BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of The Dayton Power and Light Company to Increase its Rates for Electric Distribution	**)** **)** **)**	**Case No. 15-1830-EL-AIR**
In the Matter of the Application of The Dayton Power and Light Company for Accounting Authority	**)** **)** **)**	**Case No. 15-1831-EL-AAM**
In the Matter of the Application of The Dayton Power and Light Company for Approval of Revised Tariffs	**)** **)** **)**	**Case No. 15-1832-EL-ATA**

DIRECT TESTIMONY OF

JONATHAN WALLACH

ON BEHALF OF

THE NATURAL RESOURCES DEFENSE COUNCIL

Resource Insight, Inc.

APRIL 11, 2018

TABLE OF CONTENTS

I. Introduction and Summary

Q: Please state your name, occupation, and business address.

A: My name is Jonathan F. Wallach. I am Vice President of Resource Insight, Inc., 5 Water Street, Arlington, Massachusetts.

Q: Please summarize your professional experience.

A: I have worked as a consultant to the electric power industry since 1981. From 1981 to 1986, I was a Research Associate at Energy Systems Research Group. In 1987 and 1988, I was an independent consultant. From 1989 to 1990, I was a Senior Analyst at Komanoff Energy Associates. I have been in my current position at Resource Insight since 1990.

Over the past four decades, I have advised and testified on behalf of clients on a wide range of economic, planning, and policy issues relating to the regulation of electric utilities, including: electric-utility restructuring; wholesale-power market design and operations; transmission pricing and policy; market-price forecasting; market valuation of generating assets and purchase contracts; power-procurement strategies; risk assessment and mitigation; integrated resource planning; mergers and acquisitions; cost allocation and rate design; and energy-efficiency program design and planning.

My resume is attached as Exhibit JFW-1.

Q: Have you testified previously in utility proceedings?

A: Yes. I have sponsored expert testimony in more than eighty state, provincial, and federal proceedings in the U.S. and Canada, including before the Public Utilities Commission of Ohio ("PUCO" or "the Commission") on behalf of

the Office of the Ohio Consumers' Counsel ("OCC") in Case Nos. 09-906-EL-SSO, 10-388-EL-SSO, 11-346-EL-SSO, and 13-2385-EL-SSO. I included a detailed list of my previous testimony in Exhibit JFW-1.

Q: On whose behalf are you testifying?

A: I am testifying on behalf of the Natural Resources Defense Council.

Q: Are you sponsoring any exhibits?

A: Yes. I am sponsoring the following exhibits:

- Exhibit JFW-1: Resume of Jonathan Wallach, Resource Insight, Inc.
- Exhibit JFW-2: Citations to Marginal-Price Elasticity Studies
- Exhibit JFW-3: DP&L's Response to OCC's INT-125

Q: What is the purpose of your testimony?

A: On November 30, 2015, Dayton Power and Light Company ("DP&L" or "the Company") filed an application and supporting testimony for approval of increased electric rates for distribution service. My testimony focuses on the Company's request to increase the monthly customer charge for residential customers from $4.25 to $13.73 per customer.[1] I respond to the testimony of Company witness Nathan C. Parke supporting the requested increase, and to the testimony of Bruce R. Chapman regarding the Company's cost of service study ("COSS"), which served as the basis for the Company's proposal to increase the customer charge.

On March 12, 2018, PUCO staff ("Staff") filed a report regarding its investigation of the Company's application ("Staff Report"). My testimony

[1] My testimony addresses only the Company's proposal with respect to non-employee residential customers. I do not address the Company's proposal to provide a rate discount to employees by eliminating the customer charge.

also addresses the discussion in the Staff Report regarding Staff's methodology for calculating the residential customer charge.

Q: Does your testimony address the allocation of costs among the various customer classes based on the Company's COSS?

A: No. My testimony does not assess whether the allocation methods used in the Company's COSS produce a reasonable allocation of costs to customer classes. Instead, my testimony addresses the Company's proposal to rely on the allocation results from the COSS for rate design purposes, specifically for the purposes of setting the level of the residential customer charge.

Q: Did you review any documents filed in other Commission proceedings?

A: Yes. In addition to Company documents filed in this case, I reviewed both the March 13, 2017 *Amended Stipulation and Recommendation*, filed in Case No. 16-0395-EL-SSO, and the October 27, 2017 *Stipulation and Recommendation*, filed in Case No. 17-1398-EL-POR. Specifically, I reviewed in both stipulations the provisions regarding implementation of a decoupling rider by DP&L and requiring that the details of the decoupling rider be addressed in the instant proceeding.

As far as I am aware, the Company has not yet fulfilled its agreement in these stipulations to propose in the current proceeding a detailed design for a decoupling rider. However, I reserve the right to file supplemental testimony regarding any such proposal once DP&L complies with the decoupling provisions of these stipulations.

Q: Please summarize your findings and conclusions regarding the Company's proposal to increase the residential customer charge.

A: The Company's proposal runs contrary to long-standing principles for designing cost-based rates. As recognized in the Staff Report, DP&L's

proposal would inappropriately shift recovery of demand-related costs from the volumetric energy rate to the residential customer charge.[2] As explained in more detail below, the Company's proposal to recover demand-related costs through the residential customer charge would:

- Lead to subsidization of high-usage residential customers' costs by low-usage customers, and thereby inequitably increase bills for the Company's low-usage residential customers.
- Dampen price signals to consumers for investing in energy efficiency.

Consequently, the Commission should reject the Company's proposal to increase the residential monthly customer charge to $13.73 per customer. Instead, based on an adaptation of Staff's methodology for calculating the customer charge, I recommend that the residential monthly customer charge be increased to $6.60 per customer in order to recover the cost of meters, service drops, and customer services required to connect a residential customer.[3]

Q: How is the rest of your testimony organized?

A: In Section II, I describe the Company's proposal for increasing the residential customer charge and explain how DP&L relies on the results of its COSS to derive the proposed residential customer charge. In Section III, I discuss how the Company's proposal violates long-standing principles of cost-based rate design. In addition, I describe in Section III my derivation of a cost-based customer charge for residential customers. In Section IV, I discuss how the

[2] Staff Report, Case No. 15-1830-EL-AIR, 36 (March 12, 2018).

[3] If the Commission approves the Company's proposal to eliminate the customer charge for employees, then I would recommend increasing the non-employee monthly customer charge to $6.63 per customer.

Company's proposal would give rise to unreasonable cost subsidization within the residential class, and would dampen energy price signals. Finally, Section V summarizes my conclusions and recommendations.

II. DP&L's Proposal

Q: What is a customer charge?

A: A customer charge is a fixed fee charged to each customer on their monthly bill regardless of the customer's energy usage during that month.

Q: What is the Company's proposal with respect to the customer charge for residential customers?

A: The Company proposes to increase the residential customer charge from $4.25 to $13.73 per customer per month. The proposed $9.48 increase would more than triple the customer charge.

Q: What is the basis for the Company's proposal to increase the residential monthly customer charge to $13.73 per customer?

A: According to Company witness Mr. Parke, DP&L proposes to set the residential customer charge based on the results of the Company's COSS:

> The cost of service study identified costs as customer-related and demand-related. Customer-related costs are recovered through a customer charge; demand-related costs through demand based charges. If a customer class does not have demand meters, the demand-related costs were assigned to a kWh charge.[4]

[4] *Direct Testimony of Nathan C. Parke*, Case No. 15-1830-EL-AIR, at pg. 12 lines 9-12 (November 30, 2015).

Specifically, DP&L proposes to set the residential customer charge at its estimate of the customer-related cost per residential customer based on the results of the COSS.

Q: How does DP&L derive its estimate of the customer-related cost per residential customer?

A: In order to allocate costs to customer classes, the COSS first separates total costs into distribution, customer service, and administrative and general functions. Costs in each function are then classified as demand-related or customer-related based on whether costs are considered to be "caused" by peak demand or the number of customers, respectively. Finally, costs classified as either demand-related or customer-related are allocated to customer classes in proportion to each class's contribution to total-system peak demand or number of customers, respectively.

The cost of meters, service drops, and customer services are deemed to be customer-related in the COSS. In addition, the Company's COSS classifies a portion of pole, conductor, conduit, and line transformer costs as customer-related, based on the results of a minimum-size analysis of such distribution plant costs.[5]

Each of the costs the Company classifies as customer-related – i.e., the costs of meters, service drops, customer services, and the customer-related portion of distribution plant – are allocated to customer classes in the COSS. The Company estimates a customer-related cost per residential customer by taking the total amount of such costs allocated to the residential class in the COSS and then dividing that amount by the number of residential

[5] *Direct Testimony of Bruce R. Chapman,* Case No. 15-1830-EL-AIR, at pg. 9 (November 30, 2015).

customers.[6] The Company's estimate of the total customer-related cost per residential customer can thus be thought of as the sum of the per-customer cost for meters, service drops, customer services, and the customer-related portion of distribution plant. As noted above, the Company proposes to set the monthly customer charge for residential customers at this estimate of the total customer-related cost per residential customer.

Q: Please describe the Company's minimum-size analysis of pole, conductor, conduit, and line transformer costs.

A: The Company's minimum-size analysis attempts to estimate the cost to install the same amount of poles, wires, conduit, and transformers as are currently on the distribution system, assuming that each piece of distribution equipment is sized to meet minimal load. In other words, the Company's minimum-size analysis attempts to estimate the cost to replicate the configuration of the existing distribution system using "minimum-size" equipment.

In the COSS, the "minimum" portion of distribution plant costs (as determined by the minimum-size analysis) is classified as customer-related and then allocated to customer classes in proportion to the number of customers in each class. As explained above, to derive the customer-related distribution plant cost per residential customer, DP&L takes the customer-

[6] The Company's calculation of the customer-related cost per residential customer is shown in Schedule E-3.1. As indicated in Schedule E-3.1, the COSS estimates a total customer-related cost allocated to the residential class of about $75.7 million. Dividing this amount by the number of non-employee and employee residential customers yields a customer-related cost per residential customer of $13.69. Since DP&L proposes to recover customer-related costs solely from non-employees, the Company divides the $75.7 million amount by just the number of non-employee residential customers to derive a customer charge of $13.73.

related plant cost allocated to the residential class from the COSS and divides it by the number of residential customers.

III. DP&L's Proposal Violates Principles of Cost-Based Rate Design

Q: What are the relevant considerations in designing cost-based distribution rates for residential customers?

A: The primary challenge in rate design is to reflect the costs that customers impose on the system, both to encourage them to use utility resources responsibly and to share costs fairly. Customer charges should reflect the fact that each customer contributes equally to certain distribution costs regardless of that customer's energy usage. Volumetric energy rates, on the other hand, recognize that customers of different sizes and load profiles contribute to other distribution costs at different levels. If usage-driven costs are inappropriately collected through fixed customer charges, then customers will have reduced incentives to invest in energy efficiency.[7]

Q: Given these considerations, what categories of costs are appropriately recovered through the volumetric energy rate?

