MINNESOTA
PUBLIC UTILITIES COMMISSION

Staff Briefing Papers
Volume II, Sales Forecasting & CCOSS Issues

Meeting Date	November 5, 2018	Agenda Item **1
	November 8, 2018	
Company	Minnesota Energy Resources Corporation (MERC)	
Docket No.	**G-011/GR-17-563**	
	In the Matter of the Application of Minnesota Energy Resources Corporation for Authority to Increase Rates for Natural Gas Service in Minnesota	

Issues

I. Sales Forecast

1. Should the Commission adopt the ALJ's recommendation to approve MERC's sales forecast that excludes the adjustment for MERC's February 2018 customer count?
2. What reporting requirements should MERC comply with in the next rate case?

II. CCOSS

1. Should the Commission adopt the ALJ's recommendation to approve MERC's Zero-Intercept CCOSS model incorporating the two modifications suggested by the Department?
2. Should the Commission adopt the ALJ's recommendation to require MERC to file only one CCOSS in its next rate case?

Ganesh Krishnan ganesh.krishnan@state.mn.us 651-201-2215

✓ **Relevant Documents**	**Date**
Sales Forecast	
A. MERC	
1. Matthew Czervionke Direct Testimony	October 13, 2017
2. Matthew Czervionke Rebuttal testimony	June 1, 2018
3. Seth S. DeMerritt Direct Testimony	October 13, 2017
4. Seth S. DeMerritt Rebuttal Testimony	June 1, 2018
5. Amber Lee Direct Testimony	October 13, 2017
6. Amber Lee Rebuttal Testimony	June 1, 2018
7. MERC Issues Matrix	August 7, 2018
8. MERC Initial Brief	August 7, 2018
9. MERC Proposed Findings	August 7, 2018
10. MERC Reply Brief	August 21, 2018
B. Department of Commerce	
1. Shah Direct Testimony	May 4, 2018
2. Shah Rebuttal Testimony	June 22, 2018
3. Department Initial Brief	August 7, 2018
4. Department Issues Matrix	August 7, 2018
5. Department Proposed Findings	August 21, 2018
6. Department Reply Brief	August 21, 2018
C. ALJ's Report	September 21, 2018
D. Exceptions	
1. MERC Exceptions	October 8, 2018
Class Cost of Service Studies	
A. MERC	
1. Initial Filing--Volume 3 - Informational Requirement Document 12	October 13, 2017
2. Initial Filing--Volume 4 - Nelson Workpapers	October 13, 2017

✓ **Relevant Documents**	**Date**
3. Aaron L. Nelson Direct Testimony	October 13, 2017
4. Aaron L. Nelson Rebuttal Testimony	June 1, 2018
5. Aaron L. Nelson Surrebuttal Testimony	June 22, 2018
6. MERC Issues Matrix	August 7, 2018
7. MERC Initial Brief	August 7, 2018
8. MERC Proposed Findings	August 7, 2018
9. MERC Reply Brief	August 21, 2018
B. Department of Commerce	
1. Dr. Samir Ouanes Direct Testimony	May 4, 2018
2. Dr. Samir Ouanes Rebuttal Testimony	June 1, 2018
3. Dr. Samir Ouanes Surrebuttal Testimony	June 22, 2018
4. Michael N. Zajicek Direct Testimony	May 4, 2018
5. Department Initial Brief	August 7, 2018
6. Department Proposed Findings	August 21, 2018
C. OAG	
1. Tim Meernik Direct Testimony	May 4, 2018
2. Tim Meernik Surrebuttal Testimony	June 22, 2018
3. OAG Initial Brief	August 7, 2018
4. OAG Reply Brief	August 21, 2018
5. OAG Proposed Findings	August 21, 2018
D. ALJ's Report	September 21, 2018
E. Exceptions	
1. OAG Exceptions	October 8, 2018

Table of Contents

I. Sales Forecast

1. Should the Commission adopt the ALJ's recommendation to approve MERC's sales forecast that excludes the adjustment for MERC's February 2018 customer count?

Introduction

Establishing MERC's test-year sales volumes is an important part of setting rates because test-year sales are used to calculate MERC's overall test-year revenue deficiency and in designing rates.

The Issue in a Nutshell

As is customary in any rate case, the applicant (i.e., MERC) provided the test-year sales forecast. MERC's estimated test-year weather-normalized sales were 753,081,025 therms.

The Department claims that MERC's proposed sales forecast is unreasonable[1] but, in the end, agreed that it can be used "solely for the purpose of setting rates."[2]

As has been the recent experience, the Department opposed MERC's forecast because, according to the Department, MERC did not demonstrate the reasonableness of its forecasting models.

The Department offered an alternative test-year forecast of 792,933,091 therms – an increase in test-year sales of approximately 39,852,066 therms (or 5-percent) from MERC's originally-filed estimate. This higher estimated-test-year sales-figure decreased MERC's test-year revenue requirement by $1,146,899.[3]

MERC opposed the Department's analysis as unreasonable because of its reliance entirely on historical (time-series) data. MERC also indicated that the Department's analysis was based on data that MERC supplied in response to the Department's interrogatories, and that there were errors in the underlying data.

The effect of these errors was that, in the Department's analysis, sales to Super Large Volume Joint and FLEX customers were under-stated, while sales to Large Volume Interruptible, Joint,

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[1] Staff Note: It is perhaps more apt to say that the Department views MERC's regression models as unreasonable and forecasts derived from them are, consequentially, unreasonable. Shah Surrebuttal Testimony, p. 39.
[2] Department initial Brief, p. 34.
[3] Shah Direct Testimony, p. 46.

and Transportation Sale for Resale categories were over-stated.[4] Correcting for this error, MERC maintained, would reduce MERC's test-year revenue by $1,791,438.[5]

MERC also identified its concerns with the Department's proposal of 50/50 split of customer counts and sales between the Small and Large Commercial & Industrial customer classes.[6] Correcting for this customer allocation, MERC contended, would decrease MERC's test-year revenue by an additional $3,806,035.[7]

Significantly, MERC continued to support its initial sales forecast and specifically noted that it does not agree with the Department's "position, either as proposed or with these identified adjustments." However, the Department's critique of MERC's allocation of customers between Small and Large Commercial and Industrial rate classes in the General Service forced the Company to acknowledge its initial misallocation of customers between these two rate classes.[8] The material upshot of this analysis is that customers and sales were rearranged between the two rate classes (small and large General Service C&I customers), but the total sales remained the same. The following tables provides the initial and corrected sales figures for the Commercial & Industrial (C&I) General Service Rate Class:[9]

Table 200		
Rate Class	Test-Year 2018 (Therms)*	Corrected Test-Year 2018 (Therms)**
C&I General Service Rate		
Small General Service	9,089,669	8,374,639
Large General Service	92,408,923	93,123,953
Total C&I General Service	101,498,592	101,498,592

[4] DeMerritt Rebuttal Testimony, p. 22.
[5] DeMerritt Rebuttal Testimony, p. 24.
[6] DeMerritt Rebuttal Testimony, p. 19. This issue is not related to the sales forecast regression models or methodology. It has to do with the allocation of revenues between customers within the Small and Large C&I classes arising from mapping sales forecasts of the existing customer classes to the new customer classes proposed in this docket.
[7] DeMerritt Rebuttal Testimony, p. 24.
[8] DeMerritt Rebuttal Testimony, p. 19.
[9] The related customer-count reclassification is presented below:

Rate Class	Customer Count	
	Initial	Corrected
Small General Service	9,097	9,853
Large General Service	13,033	12,276

By continuing to support its originally filed sales forecast, and updating for the General Service Small and Large C&I allocations, MERC has reduced the revenue calculation on current rates by $220,902, as compared to MERC's initial filing.[10]

The Department agreed that changes to its alternative forecast when revised to reflect MERC's correction to sales data would increase MERC's test-year revenue deficiency.[11] The Department added that its alternative forecast "would result in harm to ratepayers by increasing the revenue deficiency." That is, the Department's alternative forecast "would result in a sales forecast that would produce rates higher than what MERC's proposed sales forecast would produce."[12]

However, the Department does not support the reclassification of sales between small general service and large general service rate classes.[13]

The Department concluded that MERC's initial sales forecasts are reasonable for the limited purpose of setting rates in this rate case.

