged Shaw Engineering to conduct the study. Shaw Engineering submitted its report to the Commission on July 2, 2010.



Shaw Presentation of Undergrounding Study

The study concluded:

- a. The cost to underground PEPCO's entire overhead distribution system would be \$6.2 billion (in 2010 dollars).
- b. Undergrounding would reduce the frequency of outages, but increase the duration of outages because it takes longer to detect and repair problems in an underground system than in an overhead system.
- c. Immediately after undergrounding, reliability would improve, but over time it would worsen because underground cables have a shorter life span than overhead lines.

- d. The greatest benefit would come from undergrounding primary lines, but not secondary lines to individual homes and businesses.
- e. While undergrounding the entire system is not cost-effective, a targeted approach is worthwhile.

While PEPCO and the Commission pursued the idea of selective undergrounding as one of six options for improving reliability in PEPCO's comprehensive reliability plan, there were seven more major storms. PEPCO filed reports on its restoration efforts after each of them. Not dissatisfied with PEPCO's performance but seeking further improvements, the Commission grappled with whether to establish storm restoration benchmarks.

f. Storm Restoration Benchmarks and Plan

In Order No. 13381, issued in 2004, the Commission had directed PEPCO and the PIWG to develop storm restoration performance standards for major outages considering the severity of a storm in terms of the percentage of PEPCO customers affected on a system-wide basis, the time to restore 90 percent and 100 percent of the affected customers, and the practices in other states and jurisdictions. The PIWG was required to submit quarterly progress reports.

The task proved to be difficult, as each storm seemed to have circumstances that were not easy to "normalize," and few if any jurisdictions had created any standards that could be used as models, most likely due to the same problems being encountered in D.C. By 2011, after storm restoration problems continued and as a follow-up to the Commission's 2008 investigation of outages, the Commission decided to obtain public input by issuing Order No. 16249 that began an inquiry into whether such standards should be established. Comments were received and, on that basis, the Commission issued a Notice of Inquiry (NOI) on April 27, 2012. The comments received in response to the NOI raised questions in the mind of the Commission on whether the definition of a major outage should be changed. On that narrower point, the Commission issued an NOI on June 7, 2013. After receiving comments, the Commission issued Order No. 17286 on October 30, 2013, requesting further comments. Responses were due in December 2013.

Although the Commission had not established storm restoration benchmarks by the end of 2013, it had approved a PEPCO D.C. Major Storm Outage Restoration Plan. On April 27, 2012, the Commission had issued a NOPR that included provisions requiring PEPCO to design and implement a Major Service Outage Restoration Plan. The Commission approved the Plan in Order No. 16839 on July 17, 2012. On November 6, 2012, PEPCO filed its Plan with the Commission. After receiving comments from OPC, PEPCO filed a corrected version on January 16, 2013. On May 30, 2013, after another round of comments, the Commission approved PEPCO's plan, subject to several revisions and reporting conditions.

g. The Derecho Game Changer

Meanwhile, the Derecho storm on June 29, 2012, was a game changer. At the peak, nearly 500,000 PEPCO customers lost power and over 75,000 of them were in D.C. It took PEPCO 8 days to restore power to all D.C. customers and a little longer to restore power to all of its Maryland customers.

Commission Chairman Betty Ann Kane responded to Mayor Vincent Gray’s call for a “game changer,” by suggesting he form a Task Force to pursue the idea of selective undergrounding. As a result, on August 16, 2013, the Mayor issued Executive Order 2012-130, which established the “Mayor’s Power Line Undergrounding Task Force” to improve electric system reliability and resilience in response to more frequent weather events and their impact on the electric distribution system. The Task Force was led by City Administrator, Allen Lew, and PEPCO President and Chairman of the Board, Joe Rigby. Members included Commission Chairman Kane; Councilmember Yvette Alexander; People’s Counsel Sandra Mattavous-Frye; the Directors of the Departments of the Environment, Transportation, Public Works; the Offices of the Chief Financial Officer and Budget; citizen representatives of wards 3 and 7; and representatives of the Water & Sewer Authority, WGL, Comcast Cable, and RCN. In October 2013, the Task Force submitted its findings and recommendations, including draft legislation that it had already submitted to the D.C. Council. Some of the key recommendations were to:

- a. Proceed with selective undergrounding of power lines by implementing a 7-10 year plan for undergrounding up to 60 distribution lines at a cost of nearly \$1.0 billion.
- b. Proceed with legislation that allows funding for the project through a rate surcharge totaling up to \$500 million and up to \$375 million authorized through utility rate securitization in bonds.
- c. Develop a public awareness and stakeholder communications plan.



PSC Chairman Betty Ann Kane participating in a meeting of the Mayor’s Undergrounding Task Force.

h. Blue Sky Outages and Electric Reliability Goals and Benchmarks

Although the impetus for undergrounding overhead lines stemmed from a search for ways to improve PEPCO’s storm restoration efforts, the Commission has also sought to improve PEPCO’s overall electric system reliability.

The industry measures electric reliability on the basis of the average number of outages or frequency of outages, (SAIFI or System Average Interruption Frequency Index) and the average duration of outages in hours (SAIDI or System Average Interruption Duration Index and CAIDI or Customer Average Interruption Duration Index). Principal causes of sustained outages⁸⁵ include

⁸⁵ Prior to 2001, PEPCO used a one-minute standard. Beginning in 2001, PEPCO adopted the industry standard of 5 minutes for a sustained outage.

equipment failure, trees, weather, animals, cable cuts, load, motor vehicle collisions, fire, and downed wires. Major events such as major storm-related outages are not included in the definition so these types of outages are often referred to as “blue sky” outages because they generally occur when the weather is not a major factor. Blue sky outages are now defined as non-major outages lasting more than 8 hours regardless of how many customers are affected or customer service outages affecting more than 100 and fewer than 10,000 customers, regardless of duration and are reported by PEPCO in Attachments 1-4 of its monthly outage reports. Major service outages are defined as impacting more than 10,000 customers and restoration efforts take more than 24 hours.

*The first mention of blue sky outages in the Minutes of Commission meetings was in 1964 when a resident, Mr. Richard Goode, of 1623 45th Street, N.W. complained of experiencing many electric power failures. They frequently occurred on a hot Saturday or Sunday, probably due to heavy demand for air conditioning. Chairman Washington asked the Assistant Chief Engineer to investigate and report to the Commission as to why the area was experiencing electric power failures.*⁸⁶

Although there was at least one equipment failure-caused blue sky outage that occurred on January 6, 1992,⁸⁷ looking back, the Commission began to focus on PEPCO’s electric system reliability and track its performance in 2000, as measured by these three indices. At that time, the Commission was also grappling with investigations of manhole incidents, the first evidence of aging underground infrastructure and PEPCO’s performance in restoring service after the 1999 Ice Storm. In that same year, PEPCO sold or transferred its generation assets to Mirant. The Commission ordered PEPCO to revise the scope of its annual Productivity Improvement Plans called PIPs, by shifting its focus away from the performance of its generating facilities and the procurement of fuel for the units, to the Company’s transmission and distribution (T&D) system and the evaluation and remediation of its least performing feeders (LPFs) that accounted for about 2 percent of its 751 feeders in the District of Columbia. In Order No. 11604, issued on February 10, 2000, the Commission stated:

*We note that, although PEPCO’s performance may exceed the industry average, it remains incumbent upon PEPCO to continue to ensure the provision of safe and reliable electric service to customers in the District. To that end, the Commission concurs with Staff’s recommendation that PEPCO work with the PIWG to investigate additional T&D reliability measuring criteria, and outage documentation and reporting indices. Further, PEPCO is directed to report to the PIWG, on an annual basis, the results of its evaluations of the performance of its feeders and the status of its reliability improvement projects, including the ongoing hardening of power supply to each substation.*⁸⁸

This action proved to be timely as F.C. No. 766, first opened in 1981 to audit PEPCO’s productivity performance, became the locus for a comprehensive review of PEPCO’s system reliability each year, with particular attention paid to improving the performance of the company’s poorest feeders that contributed to the most blue sky outages. Specifically, also in Order No. 11604, the Commission noted that PEPCO had indicated that it used the reliability measures of the

⁸⁶ Minutes of Commission Meetings, p. 4995

⁸⁷ See PEPCO’s May 8, 1992 Report on its January 6, 1992 Power Outage.