A: Volumetric energy rates should be set at levels that recover those categories of costs that tend to increase with customer usage. Energy rates should include costs directly driven by customer usage, such as plant and operation and maintenance costs. They should also include costs that tend to rise

[7] National Association of Regulatory Utility Commissioners, Distributed Energy Resources Rate Design and Compensation, 118 (November 2016), available at https://pubs.naruc.org/pub/19FDF48B-AA57-5160-DBA1-BE2E9C2F7EA0.

indirectly with customer usage level, such as collection costs, uncollectible costs, and some other customer-service costs.

Q: Which costs are appropriately recovered through the customer charge?

A: In contrast to the energy rate, the customer charge is intended to reflect the cost to connect to the distribution system a customer who uses very little or zero energy. Such "minimum connection costs" are generally limited to plant and maintenance costs for a service drop and meter, along with meter-reading, billing, and other customer-service expenses. As James Bonbright explains in his seminal text *Principles of Public Utility Rates*:

> But this twofold distinction [between demand and energy in rate design] overlooks the fact that a material part of the operating and capital costs of utility business is more directly and more closely related to the number of customers than to energy consumption on the one hand or maximum kilowatt demand on the other hand. The most obvious examples of these so-called customer costs are the expenses associated with metering and billing.[8]

In their *Public Utility Economics*, economists Paul Garfield and Wallace Lovejoy also describe which costs are customer-related and therefore appropriately recovered through the customer charge:

[8] James C. Bonbright, *Principles of Public Utility Rates*. Columbia University Press, pg. 311 (1961). Publicly available at http://www.raponline.org/wp-content/uploads/2016/05/powellgoldstein-bonbright-principlesofpublicutilityrates-1960-10-10.pdf.

> The purpose of both the service charge and the minimum charge is to cover at least some of the costs incurred by the utility whether or not the customer uses energy in a particular month. For small customers under the block meter-rate schedule, a charge of this kind is intended to cover the expenses relating to meter service and maintenance, meter reading, accounting and collecting, return on the investment in meters and the service lines connecting the customer's premises to the distribution system, and others. Such expenses as these represent as a minimum the "readiness-to-serve" expenses incurred by the utility on behalf of each customer.[9]

More recently, Severin Borenstein restated these principles for designing cost-based customer charges as follows:

> When having one more customer on the system raises the utility's costs regardless of how much the customer uses – for instance, for metering, billing, and maintaining the line from the distribution system to the house – then a fixed charge to reflect that additional fixed cost the customer imposes on the system makes perfect economic sense. The idea that each household has to cover its customer-specific fixed costs also has obvious appeal on ground of fairness or equity.[10]

Q: Is the Company's proposal for the residential customer charge consistent with these long-standing principles of cost-based rate design?

A: No. Contrary to these principles, DP&L proposes to recover through the residential customer charge not just minimum connection costs – i.e., the costs for meters, service drops, and customer services – but also the Company's estimate of the customer-related distribution plant cost per residential customer. As discussed above in Section II, DP&L relies on the results of its minimum-size analysis to estimate the customer-related distribution plant cost per residential customer.

---

[9] Paul J. Garfield and Wallace F. Lovejoy, *Public Utility Economics*, Prentice-Hall, Inc., pgs. 155-156 (1964).

[10] Severin Borenstein, "What's So Great About Fixed Charges?" (2014), available at https://energyathaas.wordpress.com/2014/11/03/whats-so-great-about-fixed-charges/.

Q: Is it reasonable to rely on the results of a minimum-size analysis to estimate the customer-related distribution plant cost per residential customer?

A: No. As noted above in Section II, the purpose of a minimum-size analysis is to determine the portion of distribution plant costs to be allocated to customer classes based on the number of customers in each class. The Company has not offered any evidence that its minimum-size analysis also yields reliable estimates of the customer-related distribution plant cost *per customer*.

To the contrary, minimum-size analyses overstate the minimum plant cost per customer because they assume that a minimum system carrying minimal load would have the same number of poles, the same length of conductor and conduit, and the same number of transformers as currently installed in a distribution system designed to carry actual distribution load. In other words, the minimum-size method assumes that each piece of distribution equipment would serve the same number of customers on average, regardless of whether the customers are average-sized (as for the actual system) or have minimal demand (as for the hypothetical minimum-size system.)

This is not a realistic assumption, since even a minimally sized piece of distribution equipment should be able to serve more minimal-demand customers than the number of average-demand customers served by average-sized distribution equipment. Consequently, the true minimum distribution plant cost to serve a customer with minimal usage is likely to be less than that derived using a minimum-size analysis. Indeed, since the minimum-size method attempts to estimate the plant cost incurred regardless of usage – i.e., the cost to serve load approaching zero, the true minimum plant cost per

customer is zero since distribution equipment that carries zero load can serve an infinite number of customers with zero load.

Q: How does Staff respond to the Company's proposal to recover customer-related distribution plant costs through the residential customer charge?

A: Staff generally rejects the Company's proposal, noting in the Staff Report that the Company's proposal would "shift a significant portion of the fixed demand costs into the customer charge."[11] Instead, the Staff Report recommends that the customer charge be set based on "minimally compensatory approach", which provides for recovery through the customer charge of minimum connection costs plus the Company's estimate of customer-related transformer costs based on a minimum-system analysis.[12] Based on this approach, the Staff Report recommends a monthly customer charge for residential customers of $7.88 per customer.

Q: Do you agree with the approach recommended in the Staff Report for designing the residential customer charge?

A: I agree with Staff that the residential customer charge should be "minimally compensatory". As discussed above, the customer charge should be set to recover only the minimum cost to connect a residential customer – i.e., the cost of meters, service drops, and customer services. Therefore, Staff reasonably excludes minimum-size pole, wire, and conduit plant costs from its estimate of the residential customer charge.

However, I do not agree with Staff's proposal to include minimum-size transformer plant costs in its estimate of the residential customer charge. The

[11] Staff Report, pg. 36.

[12] Id.

portion of transformer plant costs (not to mention of poles, wires, and conduit costs) classified by DP&L as customer-related using a minimum-system analysis are not appropriately recovered through the residential customer charge.

Q: What would be an appropriate rate for the residential customer charge in order to recover the minimum cost to connect a residential customer?

A: As shown in Table 1, the Staff Report indicates an annual cost for residential meters, service drops, and customer services of about $36.5 million. That translates to a rate of about $6.60 per customer per month.[13] Consequently, the residential monthly customer charge would need to be increased from $4.25 to $6.60 per customer in order to recover minimum connection costs.

Table 1: Calculation of Minimum Connection Cost

Service Drops	77,295,957
Meters	19,959,436
Total Plant Cost	97,255,393
Carrying Charge	25%
Annual Carrying Cost	24,313,848
Customer-Service Expenses	12,210,996
Total Carrying Cost and Expenses	36,524,844
Number of Bills	5,530,430
Minimum Connection Cost	**$6.60**

Q: What accounts for the $1.28 difference between your recommended $6.60 customer charge and the $7.88 charge recommended in the Staff Report?

[13] Based on the results of Staff's methodology for calculating the residential customer charge, as shown in Table 5 on pg. 37 of the Staff Report.

A: The $1.28 difference represents demand-related transformer plant costs that would be inappropriately recovered through the residential customer charge under Staff's proposal.

Q: What accounts for the $7.13 difference between your recommended $6.60 customer charge and the $13.73 charge proposed by DP&L?

A: The $7.13 difference between a $6.60 customer charge and the $13.73 charge proposed by DP&L represents demand-related pole, wire, conduit, and transformer plant costs that would be inappropriately recovered through the fixed customer charge under the Company's proposal. As discussed in Section IV below, this shift in recovery of demand-related costs from the volumetric energy rate to the fixed customer charge would give rise to cost subsidization within the residential class and dampen energy price signals to consumers for investing in energy efficiency.

Q: If not appropriately recovered through the customer charge, should such demand-related costs instead be recovered through a residential demand charge?

A: No. Recovery of demand-related costs through a residential demand charge would dampen price signals for conservation, promote inefficient customer behavior, and undermine customers' ability to control electricity costs.

Demand charges on a monthly bill are typically determined based on the customer's maximum demand, whenever that maximum occurs during the month. In order to control monthly demand costs, customers would therefore need to have detailed information regarding their load profiles for each day of the month as well as in-depth understanding of which combination of appliance- or equipment-usage gives rise to monthly maximum demands. Even with such information and knowledge, it would be difficult for a

residential customer to reduce demand charges, since even a single failure to control load during the month would result in the same demand charge as if the same demand had been reached in every day or every hour.

A demand charge would also provide little or no incentive for residential customers to take actions that reduce distribution-system costs. Distribution equipment costs typically are driven by the coincident peak load for all customers sharing the equipment. An individual customer is unlikely to reach her maximum demand at the same time as when the coincident peak on the distribution system occurs. Thus, a demand charge will provide an incentive to a residential customer to control load at the time that customer reaches her *individual* maximum demand, which does not necessarily correspond to the time of peak load on the distribution system. In fact, some customers might respond to a demand charge by shifting loads from their own peak to the peak hour on the local distribution system, thereby increasing their contribution to maximum or critical loads on the local distribution system and further stressing the system during peak periods.

Finally, shifting recovery of demand-related costs from the energy rate to a demand charge would send the wrong energy price signal. Shifting demand-related costs to a demand charge would lower the energy rate and thereby perversely encourage *increased* energy consumption, some of which might occur at times of peak loading on the distribution system – when energy conservation is most needed. Shifting costs from the energy rate to a demand charge could therefore increase distribution system costs and offset any (limited) benefits from a residential demand charge.

Severin Borenstein aptly summed up the shortcomings (and the antiquated nature) of demand charges when he wrote: "It is unclear why demand charges still exist."[14]

IV. Customer Impacts from DP&L's Proposal

A. DP&L's Proposal Would Lead to Intra-Class Cost Subsidization

Q: How would the Company's proposal to increase the residential customer charge cause intra-class subsidization?

A: As discussed above in Section III, DP&L's proposal to increase the residential customer charge would shift recovery of demand-related costs from the volumetric energy rate to the fixed customer charge. Such demand-related costs are driven by residential load and are therefore appropriately recovered from residential customers in proportion to their contribution to total load. To the extent that demand-related costs are recovered at a fixed rate through the residential customer charge rather than at a volumetric rate through the energy charge, residential customers with below-average usage would bear a disproportionate share of demand-related costs and consequently subsidize customers with above-average usage. In this case, a residential customer with below-average usage will pay more, and a residential customer with above average-usage will pay less, than their fair share of such costs.

[14] Severin Borenstein, "The Economics of Fixed Cost Recovery by Utilities", in *Recovery of Utility Fixed Costs: Utility, Consumer, Environmental and Economist Perspectives*, Lawrence Berkeley National Laboratory, 60 (2016). Publicly available at http://eta-publications.lbl.gov/sites/default/files/lbnl-1005742.pdf.

Q: What is the extent of the intra-class subsidization under the Company's proposal to increase the residential customer charge to $13.73?

A: As explained above in Section III, the $7.13 difference between the minimum connection cost of $6.60 and the $13.73 customer charge proposed by DP&L represents demand-related distribution plant costs that would be inappropriately recovered from each residential customer every month through a fixed charged on the customer's bill. The Company estimates about 5.5 million residential bills in the test year.[15] This means that $39.2 million of demand-related distribution plant costs would be recovered annually through the residential customer charge under the Company's proposal.