MERC's Test-Year Sales Forecast

MERC's 2018 test-year sales forecasts are derived from regression models estimated with monthly data from January 2007 through December 2016.[14] The normal weather variable, Heating Degree Day ("HDD"), with a base of 65°F, was based on a rolling 20 year average (years 1997-2016) for MERC's three PGA areas.

MERC divided its customers first into three Purchased Gas Adjustment (PGA) systems:

(1) MERC Northern Natural Gas Pipeline (MERC-NNG);
(2) MERC-Consolidated consisting of MERC Centra, Viking Gas and Great Lakes Gas Pipelines; and
(3) MERC - Albert Lea (MERC-AL).

Up to now, MERC had classified its customers broadly between firm and interruptible classes. In the firm class, there are Residential, General Service Small Commercial and Industrial (C&I) and General Service Large C&I customers. In the interruptible classes, there are Small Volume Interruptible, Large Volume Interruptible, and Super Large Volume Interruptible customers.[15]

MERC is proposing in this case, to replace these classes with Firm classes 1 through 5, and Interruptible Classes 1 through 5 customers. With regard to transportation service, MERC is proposing to consolidate its Interruptible and Joint transportation customer classes into

[10] DeMerritt Rebuttal Testimony, p. 25.
[11] Shah Surrebuttal Testimony, p. 41.
[12] Department Initial Brief, p. 46.
[13] Department Initial Brief, p. 51.
[14] DeMerritt Direct Testimony, p. 21.
[15] Lee Direct Testimony, p. 21.

Firm/Interruptible Classes 1 through 5. MERC is also proposing to create six Farm Tap customer classes (all firm sales), three Agricultural Grain Dryer customer classes (sales or transport), and two Power Generating Unit customer classes (sales or transport).

MERC first developed sales forecasts for the existing customer classes – Czervionke Direct Testimony, Exhibit ___MRC-1, Schedule E-1 – utilizing regression models. The regression models included economic and demographic variables, HDD, binary variables, and time trend variables. The forecasting models also incorporated various seasonal and autoregressive components where necessary to correct for seasonality and serial correlation in the data patterns.

MERC then mapped these sales forecasts onto the new customer classes proposed in this docket.[16] MERC's test-year sales forecast is an aggregate of several models for forecasting; summing these total sales for all customer classes yields MERC's total sales (presented below):[17]

Table 201		
MERC Forecast (Existing Customer Classes)		
Rate Class	Test-Year 2018 (Therms)*	Corrected Test-Year 2018 (Therms)**
Residential	183,783,848	
C&I General Service Rate		
Small General Service	9,089,669	8,374,639
Large General Service	92,408,923	93,123,953
Total C&I General Service	101,498,592	101,498,592
Interruptible & Joint		
Interruptible	36,544,892	
Joint	404,285	
Total Interruptible & Joint	36,949,177	
Transportation	430,849,408	
Total MERC-Minnesota	753,081,025	753,081,025

*Source: DeMerritt Rebuttal testimony, Exhibit___(SSD-R9), Attachment 1, Page 1 of 13.
**Source: DeMerritt Rebuttal Testimony, p. 20.

[16] DeMerritt Direct Testimony, p. 93.
[17] Sales forecast corresponding to existing customer classes can be found at DeMerritt Rebuttal Testimony, Exhibit_____SSD-R9, Attachment 1, page 5 of 13; Czervionke Direct Testimony, Exhibit _____ (MRC-1), Schedule E-1, page 5 of 5.

Table 203		
MERC Forecast (Proposed Customer Classes)		
Rate Class	Test Year 2018 Sales (therms)*	Test Year 2018 Corrected Sales (therms)**
Residential	181,526,150	181,526,150
Residential Farm Tap	2,257,698	2,257,698
Class 1	8,807,698	8,092,667
Class 1 Farm Tap	275,134	275,134
Class 1 Ag	234,889	234,889
Class 2 - Firm	85,386,635	86,097,472
Class 2 Farm Tap	3,043,620	3,043,620
Class 2 Ag	2,024,493	2,024,493
Class 2 – Int	16,204,200	16,204,200
Class 3 – Firm	3,963,107	3,967,301
Class 3 Ag	1,604,084	1,604,084
Class 3 - Interr	72,383,283	72,383,283
Class 4 – Interr	24,708,678	24,708,678
Class 5 - Interr	291,114,105	291,114,105
Power Generating 1	165,757	165,757
Power Generating 2	40,225,718	40,225,718
FLEX & Transport for Resale	19,155,776	19,155,776
Total	753,081,025	753,081,025

*Sources: DeMerritt, Direct Testimony and Schedules, Exhibit __ (SSD-38), p. 2.
Czervionke, Direct Testimony, Exhibit __ (MRC-1), Schedule E-1, pp. 1-5.
**Source: Amber Lee, Rebuttal Testimony, Exhibit____(ASL-R1), Schedule 2, pp. 1, 3, and 5.

Staff Note: The corrections to the sales forecast do not relate to regression models or methodology. They have to do with the allocation of sales between customers within the Small and Large C&I General Service classes arising from mapping sales forecasts of the existing customer classes to the new customer classes proposed in this docket.

Department of Commerce's Response to MERC's Test-Year Sales Forecast

The Department listed the following concerns with MERC's proposed sales forecast:

1) some of MERC's forecasting models had a negative constant and/or a wrong sign on the independent variable (this snag makes the models "illogical");

2) given that MERC used actual historical billing month data from January 2007 to December 2016 in its models, and despite the issue being raised in MERC's last rate case, the Department noticed that MERC used normalized weather for the historical period in some models, as opposed to using the actual weighted HDDs;

3) in one case in the forecast data files, MERC used the predicted residential customer counts as an independent variable in the Small C&I customer count model;

4) there were misallocations or "ad hoc adjustments" of customer classifications between the SC&I class (a decoupled class) and the Large C&I class (a non-decoupled class); and

5) there were issues in the transportation sales models.

The Department developed an alternative forecast for the Commission's consideration. However, the Department could not recommend its alternative sales forecast for use in this rate case "because it would result in a sales forecast that would produce rates higher than what MERC's proposed sales forecast would produce and would therefore harm ratepayers."[18] The Department attributed this to "an error in the data MERC provided to the Department regarding the Transportation class."

