BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF DELAWARE

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| IN THE MATTER OF THE APPLICATION OF<br>DELMARVA POWER & LIGHT COMPANY FOR<br>AN INCREASE IN ELECTRIC BASE RATES<br>AND MISCELLANEOUS TARIFF CHANGES<br>(FILED MARCH 22, 2013) | )<br>)<br>)<br>)<br>) | PSC DOCKET NO. 13-115 |

COPIES OF FOOTNOTE REFERENCES

IN FOOTNOTE NOS. 12, 13, 14, 15, 16, AND 17

# ELECTRIC UTILITY COST ALLOCATION MANUAL

January, 1992

NATIONAL ASSOCIATION OF
REGULATORY UTILITY COMMISSIONERS

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To ensure that costs are properly allocated, the analyst must first classify each account as demand-related, customer-related, or a combination of both. The classification depends upon the analyst's evaluation of how the costs in these accounts were incurred. In making this determination, supporting data may be more important than theoretical considerations.

Allocating costs to the appropriate groups in a cost study requires a special analysis of the nature of distribution plant and expenses. This will ensure that costs are assigned to the correct functional groups for classification and allocation. As indicated in Chapter 4, all costs of service can be identified as energy-related, demand-related, or customer-related. Because there is no energy component of distribution-related costs, we need consider only the demand and customer components.

To recognize voltage level and use of facilities in the functionalization of distribution costs, distribution line costs must be separated into overhead and underground, and primary and secondary voltage classifications. A typical functionalization and classification of distribution plant would appear as follows:

| | |
|---|---|
| Substations: | Demand |
| Distribution: | Overhead Primary |
| | Demand |
| | Customer |
| | Overhead Secondary |
| | Demand |
| | Customer |
| | Underground Primary |
| | Demand |
| | Customer |
| | Underground Secondary |
| | Demand |
| | Customer |
| | Line Transformers |
| | Demand |
| | Customer |
| Services: | Overhead |
| | Demand |
| | Customer |
| | Underground |
| | Demand |
| | Customer |
| Meters: | Customer |
| Street Lighting: | Customer |
| Customer Accounting: | Customer |
| Sales: | Customer |

it is not as controversial as the classification of substations, poles, transformers, and conductors.

**1. Account 369 - Services**

This account is generally classified as customer-related. Classification of services may also include a demand component to reflect the fact that larger customers will require more costly service drops.

**2. Account 370 - Meters**

Meters are generally classified on a customer basis. However, they may also be classified using a demand component to show that larger-usage customers require more expensive metering equipment.

**3. Account 371 - Installations on Customer Premises**

This account is generally classified as customer-related and is often directly assigned. The kind of equipment in this account often influences how this account is treated. The equipment in this account is owned by the utility, but is located on the customer's side of the meter. A utility will often include area lighting equipment in this account and assign the investment directly to the lighting customer class.

**4. Account 373 - Street Lighting and Signal Systems**

This account is generally customer-related and is directly assigned to the street customer class.

## III. ALLOCATION OF THE DEMAND AND CUSTOMER COMPONENTS OF DISTRIBUTION PLANT

After completing the classification of distribution plant accounts, the next major step in the cost of service process is to allocate the classified costs. Generally, determining the distribution-demand allocator will require more data and analysis than determining the customer allocators. Following are procedures used to calculate the demand and customer allocation factors.

### A. Development of the Distribution Demand Allocators

There are several factors to consider when allocating the demand components of distribution plant. Distribution facilities, from a design and operational perspective, are installed primarily to meet localized area loads. Distribution substations are designed to meet the maximum load from the distribution feeders emanating from the substation.

Similarly, when designing primary and secondary distribution feeders, the distribution engineer ensures that sufficient conductor and transformer capacity is available to meet the customer's loads at the primary- and secondary-distribution service levels. Local area loads are the major factors in sizing distribution equipment. Consequently, customer-class noncoincident demands (NCPs) and individual customer maximum demands are the load characteristics that are normally used to allocate the demand component of distribution facilities. The customer-class load characteristic used to allocate the demand component of distribution plant (whether customer class NCPs or the summation of individual customer maximum demands) depends on the load diversity that is present at the equipment to be allocated. The load diversity at distribution substations and primary feeders is usually high. For this reason, customer-class peaks are normally used for the allocation of these facilities. The facilities nearer the customer, such as secondary feeders and line transformers, have much lower load diversity. They are normally allocated according to the individual customer's maximum demands. Although these are the methods normally used for the allocation of distribution demand costs, some exceptions exist.