⁸⁸ p. 16-17.

frequency and duration of outages to identify the LPFs. In its March 1, 2001 Order No. 11931 on PEPCO's 2000 PIP, the Commission approved an outline for the Company's 2001 PIP that contained a new section on feeder performance and the reliability of PEPCO's T&D facilities, including industry comparisons.⁸⁹ The Commission further stated:

*The Commission is of the view that the PIP should be expanded to include the new sections so that the PIWG and the Commission can continually monitor the effect of PEPCO's post-divestiture structure and operations on its transmission and distribution productivity.*⁹⁰

In its 2001 PIP, filed on May 9, 2001, PEPCO, with input from the PIWG, added sections on PEPCO's manhole inspection program, its follow-up storm restoration performance after the 1999 Ice Storm, and SAIFI, SAIDI, and CAIDI performance and goals (overall and for the 15 least performing feeders that accounted for 2 percent of all D.C. feeders). The reliability indices for PEPCO and industry averages were based on 1999 blue sky data from the Salt River Project survey of 35 large cities, including D.C. PEPCO set the 2001 goal for SAIFI at 1.41 outages a year, the SAIDI goal at 2 hours, and the CAIDI goal at 1.42 hours. Both were calculated based on the past three-year average of PEPCO's system-wide performance.

In Order No. 12339, issued on March 15, 2002, the Commission approved PEPCO's 2001 PIP, but toughened the reliability goals by lowering them slightly to an average of 1.4 outages per year for SAIFI and an average of 1.9 hours of outages for SAIDI in 2001.

PEPCO reported its actual 2001 performance in its 2003 PIP. It met all three SAIFI, SAIDI, and CAIDI goals and it performed well in comparison with the SAIFI industry average, but its performance was below the SAIDI and CAIDI industry averages.

Meanwhile, with respect to PEPCO's 2002 PIP, in Order No. 12596, issued on November 7, 2002, the Commission approved PEPCO's proposed 2002 SAIFI and SAIDI goals of an average of 1.32 outages and 1.95 hours of outages respectively, pending a review by the PIWG of an appropriate method for setting performance goals.⁹¹ PEPCO met those goals in 2002, with actual performances of 1.29 for SAIFI and 1.48 for SAIDI. Its performance continued to be on par with industry averages attributed to ongoing initiatives such as the identification and remediation of the worst performing feeders, the manhole and T&D inspection program, the automation of substation and distribution system, the implementation of an OMS, and tree trimming activities.⁹²

The data used to calculate PEPCO's reliability performance through 2002 was on the Company's system-wide basis. On May 6, 2003, in the manhole investigation case F.C. No. 991, the Commission required the company to file performances indices for D.C. only in addition to the PEPCO system data.⁹³ As a result, PEPCO filed both data from 1998 through 2003 in the 2004 PIP filed in February of that year. The D.C. data showed the Company's 2003 SAIFI and SAIDI

⁸⁹ Order No. 11931, p. 4

⁹⁰ *Ibid.*, p. 7

⁹¹ Order No. 12596, pp. 6, 7, and 20

⁹² Order No. 12804, p. 20 and Order No. 13422, p. 21.

⁹³ See Order No. 12735, p. 55.

performance was better than the PEPCO system data but worse than the industry averages and the D.C. CAIDI performance was worse than the PEPCO system and the industry average. So clearly more needed to be done.