As noted before, the effect of these errors is that, in the Department's analysis, sales to Super Large Volume Joint and FLEX customers were under-stated, while sales to Large Volume Interruptible, Joint, and Transportation Sale for Resale categories were over-stated. Correcting for this error, MERC maintained, would reduce MERC's test-year revenue by $1,791,438. MERC also identified its concerns with the Department's proposal of 50/50 split of customer counts and sales between the Small and Large Commercial & Industrial classes. Correcting for this customer allocation, MERC contended, would decrease MERC's test-year revenue by an additional $3,806,035. The Department did not contest these effects.

The Department recommended that the Commission authorize MERC's initial forecasted sales estimates for rate design purposes.

MERC's Response to the Department's Alternative Forecast

MERC indicated[19] that in February 2018, MERC re-evaluated the customer classes for which customers were classified. This evaluation led to many customers being re-classified into the

[18] Department Initial Brief, p. 46.
[19] MERC Initial Brief, p. 43.

correct General Service Small and Large C&I classes based on their 2017 usage. Accordingly, MERC proposed to use the Small versus Large General Service C&I actual customer split for each of the PGA systems as of March 2018, thereby accounting for the most recent and accurate customer classification data possible. This approach responds to the concerns raised by the Department regarding MERC's assignment of customers to the Small and Large C&I classes and allocates the General Service C&I sales forecast across the most recent customer count allocation data available, as well as using a more reasonable approach for use per customer data for the General Service Small C&I customers. As a result, MERC claimed, this represents a reasonable sales and customer count allocation for purposes of setting rates in this proceeding. MERC stated that using this approach results in a reduction of the revenue calculation on current rates of $220,902 and requires an increase to the overall revenue deficiency of that amount.

MERC emphasized that the disagreements between it and the Department regarding forecasting methodology were immaterial in this proceeding because, as of Surrebuttal Testimony, both parties were in agreement that the Company's customer count and sales forecast should be used for purposes of setting rates.[20]

ALJ's Report (Findings Nos. 227-233 and 321-328)

The ALJ's Findings regarding sales and revenue forecast are contained on pages 37-38 (paras 227-233) and also on pages 53-54 (paras 321-328) of the ALJ's report and they are not reproduced here.

The ALJ acknowledged (¶ 229, P. 38) the disagreement between MERC and the Department regrading changes within the General Service Small and Large C&I customer classes and noted that MERC's updated General Service Small and Large C&I allocations resulted in reducing the calculation of revenue from current rates by $220,902.

The ALJ also acknowledged that the Department's position that MERC's originally filed sales forecast is reasonable for the purpose of setting rates and that the Department opposes MERC's proposed adjustments to the customer and sales allocations which reduce the revenue from current rates by an additional $220,902.

The ALJ agreed that (¶232, P. 38)

> . . . MERC's regression-based sales forecasts are reasonable for purposes of setting rates in this proceeding.

The ALJ concluded:

> MERC's customer counts and sales forecasts, while in need of improvement, are appropriate for use in setting just and reasonable rates (p. 2).

[20] MERC Reply Brief, p. 19.

The ALJ also found (¶328, P. 54):

> . . . that the results of MERC's initially-filed sales forecasts are reasonable for the limited purpose of setting rates in this proceeding, given that those results resolve any doubt as to the reasonableness of sales forecasts in the record in favor of ratepayers. [emphasis supplied]

MERC Exceptions to the ALJ's Report

MERC indicated[21] that the ALJ's Report "appropriately concluded that MERC's forecasts are reasonable for the purpose of setting rates in this proceeding." However, MERC took "exception to the ALJ's decision not to incorporate the Company's proposal to reflect the updated revenue allocation between the Large C&I and Small C&I customer classes" (column 3 in tables 201 and 202 above).

Staff Comment

Staff supports the ALJ's Finding. Staff recommends that the Commission adopt MERC's original sales forecast and reject what MERC has called the reduction in current revenue of $220,902 "a small adjustment to reflect customer reclassifications between the Small and Large C&I classes."[22]

Staff does not support MERC's adjustment because MERC's updated proposal for allocating sales and customers between small and large commercial and industrial classes was not a result of independent discovery of error or miscalculation. MERC felt no need to review MERC's initially-filed sales forecast except for the questions raised by the Department's testimony. It was the outcome of responding to the Department's review; it was a chance-discovery which was advantageous to the Company; the probability of an outcome adverse to MERC being included in the sales forecast was not the same as the probability of an advantageous outcome.

Staff agrees with the ALJ that MERC's regression analysis is reasonable for the purposes of this case, although, along with the ALJ, Staff also suggests that MERC cooperate with the Department in ironing out any modeling issues (issue I. 2 below) in future rate cases.

[21] MERC Exceptions, p. 14.
[22] MERC Reply Brief, p. 22.

Decision Options

Issue: I. 1. Should the Commission adopt the ALJ's recommendation to approve MERC's sales forecast that excludes the adjustment for MERC's February 2018 customer count?

Column 1 Rate Class	Column 2 MERC's Initial Filing (ALJ's Finding)	Column 3 MERC's Updated Sales Forecast Reflecting Customer Re-Classifications (MERC's position)
Rate Class	Test Year 2018 Initial Sales (therms)	Test Year 2018 Corrected Sales (therms)
Residential	181,526,150	181,526,150
Residential Farm Tap	2,257,698	2,257,698
Class 1	**8,807,698**	**8,092,667**
Class 1 Farm Tap	275,134	275,134
Class 1 Ag	234,889	234,889
Class 2 - Firm	**85,386,635**	**86,097,472**
Class 2 Farm Tap	3,043,620	3,043,620
Class 2 Ag	2,024,493	2,024,493
Class 2 – Int	16,204,200	16,204,200
Class 3 – Firm	**3,963,107**	**3,967,301**
Class 3 Ag	1,604,084	1,604,084
Class 3 - Interr	72,383,283	72,383,283
Class 4 – Interr	24,708,678	24,708,678
Class 5 - Interr	291,114,105	291,114,105
Power Generating 1	165,757	165,757
Power Generating 2	40,225,718	40,225,718
FLEX & Transport for Resale	19,155,776	19,155,776
Total	753,081,025	753,081,025

201. Adopt the ALJ's Finding (Column 2 in the above table). (ALJ and Department)

202. Adopt MERC's position (Column 3 in the above table). (MERC)

I. Sales Forecast

2. What reporting requirements should MERC comply with in the next rate case?

Staff Note: The issue of reporting requirements is not controversial. The Commission may approve the ALJ's recommendation. No exceptions to the ALJ's report were filed.

Department of Commerce Recommendation

The Department of Commerce recommended that the Commission continue to apply the following requirements (to MERC's future rate cases) from MERC's previous rate case:[23]

In the initial filing in future rate cases, the Company shall include the following:

a. a summary spreadsheet that links together the Company's test-year sales and revenue estimates, its CCOSS, and its rate-design schedules;

b. a spreadsheet that fully links together all raw data, to the most detailed information available and in a format that enables the full replication of MERC's process, that the Company uses to calculate the input data it uses in its test-year sales analysis;

c. a bridging schedule that fully links together old and new billing systems, and demonstrates that there is no difference between the two billing systems, in the event the Company updates, modifies, or changes its billing system;

d. any, and all, data used for its sales forecast 30 days in advance of its next general rate case; and

e. detailed information sufficient to allow for replication of any and all Company-derived forecast variables.

The Department indicated that MERC has agreed to accept the above-mentioned requirements.