If the demand-related costs recovered through the residential customer charge under the Company's proposal were instead recovered through the volumetric energy rate, each residential customer would contribute to recovery of these costs in proportion to their usage. The Company estimates residential sales in the test year of about 5.3 million megawatt-hours.[16] Therefore, if the $39.2 million of demand-related costs continued to be recovered through the energy rate rather than through the customer charge, they would be charged at a rate of 0.75 cents per kilowatt-hour ("¢/kWh"). Under that rate structure, a residential customer with below-average monthly usage of 500 kWh would contribute about $45 per year toward recovery of demand-related costs while a customer with above-average monthly usage of 1,500 kWh would contribute about $134 per year.[17] Thus, the 1,500 kWh

[15] The number of residential bills in the test year is provided in Schedule E-4.

[16] The Company's estimate of residential sales in the test year is provided in Schedule E-4.

[17] Based on data provided in Schedule E-4, I estimate monthly usage of 950 kWh for an average residential customer.

customer would contribute three times more than the 500 kWh customer, in direct proportion to their usage and consistent with accepted principles of cost-causation.

In contrast, under the Company's proposal to recover $39.2 million of demand-related costs through the customer charge, each residential customer would contribute about $85 per year toward recovery of such costs regardless of that customer's usage. A below-average 500 kWh customer would therefore pay nearly double their fair share of these demand-related costs under the Company's proposal while an above-average 1,500 kWh customer would pay only 63% of their fair share.

B. DP&L's Proposal Would Dampen Energy Price Signals and Discourage Investments in Energy Efficiency

Q: Would the Company's proposal to increase the residential customer charge send appropriate price signals?

A: No. As discussed above in Section III, DP&L proposes to set the residential customer charge at a rate that greatly exceeds the minimum cost to connect a residential customer. The amount in excess of minimum connection costs represents usage-related costs that are appropriately recovered in the volumetric energy rate. However, under the Company's proposal, this excess over the minimum connection costs would instead be inappropriately recovered through the customer charge. This shift in the recovery of usage-related costs from the volumetric energy rate to the fixed customer charge would dampen price signals and discourage economically efficient behavior by residential customers.

Q: How does the Company's proposal to increase the customer charge to $13.73 affect the residential energy rate?

A: Along with its proposal to increase the customer charge to $13.73, DP&L proposes to decrease the distribution energy rate from 2.260¢/kWh to 2.096¢/kWh in order to recover the proposed allocation of test year revenue requirements to non-employee residential customers. If, instead, the monthly customer charge were increased to $6.60 per customer to reflect minimum connection costs, the distribution energy rate would need to be increased to 2.847¢/kWh to recover the same allocated revenue requirement.[18] Thus, under the Company's proposal to recover $7.13 more than minimum connection cost in the customer charge, the energy rate would be 0.75¢/kWh, or about 26%, less than the energy rate would be if the customer charge were set equal to minimum connection cost.

The total energy rate paid by residential customers includes the Standard Service Offer and volumetric rider rates. Assuming a Standard Service Offer rate of 5.33¢/kWh and a total rate for all volumetric riders of 2.64¢/kWh, the total residential energy rate with a customer charge of $6.60 would be 10.82¢/kWh.[19] If the residential customer charge were increased to $13.73 as proposed by DP&L, then the total energy rate would drop by about 7% to 10.07¢/kWh.

Q: How would residential customers likely respond to the lower energy rate under the Company's proposal for the residential customer charge?

[18] Estimated based on data provided in Schedule E-4.

[19] The Standard Offer and volumetric rider rates were derived using the Company's online bill calculator and assuming monthly usage of 950 kWh.

A: Residential customers respond to the price signals sent by the electrical rate structure. When more of a utility's costs are recovered through a fixed charge which does not vary according to usage, the incentive to save energy is reduced.

Customer responses to electric utility rates are generally measured as price elasticities, i.e., the ratio of the percentage change in consumption to the percentage change in price. Price elasticities are generally low in the short term and rise over several years, because customers have more options for increasing or reducing energy usage in the medium to long term. For example, a review by Espey and Espey (2004) of 36 articles on residential electricity demand published between 1971 and 2000 reports short-run elasticity estimates of about −0.35 on average across studies and long-run elasticity estimates of about −0.85 on average across studies.[20] In other words, on average across these studies, consumption decreased by 0.35% in the short term and by 0.85% in the long term for every 1% increase in price.

Studies of electric price response typically examine the change in usage as a function of changes in the marginal rate paid by the customer.[21] Table 2 lists the results of seven studies of marginal-price elasticity over the last forty years.[22]

---

[20] Espey, James, and Molly Espey. 2004. "Turning on the Lights: A Meta-Analysis of Residential Electricity Demand Elasticities" Journal of Agricultural and Applied Economics, Volume 36 Issue 1, pgs. 65–81. Publicly available at https://ageconsearch.umn.edu/bitstream/42897/2/Espey%20JAAE%20April%202004.pdf.

[21] For residential customers, that would be the total energy rate for distribution, Standard Offer, and volumetric riders.

[22] The citations for these studies are provided in Exhibit JFW-2.

Table 2: Summary of Marginal-Price Elasticities

Authors	Date	Elasticity Estimates
Acton, Bridger, and Mowill	1976	−0.35 to −0.7
McFadden, Puig, and Kirshner	1977	−0.25 without electric space heat and −0.52 with space heat
Barnes, Gillingham, and Hageman	1981	−0.55
Henson	1984	–0.27 to –0.30
Reiss and White	2005	−0.39
Xcel Energy Colorado	2012	–0.3 (at years 2 and 3)
Orans et al, on BC Hydro inclining-block rate	2014	–0.13 in 3rd year of phased-in rate

Q: What would be a reasonable estimate of the marginal-price elasticity for changes in the residential energy rate?

A: From Table 2, it appears that –0.3 would be a reasonable mid-range estimate of the impact over a few years.

Q: What would be a reasonable estimate of the effect on energy use from a 7% reduction to the total energy rate under the Company's proposal to increase the residential customer charge?

A: An elasticity of –0.3 and a 7% reduction in marginal energy price (i.e., the combined rate for distribution, Standard Service Offer, and volumetric riders) would result in an increase in energy consumption of about 2%. This means that all else equal, residential load would be expected to increase by about 2% over a several-year period as a result of implementing the Company's proposed customer charge increase.

For comparison, I estimate that the energy savings from the Company's residential energy efficiency programs will increase each year by an amount

equivalent to about 1.6% of forecasted annual residential load.[23] Thus, the increase in consumption induced by the Company's proposal to shift recovery of usage-related costs from the energy rate to the customer charge would undo more than a year of energy savings from the residential energy efficiency portfolio.

V. Conclusions and Recommendations

Q: What do you conclude with respect to the Company's proposal to increase the residential customer charge to $13.73?

A: The Company's proposal would inappropriately shift load-related costs from the volumetric energy rate to the customer charge, dampen price signals to consumers for conserving energy, disproportionately and inequitably increase bills for the Company's smallest residential customers, and lead to the subsidization of larger residential customers' costs by customers with below-average usage. Accordingly, the Commission should reject the Company's proposal to increase the monthly customer charge to $13.73. Instead, I recommend that the residential monthly customer charge be increased to $6.60.

Q: Does this conclude your direct testimony?

A: Yes. However, I reserve the right to file supplemental testimony regarding any proposal for a decoupling rider filed by DP&L in this proceeding in

[23] Based on the Company's forecast of residential sales provided in response to OCC INT-125 (attached as Exhibit JFW-3) and on the forecast of residential energy savings from: *2018-2020 Portfolio Plan*, Case No. 17-1398-EL-POR, 8 (2017).

compliance with the stipulations in Case Nos. 16-0395-EL-SSO and 17-1398-EL-POR.

Qualifications of

JONATHAN F. WALLACH

Resource Insight, Inc.
5 Water Street
Arlington, Massachusetts 02476

SUMMARY OF PROFESSIONAL EXPERIENCE

1990–Present **Vice President, Resource Insight, Inc.** Provides research, technical assistance, and expert testimony on electric- and gas-utility planning, economics, regulation, and restructuring. Designs and assesses resource-planning strategies for regulated and competitive markets, including estimation of market prices and utility-plant stranded investment; negotiates restructuring strategies and implementation plans; assists in procurement of retail power supply.

1989–90 **Senior Analyst, Komanoff Energy Associates.** Conducted comprehensive cost-benefit assessments of electric-utility power-supply and demand-side conservation resources, economic and financial analyses of independent power facilities, and analyses of utility-system excess capacity and reliability. Provided expert testimony on statistical analysis of U.S. nuclear plant operating costs and performance. Co-wrote *The Power Analyst*, software developed under contract to the New York Energy Research and Development Authority for screening the economic and financial performance of non-utility power projects.

1987–88 **Independent Consultant.** Provided consulting services for Komanoff Energy Associates (New York, New York), Schlissel Engineering Associates (Belmont, Massachusetts), and Energy Systems Research Group (Boston, Massachusetts).

1981–86 **Research Associate, Energy Systems Research Group.** Performed analyses of electric utility power supply planning scenarios. Involved in analysis and design of electric and water utility conservation programs. Developed statistical analysis of U.S. nuclear plant operating costs and performance.

EDUCATION

BA, Political Science with honors and Phi Beta Kappa, University of California, Berkeley, 1980.

Massachusetts Institute of Technology, Cambridge, Massachusetts. Physics and Political Science, 1976–1979.

PUBLICATIONS

"The Future of Utility Resource Planning: Delivering Energy Efficiency through Distributed Utilities" (with Paul Chernick), *International Association for Energy Economics Seventeenth Annual North American Conference* (460–469). Cleveland, Ohio: USAEE. 1996.

"The Price is Right: Restructuring Gain from Market Valuation of Utility Generating Assets" (with Paul Chernick), *International Association for Energy Economics Seventeenth Annual North American Conference* (345–352). Cleveland, Ohio: USAEE. 1996.

"The Future of Utility Resource Planning: Delivering Energy Efficiency through Distribution Utilities" (with Paul Chernick), *1996 Summer Study on Energy Efficiency in Buildings* 7(7.47–7.55). Washington: American Council for an Energy-Efficient Economy, 1996.

"Retrofit Economics 201: Correcting Common Errors in Demand-Side-Management Cost-Benefit Analysis" (with John Plunkett and Rachael Brailove). In proceedings of "Energy Modeling: Adapting to the New Competitive Operating Environment," conference sponsored by the Institute for Gas Technology in Atlanta in April of 1995. Des Plaines, Ill.: IGT, 1995.

"The Transfer Loss is All Transfer, No Loss" (with Paul Chernick), *Electricity Journal* 6:6 (July, 1993).

"Benefit-Cost Ratios Ignore Interclass Equity" (with Paul Chernick et al.), *DSM Quarterly*, Spring 1992.

"Consider Plant Heat Rate Fluctuations," *Independent Energy*, July/August 1991.

"Demand-Side Bidding: A Viable Least-Cost Resource Strategy" (with Paul Chernick and John Plunkett), *Proceedings from the NARUC Biennial Regulatory Information Conference*, September 1990.

"New Tools on the Block: Evaluating Non-Utility Supply Opportunities With *The Power Analyst*, (with John Plunkett), *Proceedings of the Fourth National Conference on Micro-computer Applications in Energy*, April 1990.