To put pressure on PEPCO to improve its performance, the Commission established new reliability performance benchmarks in the absence of any industry benchmarks. Specifically, on April 27, 2005, the Commission issued Order No. 13565 in F.C. No. 982, adopting customer service and interim reliability benchmarks that the PIWG had submitted on June 4, 2003. The first benchmark, for 2006, was to be based on 4 years of OMS data, excluding major event days (MEDs) using an IEEE (Institute of Electrical and Electronics Engineers) proposed method. An additional year of OMS data was to be added annually until there was 5 years of data. Thereafter, the benchmark would be reset annually using a rolling 5-year average. The 2006 benchmarks were 1.09 for SAIFI, 3.52 hours for SAIDI, and 3.72 hours for CAIDI.

PEPCO's D.C. performance met the 3 benchmarks more often than not between 2006 and 2009. However, as the Commission continued to track PEPCO's reliability performance through the annual PIPs, it began to receive complaints of frequent outages in specific wards and neighborhoods. For example, in 2006, feeder 15197 in ward 4 had been on the least performing feeder list in 2004 and again in 2006, despite PEPCO's remedial efforts. The Commission docketed the complaints in F.C. No. 1055 and arranged for PEPCO to meet with the residents to discuss the proposed remediation. The work was completed in August 2007. However, other residents in ward 4 were also complaining such that on January 24, 2007, OPC filed a petition for the Commission to investigate recurring unplanned outages in ward 4. In a subsequent petition, OPC added complaints from wards 7 and 8 to the petition in June 2007. On July 26, 2007, the Commission granted OPC's request in Order No. 14390. PEPCO agreed to compensate the nearly 400 customers who had filed claims for damages related to the outages and the Commission monitored the process until all claims were paid.

The pressure on PEPCO to improve its performance did not stop there. On September 28, 2007, the Commission finalized Electric Quality of Service Standards (EQSS) in F.C. No. 982 as a foundation for holding PEPCO accountable for its service reliability performance. The rules contained requirements for ensuring PEPCO and electricity suppliers operating in the District met adequate levels of quality and reliable service. Specifically, there were reporting requirements for major and non-major outages, manhole incidents, and power quality complaints; customer service standards, reliability benchmarks, and billing error notification both to the Commission and OPC. Whenever PEPCO failed a benchmark, the Company was required to develop a corrective action plan and report on its progress to the Commission in its Annual Consolidated Reports (ACRs), which in 2005 became the successor name to the PIP.

Moreover, on June 13, 2008, a major service outage occurred affecting 12,000 customers in downtown D.C., including the Commission. The cause was a shutdown of the 10th street substation. The outage affected the Metro subway system, traffic signals and many government and commercial buildings. On June 17, 2008, the Commission issued Order No. 14834, initiating an investigation in F.C. No. 1062. The Commission concluded its investigation in 2009, after another power outage occurred that was also associated with equipment failure at the 10th street substation and PEPCO had replaced the switches that contributed to both events.

Also, on June 17, 2008, OPC, using data compiled from PEPCO's notices of outages in accordance with the EQSS and after the unplanned outage on June 13, filed a petition for investigation into 2008 electric service outages. The Commission was also receiving complaints from a number of citizens, particularly in ward 3, regarding frequent outages. Thus, on November 8, 2008, the Commission held a public hearing to address the complaints. In the meantime, to ensure compliance with the EQSS, the Commission modified the EQSS in July 2008, by requiring PEPCO and all electricity suppliers to file quarterly compliance reports with explanations of any failures and plans for remedying the failure in the following quarterly report. On December 2, 2008, after the public hearing, the Commission issued Order No. 15131 that required PEPCO to file monthly non-major outage reports so the Commission would have more timely data than it was receiving in the Annual Consolidated Reports (ACRs) in order to be more proactive in directing improvements on an ongoing basis.