In addition, the Department recommended that

f) at least six months in advance of filing its next rate case (or any proceeding requiring a sales or revenue forecast), MERC and the Department work on the following issues:[24]

(1) verifying that MERC's forecasting models have appropriate signs on the independent variables chosen by the Company;

(2) use of actual weighted heating degree days (HDD);

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[23] Findings of Fact, Conclusions, and Order, G-011/GR-13-617, October 28, 2014, pp. 62-63 (ordering para 42).

[24] ALJ's Report, para. 231, p. 38; Department's Initial Brief, p. 52.

(3) not using predicted residential customer counts as an independent variable in the Small C&I customer count model;

(4) avoiding any misallocation or "ad hoc adjustments" of customer classifications between the Small C&I class (a decoupled class) and the Large C&I class (a non-decoupled class); (5) accurate forecasting from the transportation models;

(5) addressing gaps in historical data for the Small C&I and Large C&I customer classes; and

(6) resolving data integrity issues identified in this rate case.

The Department also recommended that removal of reporting requirements related to the third-party audit[25] initiated in MPUC Docket No. G-007,011/GR-10-977 would be appropriate but that MERC should be required to continue to provide a bridging schedule that links together old and new billing systems to demonstrate there is no difference between the two systems, as recommended in "c" above.

ALJ's Recommendations (Findings Nos. 502 & 233)

The ALJ recommended (¶ 502, p. 82):

Beginning at least six months before MERC files its next rate case, MERC and the Department should work on the following forecasting-related issues:

(1) whether MERC's forecasting models have appropriate signs on the independent variables chosen by MERC;

(2) use of actual weighted Heating Degree Days;

(3) avoiding use of predicted residential customer counts as an independent variable in the Small C&I customer count model;

(4) reducing misallocation or "ad hoc adjustments" of customer classifications between the Small C&I class (a decoupled class) and the Large C&I class (a non-decoupled class);

(5) implementing improvements to transportation models; and,

(6) resolving data integrity issues, including those related to the Small C&I and Large C&I customer classes and the unavailability of historical data.

The ALJ also recommended (¶233, p. 38) that removal of reporting requirements related to the audit initiated in Docket No. GR-10-977 is appropriate but MERC should continue to provide a bridging schedule that links the old and new billing systems to demonstrate that there is no difference between the two.

[25] See the Department's Proposed Findings, ¶ 155; and DeMerritt (MERC), Direct Testimony, p. 25.

Decision Options

Issue: I. 2. What reporting requirements should MERC comply with in the next rate case?

203. Adopt the ALJ's recommendations, (¶ 502, p. 82 and ¶233, p. 38).

204. Other action by the Commission.

II. Class Cost of Service Studies (CCOSSs)

1. Should the Commission adopt the ALJ's recommendation to approve MERC's Zero-Intercept CCOSS model incorporating the two modifications suggested by the Department?

Staff Note: CCOSS studies (or, simply cost studies) are elaborate, involved, and expensive to prepare. As such, utilities prepare these studies to comply with filing requirements and do not typically modify or refine the cost studies in light of changes in revenue requirement as the rate case evolves. "At the evidentiary hearing, Mr. Meernik, an economist with the OAG, estimated that development of an additional CCOSS would take a utility project specialist (like MERC's Aaron Nelson) two or three work weeks to complete."[26] In this docket, MERC initially indicated a total revenue deficiency of $12.6M.[27] MERC subsequently filed supplemental testimony to account for the 2017 Federal Tax Act, in which the increase in revenue requirement was limited to $7.3 million – a reduction of $5.3 million from the initial revenue requirement. There were further reductions in the revenue deficiency. A revised cost study reflecting this latest proposed revenue requirement was not prepared.

Objective of a Class Cost of Service Study

The Commission's rules pt. 7825.4300(C) require the filing of a CCOSS with each general rate case filing. The purpose of a CCOSS is to apportion the total cost of providing service to each broad customer class according to how the costs were caused. That is, the purpose of a CCOSS is to identify the cost responsibility of each broad customer class.

Nature of Utility Costs, CCOSS Models, and Scope for Controversy

Costs in natural gas distribution consist of direct costs and shared (or joint) costs.

Some cost components are direct in that they are easily identified with the function/activity that causes such costs. It is a relatively straightforward matter of determining which functions or customers are responsible for such costs and assigning the costs to those functions or customers. However, only a small portion of a utility's costs are direct costs.

However, it is in the nature of public utilities that a vast majority of cost components are shared between activities/functions, services, and customers. Shared costs are inherently difficult to separate and allocate to the appropriate activities.

Shared costs arise because facilities that enable the production of one good simultaneously enable the production of other goods. If the same production facility produces cellophane

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[26] ALJ's Finding ¶361, p. 60.

[27] Informational Requirement Document 12, line 47; Wolter Direct Testimony, p. 5.

tapes, post-it pads, post-it flags, and mouse trap sticky pads, costs between these products are shared but are difficult to separate. Analytical methods will have to be found to classify costs between the four products. If cellophane tapes are the flagship product, it will be tempting to attribute the bulk of the costs to this product and apportion only the incremental costs to the other three products.

Because of the shared nature of costs, distribution costs are estimated based on assumptions and models. Unlike direct costs, shared costs cannot be directly assigned. The task of a cost study is to find "allocators" that apportion these joint and common costs across service categories (residential, commercial, industrial, and so on) in a cost-causative manner.

The foundation of cost studies are subjective and different costs emerge as the assumptions and models are changed. The National Association of Regulatory Utility Commissioners (NARUC) prepared an Electric Utility Cost Allocation Manual in 1992 to act as a primer on this subject. This document was widely cited in this docket. This document notes that "a high degree of subjective judgment is required to categorize . . . elements . . . where an element performs multiple functions" (p. 72) and classification of costs can be controversial (pp. 95-96).

As the bulk of the utility costs are jointly incurred, cost classification and allocation methods are invariably controversial.

Filing Requirements Established in MERC's Previous Rate Case

The Commission's October 31, 2016 Order in Docket No. G-011/GR-15-736 (MERC's previous rate case) required MERC to file four CCOSSs – Zero Intercept, Minimum Size, Basic System, and Average and Excess studies. MERC's 812-page "Initial Filing--Volume 3 - Informational Requirement Document 12" complies with this requirement.

Cost Studies in General

The preparation of a CCOSS involves three steps: (1) functionalization; (2) classification; and (3) allocation.

Cost functionalization identifies and separates plant and expenses into functions such as (1) Production; (2) Storage; (3) Transmission; (4) Distribution; (5) Customer; and (6) Administrative and General.

Cost classification further assigns functionalized plant and expenses to categories based on whether they are related to (1) energy or commodity; (2) demand or capacity; or (3) customers. Commodity/energy costs are those that vary with the amount of energy supplied; demand costs are related to the facilities that are needed to meet peak customer demands; and customer costs are those that vary with the number of customers connected to the distribution system.

There are two commonly used studies – collectively called minimum-system studies – to determine the classification of customer- and demand-related portions of gas distribution mains. One of these two studies is called the minimum-size study. The other is called zero-intercept study.[28]

As the ALJ recognized,[29] a minimum-size study assumes that a distribution system can be built to serve the minimum load requirements of customers. The minimum system consists of the minimum amount of fixed investment required to connect customers to the system regardless of their gas usage or demand (i.e., the customer-related portion). Costs in excess of the minimum system are related to the demand imposed on the system by those customers (i.e., the demand-related portion).