The load diversity differences for some utilities at the transmission and distribution substation levels may not be large. Consequently, some large distribution substations may be allocated using the same method as the transmission system. Before the cost analyst selects a method to allocate the different levels of distribution facilities, he must know the design and operational characteristics of the distribution system, as well as the demand losses at each level of the distribution system.

As previously indicated, the distribution system consists of several levels. The first level starts at the distribution substation, and the last level ends at the customer's meters. Power losses occur at each level and should be included in the demand allocators. Power losses are incorporated into the demand allocators by showing different demand loss factors at each predominant voltage level. The demand loss factor used to develop the primary-distribution demand allocator will be slightly larger than the demand loss factor used to develop the secondary demand allocator. When developing the distribution demand allocator, be aware that some customers take service at different voltage levels.

Cost analysts developing the allocator for distribution of substations or primary demand facilities must ensure that only the loads of those customers who benefit from these facilities are included in the allocator. For example, the loads of customers who take service at transmission level should not be reflected in the distribution substation or primary demand allocator. Similarly, when analysts develop the allocator for secondary demand facilities, the loads for customers served by the primary distribution system should not be included.

Utilities can gather load data to develop demand allocators, either through their load research program or their transformer load management program. In most cases, the load research program gathers data from meters on the customers' premises. A more complex procedure is to use the transformer load management program.

This procedure involves simulating load profiles for the various classes of equipment on the distribution system. This provides information on the nature of the load diversity between the customer and the substation, and its effect on equipment cost. Determining demand allocators through simulation provides a first-order load approximation, which represents the peak load for each type of distribution equipment.

The concept of peak load or "equipment peak" for each piece of distribution equipment can be understood by considering line transformers. If a given transformer's loading for each hour of a month can be calculated, a transformer load curve can be developed. By knowing the types of customers connected to each load management transformer, a simulated transformer load profile curve can be developed for the system. This can provide each customer's class demand at the time of the transformer's peak load. Similarly, an equipment peak can be defined for equipment at each level of the distribution system. Although the equipment peak obtained by this method may not be ideal, it will closely approximate the actual peak. Thus, this method should reflect the different load diversities among customers at each level of the distribution system. An illustration of the simulation procedure is provided in Appendix 6-A.

## B. Allocation of Customer-Related Costs

When the demand-customer classification has been completed, most of the assumptions will have been made that affect the results of the completed cost of service study.

The allocation of the customer-related portion of the various plant accounts is based on the number of customers by classes of service, with appropriate weightings and adjustments. Weighting factors reflect differences in characteristics of customers within a given class, or between classes. Within a class, for instance, we may want to give more weighting of a certain plant account to rural customers, as compared to urban customers. The metering account is a clear example of an account requiring weighting for differences between classes. A metering arrangement for a single industrial customer may be 20 to 80 times as costly as the metering for one residential customer.

While customer allocation factors should be weighted to offset differences among various types of customers, highly refined weighting factors or detailed and time consuming studies may not seem worthwhile. Such factors applied in this final step of the cost study may affect the final results much less than such basic assumptions as the demand-allocation method or the technique for determining demand-customer classifications.

Expense allocations generally are based on the comparable plant allocator of the various classes. For instance, maintenance of overhead lines is generally assumed to be directly related to plant in overhead conductors and devices. Exceptions to this rule will occur in some accounts. Meter expenses, for example, are often a function of

# APPENDIX 6-A

## DERIVATION OF DEMAND ALLOCATOR THROUGH SIMULATION

The derivation of the demand allocator through simulation requires extensive data on the locations of various types of customers on the distribution system. This data may be available through the utility's transformer load management (TLM) system.

A TLM system may be used by a utility to provide data to minimize the loss of transformers from overload and to provide a data base for local area forecasts for engineering design. Such a data base can provide the location and size of line transformers, and identify the primary feeder leaving the substation that supplies each transformer. It can also provide the identity of the customer connected to each transformer and the usage levels of those customers. Additional sampling may be necessary to determine which transformers have secondary lines between the transformers and the customer service drops. In a simulation, the TLM data can be combined with the utility's load research data to obtain peak loading at points in the system not normally metered, as well as a matching set of the sales peak measurements normally made.