2008 Community Hearing Re Outages

In Order No. 15568, issued on October 7, 2009 with respect to PEPCO's 2009 ACR, the Commission directed PEPCO to achieve the best quartile of performance, using the IEEE T&D System Benchmarking Study.⁹⁴ PEPCO had been reporting the results of the survey in its PIPs and ACRs, but the PEPCO data represented the company on a system-wide basis and thus was not D.C. specific. Moreover, the Commission did not set a date for the achievement of the goal. Nonetheless, in PEPCO's 2011 ACR that contained 2009 data, the Company began comparing PEPCO's D.C. results with the industry data that was separated into 4 quartiles. PEPCO's D.C. performance fell in the 2nd quartile for SAIFI, the 3rd quartile for SAIDI, and the 4th quartile for CAIDI.

⁹⁴ p. 16

Meanwhile, blue sky outages caused by equipment failure continued to occur. For example, in 2011, the Commission initiated an investigation, again in F.C. No. 1062, into a power outage at New York Avenue and 1st streets, N.E. after failure of certain underground cables.



2011 Reliability Hearing

Although PEPCO was meeting the benchmarks established in the EQSS, the Commission was not satisfied with the continued number of blue sky outages based on its review of PEPCO's monthly outage reports. One of the problems with the benchmarks was that they were dependent on PEPCO's past performance. When PEPCO's performance deteriorated, it increased the benchmarks making it easier for PEPCO to meet them. Therefore, also in 2011, the Commission toughened the reliability performance benchmarks in the EQSS. After issuing two NOPRs, the Commission approved more aggressive benchmarks in the EQSS in Order No. 16427, issued on July 7, 2011. The new rules went into effect with the publication of the Notice of Final Rulemaking (NOFR) in the D.C. Register on July 22, 2011.

The revised SAIFI and SAIDI standards, beginning in 2013, were designed to enforce continuous improvement in electric service reliability through 2020, when PEPCO's performance was expected to reach the top tier of electric distribution systems. The Commission also required that the SAIFI and SAIDI indices be based on D.C. only data, rather than PEPCO system-wide data. Finally, the new rules imposed forfeitures and penalties pursuant to D.C. Code, sections 34-706 and 34-1508. Under section 34-706, failure to perform a duty or obey a Commission order carried a \$5,000 penalty and the penalty for violation of the electric competition and consumer protection act could lead to a penalty not exceeding \$10,000. Between 2011 and 2013, the Commission issued several NOPRs in an attempt to implement a new Section 34-706e, which mandated a \$100,000 forfeiture and fine for reliability performance violations, but as of the end of 2013, the Commission had not established regulations because legally the Commission would have to provide the utility company with the opportunity to remedy the situation before any fine could be imposed.

Although only time will tell, it does appear that in 2013, the Commission's efforts to improve electric reliability are proving to be successful. In the Commission's Centennial Anniversary year, PEPCO's D.C. performance was better than the SAIFI and SAIDI benchmarks and PEPCO's SAIFI & CAIDI performances equaled the industry averages (.88 and 2.35 respectively) and its SAIDI performance was higher by only .01 points (2.07 versus 2.06). In addition, consumer complaints regarding blue sky outages have plummeted. The Commission stated in its Order No. 17455 regarding PEPCO's 2013 ACR -

...we want to make note of two items with respect to PEPCO's reliability performance. The first is to note that the reliability performance standards adopted by the Commission in 2012, to be effective in 2013, require that PEPCO meet certain SAIFI and SAIDI standards, excluding Major Service Outages. We note that PEPCO describes in the 2013 Consolidated Report that in 2012, it achieved a SAIFI of 0.96 and SAIDI of 2.21. Under the Commission's regulations, the 2013 SAIFI reliability performance standard is 1.13 and the SAIDI reliability performance standard is 2.68. PEPCO has reached this performance standard one year in advance. This is a significant achievement and we congratulate PEPCO for the progress that it has made in this regard. We hope PEPCO will continue to improve its performance and continue to meet or exceed these standards in the coming years.⁹⁵

As the Commission remains vigilant and is committed to continuing progress, Table 8.5 tracks the history of PEPCO's electric reliability performance for future monitoring purposes.

⁹⁵ Order No. 17455, paragraph 138, p. 56.