In the minimum-size study, the entire network of pipes is hypothetically conceptualized such as to not carry any capacity. MERC has determined that its network consisting entirely of 2-inch diameter pipes would represent its minimum-size system.[30] The cost of a 2-inch minimum pipe is then representative of customer-related costs. Any cost in excess of this hypothetical cost can then be attributed to the demand. MERC calculated total current system costs of $458,902,038, of which $338,148,425 or 73.7 percent is determined to be the minimum system (customer-related) cost. The remaining $120,753,614 or 26.3 percent of the current system costs represents the demand- or capacity-related cost of the system.[31]

Because this minimum-size distribution equipment has some load-carrying capability, it is generally regarded that a minimum-size study slightly over-assigns customer-related costs. The ability to carry even a modest amount of capacity is viewed as a potential demand-related cost.

A zero-intercept study for gas distribution mains is based on a regression analysis that relates pipe size and cost for each pipe of equal diameter. In the zero-intercept study, the estimated intercept of the regression equation serves as the proxy for the unit cost (per foot) of a distribution system that has no carrying capacity to distribute gas. Once a zero-intercept is determined, that zero-intercept value is multiplied by all quantities of distribution mains currently installed by the utility to arrive at a total minimum system cost.

The total minimum system cost divided by total system cost derives the portion of the system that is considered to be fixed investment, and is classified as customer-related within a CCOSS. The remaining balance is considered costs in excess of the minimum system, and are classified

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[28] The customer-component of distribution system cost, in this method, is given by the value of the vertical intercept of the regression, corresponding to zero or no load. Hence, the name zero-intercept model.
[29] ALJ's Report, ¶339, p. 56.
[30] Nelson Direct Testimony, pp. 24-27.
[31] Nelson Direct Testimony, p. 28. MERC also classified distribution mains using the 0.75-inch as the minimum size.

as demand-related. Historically, MERC has relied on the zero-intercept study for supporting its revenue apportionment in rate cases.

As opposed to the minimum system cost methods, there are two additional cost methods offering a different perspective – the basic system method and the average-and-excess method.

In the basic system method, the distribution main investment and costs are classified as 100-percent demand-related. Under the basic system theory, only those facilities, such as meters, regulators and service taps, are considered to be customer related, as they vary directly with the number of customers on the system.

The Average & Excess method is an energy weighted method (i.e., average demand) for allocating capacity costs to customer classes. It recognizes both the "average use of capacity and responsibility for the capacity required to meet the maximum system load." Average use represents the used capacity of the system, or minimum capacity needed to deliver total gas used. Excess use represents the unused capacity of the system and is defined as the difference between average use and peak capacity. The average-and-excess method characterizes all distribution-system costs as capacity costs, but rejects the premise that these costs should be allocated solely on the basis of coincident peak demand. In this approach, some costs are allocated based on each class's average level of usage, reflected by each class's energy consumption or average demand.

The final step, the functionalized and classified costs are allocated to the various customer classes based on how each class causes costs to be incurred. Generally, customer costs are allocated on the basis of the number of customers in each class; demand or capacity costs are allocated on the basis of the demand imposed on the system by each class during specific peak hours; and energy/commodity costs are allocated among the customer classes based on the energy the system must supply to serve the various customer classes.

MERC's CCOSS Recommendation

MERC recommends that the Commission adopt its zero-intercept study. As noted before, the overall test-year revenue deficiency for MERC was estimated to be $12.6 million. MERC's initial filing – Informational Requirement Document 12, line 47, pages 1-4, provides the revenue deficiency[32] associated with each broad customer class.

[32] MERC has calculated revenue deficiency as net operating income less required return at 7.02% plus additional income tax on revenue deficiency. Net operating income is total operating income less total operating expenses. Required return is required rate of return time rate base.

Staff Note: The OAG's witness, Tim Meernik has reworked MERC's calculations and has provided the net cost of service[33] for each customer class (See, Meernik Direct Testimony, TPM-D-9, pages 1-3) under the four different CCOSS methods (Zero Intercept, Minimum Size, Basic System and Average and Excess).

The zero-intercept study is generally perceived as being more accurate than the minimum-size study. MERC performed 80 (eighty) zero-intercept regression analyses while attempting to create a model that satisfied all regression analysis assumptions and made sense.[34] MERC urged the Commission to use zero-intercept study number 13, and give it the most weight.

This study (#13) yielded a unit cost of $9.787/ft.[35] for plastic pipes and $16.185/ft. for steel pipes.[36]

Utilizing $9.79 per foot as the cost of the minimum system, MERC estimated that 55.1 percent of gas main costs are attributable to the customer-related function and the remaining 44.9 percent are attributable to the demand- or capacity-related function of the system.[37]

MERC compared the fixed unit cost of $9.79 per foot with its minimum-size study fixed unit cost of $13.40 (weighted average of its plastic and steel) and concluded "intuitively, these results make sense given minimum-size studies generally over-estimate the minimum system cost of mains as compared to zero-intercept studies."[38] MERC also compared its use of a unit cost of $9.79 per foot with the average current cost for two-inch plastic and steel pipes of $13.06 and $14.14, respectively.

In the minimum-size study where the minimum distribution system is represented by 2-inch pipes, MERC calculated the total current system costs to be $458,902,038, of which $338,148,425 or 73.7 percent was determined to be the minimum system (i.e., customer-related). The remaining $120,753,614 or 26.3 percent of the current system costs represents the demand- or capacity-related cost of the system. The minimum system cost was derived by multiplying average current unit cost of the minimum-sized pipe for plastic and steel, which is $13.06 and $14.14, respectively, by the total quantity of plastic and steel pipe installations, which are 17,395,594 and 7,847,381, respectively.

The following table provides a convenient summary of the classification of costs emerging from the two minimum system cost studies:

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[33] Net cost of service is defined as total operating expense less cost of gas plus required return.
[34] Nelson Direct Testimony, p. 66; Schedule 1.4, Informational Requirement Document 12.
[35] Informational Requirement Document 12, p. 127 of 812.
[36] Informational Requirement Document 12, p. 176 of 812. The unit cost of steel pipes is calculated as $9.78659 plus $6.39761 = $16.185/ft.
[37] Informational Requirement Document 12, p. 180 of 812.
[38] Nelson Direct Testimony, p. 72

CCOSS Method	Customer-Related Costs (%)	Demand-Related Costs (%)
MERC Minimum-Size	73.7%	26.3%
MERC Zero-Intercept	55.1%	44.9%

MERC stated that in MERC's last rate case, the Commission concluded that MERC's zero-intercept study provided "the most useful tool in the record for distinguishing between customer-related costs and capacity-related costs."[39] MERC added that the record in this proceeding supports a finding that MERC's zero-intercept CCOSS should be accepted as a useful tool for setting rates.

Department of Commerce Analysis

The Department of Commerce supports the zero-intercept method as the preferred approach to classify distribution mains in this case. The Department concluded that MERC's zero-intercept method is statistically reliable. The Department observed that MERC's classification and allocation of functionalized accounts are generally consistent with the Gas Manual and cost-causation principles.[40] The Department also indicated "[t]he currently proposed Zero-Intercept CCOSS is similar to the Company's proposed CCOSS in its last rate case."[41] However, the Department observed some changes in MERC's methodology but found these changes and MERC's zero-intercept model to be reasonable.