To calculate equipment peaks on an ongoing basis, a sample of transformers would have to be selected for load research metering, which could be projected to the total population of transformers. However, this may not be feasible because the cost of such a project could far outweigh the benefit derived. On the other hand, sales peaks calculated from existing load research sampling are available. This load research data could be used with the TLM data to simulate equipment peaks and their corresponding sales peaks. By comparing the peaks, we can select an appropriate allocator for each engineering category. The purpose of the simulation is not to calculate the allocators themselves, but to investigate the relationship between the equipment peaks and the sales peaks. This will allow us to choose appropriate sales peaks for allocating each engineering category.

From the TLM data, we can identify the specific transformer, three-phase circuit (feeder), and distribution substation serving each customer. Given the customer load profiles for each hour of a particular month, we can then add up the hourly load for each transformer, circuit, or substation, find its peak, and add totals by rate schedule to the equipment peaks. The key element of the simulation is the load profile of each customer.

How to generate a customer load profile and use it to simulate equipment peaks is shown below. Line transformers are used for illustration. After sorting the TLM data by transformer number, follow these steps:

Step 1 - Read a customer record from the TLM data file.

Step 2 - Test the transformer number to determine if a new transformer has been found. If not, proceed to Step 3; otherwise, go to Step 7.

Step 3 - From the TLM data, use the rate schedule and the KWH/day to identify a set of load profiles from the proper strata with the matching rate schedule.

Step 4 - Generate and use a pseudo-random number to select one of the load profiles within the identified set.

Step 5 - Combine the hourly loads for the selected load profile to yield the same total energy consumed in the TLM data. This is done by taking the TLM KWH/day divided by the KWH/day for the selected load profile and multiplying the result by the load for each hour of the selected load profile.

Step 6 - Add the customer's simulated hourly loads to the totals by rate schedule for the customer's transformer, and to the totals for the various sales peaks being generated. Now return to Step 1.

Step 7 - If you detect the end of data for a transformer, the transformer totals will contain simulated hourly loads for each hour of the month for that transformer. Search these loads to find the transformer's peak load hour. Add the loads for each rate schedule at the time of this peak to the equipment peak totals by rate schedule. Then clear the transformer totals and proceed to the next transformer in Step 3.

Determine the simulation of equipment peaks for substations and primary and secondary conductors in the same manner. The estimated equipment peaks for each month for each distribution component can then be compared to various class peaks (monthly coincident peaks, noncoincident peaks, etc.) that are available from load research data. The class peak factors that best match the equipment peaks should then be used to allocate each distribution component.

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
INITIAL SET OF COST OF SERVICE DATA REQUESTS
TO DELMARVA POWER & LIGHT COMPANY

Question No.: PSC-COS-29

Please refer to page 9, line 22 to page 10 line 1 of the Testimony of Elliott P. Tanos. Please provide (1) a definition and narrative explanation of the referenced weighted Class MDD and Customer NCP factors, describing the data used and all calculations employed in developing the weighted Class MDD and Customer NCP factors used in the COSS, (2) workpapers and supporting documentation showing the development of the weighted Class MDD and Customer NCP factors in the COSS, including workpapers and supporting documentation for all diversity and loss factors used, and (3) a list of all system locations where demand is measured by demand meters, i.e., customer, substation, etc., indicating the distribution level at which the meters measure demand, i.e., customer, line transformer, secondary, primary, sub-transmission and transmission. Calculation workpapers should be provided in electronic spreadsheet format with all formulae and macros intact.

RESPONSE:

1. The Class Maximum Diversified Demand (Class MDD) is the maximum hourly demand found for the customer class over the analysis period where the simultaneous demands of the class of customers is taken as a whole.

   The Customer Non-coincident Peak (NCP) is the sum of the individual maximum demands of the customers within a class on a customer-by-customer basis over the analysis period.

   Please see Schedule (EPT-1), page 18, lines 1-7 for the development of the weighted Class MDD and Customer NCP demand factors. Please also see the example below that shows the calculation of the DEMSEC allocation factor for the Residential class:

   Residential DEMSEC calculation:

   50% [Specific Class MDD/(Sum of applicable Customer Classes' MDD)] +
   50% [Specific Customer NCP/(Sum of applicable Classes' Customer NCP)]
   Residential DEMSEC = 50% [755,061 / 1,460,013] +
   50% [1,818,377 / 3,472,404]
   = 0.52041

2. Please see the response to part (1) above.
3. The information is not available in the form requested and would require significant original work to create.