REPORTS

"Economic Benefits from Early Retirement of Reid Gardner" (with Paul Chernick) prepared for and filed by the Sierra Club in PUC of Nevada Docket No. 11-08019.

"Green Resource Portfolios: Development, Integration, and Evaluation" (with Paul Chernick and Richard Mazzini) report to the Green Energy Coalition presented as evidence in Ontario EB 2007-0707.

"Risk Analysis of Procurement Strategies for Residential Standard Offer Service" (with Paul Chernick, David White, and Rick Hornby) report to Maryland Office of People's Counsel. 2008. Baltimore: Maryland Office of People's Counsel.

"Integrated Portfolio Management in a Restructured Supply Market" (with Paul Chernick, William Steinhurst, Tim Woolf, Anna Sommers, and Kenji Takahashi). 2006. Columbus, Ohio: Office of the Ohio Consumers' Counsel.

"First Year of SOS Procurement." 2004. Prepared for the Maryland Office of People's Counsel.

"Energy Plan for the City of New York" (with Paul Chernick, Susan Geller, Brian Tracey, Adam Auster, and Peter Lanzalotta). 2003. New York: New York City Economic Development Corporation.

"Peak-Shaving–Demand-Response Analysis: Load Shifting by Residential Customers" (with Brian Tracey). 2003. Barnstable, Mass.: Cape Light Compact.

"Electricity Market Design: Incentives for Efficient Bidding; Opportunities for Gaming." 2002. Silver Spring, Maryland: National Association of State Consumer Advocates.

"Best Practices in Market Monitoring: A Survey of Current ISO Activities and Recommendations for Effective Market Monitoring and Mitigation in Wholesale Electricity Markets" (with Paul Peterson, Bruce Biewald, Lucy Johnston, and Etienne Gonin). 2001. Prepared for the Maryland Office of People's Counsel, Pennsylvania Office of Consumer Advocate, Delaware Division of the Public Advocate, New Jersey Division of the Ratepayer Advocate, Office of the People's Counsel of the District of Columbia.

"Comments Regarding Retail Electricity Competition." 2001. Filed by the Maryland Office of People's Counsel in U.S. FTC Docket No. V010003.

"Final Comments of the City of New York on Con Edison's Generation Divestiture Plans and Petition." 1998. Filed by the City of New York in PSC Case No. 96-E-0897.

"Response Comments of the City of New York on Vertical Market Power." 1998. Filed by the City of New York in PSC Case Nos. 96-E-0900, 96-E-0098, 96-E-0099, 96-E-0891, 96-E-0897, 96-E-0909, and 96-E-0898.

"Preliminary Comments of the City of New York on Con Edison's Generation Divestiture Plan and Petition." 1998. Filed by the City of New York in PSC Case No. 96-E-0897.

"Maryland Office of People's Counsel's Comments in Response to the Applicants' June 5, 1998 Letter." 1998. Filed by the Maryland Office of People's Counsel in PSC Docket No. EC97-46-000.

"Economic Feasibility Analysis and Preliminary Business Plan for a Pennsylvania Consumer's Energy Cooperative" (with John Plunkett et al.). 1997. 3 vols. Philadelphia, Penn.: Energy Coordinating Agency of Philadelphia.

"Good Money After Bad" (with Charles Komanoff and Rachel Brailove). 1997. White Plains, N.Y.: Pace University School of Law Center for Environmental Studies.

"Maryland Office of People's Counsel's Comments on Staff Restructuring Report: Case No. 8738." 1997. Filed by the Maryland Office of People's Counsel in PSC Case No. 8738.

"Protest and Request for Hearing of Maryland Office of People's Counsel." 1997. Filed by the Maryland Office of People's Counsel in PSC Docket Nos. EC97-46-000, ER97-4050-000, and ER97-4051-000.

"Restructuring the Electric Utilities of Maryland: Protecting and Advancing Consumer Interests" (with Paul Chernick, Susan Geller, John Plunkett, Roger Colton, Peter Bradford,

Bruce Biewald, and David Wise). 1997. Baltimore, Maryland: Maryland Office of People's Counsel.

"Comments of the New Hampshire Office of Consumer Advocate on Restructuring New Hampshire's Electric-Utility Industry" (with Bruce Biewald and Paul Chernick). 1996. Concord, N.H.: NH OCA.

"Estimation of Market Value, Stranded Investment, and Restructuring Gains for Major Massachusetts Utilities" (with Paul Chernick, Susan Geller, Rachel Brailove, and Adam Auster). 1996. On behalf of the Massachusetts Attorney General (Boston).

"Report on Entergy's 1995 Integrated Resource Plan." 1996. On behalf of the Alliance for Affordable Energy (New Orleans).

"Preliminary Review of Entergy's 1995 Integrated Resource Plan." 1995. On behalf of the Alliance for Affordable Energy (New Orleans).

"Comments on NOPSI and LP&L's Motion to Modify Certain DSM Programs." 1995. On behalf of the Alliance for Affordable Energy (New Orleans).

"Demand-Side Management Technical Market Potential Progress Report." 1993. On behalf of the Legal Environmental Assistance Foundation (Tallahassee)

"Technical Information." 1993. Appendix to "Energy Efficiency Down to Details: A Response to the Director General of Electricity Supply's Request for Comments on Energy Efficiency Performance Standards" (UK). On behalf of the Foundation for International Environmental Law and Development and the Conservation Law Foundation (Boston).

"Integrating Demand Management into Utility Resource Planning: An Overview." 1993. Vol. 1 of "From Here to Efficiency: Securing Demand-Management Resources" (with Paul Chernick and John Plunkett). Harrisburg, Pa.:Pennsylvania Energy Office

"Making Efficient Markets." 1993. Vol. 2 of "From Here to Efficiency: Securing Demand-Management Resources" (with Paul Chernick and John Plunkett). Harrisburg, Pa.: Pennsylvania Energy Office.

"Analysis Findings, Conclusions, and Recommendations." 1992. Vol. 1 of "Correcting the Imbalance of Power: Report on Integrated Resource Planning for Ontario Hydro" (with Paul Chernick and John Plunkett).

"Demand-Management Programs: Targets and Strategies." 1992. Vol. 1 of "Building Ontario Hydro's Conservation Power Plant" (with John Plunkett, James Peters, and Blair Hamilton).

"Review of the Elizabethtown Gas Company's 1992 DSM Plan and the Demand-Side Management Rules" (with Paul Chernick, John Plunkett, James Peters, Susan Geller, Blair Hamilton, and Andrew Shapiro). 1992. Report to the New Jersey Department of Public Advocate.

"Comments of Public Interest Intervenors on the 1993–1994 Annual and Long-Range Demand-Side Management and Integrated Resource Plans of New York Electric Utilities" (with Ken Keating et al.) 1992.

"Review of Jersey Central Power & Light's 1992 DSM Plan and the Demand-Side Management Rules" (with Paul Chernick et al.). 1992. Report to the New Jersey Department of Public Advocate.

"Review of Rockland Electric Company's 1992 DSM Plan and the Demand-Side Management Rules" (with Paul Chernick et al.). 1992.

"Initial Review of Ontario Hydro's Demand-Supply Plan Update" (with David Argue et al.). 1992.

"Comments on the Utility Responses to Commission's November 27, 1990 Order and Proposed Revisions to the 1991–1992 Annual and Long Range Demand Side Management Plans" (with John Plunkett et al.). 1991.

"Comments on the 1991–1992 Annual and Long Range Demand-Side-Management Plans of the Major Electric Utilities" (with John Plunkett et al.). Filed in NY PSC Case No. 28223 in re New York utilities' DSM plans. 1990.

"Profitability Assessment of Packaged Cogeneration Systems in the New York City Area." 1989. Principal investigator.

"Statistical Analysis of U.S. Nuclear Plant Capacity Factors, Operation and Maintenance Costs, and Capital Additions." 1989.

"The Economics of Completing and Operating the Vogtle Generating Facility." 1985. ESRG Study No. 85-51A.

"Generating Plant Operating Performance Standards Report No. 2: Review of Nuclear Plant Capacity Factor Performance and Projections for the Palo Verde Nuclear Generating Facility." 1985. ESRG Study No. 85-22/2.

"Cost-Benefit Analysis of the Cancellation of Commonwealth Edison Company's Braidwood Nuclear Generating Station." 1984. ESRG Study No. 83-87.

"The Economics of Seabrook 1 from the Perspective of the Three Maine Co-owners." 1984. ESRG Study No. 84-38.

"An Evaluation of the Testimony and Exhibit (RCB-2) of Dr. Robert C. Bushnell Concerning the Capital Cost of Fermi 2." 1984. ESRG Study No. 84-30.

"Electric Rate Consequences of Cancellation of the Midland Nuclear Power Plant." 1984. ESRG Study No. 83-81.

"Power Planning in Kentucky: Assessing Issues and Choices—Project Summary Report to the Public Service Commission." 1984. ESRG Study No. 83-51.

"Electric Rate Consequences of Retiring the Robinson 2 Nuclear Plant." 1984. ESRG Study No. 83-10.

"Power Planning in Kentucky: Assessing Issues and Choices—Conservation as a Planning Option." 1983. ESRG Study No. 83-51/TR III.

"Electricity and Gas Savings from Expanded Public Service Electric and Gas Company Conservation Programs." 1983. ESRG Study No. 82-43/2.

"Long Island Without the Shoreham Power Plant: Electricity Cost and System Planning Consequences; Summary of Findings." 1983. ESRG Study No. 83-14S.

"Long Island Without the Shoreham Power Plant: Electricity Cost and System Planning Consequences; Technical Report B—Shoreham Operations and Costs." 1983. ESRG Study No. 83-14B.

"Customer Programs to Moderate Demand Growth on the Arizona Public Service Company System: Identifying Additional Cost-Effective Program Options." 1982. ESRG Study No. 82-14C.

"The Economics of Alternative Space and Water Heating Systems in New Construction in the Jersey Central Power and Light Service Area, A Report to the Public Advocate." 1982. ESRG Study No. 82-31.

"Review of the Kentucky-American Water Company Capacity Expansion Program, A Report to the Kentucky Public Service Commission." 1982. ESRG Study No. 82-45.

"Long Range Forecast of Sierra Pacific Power Company Electric Energy Requirements and Peak Demands, A Report to the Public Service Commission of Nevada." 1982. ESRG Study No. 81-42B.

"Utility Promotion of Residential Customer Conservation, A Report to Massachusetts Public Interest Research Group." 1981. ESRG Study No. 81-47

PRESENTATIONS

"Office of People's Counsel Case No. 9117" (with William Fields). Presentation to the Maryland Public Utilities Commission in Case No. 9117, December 2008.

"Electricity Market Design: Incentives for Efficient Bidding, Opportunities for Gaming." NASUCA Northeast Market Seminar, Albany, N.Y., February 2001.

"Direct Access Implementation: The California Experience." Presentation to the Maryland Restructuring Technical Implementation Group on behalf of the Maryland Office of People's Counsel. June 1998.

"Reflecting Market Expectations in Estimates of Stranded Costs," speaker, and workshop moderator of "Effectively Valuing Assets and Calculating Stranded Costs." Conference sponsored by International Business Communications, Washington, D.C., June 1997.