However, the Department noticed some shortcomings in MERC's approach.

First, the Department noted that MERC did not use all of the quantities of distribution mains currently installed by MERC in the calculation of the total minimum system cost.[42] Some of its pipes were left out of the analysis.

In the calculation of the minimum system cost under the 2-inch diameter minimum size study, MERC reported a total quantity (of varying size) of pipes of 25,242,975 feet (17,395,594 feet of plastic pipes and 7,847,381 feet of steel pipes).[43] In the calculation of the minimum system cost under MERC's-preferred zero-intercept study, MERC reported a total quantity (of varying size and material) of pipes of 25,074,071 feet (17,394,186 feet of plastic pipes and 7,679,885 feet of steel pipes).[44] In the zero-intercept study, MERC left out 10- and 12-inch diameter steel pipes from consideration; there were also some discrepancies in the tabulation of certain plastic pipes between the minimum-size and zero-intercept studies. In its response to a Department

[39] MERC Initial Brief, p. 44.
[40] Ouanes Direct Testimony, p. 34.
[41] Ouanes Direct Testimony, p. 11.
[42] Ouanes Direct Testimony (p. 73 of 84), Ex_____SO-9, p. 1 of 4.
[43] MERC Informational Requirement Document 12, p. 520 of 812.
[44] MERC Informational Requirement Document 12, p. 180 of 812.

interrogatory, MERC showed a total quantity of 25,248,771 ft.[45] In any event, MERC did not use all of the quantity of pipes in the calculation of minimum cost between the two studies that constitute the minimum system method.

The Department recommended that MERC include all quantities of distribution mains currently installed by the utility in the calculation of the customer- and demand-related portions of the distribution mains in the minimum-size methods.

The Department indicated that MERC re-ran its minimum system cost studies incorporating all of the distribution mains.

However, the data correction did not affect MERC's minimum-size CCOSS. The customer- and demand-related components remained the same as before – 74-percent and 26-percent, respectively.[46]

The correction did not materially affect the results of MERC's zero-intercept cost study either. The correction decreased the customer-related classification of distribution mains to 53.9 percent (from 55.1 percent) and increased the demand-related classification to 46.1 (from 44.9 percent). Overall, the change in classification percentages had minimal impact on the revenue requirements by customer class.

Second, the Department raised a concern that the classification of the customer- and demand-related functions were not based on the separate prices of plastic steel pipes. The Department questioned the propriety of using the input cost of plastic pipes for all pipes (including steel pipes).

The Department recommended that MERC use the separate zero-intercept values for plastic ($9.787/ foot) and steel ($16.185/ foot) instead of "arbitrarily" setting the zero-intercept value of steel at $9.787 per foot in the calculation of the portions of the distribution mains to be classified as customer- and demand-related.

The Department requested MERC to re-run the cost studies incorporating its two recommendations.[47]

MERC's rerun of the minimum-size CCOSS incorporating the separate plastic- and steel-pipe prices did not at all change the customer- and demand related proportions[48] – 74 percent of costs are still attributable to the hypothetical minimum-size system with the remaining 26 percent attributable to the demand-related function.

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[45] Ouanes Direct Testimony, Ex____SO-10, p. 4.

[46] Ouanes Direct Testimony, p. 26.

[47] Ouanes Direct Testimony, p. 30.

[48] This is because MERC had initially conducted its minimum size study using separate plastic and steel pipe costs.

The revised zero-intercept method analysis showed that 64.8 percent of the costs are attributable to the hypothetical no-load system with the remaining 35.2 percent attributable to customer demand.[49]

A tabulation of the classification of customer- and capacity-related costs of the various runs of the minimum system models is provided below:

Minimum System Cost Models	Customer-Related Costs (%)	Demand-Related Costs (%)
MERC Minimum-Size*	73.7%	26.3%
MERC Zero-Intercept	55.1%	44.9%
Zero-Intercept – all pipes included**	53.9%	46.1%
Zero-Intercept – all pipes included and separate prices for plastic and steel pipes***	64.8%	35.2%

*The minimum size method is known to overstate customer-related costs (Ouanes Direct Testimony, p. 32).

**This is the model eventually supported by MERC.

***This is the method supported by the Department.

The Department argued that its recommended approach (the last row in the above table) yields a customer-related cost lower than that of the minimum size method.

The Department concluded that MERC's classification and allocation of the functionalized accounts are generally consistent with the Gas Manual and cost-causation principles and that MERC's Zero-Intercept CCOSS with the two recommended adjustments above is reasonable.

However, the Department noted that a zero-intercept study incorporating its two recommendations "is the best alternative in the record" and to accept this revised CCOSS as a useful tool for the purpose of setting rates.

MERC's Response to the Department's Recommendations

MERC agreed that inclusion of all quantities of distribution main currently in place is appropriate for classifying distribution mains as customer- and demand-related. However, including all pipes in the analysis did not significantly alter the classification of costs.

MERC does not agree that using both zero-intercept costs (plastic and steel) is the best alternative for the calculation of the portions of distribution main to be classified as customer- and demand related in the implementation of the zero-intercept method. MERC indicated that

[49] Ouanes Direct Testimony, 30.

unit cost of steel pipes from the zero-intercept model ($16.185/ft) "does not make sense" when compared with the unit-cost from the minimum-size study ($14.14).[50]
But, MERC noted that the revised CCOSS, incorporating both of the Department's recommendations, may offer another useful data point for the Commission to consider.[51]

MERC argued that the zero-intercept value for steel pipes of $16.185 actually produces customer-related costs that are higher than MERC's minimum-size calculation.[52] Since both the Department and MERC recognize that a two-inch diameter main has capacity carrying capabilities, and therefore capacity-related costs are incorrectly assigned as customer-related costs in minimum-size calculations, the use of $16.185 as the cost of steel pipes is nonsensical.

Incorporation of both of the Department's recommendations in MERC's zero-intercept model provides the classification of customer-related proportion of distribution mains as 64.8-percent and capacity-related proportion of 35.2-percent.[53] Overall, the change in classification percentages had a sizeable impact on the revenue requirements by customer class.[54] Even so, MERC maintained that "it is unlikely that by using this revised CCOSS as a starting point, the Company would propose a rate design significantly different" from that initially proposed.

OAG's Position

While MERC proposes considering only the zero-intercept method (and uses the minimum size method as a check on the results of the zero-intercept method), the OAG advocates use of multiple cost studies. As in the previous rate cases, the OAG has put forth two reasons for considering multiple CCOSSs: (1) cost studies are not perfect and (2) different cost studies can more accurately describe different parts of the distribution system.

The OAG noted that there are no major disputes between the Company and the OAG regarding the "nuts and bolts" of how these various CCOSSs are conducted. There is, however, significant dispute as to which (and even how many) CCOSSs should be considered. The OAG noted that because of the inherent shortcomings of all cost models, the Commission should take a balanced approach and consider a weighted average of the results of multiple cost studies.