Respondent: Elliott P. Tanos

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
INITIAL SET OF COST OF SERVICE DATA REQUESTS
TO DELMARVA POWER & LIGHT COMPANY

Question No. : PSC-COS-30

Please refer to page 9, line 21 to page 10, line 4 of the Testimony of Elliott P. Tanos. Please (1) define Delmarva's Class MDD and Customer NCP allocators using an example calculation and explain with an example how Delmarva qualitatively and quantitatively defines "diversity," (2) provide a system map showing the location of all Delmarva's planning load centers, (2) a list of all Delmarva's planning load centers, with time of load center peak demand and class demands at load center peak, (3) an explanation and description of how Delmarva's MDD and NCP allocators accounts for the differing class demands at load center peak demand, and (4) workpapers showing the development of time of peak, peak demand, class demands at peak and NCP allocator(s). Calculation workpapers should be provided in electronic spreadsheet format with all equations and macros intact.

RESPONSE:

1. Please see the response to Data Request PSC COS-29. Diversity is a characteristic of a variety of electric loads whereby individual customer maximum demands usually occur at different times. The Company installs equipment based on the maximum demand of the customer and the diversity of customers that can be used to efficiently make investment in the required facilities. The diversified (Class MDD) and non-diversified (Customer NCP) demand factors that are used in the cost of service study consider this when assigning investment.
   For example, distribution line transformer-related costs are allocated using the average of the Class MDD and Customer NCP demand measures to recognize that transformers may serve multiple customers so that the diversity of load will impact the sizing of the transformer; while other transformers serve a single customer so no load diversity is considered in sizing the transformer. Also, the cost of service study recognizes this latter point by allocating transformers to the large secondary customers based on the sum of the customer maximum demands only. The magnitudes of these demands by customer class are clearly shown on page 18-2 of Schedule EPT-1.
2. The maps are voluminous and include descriptions and drawings of critical electric infrastructure. These documents are available for review at the Company's offices. Arrangements to view these data can be made by contacting Todd Goodman at 302-429-3786.
   With regard to "planning load centers" refer to responses in PSC-COS-5, PSC-G-6, PSC-G-7, and AG-GEN-6.
3. The Company designs, constructs, and operates distribution facilities to be able to meet localized area loads. As explained in the NARUC Electric Utility Cost Allocation Manual, on page 97:

   > Local area loads are the major factors in sizing distribution equipment. Consequently, customer-class non-coincident demands (NCPs) and individual customer maximum demands are the load characteristics that are normally used to allocate the demand component of distribution facilities.

   The Class MDD (class non-coincident demand measure) and Customer NCP (sum of individual customer maximum demands) are used in the COSS to reflect this consideration.

4. Please see the attachments to the responses to PSC-COS-34 and PSC-COS-28.

Respondent: Elliott P. Tanos/Michael W. Maxwell

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
FOLLOW UP DATA REQUESTS TO ELLIOTT P. TANOS
TO DELMARVA POWER & LIGHT COMPANY

Question No. : PSC-EPT-10

Provide any support or references that address combining class NCP and customer NCP allocation factors for purposes of reflecting the sizing of distribution equipment with different diversity characteristics

RESPONSE:

Consistent with the prior case, the Company has applied the weighted Class MDD and the undiversified sum of the customer maximum demands (Customer NCP) recognizing that load diversity at the primary facilities is usually high and that the facilities located nearer the customer have a much lower load diversity.

For example, distribution line transformers are allocated using the average of the two demand levels to recognize that transformers may serve multiple customers so that the diversity of load will impact the sizing of the transformer; while other transformers serve a single customer so no load diversity is considered in sizing the transformer. Also, the cost of service study recognizes this latter point by allocating transformers to the large secondary customers based on the sum of the customer maximum demands only.

Respondent: Elliott P. Tanos

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
FOLLOW UP DATA REQUESTS TO ELLIOTT P. TANOS
TO DELMARVA POWER & LIGHT COMPANY

Question No. : PSC-EPT-11

Provide any studies, analyses, or other support for the use of an equal weighting between class NCP and Customer NCP demands, or between number of customers and MWH sales, in the development of the company allocation factors.