EXPERT TESTIMONY

1989 **Mass. DPU** on behalf of the Massachusetts Executive Office of Energy Resources. Docket No. 89-100. Joint testimony with Paul Chernick relating to statistical analysis of U.S. nuclear-plant capacity factors, operation and maintenance costs, and capital additions; and to projections of capacity factor, O&M, and capital additions for the Pilgrim nuclear plant.

1994 **NY PSC** on behalf of the Pace Energy Project, Natural Resources Defense Council, and Citizen's Advisory Panel. Case No. 93-E-1123. Joint testimony with John Plunkett critiques proposed modifications to Long Island Lighting Company's DSM programs from the perspective of least-cost-planning principles.

1994 **Vt. PSB** on behalf of the Vermont Department of Public Service. Docket No. 5270-CV-1 and 5270-CV-3. Testimony and rebuttal testimony discusses rate and bill effects from DSM spending and sponsors load shapes for measure- and program-screening analyses.

1996 **New Orleans City Council** on behalf of the Alliance for Affordable Energy. Docket Nos. UD-92-2A, UD-92-2B, and UD-95-1. Rates, charges, and integrated resource planning for Louisiana Power & Lights and New Orleans Public Service, Inc.

1996 **New Orleans City Council** Docket Nos. UD-92-2A, UD-92-2B, and UD-95-1. Rates, charges, and integrated resource planning for Louisiana Power & Lights and New Orleans Public Service, Inc.; Alliance for Affordable Energy. April, 1996.

Prudence of utilities' IRP decisions; costs of utilities' failure to follow City Council directives; possible cost disallowances and penalties; survey of penalties for similar failures in other jurisdictions.

1998 **Massachusetts Department of Telecommunications and Energy** Docket No. 97-111, Commonwealth Energy proposed restructuring; Cape Cod Light Compact. Joint testimony with Paul Chernick, January, 1998.

Critique of proposed restructuring plan filed to satisfy requirements of the electric-utility restructuring act of 1997. Failure of the plan to foster competition and promote the public interest.

Massachusetts Department of Telecommunications and Energy Docket No. 97-120, Western Massachusetts Electric Company proposed restructuring; Massachusetts Attorney General. Joint testimony with Paul Chernick, October, 1998. Joint surrebuttal with Paul Chernick, January, 1999.

Market value of the three Millstone nuclear units under varying assumptions of plant performance and market prices. Independent forecast of wholesale market prices. Value of Pilgrim and TMI-1 asset sales.

1999 **Maryland PSC** Case No. 8795, Delmarva Power & Light comprehensive restructuring agreement, Maryland Office of People's Counsel. July 1999.

Support of proposed comprehensive restructuring settlement agreement

Maryland PSC Case Nos. 8794 and 8808, Baltimore Gas & Electric Company comprehensive restructuring agreement, Maryland Office of People's Counsel. Initial Testimony July 1999; Reply Testimony August 1999; Surrebuttal Testimony August 1999.

Support of proposed comprehensive restructuring settlement agreement

Maryland PSC Case No. 8797, comprehensive restructuring agreement for Potomac Edison Company, Maryland Office of People's Counsel. October 1999.

Support of proposed comprehensive restructuring settlement agreement

Connecticut DPUC Docket No. 99-03-35, United Illuminating standard offer, Connecticut Office of Consumer Counsel. November 1999.

Reasonableness of proposed revisions to standard-offer-supply energy costs. Implications of revisions for other elements of proposed settlement.

2000 **U.S. FERC** Docket No. RT01-02-000, Order No. 2000 compliance filing, Joint Consumer Advocates intervenors. Affidavit, November 2000.

Evaluation of innovative rate proposal by PJM transmission owners.

2001 **Maryland PSC** Case No. 8852, Charges for electricity-supplier services for Potomac Electric Power Company, Maryland Office of People's Counsel. March 2001.

Reasonableness of proposed fees for electricity-supplier services.

Maryland PSC Case No. 8890, Merger of Potomac Electric Power Company and Delmarva Power and Light Company, Maryland Office of People's Counsel. September 2001; surrebuttal, October 2001. In support of settlement: Supplemental, December 2001; rejoinder, January 2002.

Costs and benefits to ratepayers. Assessment of public interest.

Maryland PSC Case No. 8796, Potomac Electric Power Company stranded costs and rates, Maryland Office of People's Counsel. December 2001; surrebuttal, February 2002.

Allocation of benefits from sale of generation assets and power-purchase contracts.

2002 **Maryland PSC** Case No. 8908, Maryland electric utilities' standard offer and supply procurement, Maryland Office of People's Counsel. Direct, November 2002; Rebuttal December 2002.

Benefits of proposed settlement to ratepayers. Standard-offer service. Procurement of supply.

2003 **Maryland PSC** Case No. 8980, adequacy of capacity in restructured electricity markets; Maryland Office of People's Counsel. Direct, December 2003; Reply December 2003.

Purpose of capacity-adequacy requirements. PJM capacity rules and practices. Implications of various restructuring proposals for system reliability.

2004 **Maryland PSC** Case No. 8995, Potomac Electric Power Company recovery of generation-related uncollectibles; Maryland Office of People's Counsel. Direct, March 2004; Supplemental March 2004, Surrebuttal April 2004.

Calculation and allocation of costs. Effect on administrative charge pursuant to settlement.

Maryland PSC Case No. 8994, Delmarva Power & Light recovery of generation-related uncollectibles; Maryland Office of People's Counsel. Direct, March 2004; Supplemental April 2004.

Calculation and allocation of costs. Effect on administrative charge pursuant to settlement.

Maryland PSC Case No. 8985, Southern Maryland Electric Coop standard-offer service; Maryland Office of People's Counsel. Direct, July 2004.

Reasonableness and risks of resource-procurement plan.

2005 **FERC** Docket No. ER05-428-000, revisions to ICAP demand curves; City of New York. Statement, March 2005.

Net-revenue offset to cost of new capacity. Winter-summer adjustment factor. Market power and in-City ICAP price trends.

FERC Docket No. PL05-7-000, capacity markets in PJM; Maryland Office of People's Counsel. Statement, June 2005.

Inefficiencies and risks associated with use of administratively determined demand curve. Incompatibility of four-year procurement plan with Maryland standard-offer service.

FERC Dockets Nos. ER05-1410-000 & EL05-148-000, proposed market-clearing mechanism for capacity markets in PJM; Coalition of Consumers for Reliability, Affidavit October 2005, Supplemental Affidavit October 2006.

Inefficiencies and risks associated with use of administratively determined demand curve. Effect of proposed reliability-pricing model on capacity costs.

2006 **Maryland PSC** Case No. 9052, Baltimore Gas & Electric rates and market-transition plan; Maryland Office of People's Counsel, February 2006.

Transition to market-based residential rates. Price volatility, bill complexity, and cost-deferral mechanisms.

Maryland PSC Case No. 9056, default service for commercial and industrial customers; Maryland Office of People's Counsel, April 2006.

Assessment of proposals to modify default service for commercial and industrial customers.

Maryland PSC Case No. 9054, merger of Constellation Energy Group and FPL Group; Maryland Office of People's Counsel, June 2006.

Assessment of effects and risks of proposed merger on ratepayers.

Illinois Commerce Commission Docket No. 06-0411, Commonwealth Edison Company residential rate plan; Citizens Utility Board, Cook County State's Attorney's Office, and City of Chicago, Direct July 2006, Reply August 2006.

Transition to market-based rates. Securitization of power costs. Rate of return on deferred assets.

Maryland PSC Case No. 9064, default service for residential and small commercial customers; Maryland Office of People's Counsel, Rebuttal Testimony, September 2006.

Procurement of standard-offer power. Structure and format of bidding. Risk and cost recovery.

FERC Dockets Nos. ER05-1410-000 & EL05-148-000, proposed market-clearing mechanism for capacity markets in PJM; Maryland Office of the People's Counsel, Supplemental Affidavit October 2006.

Distorting effects of proposed reliability-pricing model on clearing prices. Economically efficient alternative treatment.

Maryland PSC Case No. 9063, optimal structure of electric industry; Maryland Office of People's Counsel, Direct Testimony, October 2006; Rebuttal November 2006; surrebuttal November 2006.

Procurement of standard-offer power. Risk and gas-price volatility, and their effect on prices and market performance. Alternative procurement strategies.

Maryland PSC Case No. 9073, stranded costs from electric-industry restructuring; Maryland Office of People's Counsel, Direct Testimony, December 2006.

Review of estimates of stranded costs for Baltimore Gas & Electric.

2007 **Maryland PSC** Case No. 9091, rate-stabilization and market-transition plan for the Potomac Edison Company; Maryland Office of People's Counsel, Direct Testimony, March 2007.

Rate-stabilization plan.

Maryland PSC Case No. 9092, rates and rate mechanisms for the Potomac Electric Power Company; Maryland Office of People's Counsel, Direct Testimony, March 2007.

Cost allocation and rate design. Revenue decoupling mechanism.

Maryland PSC Case No. 9093, rates and rate mechanisms for Delmarva Power & Light; Maryland Office of People's Counsel, Direct Testimony, March 2007.

Cost allocation and rate design. Revenue decoupling mechanism.

Maryland PSC Case No. 9099, rate-stabilization plan for Baltimore Gas & Electric; Maryland Office of People's Counsel, Direct, March 2007; Surrebuttal April 2007.

Review of standard-offer-service-procurement plan. Rate stabilization plan.

Connecticut DPUC Docket No. 07-04-24, review of capacity contracts under Energy Independence Act; Connecticut Office of Consumer Counsel, Joint Direct Testimony June 2007.

Assessment of proposed capacity contracts.

Maryland PSC Case No. 9117, residential and small-commercial standard-offer service; Maryland Office of People's Counsel. Direct and Reply, September 2007; Supplemental Reply, November 2007; Additional Reply, December 2007; presentation, December 2008.

Benefits of long-term planning and procurement. Proposed aggregation of customers.

Maryland PSC Case No. 9117, Phase II, residential and small-commercial standard-offer service; Maryland Office of People's Counsel. Direct, October 2007.

Energy efficiency as part of standard-offer-service planning and procurement. Procurement of generation or long-term contracts to meet reliability needs.

2008 **Connecticut DPUC 08-01-01**, peaking generation projects; Connecticut Office of Consumer Counsel. Direct (with Paul Chernick), April 2008.

Assessment of proposed peaking projects. Valuation of peaking capacity. Modeling of energy margin, forward reserves, other project benefits.

Ontario EB-2007-0707, Ontario Power Authority integrated system plan; Green Energy Coalition, Penimba Institute, and Ontario Sustainable Energy Association. Evidence (with Paul Chernick and Richard Mazzini), August 2008.

Critique of integrated system plan. Resource cost and characteristics; finance cost. Development of least-cost green-energy portfolio.

2009 **Maryland PSC** Case No. 9192, Delmarva Power & Lights rates; Maryland Office of People's Counsel. Direct, August 2009; Rebuttal, Surrebuttal, September 2009.

Cost allocation and rate design.

Wisconsin PSC Docket No. 6630-CE-302, Glacier Hills Wind Park certificate; Citizens Utility Board of Wisconsin. Direct and Surrebuttal, October 2009.