The OAG recommended that the Commission consider cost studies based on the zero-intercept method, the basic system approach, and the average-and-excess approach in determining revenue apportionment.[55]

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[50] Ouanes (Department) Direct Testimony, Exhibit SO-10, p. 1; MERC Informational Requirement Document 12, p. 520 of 812.
[51] Nelson Surrebuttal Testimony, p. 3.
[52] Nelson Rebuttal Testimony, p. 12.
[53] Nelson Rebuttal Testimony, Exhibit___ALN-R3, p. 309 of 476.
[54] Nelson Rebuttal Testimony, p. 14; Exhibit___ALN-R3, pp. 310-313 of 476.
[55] Meernik Direct Testimony, p. 36.

The OAG specifically asked the Commission not to consider the minimum-size method because the zero-intercept method provides the same or similar perspective. The OAG argued that while the zero-intercept method classifies distribution main costs as both capacity- and customer-related, and it is essential to consider such a method, it is equally essential that the Commission also consider other methods (such as the basic system approach and average-and-excess approach) that classify distribution main costs as 100-percent capacity-related. This is because there are situations where MERC incurs distribution main costs solely in order to meet peak demand.

In approaching class revenue apportionment and rate design, the OAG assigned "a weight of 50 percent to the zero-intercept method, 25 percent to the basic system approach, and 25 percent to the average-and-excess approach."[56]

MERC's Response to the OAG

MERC noted that the record in this proceeding supports a finding that MERC's zero-intercept CCOSS, incorporating all of the pipes currently installed should be accepted as a useful tool for setting rates. However, MERC did not oppose consideration of the Department's recommended revised zero-intercept CCOSS, which incorporates separate costs for steel and plastic mains, as an additional factor informing revenue apportionment. MERC noted that its overall rate design would not change whether the Commission used MERC's or the Department's recommended CCOSS as a starting place.

MERC pointed out that in its previous rate case, the Commission concluded that MERC's zero-intercept study provided "the most useful tool in the record for distinguishing between customer-related costs and capacity-related costs." The Commission "decline[d] to adopt the OAG's recommendation to select multiple cost studies to guide the Commission's further analysis."

However, despite recognizing the shortcomings of the alternative methodologies advocated by the OAG, the Commission ordered MERC to file a basic system and average-and-excess CCOSS in its next rate case, "to ensure that the Commission receives sufficient studies to evaluate." The implication is that the Commission ordered additional cost studies for informational, not revenue allocation, purposes.

MERC also argued that the OAG's recommended weighted CCOSS assigns arbitrary weightings to the zero-intercept CCOSS as well as the basic system CCOSS and average-and-excess CCOSS, and should be rejected because neither the basic system nor the average-and-excess CCOSS recognize that the Company's investment in distribution main is driven by both demand and customer considerations.

[56] Meernik Direct Testimony, p. 51.

Finally, in recognition of the lack of record support for the value of the basic system or average-and-excess methods in explaining MERC's investment in distribution main in either this proceeding or the Company's last rate case, and recognizing the significant time and expense associated with generating numerous CCOSSs, for future rate-case filings, MERC should be required only to file one CCOSS in accordance with Minn. R. 7825.4300(C).

MERC noted that it would, however, produce other CCOSSs "in response to information requests by other parties as long as the methodologies requested by those parties are clearly defined, supported, and consistent, including a detailed explanation and justification for any deviation from previously made requests."

Department's Response to the OAG

The Department agrees with MERC that classification methods that assume demand is the only factor driving a utility's investment in distribution mains incorrectly assume that there is no delivery or service function of the natural gas system. It also agrees with MERC that the distribution system performs two functions: (1) being capable of delivering service to customers' residences or businesses (customer costs), and (2) ensuring that the distribution system is large enough to provide reliable service (demand costs).

The Department added that in MERC's last rate case, the Commission determined that minimum-system CCOSSs appropriately recognized that a gas utility's distribution plant is designed both to meet capacity needs on the system and to connect customers regardless of capacity needs, whereas the Basic-System CCOSS did not reflect this dynamic and that the record in this case regarding the drivers of MERC's distribution main investments has not changed from the Commission's above-referenced decision.

The Department concluded that the OAG's methods fail to reflect that a utility's investment in distribution mains is driven by both demand and customer considerations and therefore do not accurately reflect cost causation.

ALJ's Report (Findings Nos. 329-370)

The ALJ has included a thorough discussion of CCOSSs at pages 54 through 61, ¶¶329-370.

The ALJ's Findings

The ALJ's general findings are not repeated here except for the following findings that summarize his conclusions and recommendations:

> ¶347 (p. 58): "[b]ecause a minimum-size study can slightly over-assign customer costs, MERC recommended using the results of this parallel study only as a check upon the results of the zero-intercept study."

¶349 (p. 58): MERC also urged the Commission to give no weight to the results of the average-and-excess study.

¶366. The CCOSS as revised by the Department (so as to reflect all of the distribution mains installed by the utility, and weighted cost averages of the different types of distribution mains), is the superior alternative.

¶367. Regardless of whether MERC's Recommended Revised CCOSS, or the Department's Recommended Revised CCOSS, is relied upon by the Commission, the apportionment of revenue responsibility that MERC proposes to make as a result of these studies is reasonable.

The Administrative Law Judge's CCOSS Recommendations (w/o footnotes)

Staff Note: Essentially, the ALJ recommended that the Department's method was the superior alternative. Although the ALJ did not particularly recommend a cost method for Commission adoption, Staff is representing this "superior alternative" as the ALJ's "soft" recommendation. However, the ALJ explicitly recommended that the Commission not consider the OAG's minimum system and average-and-excess approaches. MERC, however, noted that a zero-intercept study incorporating the two adjustments recommended by the Department results in "a cost shifting of about $2.1 million from the larger customer classes to the Residential and C&I Classes as compared to MERC's proposed Zero-Intercept CCOSS."[57] MERC added that it is unlikely that by using this revised CCOSS as a starting point, the Company would propose a rate design significantly different,[58] because in Docket No. G-011/GR-15-736, MERC agreed to hold customer charges unchanged in this docket to facilitate the transition of former IPL customers.[56] The ALJ found that whichever cost study is relied upon by the Commission (MERC's zero-intercept study with or without the adjustments), the apportionment of revenue responsibility that MERC proposes to make as a result of these studies is reasonable.

ALJ's Recommendations

The ALJ's recommendations are provided below:

¶362. Because . . . both the Basic-System method and the Average-and-Excess method classify distribution mains as 100 percent demand-related costs, they do not reflect the role that customers' individual needs for capacity plays in driving distribution costs. Accordingly, neither a Basic-System CCOSS nor an Average-and-Excess CCOSS accurately reflects cost causation in the most common circumstances. For that reason, the results from these studies should not guide the Commission's decision-making in this matter. [emphasis supplied]

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[57] Nelson Rebuttal (p. 423 of 476), Exhibit___(ALN-R7), p. 3.

[58] Nelson Rebuttal, pp. 14-15; Ouanes (Department) Rebuttal Testimony, Ex. ___ SO-R-1, p. 3.

¶363. While the zero-intercept studies are a fairer and more reliable guide for cost allocation, there is an important methodological dispute between the Department and the Company in this case: The Department and MERC disagree as to whether the unit costs of plastic and steel distribution mains in a zero-intercept CCOSS should mirror the percentages of those kinds of pipe in MERC's distribution system, or instead be represented by the lower-priced plastic mains.