RESPONSE:

The 50/50 weighting of the class maximum diversified demand and the undiversified sum of the customer maximum demands that is used in the development of the Company allocation factors is consistent with the method applied in prior cases, and represents a reasonable approach to allocating these plant investments.

For example, very large secondary customers generally will have a transformer located at their facility and are generally not adjacent to other large customers. Smaller customers have much smaller loads and are often more clustered, which provides for the aggregation of several customers per transformer.

The use of a 50/50 weighting of Class MDD and Customer NCP is a reasonable approach that recognizes this aggregation and properly allocates these costs. Use of either demand approach alone (Class MDD or customer max) would under allocate (Customer MDD) or materially over allocate (customer max) to smaller customers such as residential. The magnitudes of these demands by customer class are clearly shown on page 18-2 of Company Witness Tanos' Schedule (EPT)-1. The only proper use of customer maximum demands is in the allocation with respect to larger secondary customers, as applied in the prior case.

Also, consistent with the prior case, the Company has used a composite allocator based on number of customers and sales usage to assign O&M accounts that include services that benefit all customers who use energy; and programs that are designed to encourage safety, efficiency, and conservation. The Company maintains personnel that service all customers, and a representative approach is to prepare an equally weighted composite allocation based on the number of customers and their corresponding sales usage. In this manner, all customers are fairly represented in the final allocation process for these expense

Respondent: Elliott P. Tanos

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
INITIAL SET OF COST OF SERVICE DATA REQUESTS
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Question No. : PSC-COS-27

Please refer to page 9, lines 16-19 of the Testimony of Elliott P. Tanos. Please (1) provide (a) a detailed description and explanation of Delmarva's system planning process for demand-related distribution facilities, specifically defining the voltage levels used, the design, planning and operating parameters used for and/or taken account of at each voltage level, the types of facilities included in each voltage level and the design criteria for each voltage level and (b) all policy statements, manuals and/or other documents that support this response, (2) define the load centers accounted for in the planning and sizing of distribution lines, transformers and, substations at each voltage level, (3) define qualitatively and quantitatively the relative contribution of load center peak demand versus system peak demand at each voltage level, and (3) provide copies of all analyses, studies, workpapers, and/or other documentation showing, demonstrating and quantifying the extent to which (a) load center peak demand differs from system peak demand and (b) customer class load center peak demands differ from customer class system peak demands. Calculation workpapers should be provided in electronic spreadsheet format with all equations and macros intact.

RESPONSE:

1-3 Refer to the responses to PSC-COS-5, PSC-G-6, PSC-G-7, and AG-GEN-6.

Respondent: Michael W. Maxwell

PSC DOCKET NO. 13-115
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Question No. : PSC-COS-29

Please refer to page 9, line 22 to page 10 line 1 of the Testimony of Elliott P. Tanos. Please provide (1) a definition and narrative explanation of the referenced weighted Class MDD and Customer NCP factors, describing the data used and all calculations employed in developing the weighted Class MDD and Customer NCP factors used in the COSS, (2) workpapers and supporting documentation showing the development of the weighted Class MDD and Customer NCP factors in the COSS, including workpapers and supporting documentation for all diversity and loss factors used, and (3) a list of all system locations where demand is measured by demand meters, i.e., customer, substation, etc., indicating the distribution level at which the meters measure demand, i.e., customer, line transformer, secondary, primary, sub-transmission and transmission. Calculation workpapers should be provided in electronic spreadsheet format with all formulae and macros intact.

RESPONSE:

1. The Class Maximum Diversified Demand (Class MDD) is the maximum hourly demand found for the customer class over the analysis period where the simultaneous demands of the class of customers is taken as a whole.

   The Customer Non-coincident Peak (NCP) is the sum of the individual maximum demands of the customers within a class on a customer-by-customer basis over the analysis period.

   Please see Schedule (EPT-1), page 18, lines 1-7 for the development of the weighted Class MDD and Customer NCP demand factors. Please also see the example below that shows the calculation of the DEMSEC allocation factor for the Residential class:

   Residential DEMSEC calculation:

   50% [Specific Class MDD/(Sum of applicable Customer Classes' MDD)] +
   50% [Specific Customer NCP/(Sum of applicable Classes' Customer NCP)]
   Residential DEMSEC = 50% [755,061 / 1,460,013] +
   50% [1,818,377 / 3,472,404]
   = 0.52041

2. Please see the response to part (1) above.
3. The information is not available in the form requested and would require significant original work to create.