Reasonableness of proposed wind facility.

PUC of Ohio Case No 09-906-EL-SSO, standard-service-offer bidding for three Ohio electric companies; Office of the Ohio Consumers' Counsel. Direct, December 2009.

Design of auctions for SSO power supply. Implications of migration of First-Energy from MISO to PJM.

2010 **PUC of Ohio** Case No 10-388-EL-SSO, standard-service offer for three Ohio electric companies; Office of the Ohio Consumers' Counsel. Direct, July 2010.

Design of auctions for SSO power supply.

Maryland PSC Case No. 9232, Potomac Electric Power Co. administrative charge for standard-offer service; Maryland Office of People's Counsel. Reply, Rebuttal, August 2010.

Proposed rates for components of the Administrative Charge for residential standard-offer service.

Maryland PSC Case No. 9226, Delmarva Power & Light administrative charge for standard-offer service; Maryland Office of People's Counsel. Reply, Rebuttal, August 2010.

Proposed rates for components of the Administrative Charge for residential standard-offer service.

Maryland PSC Case No. 9221, Baltimore Gas & Electric cost recovery; Maryland Office of People's Counsel. Reply, August 2010; Rebuttal, September 2010; Surrebuttal, November 2010

Proposed rates for components of the Administrative Charge for residential standard-offer service.

Wisconsin PSC Docket No. 3270-UR-117, Madison Gas & Electric gas and electric rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, Surrebuttal, September 2010.

Standby rate design. Treatment of uneconomic dispatch costs.

Nova Scotia UARB Case No. NSUARB P-887(2), fuel-adjustment mechanism; Nova Scotia Consumer Advocate. Direct, September 2010.

Effectiveness of fuel-adjustment incentive mechanism.

Manitoba PUB, Manitoba Hydro rates; Resource Conservation Manitoba and Time to Respect Earth's Ecosystems. Direct, December 2010.

Assessment of drought-related financial risk.

2011 **Mass. DPU 10-170,** NStar–Northeast Utilities merger; Cape Light Compact. Direct, May 2011.

Merger and competitive markets. Competitively neutral recovery of utility investments in new generation.

Mass. DPU 11-5, -6, -7, NStar wind contracts; Cape Light Compact. Direct, May 2011.

Assessment of utility proposal for recovery of contract costs.

Wisc. PSC Docket No. 4220-UR-117, electric and gas rates of Northern States Power: Citizens Utility Board of Wisconsin. Direct, Rebuttals (2) October 2011; Surrebuttal, Oral Sur-Surrebutal November 2011;

Cost allocation and rate design. Allocation of DOE settlement payment.

Wisc. PSC Docket No. 6680-FR-104, fuel-cost-related rate adjustments for Wisconsin Power and Light Company: Citizens Utility Board of Wisconsin. Direct, October 2011; Rebuttal, Surrebuttal, November 2011

Costs to comply with Cross State Air Pollution Rule.

2012 **Maryland PSC** Case No. 9149, Maryland IOUs' development of RFPs for new generation; Maryland Office of People's Counsel. March 2012.

Failure of demand-response provider to perform per contract. Estimation of cost to ratepayers.

PUCO Cases Nos. 11-346-EL-SSO, 11-348-EL-SSO, 11-349-EL-AAM, 11-350-EL-AAM, transition to competitive markets for Columbus Southern Power Company and Ohio Power Company; Ohio Consumers' Counsel. May 2012

Structure of auctions, credits, and capacity pricing as part of transition to competitive electricity markets.

Wisconsin PSC Docket No. 3270-UR-118, Madison Gas & Electric rates, Wisconsin Citizens Utility Board. Direct, August 2012; Rebuttal, September 2012.

Cost allocation and rate design (electric).

Wisconsin PSC Docket No. 05-UR-106, We Energies rates, Wisconsin Citizens Utility Board. Direct, Rebuttal, September 2012.

Cost allocation and rate design (electric).

Wisconsin PSC Docket No. 4220-UR-118, Northern States Power rates, Wisconsin Citizens Utility Board. Direct, Rebuttal, October 2012; Surrebuttal, November 2012.

Recovery of environmental remediation costs at a manufactured gas plant. Cost allocation and rate design.

2013 **Corporation Commission of Oklahoma** Cause No. PUD 201200054, Public Service Company of Oklahoma environmental compliance and cost recovery, Sierra Club. Direct, January 2013; rebuttal, February 2013; surrebuttal, March 2013.

Economic evaluation of alternative environmental-compliance plans. Effects of energy efficiency and renewable resources on cost and risk.

Maryland PSC Case No. 9324, Starion Energy marketing, Maryland Office of People's Counsel. September 2013.

Estimation of retail costs of electricity supply.

Wisconsin PSC Docket No. 6690-UR-122, Wisconsin Public Service Corporation gas and electric rates, Wisconsin Citizens Utility Board. Direct, August 2013; Rebuttal, Surrebuttal September 2013.

Cost allocation and rate design; rate-stabilization mechanism.

Wisconsin PSC Docket No. 4220-UR-119, Northern States Power Company gas and electric rates, Wisconsin Citizens Utility Board. Direct, Rebuttal, Surrebuttal, October 2013.

Cost allocation and rate design.

Michigan PSC Case No. U-17429, Consumers Energy Company approval for new gas plant, Natural Resources Defense Council. Corrected Direct, October 2013.

Need for new capacity. Economic assessment of alternative resource options.

2014 **Maryland PSC** Cases Nos. 9226 & 9232, administrative charge for standard-offer service; Maryland Office of People's Counsel. Reply, April 2014; surrebuttal, May 2014.

Proposed rates for components of the Administrative Charge for residential standard-offer service.

Conn. PURA Docket No. 13-07-18, rules for retail electricity markets; Office of Consumer Counsel. Direct, April 2014.

Estimation of retail costs of power supply for residential standard-offer service.

PUC Ohio Cases Nos. 13-2385-EL-SSO, 13-2386-EL-AAM; Ohio Power Company standard-offer service; Office of the Ohio Consumers' Counsel. Direct, May 2014.

Allocation of distribution-rider costs.

Wisc. PSC Docket No. 6690-UR-123, Wisconsin Public Service Corporation electric and gas rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, August 2014; Surrebuttal, September 2014.

Cost allocation and rate design.

Wisc. PSC Docket No. 05-UR-107, We Energy biennial review of electric and gas costs and rates; Citizens Utility Board of Wisconsin. Direct, August 2014; Rebuttal, Surrebuttal September 2014.

Cost allocation and rate design.

Wisc. PSC Docket No. 3270-UR-120, Madison Gas and Electric Co. electric and gas rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, September 2014.

Cost allocation and rate design.

Nova Scotia UARB Case No. NSUARB P-887(6), Nova Scotia Power fuel-adjustment mechanism; Nova Scotia Consumer Advocate. Evidence, December 2014.

Allocation of fuel-adjustment costs.

2015 **Maryland PSC** Case No. 9221, Baltimore Gas & Electric cost recovery; Maryland Office of People's Counsel. Second Reply, June 2015; Second Rebuttal, July 2015.

Proposed rates for components of the Administrative Charge for residential standard-offer service.

Wisconsin PSC Docket No. 6690-UR-124, Wisconsin Public Service Corporation electric and gas rates, Citizens Utility Board of Wisconsin. Direct, Rebuttal, September 2015; Surrebuttal, October 2015.

Cost allocation and rate design.

Wisconsin PSC Docket No. 4220-UR-121, Northern States Power Company gas and electric rates, Citizens Utility Board of Wisconsin. Direct, Rebuttal, Surrebuttal, October 2015.

Cost allocation and rate design.

Maryland PSC Cases Nos. 9226 & 9232, administrative charge for standard-offer service; Maryland Office of People's Counsel. Third Reply, September 2015; Third Rebuttal, October 2015.

Proposed rates for components of the Administrative Charge for residential standard-offer service.

Nova Scotia UARB Case No. NSUARB P-887(7), Nova Scotia Power fuel-adjustment mechanism; Nova Scotia Consumer Advocate. Evidence, December 2015.

Accounting adjustment for estimated over-earnings. Proposal for modifying procedures for setting the Actual Adjustment.

2016 **Maryland PSC** Case No. 9406, Baltimore Gas & Electric base rate case; Maryland Office of People's Counsel. Direct, February 2016; Rebuttal, March 2016; Surrebuttal, March 2016.

Allocation of Smart Grid costs. Recovery of conduit fees. Rate design.

Nova Scotia UARB Case No. NSUARB P-887(16), Nova Scotia Power 2017-2019 Fuel Stability Plan; Nova Scotia Consumer Advocate. Direct, May 2016; Reply, June 2016.

Base Cost of Fuel forecast. Allocation of Maritime Link capital costs. Fuel cost hedging plan.

Wisconsin PSC Docket No. 3270-UR-121, Madison Gas and Electric Company electric and gas rates, Citizens Utility Board of Wisconsin. Direct, August 2016; Rebuttal, Surrebuttal, September 2016.

Cost allocation and rate design.

Wisconsin PSC Docket No. 6680-UR-120, Wisconsin Power and Light Company electric and gas rates, Citizens Utility Board of Wisconsin. Direct, Rebuttal, Surrebuttal, Sur-surrebuttal, September 2016.

Cost allocation and rate design.

Minnesota PSC Docket No. E002/GR-15-826, Northern States Power Company electric rates, Clean Energy Organizations. Direct, June 2016; Rebuttal, September 2016; Surrebuttal, October 2016.

Cost basis for residential customer charges.

Nova Scotia UARB Case No. NSUARB M07611, Nova Scotia Power 2016 fuel adjustment mechanism audit; Nova Scotia Consumer Advocate. Direct, November 2016.

Sanctions for imprudent fuel-contracting practices.

2017 **Kentucky PSC** Case No. 2016-00370, Kentucky Utilities Company electric rates, Sierra Club. Direct, March 2017.

Cost basis for residential customer charges. Design of residential energy charges.

Kentucky PSC Case No. 2016-00371, Louisville Gas & Electric Company electric rates, Sierra Club. Direct, March 2017.

Cost basis for residential customer charges. Design of residential energy charges.

Massachusetts DPU 17-05, Eversource Energy electric rates, Cape Light Compact. Direct, April 2017; Supplemental Direct, Surrebuttal, August 2017.

Cost Allocation. Cost basis for residential customer charges. Demand charges for net metering customers.

Michigan PSC Case No. U-18255, DTE Electric Company electric rates, Natural Resources Defense Council, Michigan Environmental Council, and Sierra Club. Direct, August 2017.

Cost basis for residential customer charges.

North Carolina NCUC Docket No. E-2, Sub 1142, Duke Energy Progress electric rates, North Carolina Justice Center, North Carolina Housing Coalition, Natural Resources Defense Council, and Southern Alliance for Clean Energy. Direct, October 2017.

Cost basis for residential customer charges.

2018 **North Carolina NCUC** Docket No. E-7, Sub 1146, Duke Energy Carolinas electric rates, North Carolina Justice Center, North Carolina Housing Coalition, Natural Resources Defense Council, and Southern Alliance for Clean Energy. Direct, January 2018.

Cost basis for residential customer charges.