Respondent: Elliott P. Tanos

PSC DOCKET NO. 13-115
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Question No.: PSC-COS-30

Please refer to page 9, line 21 to page 10, line 4 of the Testimony of Elliott P. Tanos. Please (1) define Delmarva's Class MDD and Customer NCP allocators using an example calculation and explain with an example how Delmarva qualitatively and quantitatively defines "diversity," (2) provide a system map showing the location of all Delmarva's planning load centers, (2) a list of all Delmarva's planning load centers, with time of load center peak demand and class demands at load center peak, (3) an explanation and description of how Delmarva's MDD and NCP allocators accounts for the differing class demands at load center peak demand, and (4) workpapers showing the development of time of peak, peak demand, class demands at peak and NCP allocator(s). Calculation workpapers should be provided in electronic spreadsheet format with all equations and macros intact.

RESPONSE:

1. Please see the response to Data Request PSC COS-29. Diversity is a characteristic of a variety of electric loads whereby individual customer maximum demands usually occur at different times. The Company installs equipment based on the maximum demand of the customer and the diversity of customers that can be used to efficiently make investment in the required facilities. The diversified (Class MDD) and non-diversified (Customer NCP) demand factors that are used in the cost of service study consider this when assigning investment.
   For example, distribution line transformer-related costs are allocated using the average of the Class MDD and Customer NCP demand measures to recognize that transformers may serve multiple customers so that the diversity of load will impact the sizing of the transformer; while other transformers serve a single customer so no load diversity is considered in sizing the transformer. Also, the cost of service study recognizes this latter point by allocating transformers to the large secondary customers based on the sum of the customer maximum demands only. The magnitudes of these demands by customer class are clearly shown on page 18-2 of Schedule EPT-1.
2. The maps are voluminous and include descriptions and drawings of critical electric infrastructure. These documents are available for review at the Company's offices. Arrangements to view these data can be made by contacting Todd Goodman at 302-429-3786.
   With regard to "planning load centers" refer to responses in PSC-COS-5, PSC-G-6, PSC-G-7, and AG-GEN-6.
3. The Company designs, constructs, and operates distribution facilities to be able to meet localized area loads. As explained in the NARUC Electric Utility Cost Allocation Manual, on page 97:

   > Local area loads are the major factors in sizing distribution equipment. Consequently, customer-class non-coincident demands (NCPs) and individual customer maximum demands are the load characteristics that are normally used to allocate the demand component of distribution facilities.

   The Class MDD (class non-coincident demand measure) and Customer NCP (sum of individual customer maximum demands) are used in the COSS to reflect this consideration.

4. Please see the attachments to the responses to PSC-COS-34 and PSC-COS-28.

Respondent: Elliott P. Tanos/Michael W. Maxwell

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
INITIAL SET OF COST OF SERVICE DATA REQUESTS
TO DELMARVA POWER & LIGHT COMPANY

Question No.: PSC-COS-31

Please refer to pages 24-1 to 24-2 of Schedule EPT-1 of the Testimony of Elliott P. Tanos. Please provide all workpapers and supporting documentation showing the development of the capacity-distribution related allocators listed on the referenced pages of Schedule EPT-1. Calculation workpapers should be provided in electronic spreadsheet format with all formulae and macros intact.

RESPONSE:

Refer to the response to PSC-COS-18, Attachment 1 containing the electronic version of the cost of service study, the tab entitled "Cost of Service", lines 73 through 79. See also PSC-COS-18, Attachment 2 and the attachment to PSC-COS-28.

Respondent: Elliott P. Tanos

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
INITIAL SET OF COST OF SERVICE DATA REQUESTS
TO DELMARVA POWER & LIGHT COMPANY

Question No. : PSC-COS-32

Please refer to pages 2-1 and 2-2, lines 10-22 of Schedule EPT-1 of the Testimony of Elliott P. Tanos. For each customer class (columns 7-15), please provide (1) the number of customers and CP and NCP demands of each class' customers served by each of the facilities in the primary, and secondary voltage level subaccounts for accounts 364, 365, 366, and 367 and (2) workpapers and supporting documentation for the data provided in response to (1). Calculation workpapers should be provided in electronic spreadsheet format with all equations and macros intact.

RESPONSE:

Please see the response to PSC-COS-34. Also see Schedule (EPT)-1, page 18, lines 1-7 for the applicable non- coincident peak demand measures applied to allocate the costs of the primary and secondary facilities. The NCP demands are determined based on service points that are maintained in the settlement database.

Respondent: Elliott P. Tanos

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
INITIAL SET OF COST OF SERVICE DATA REQUESTS
TO DELMARVA POWER & LIGHT COMPANY

Question No. : PSC-COS-33

Please refer to pages 2-1 and 2-2, line 23 of Schedule EPT-1 of the Testimony of Elliott P. Tanos. For each customer class (columns 7-15), please provide (1) the number of customers and CP and NCP demands of each class' customers served by underground line transformers and overhead line transformers in account 368 and (2) workpapers and supporting documentation for the data provided in response to (1). Calculation workpapers should be provided in electronic spreadsheet format with all equations and macros intact.

RESPONSE:

Please see the response to PSC-COS-34, and the response to PSC-COS-30 that describes the allocation approach that is used to assign distribution line transformer-related costs.

Respondent: Elliott P. Tanos

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
INITIAL SET OF COST OF SERVICE DATA REQUESTS
TO DELMARVA POWER & LIGHT COMPANY

Question No. : PSC-COS-34

Please refer to pages 24-1 to 24-2 of Schedule EPT-1 of the Testimony of Elliott P. Tanos. Please provide for the years 2002-2012 (1) system coincident peak KW demands by class at the transmission, sub-transmission, distribution primary, distribution secondary and distribution line transformer levels, (2) non-coincident peak or maximum KW demands by class at the transmission, sub-transmission, distribution primary, distribution secondary and distribution line transformer levels, (3) all workpapers and supporting documentation showing the development of the class KW demands requested in (1) and (2) above, including workpapers and supporting documentation for all diversity and loss factors used, and (4) a list of all system locations where demand is measured by demand meters, i.e., customer, substation, etc.), indicating the distribution level at which the meters measure demand, i.e., customer, line transformer, secondary, primary, sub-transmission and transmission. Calculation workpapers should be provided in electronic spreadsheet format with all formulae and macros intact.

RESPONSE:

(1) System peak coincident demands by cost of service class were compiled at the meter level for 2007, 2008, and 2010. For 2011, the system peak coincident demand by class was compiled at the meter level and computed at the transmission or PJM Delmarva Zone level. Please see attachment for the available values.

(2) Maximum demands by class have been compiled at the meter level and at the Delmarva Zone level for 2007, 2008, 2010, and 2011. Please see attachment.

(3) Supporting information for parts (1) and (2) of this request are voluminous and much of it is embedded in large data bases in the Load Settlement System or on the Company's mainframe. Existing system information and documents may be viewed or system demonstrations may be given at the Company's offices. Please contact Pam Scott at 302-429-3143 to make arrangements.

(4) The information is not available in the form requested, and would require significant original work to create.

Respondent: Elliott P. Tanos

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
INITIAL SET OF COST OF SERVICE DATA REQUESTS
TO DELMARVA POWER & LIGHT COMPANY

Question No. : PSC-COS-18

Please refer to page 3, lines 16-18 and Schedule EPT-1 of the Testimony of Elliott P. Tanos. Please provide (1) Schedule EPT-1 in electronic spreadsheet format with all formulae and macros intact and (2) all workpapers and supporting documentation underlying Schedule EPT-1. Calculation workpapers should be provided in electronic spreadsheet format with all formulae and macros intact.

RESPONSE:

In reference to the Schedule (EPT)-1, the Class Cost of Service study provided in the Direct Testimony of Company Witness Tanos: Delmarva Power & Light Company acquired the license to use the electric cost of service model software under a licensing agreement with Management Applications Consulting, Inc. (MAC). The cost of service model software remains the sole and exclusive property of MAC and contains confidential trade secrets. This software is for use in the analysis connected with Public Service Commission Docket No. 13-115 and is provided as Attachment 1 pursuant to the terms of the Confidentiality and Nondisclosure Agreement.

Please refer to Company Witness Tanos direct testimony on page 7, lines 18-19, for the source of the Total Delaware Distribution amounts shown in column 1 of the cost of service study.

Please also see the following attachments:

Attachments 2 and 3 provides details regarding the Class MDD and Customer NCP measures that support the development of the DEMPRI, DEMSEC, DEMTRANSF plant allocators detailed on Schedule (EPT)-1, page 18, lines 1-3. See also the attachment to PSC-COS 28.