Works Cited

Acton, Jan, Bridger Mitchell, and Ragnhill Mowill. 1976. "Residential Demand for Electricity in Los Angeles: An Econometric Study of Disaggregate Data" Rand Report R-1899-NSF, Rand Corporation: Santa Monica, Cal., 1976. www.prgs.edu/content/dam/rand/pubs/reports/2008/R1899.pdf.

Barnes, Roberta, Robert Gillingham, and Robert Hagemann. 1981. "The Short-Run Residential Demand for Electricity" *Review of Economics and Statistics* 63(Nov. 1981):4 at 541–552; www.jstor.org/discover/10.2307/1935850

Espey, James, and Molly Espey. 2004. "Turning on the Lights: A Meta-Analysis of Residential Electricity Demand Elasticities" Journal of Agricultural and Applied Economics 36 (1), 65–81. Publicly available at https://ageconsearch.umn.edu/bitstream/42897/2/Espey%20JAAE%20April%202004.pdf

Henson, Steven. 1984. "Electricity Demand Estimates under Increasing-Block Rates" *Southern Economic Journal* 51(July 1984): 1 at 147–156. www.jstor.org/discover/10.2307/1058328

McFadden, Daniel, Carlos Puig, and Daniel Kirshner. 1977. "Determinants of the Long-Run Demand for Electricity," Proceedings of the Business and Economic Statistics Section, American Statistical Association, 1977at 109–119. eml.berkeley.edu/reprints/mcfadden/7_2.pdf

Orans, Ren, Michael Li, Jenya Kahn-Lang, and Chi-Keung Woo. 2014. "Are Residential Customers Price-Responsive to an Inclining Block Rate? Evidence from British Columbia, Canada" *Electricity Journal* 27(1) 85–92. www.sciencedirect.com/science/article/pii/S1040619013002935

Reiss, Peter, and Matthew White. 2005 "Household Electricity Demand, Revisited" *Review of Economic Studies* 72:853–883. web.stanford.edu/~preiss/demand.pdf

Xcel Energy. 2012. "Impact Analysis of Residential Two Tier, Inverted Block Rates" 11/05/2012. Minneapolis: Xcel Energy. www.dora.state.co.us/pls/efi/efi_p2_v2_demo.show_document?p_dms_document_id=190806.

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of The Dayton Power and Light Company for an Increase in Electric Distribution Rates.	))))	Case No. 15-1830-EL-AIR
In the Matter of the Application of The Dayton Power and Light Company for Approval to Change Accounting Methods.	))))	Case No. 15-1831-EL-AAM
In the Matter of the Application of The Dayton Power and Light Company for Tariff Approval.	))))	Case No. 15-1832-EL-ATA

THE DAYTON POWER AND LIGHT COMPANY'S OBJECTIONS AND RESPONSES TO THE OFFICE OF THE OHIO CONSUMERS' COUNSEL'S INTERROGATORIES AND REQUEST FOR PRODUCTION OF DOCUMENTS, FIFTH SET, JANUARY 29, 2016

The Dayton Power and Light Company ("DP&L") objects and responds to The Office of the Ohio Consumers' Counsel's Interrogatories and Requests for Production of Documents Propounded Upon Dayton Power and Light Company, Fifth Set, January 29, 2016, as follows.

GENERAL OBJECTIONS

1. DP&L objects to and declines to respond to each and every discovery request to the extent that it seeks information that is irrelevant and is not reasonably calculated to lead to the discovery of admissible evidence. Ohio Admin. Code § 4901-1-16(B).

2. DP&L objects to and declines to respond to each and every discovery request to the extent that it is harassing, unduly burdensome, oppressive or overbroad. Ohio Admin. Code §§ 4901-1-16(B) and 4901-1-24(A).

3. DP&L objects to each and every discovery request to the extent that it seeks information that is privileged by statute or common law, including privileged communications between attorney and client or attorney work product. Ohio Admin. Code § 4901-1-16(B). Such material or information shall not be provided, and any inadvertent disclosure of material or information protected by the attorney-client privilege, the attorney work product doctrine or any other privilege or protection from discovery is not intended and should not be construed to constitute a waiver, either generally or specifically, with respect to such information or material or the subject matter thereof.

4. DP&L objects to each and every discovery request to the extent that it seeks information that is proprietary, competitively sensitive or valuable, or constitutes trade secrets. Ohio Admin. Code § 4901-1-24(A).

5. To the extent that interrogatories seek relevant information that may be derived from the business records of DP&L or from an examination or inspection of such records and the burden of deriving the answer is the same for the party requesting the information as it is for DP&L, DP&L may specify the records from which the answer may be derived or ascertained and afford the party requesting the information the opportunity to examine or inspect such records. Ohio Admin. Code § 4901-1-19(D).

6. DP&L objects to each and every interrogatory that can be answered more efficiently by the production of documents or by the taking of depositions. Under the comparable Ohio Civil Rules, "[a]n interrogatory seeks an admission or it seeks information of major significance in the trial or in the preparation for trial. It does not contemplate an array of details or outlines of evidence, a function reserved by rules for depositions." Penn Cent. Transp. Co. v. Armco Steel Corp., 27 Ohio Misc. 76, 77, 272 N.E.2d 877, 878 (Montgomery Cty. 1971). As Penn further noted, interrogatories that ask one to "describe in detail," "state in detail," or "describe in particulars" are "open end invitation[s] without limit on its comprehensive nature with no guide for the court to determine if the voluminous response is what the party sought in the first place." Id., 272 N.E.2d at 878.

7. DP&L objects to each and every discovery request to the extent that it calls for information that is not in DP&L's current possession, custody, or control or could be more easily obtained through third parties or other sources. Ohio Admin. Code § 4901-1-19(C) and 4901-1-20(D). DP&L also objects to each and every discovery request that seeks information that is already on file with the Public Utilities Commission of Ohio or the Federal Energy Regulatory Commission. To the extent that each and every discovery request seeks information available in pre-filed testimony, pre-hearing data submissions and other documents that DP&L has filed with the Commission in the pending or previous proceedings, DP&L objects to it. Ohio Admin. Code § 4901-1-16(G).

8. DP&L reserves its right to redact confidential or irrelevant information from documents produced in discovery. All documents that have been redacted will be stamped as such.

9. DP&L objects to each and every discovery request to the extent that it is vague or ambiguous or contains terms or phrases that are undefined and subject to varying interpretation or meaning, and may, therefore, make responses misleading or incorrect.

10. DP&L objects to any discovery request to the extent that it calls for information not in its possession, but in the possession of DP&L's unregulated affiliates.

11. DP&L objects to each and every discovery request to the extent that it calls for a legal conclusion, and thus seeks information that cannot be sponsored by a witness.

12. DP&L further objects because these discovery requests seek information that DP&L does not know at this time.

INT-125. Regarding Workpaper E-4.1a, page 1, line 1; DP&L's Long term Forecast Report filed in case No. 15-663-EL-FOR, Form FE-D1). The Company appears to have included 13,790,060,536 of total kWh sales in its test year forecast. What information and/or calculations are required to reconcile this value with the generally higher "Total End User Consumption" values in 2015 and 2016 within Form FE-D1 of the Company's filed Long term Forecast Report?

RESPONSE: General Objections Nos. 2 (unduly burdensome), 5 (inspection of business records), 9 (vague or undefined). DP&L further objects because the request is unduly burdensome, and can be performed by OCC. Subject to all general objections, DP&L states that the Company's test year is comprised of 4 months of actual sales combined with 8 months of forecasted sales. The forecasted period of the test year was derived using the Company's Long Term Forecast Report. As illustrated in DP&L-AIR 0003091, the Company's forecasted sales values reflect those reported in the LTFR (Form FE-D1).

Witness Responsible: Robert J. Adams

The Dayton Power and Light Company
Test Year with Actual and Projected Sales by Rate Class / Revenue Determinant

Line	Tariff Class/Description	Actual Jun-15	Actual Jul-15	Actual Aug-15	Actual Sep-15	Forecast Oct-15	Forecast Nov-15	Forecast Dec-15	Forecast Jan-16	Forecast Feb-16	Forecast Mar-16	Forecast Apr-16	Forecast May-16
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)
1	Residential Non-Heating												
2	All kWh	283,200,086	335,717,520	360,929,602	320,278,649	231,274,102	232,396,152	278,613,417	343,022,080	306,917,913	275,421,896	241,757,527	225,751,580
3	Residential Heating												
4	All kWh	100,586,450	112,473,920	115,741,764	106,475,666	92,568,684	124,202,474	184,959,101	258,651,882	254,508,028	213,944,853	148,965,101	104,070,758
5	Secondary												
6	All kW	1,173,884	1,206,779	1,215,862	1,212,484	1,181,384	1,127,617	1,102,516	1,105,530	1,108,031	1,120,693	1,125,908	1,146,728
7	All kWh	338,019,588	368,471,289	376,064,371	362,999,631	325,384,318	303,850,580	306,117,820	340,019,055	330,448,178	313,743,749	310,951,624	305,946,056
8	Primary												
9	All kW	516,767	511,230	520,666	516,208	527,272	501,865	488,874	482,620	476,592	488,990	497,003	510,318
10	All kWh	243,913,545	245,335,766	251,670,865	246,748,532	242,019,792	228,788,443	216,896,130	225,104,366	227,276,617	221,834,962	231,568,604	228,015,297
11	All kVar	294,076	285,846	300,073	295,332	312,050	296,706	293,930	293,801	289,984	295,362	294,384	301,127
12	Primary Substation												
13	All kW	97,362	95,173	97,652	98,189	92,869	89,634	90,311	88,855	87,957	87,802	90,165	90,956
14	All kWh	56,828,428	57,896,449	60,103,931	61,058,286	53,893,579	54,484,223	48,962,771	49,040,946	48,204,739	44,952,902	50,819,735	51,762,080
15	All kVar	56,041	52,601	55,939	56,423	52,351	49,958	50,584	49,822	50,243	49,946	51,006	51,086
16	High Voltage												
17	All kW	162,652	167,557	171,492	174,917	163,506	151,388	136,906	140,962	142,764	142,183	145,083	148,356
18	All kWh	86,925,274	90,552,380	94,213,067	93,687,825	83,552,383	77,906,337	69,507,108	74,474,420	77,254,115	72,240,858	78,645,500	76,181,247
19	All kVar	63,215	69,158	71,648	71,953	69,828	63,851	58,096	64,030	64,584	69,938	62,250	57,933
20	School												
21	All kWh - Secondary	2,475,143	2,228,796	2,596,697	3,312,892	3,147,797	2,951,297	2,810,167	3,222,911	3,389,146	3,218,667	2,924,638	2,981,313
22	All kW - Secondary	6,785	6,026	8,820	10,867	9,113	8,652	8,049	8,325	8,538	7,603	7,313	9,316
23	All kWh - Primary	1,095,000	1,057,200	1,106,040	994,380	1,290,969	1,211,523	1,265,732	1,361,365	1,400,418	1,420,354	1,244,809	1,298,194
24	All kW - Primary	2,426	2,356	3,214	2,767	3,762	3,139	3,183	3,227	3,257	3,077	3,246	3,808
25	All kVar	1,019	990	1,350	1,163	2,232	1,863	1,889	1,915	1,933	1,826	1,926	2,259
26													
27	Street Lighting												
28	All kWh	4,483,352	4,481,471	4,479,508	4,480,002	4,556,308	4,506,831	4,552,721	4,517,230	4,695,826	4,507,842	4,525,750	4,492,531
29	Private Outdoor Lighting (kWh)												
30	9500 L High Pressure Sodium	49,959	50,232	50,388	50,427	34,326	33,978	35,048	35,281	35,937	36,573	37,263	37,409
31	28000 L High Pressure Sodium	88,896	90,336	90,240	96,480	49,721	51,328	53,018	53,767	55,162	56,763	57,451	58,972
32	7000 L Mercury Vapor	1,568,325	1,569,525	1,564,575	1,560,300	1,701,113	1,672,543	1,685,296	1,671,732	1,665,924	1,658,482	1,665,652	1,652,229
33	21000 L Mercury Vapor	603,372	608,146	608,916	597,828	677,783	666,435	673,493	665,907	661,318	659,586	659,668	654,312
34	2500 L Incandescent	320	320	320	320	312	310	335	391	377	346	322	301
35	7000 L Fluorescent	858	792	792	792	936	929	893	911	880	808	859	903
36	4000 L PT Mercury	25,628	25,542	25,327	25,327	29,749	29,433	31,029	28,251	28,147	28,151	28,242	28,182
37	Total	2,337,358	2,344,893	2,340,558	2,331,474	2,493,940	2,454,956	2,479,112	2,456,240	2,447,745	2,440,709	2,449,457	2,432,308
38													
39													
40	Total kWh	1,119,864,224	1,220,559,684	1,269,246,403	1,202,367,337	1,040,181,872	1,032,752,816	1,116,164,079	1,301,870,495	1,256,542,725	1,153,726,792	1,073,852,745	1,002,931,364
41	Total kW	1,959,876.1	1,989,121.0	2,017,704.9	2,015,432.8	1,977,905.9	1,882,295.3	1,829,839.4	1,829,518.6	1,827,138.8	1,850,347.0	1,868,718.5	1,909,481.0
42	Total kVar	414,351.3	408,595.5	429,010.4	424,870.0	436,460.3	412,378.2	404,497.9	409,568.5	406,742.9	417,072.2	409,567.4	412,405.4
						1,040,182	1,032,753	1,116,164	1,301,870	1,256,543	1,153,727	1,073,853	1,002,931

Total kWh	13,790,060,536
Total kW	22,957,379
Total kVar	4,985,520

The Dayton Power and Light Company
2015 & 2016 LTFR Monthly Sales
Case No. 15-663-EL-FOR

	January	February	March	April	May	June	July	August	September	October	November	December	Total Form FE-D1
2015 Total before EE	1,297,780	1,253,494	1,153,040	1,075,000	1,005,708	1,131,984	1,269,016	1,312,314	1,237,902	1,053,393	1,045,964	1,129,375	13,964,970
EE	13,211	13,211	13,211	13,211	13,211	13,211	13,211	13,211	13,211	13,211	13,211	13,211	158,534
2015 Total After EE	1,284,569	1,240,283	1,139,828	1,061,789	992,497	1,118,773	1,255,805	1,299,103	1,224,691	1,040,182	1,032,753	1,116,164	13,806,436

	January	February	March	April	May	June	July	August	September	October	November	December	
2016 Total before EE	1,328,293	1,282,965	1,180,149	1,100,275	1,029,354	1,158,598	1,298,853	1,343,168	1,267,007	1,078,160	1,070,556	1,155,928	14,293,305
EE	26,422	26,422	26,422	26,422	26,422	26,422	26,422	26,422	26,422	26,422	26,422	26,422	317,067
2016 Total After EE	1,301,870	1,256,543	1,153,727	1,073,853	1,002,931	1,132,176	1,272,430	1,316,746	1,240,584	1,051,737	1,044,134	1,129,506	13,976,238

PUCO FORM FE-D1:
ELECTRIC UTILITY OHIO SERVICE AREA ENERGY CONSUMPTION FORECAST
(Megawatt-Hours Per Year)

		(1)	(2)	(3)	(4)	(5a)	(5b)	(6)	(7)	(8)
	YEAR	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	TRANSPORTATION[a]	OTHER[b]	ENERGY EFFICIENCY & DEMAND RESPONSE	TOTAL END USER CONSUMPTION (1)+(2)+(3)+(4)+(5a)-(5b)	LOSSES AND UNACCOUNTED FOR	NET ENERGY FOR LOAD (6)+(7)
-5	2010	5,516,004	3,767,233	3,571,504	1,467	1,426,116		14,282,324	419,500	14,701,824
-4	2011	5,424,545	3,713,941	3,560,411	817	1,428,005		14,127,719	400,646	14,528,365
-3	2012	5,181,338	3,698,607	3,650,639	1,625	1,404,461		13,936,670	455,260	14,391,930
-2	2013	5,226,437	3,697,532	3,552,428	3,913	1,349,658		13,829,968	400,670	14,230,638
-1	2014	5,344,082	3,714,874	3,651,720	3,336	1,310,285		14,024,297	396,028	14,420,325
0	2015	5,205,777	3,685,092	3,704,902	3,583	1,365,617	(158,534)	13,806,436	519,034	14,325,470
1	2016	5,328,171	3,771,733	3,792,009	3,667	1,397,725	(317,067)	13,976,238	525,266	14,501,504
2	2017	5,407,298	3,827,746	3,848,323	3,722	1,418,482	(474,015)	14,031,555	527,296	14,558,851
3	2018	5,470,126	3,872,220	3,893,036	3,765	1,434,963	(627,824)	14,046,286	527,837	14,574,123
4	2019	5,510,134	3,900,541	3,921,510	3,792	1,445,458	(778,557)	14,002,878	526,244	14,529,122
5	2020	5,536,806	3,919,422	3,940,492	3,811	1,452,455	(926,276)	13,926,709	523,448	14,450,157
6	2021	5,563,478	3,938,303	3,959,474	3,829	1,459,452	(1,071,040)	13,853,495	520,761	14,374,256
7	2022	5,632,825	3,987,392	4,008,828	3,877	1,477,643	(1,212,909)	13,897,656	522,382	14,420,038
8	2023	5,706,617	4,039,629	4,061,345	3,928	1,497,001	(1,351,940)	13,956,580	524,544	14,481,124
9	2024	5,786,929	4,096,481	4,118,502	3,983	1,518,069	(1,487,095)	14,036,870	527,491	14,564,361
10	2025	5,842,941	4,136,130	4,158,365	4,021	1,532,763	(1,618,195)	14,056,025	528,194	14,584,219

a. Transportation includes railroads & railways.

b. Other includes Street & Highway Lighting, Public Authorities and Interdepartmental Sales.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and accurate copy of the foregoing document was served this 11th day of April 2018, by electronic mail upon the parties listed below.

/s/Robert Dove
Robert Dove

Steven L. Beeler
Robert A. Eubanks
Assistant Attorneys General
Public Utilities Section
30 East Broad St., 16th Floor
Columbus, Ohio 43215
Steven.beeler@ohioattorneygeneral.gov
Robert.eubanks@ohioattorneygeneral.gov
Counsel for Staff of the Commission

Christopher M. Healey
Assistant Consumers' Counsel
Office of the Ohio Consumers' Counsel
10 West Broad Street, Suite 1800
Columbus, Ohio 43215-3485
Christopher.healey@occ.ohio.gov

Counsel for Office of the Ohio Consumers' Counsel

David Boehm
Michael L. Kurtz
Jody Kyler Cohn
Boehm, Kurtz & Lowry
36 East Seventh Street, Suite 1510
Cincinnati, Ohio 45202
dboehm@BKLlawfirm.com
mkurtz@BKLlawfirm.com
jkylercohn@BKLlawfirm.com

Counsel for Ohio Energy Group

Frank P. Darr
Matthew R. Pritchard
McNees Wallace & Nurick LLC
21 East State Street, 17th Floor
Columbus, Ohio 43215
fdarr@mwncmh.com
mpritchard@mwncmh.com

Counsel for Industrial Energy Users-Ohio

Michael D. Dortch
Richard R. Parsons
Justin M. Dortch
Kravitz, Brown & Dortch, LLC
65 East State Street, Suite 200
Columbus, Ohio 43215
mdortch@kravitzllc.com

Counsel for Calpine Energy Solutions, LLC

Elyse Akhbari
Counsel of Record
Bricker & Eckler LLP
100 South Third Street
Columbus, OH 43215
eakhbari@bricker.com

Counsel for People Working Cooperatively, Inc.

Dylan F. Borchers
Devin D. Parram
Bricker & Eckler LLP

100 South Third Street
Columbus, OH 43215-4291
dborchers@bricker.com
dparram@bricker.com

Counsel for Ohio Hospital Association

Richard L. Sites
Regulatory Counsel
155 East Broad Street, 3rd Floor
Columbus, OH 43215-3620
Rick.sites@ohiohospitals.org

Counsel for Ohio Hospital Association

Angela Paul Whitfield
Carpenter Lipps & Leland LLP
280 North High Street, Suite 1300
Columbus, Ohio 43215
paul@carpenterlipps.com

Counsel for The Kroger Co.

Colleen L. Mooney
1431 Mulford Road
Columbus, Ohio 43212
cmooney@ohiopartners.org

Counsel for Ohio Partners for Affordable Energy

Joseph Oliker
Michael Nugent
6100 Emerald Parkway
Dublin, Ohio 43016
joliker@igsenergy.com
mnugent@igsenergy.com

Counsel for IGS Energy

Kurt J. Boehm
Boehm, Kurtz & Lowry
36 East Seventh Street, Suite 1510
Cincinnati, Ohio 45202
kboehm@BKLlawfirm.com

Counsel for the City of Cincinnati

Mark A. Whitt
Andrew J. Campbell
Rebekah J. Glover
Whitt, Sturtevant LLP
The KeyBank Building, Suite 1590
88 East Broad Street
Columbus, Ohio 43215
whitt@whitt-sturtevant.com
Campbell@whitt-sturtevant.com
glover@whitt-sturtevant.com

Counsel for the Retail Energy Supply Association (RESA)

Kimberly W. Bojko (Counsel of Record)
Carpenter Lipps & Leland LLP
280 Plaza, Suite 1300
280 North High Street
Columbus, Ohio 43215
Bojko @carpenterlipps.com

Counsel for The Ohio Manufacturers' Association Energy Group

Mark A. Whitt
Andrew J. Campbell
Rebekah J. Glover
WHITT STURTEVANT LLP
The KeyBank Building, Suite 1590
88 East Broad Street
Columbus, Ohio 43215
whitt@whitt-sturtevant.com
campbell@whitt-sturtevant.com
glover@whitt-sturtevant.com

Counsel for Direct Energy Services, LLC, Direct Energy Business, LLC, and Direct Energy Business Marketing, LLC

D. David Altman (Counsel of Record)
Justin D. Newman
J. Michael Weber
D. DAVID ALTMAN CO., L.P.A.
15 East 8th Street, Suite 200W
Cincinnati, Ohio 45202
daltman@environlaw.com
jnewman@environlaw.com
jweber@environlaw.com

Counsel for Cincinnati Clean Energy Foundation