Attachment 4 3 provides the Analysis of System Losses.

Attachment 5 4 provides details regarding the separation of primary and secondary facilities. See also the response to AG-COS-7.

Attachment 6 5 supports the direct assignment of plant assets to the Rate GSP and GST customer classes, and the associated DAGSP and DAGST direct assignment allocators shown on Schedule (EPT)-1, page 18, lines 9 and 10.

Attachment 7 6 provides the support for the Account 369- Service Line allocator. Please note that a revision has been made to this assignment as described in the attachment.

Attachment 8 7 supports the assignment of Account 370 meter costs to the respective customer classes.

Attachment 9 8 provides Distribution sales and revenues by customer class. See also the response to PSC-COS-23.

Attachment 10 9 provides support for the allocation of Account 902- Meter Reading Expenses.

Attachment 10 supports the allocation of, and Account 903 - Customer Records and Collections Expenses, respectively.

Attachment 11 provides Miscellaneous allocators used in the cost of service study.

**CONFIDENTIAL**

**This information will be provided pursuant to the Commission's Rule 11 to parties who have executed the appropriate confidentiality agreement.**

Respondent: Elliott P. Tanos

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
INITIAL SET OF COST OF SERVICE DATA REQUESTS
TO DELMARVA POWER & LIGHT COMPANY

Question No. : PSC-COS-22

Please refer to page 3, lines 8-11 of the Testimony of Elliott P. Tanos. Please (1) list all of the referenced initiatives that the Company has undertaken and reflected in the cost of service study and all initiatives undertaken but not reflected in the cost of service study and (2) for each initiative undertaken (both reflected and not reflected) explain in detail the Company's efforts.

RESPONSE:

Please see the attached agenda for the Cost of Service Workshop held on August 24, 2011, together with the description below summarizing the initiatives undertaken by the Company.

1. Load data for Delaware Residential Customers: Delaware specific load survey data has been used to estimate the Residential Class Non Coincident Demand measures used in the COSS in this proceeding.

2. Weather Normalized Sales and Revenues: The Company has developed weather normalized sales and revenues for each customer class that have been used in the COSS.

3. Analysis of System Losses: An updated analysis of system losses for Delmarva was conducted and the calculated loss factors have been used in the development of the demand measures applied in the COSS.

4. Service Line Analysis: The Company has estimated the applicable service line costs for the respective customer classes, which have been used to allocate the embedded costs contained in Account 369 – Service Lines.

5. Traffic Signal Service: As requested in the workshop, the Company has separated the Traffic Signal Service from the general Street Lighting Service in the COSS.

6. Geospatial Information System (GIS) use in COSS: The Company continued to use the GIS in the process of separating the distribution primary and secondary systems for COSS purposes.

7. Costs of Pull-offs for GST and GSP Customers: The Company's review found that most GST customers paid for the pull-off costs to Delmarva's connection point. The Company identified only two GST customers with approximately $70,000 of gross plant associated with pull-offs, and these lines were 69kV (transmission level). Regarding GSP customers: the costs for any overhead pull-offs would typically be small and it is considered impracticable to attempt this cost classification with respect to installed plant, the year of installation, and the corresponding reserve attributable to any such facilities.

8. Other Operating Revenue Allocations: the COSS reflects the Company's allocation of each component of other operating revenues, as shown on Schedule (EPT)-1, page 7.

9. Post Case Filing COSS updates: the Company has agreed to provide post case filing COSS updates for any material corrections.

10. COSS model availability and instructions: the Company has extended the invitation and remains available to provide instructions on the use of the cost of service model.

Respondent: Elliott P. Tanos

PSC DOCKET NO. 13-115
DELAWARE PUBLIC SERVICE COMMISSION STAFF
INITIAL SET OF COST OF SERVICE DATA REQUESTS
TO DELMARVA POWER & LIGHT COMPANY

Question No. : PSC-COS-26

Please refer to page 9, lines 11-15 of the Testimony of Elliott P. Tanos. Please provide the referenced GIS analysis and all workpapers to and documentation supporting the GIS analyses. Calculation workpapers should be provided in electronic spreadsheet format with all formulae and macros intact.

RESPONSE:

Please see the response to PSC-COS-18, Attachment 4 that provides support for the separation of the primary and secondary systems, and the response to data request AG-COS-7 for additional details.

Respondent: Elliott P. Tanos