¶364. The Company maintains that if the zero-intercept study uses the values for plastic mains ($9.787 per foot) and steel mains ($16.185 per foot), instead of a single value in its regression analysis, the results harm residential customers. MERC argues that the requested adjustments "increased the customer-related classification for distribution main to 64.8 percent from 53.9 percent . . . decreased the demand-related classification to 35.2 percent from 46.1 percent . . . [and] had a sizeable impact on the revenue requirements by customer class. . . ."

¶365. In his Surrebuttal Testimony, Dr. Ouanes detailed that the weighted average cost of a hypothetical "zero-inch" system (comprising of plastic and steel distribution mains) had a lower total per-foot cost than projected by the Company. He also was able to check his results against those of the minimum size study; verifying, that the estimate produced by his revised zero-intercept study was less than the per foot costs of the "minimum system" study.

¶366. **The CCOSS as revised by the Department (so as to reflect all of the distribution mains installed by the utility, and weighted cost averages of the different types of distribution mains), is the superior alternative. [emphasis supplied]**

¶367. Regardless of whether MERC's Recommended Revised CCOSS, or the Department's Recommended Revised CCOSS, is relied upon by the Commission, the apportionment of revenue responsibility that MERC proposes to make as a result of these studies is reasonable.

¶368. The Administrative Law Judge further agrees that it is appropriate to limit the class cost of service submissions that MERC will be required to make when it initiates its next rate case. It is reasonable to limit those filings to one CCOSS and a minimum-size classification calculation, without the added burden of submitting a complete minimum-size CCOSS.

¶369. The Administrative Law Judge does not agree, however, that MERC has offered an appropriate limiting principle when reserving the right to refuse requests for other cost studies. MERC claims the right to refuse study-development requests that are not "clearly defined, supported, and consistent, including a detailed explanation and justification for any deviation from previously made requests."

¶370. The impacts that serial requests for information have upon overall ratemaking expense are very real, but the standard that MERC suggests is the wrong one. A better approach is for the Commission to detail the initial filing requirements for the next rate case, and to provide further that it is presumptively reasonable for any other intervening party to request two additional class cost of service studies. The Commission could further state that if more than two studies are requested, or if a request is not clearly defined, MERC may seek protection

from the Administrative Law Judge under Minn. R. 1400.6700, subp. 4 (2017). This rule provides shelter from discovery requests that place undue burdens and expense upon a party.

Exceptions

Neither MERC nor the Department took exception to the ALJ's report.

The **OAG's exceptions** disputed the ALJ's conclusion and his report's "failure to explain the arguments supporting the use of the basic system and average-and-excess CCOSSs, its failure to address criticisms of the zero-intercept methodology, and its failure to acknowledge past Commission decisions approving the use of multiple CCOSSs."

The OAG asks the Commission to adopt the following new findings:

> The basic system method only classifies costs that can be tied to a specific customer as customer-related, and treats the rest of the distribution main costs as capacity-related, because they are designed to accommodate a certain level of capacity. The basic system method is a reasonable method to consider when classifying distribution main costs.
>
> The average-and-excess method recognizes that distribution mains are not always operating at peak capacity, and are therefore built to be able to serve customers at both peak and average loads. For that reason, the average-and-excess method classifies the distribution mains as entirely capacity-related, and then allocates it as part capacity-related and part commodity-related based on a commodity weighting factor. This is done because allocating based solely on peak demand would overstate the importance of capacity. Regulatory commissions in Wisconsin, Michigan, Illinois, and South Dakota have issued orders applying, or at least considering, the average-and-excess (or the similar peak-and-average) approach. Accordingly, the average-and-excess method is a reasonable method to consider when classifying distribution main costs.

The OAG noted that the ALJ's report also the "failed to include findings chronicling the demonstrated limitations of the zero-intercept method." The OAG recommended adopting the following new finding by the Commission:

> If distribution mains are replaced to accommodate higher peak demand, those costs are caused entirely by capacity-related factors. Since MERC's last rate case, distribution main plaint in service (before depreciation) has increased by 33 percent, while the cumulative length of distribution mains has increased by only 7 percent. This shows that, in some instances, distribution main costs are increasing for reasons other than an increased number of customers. This demonstrates that it is not appropriate to use only the zero-intercept method, which treats some distribution main costs as customer-related, to classify distribution main costs.

The OAG took exception to the report's failure to note that recent Commission decisions provide support for considering multiple CCOSSs. To recognize this, the OAG recommended adopting the following new finding:

The Commission has recognized the limitations of using only one CCOSS and has instead shown a preference for using multiple CCOSSs as "useful guide[s]" for classifying distribution main costs.

Finally, the OAG noted that the ALJ's finding ¶362 was erroneous and that this finding should be rejected and replaced by the following new finding:

Delete:

~~362. Because, as noted above, both the Basic-System method and the Average-and-Excess method classify distribution mains as 100 percent demand-related costs, they do not reflect the role that customers' individual needs for capacity plays in driving distribution costs. Accordingly, neither a Basic-System CCOSS nor an Average-and-Excess CCOSS accurately reflects cost causation in the most common circumstances. For that reason, the results from these studies should not guide the Commission's decision-making in this matter.~~

Adopt:

In addition to the zero-intercept method, it is important to also consider CCOSSs that treat distribution mains as having no customer component. The appropriate way to balance the merits of the CCOSSs presented is to adopt the OAG's recommendation to use a weighted average of 50% zero-intercept, 25% basic system, and 25% average-and-excess method when estimating cost causation in this proceeding.

Staff Note

Case for Multiple Cost Studies Not Established

The OAG has pointed to some previous rate cases in justification of multiple cost methods informing revenue apportionment. However, the Commission adopted MERC's zero-intercept study in the past two rate cases. In G-011/GR-13-617,[59] the Commission concluded that "MERC's distribution mains should be classified using the Company's zero-intercept study." In G-011/GR-15-736,[60] the Commission specifically relied on "one of MERC's Minimum System CCOSSs rather than the OAG's Basic System CCOSS." The Commission further noted: "In choosing between MERC's two Minimum System CCOSSs, the Commission concurs with MERC, the Department, and the Administrative Law Judge that MERC's Zero Intercept study provides the most useful tool in the record for distinguishing between customer-related costs and capacity-related costs."

[59] Findings of Fact, Conclusions, and Order, October 28, 2014, p. 46.
[60] Findings of Fact, Conclusions, and Order, October 31, 2016, pp. 33-34.

In the past two rate cases, the Commission has forcefully stated its reasons for adopting the zero-intercept study, including the finding that MERC's cost studies do not suffer from "methodological shortcomings."[61]

While past Commission decisions by no means establish an inviolable precedent, unless the Commission identifies some significant change of circumstances – and Staff cannot point to any – or is persuaded in oral arguments that new circumstances compel the Commission to adopt multiple cost studies, it is difficult to justify the need for multiple cost studies to inform revenue apportionment in this case.

Choice between MERC's Zero-Intercept Study and Adjusted Zero-Intercept Studies

The ALJ believes there is "an important methodological dispute between the Department and the Company" (¶363). This is not so, the difference between the contenders is limited to what price to use in the zero-intercept study and is more in the nature of a "nuts and bolts" quarrel. Each side has amply justified its stance and neither side has showed a willingness to compromise in this docket. However, MERC acknowledged (somewhat confusingly) that "in future studies the unit cost of the steel distribution main should be included in the calculation of the minimum system if the result makes sense when compared to MERC's Minimum-Size study."[62]

Although the Department has argued that MERC "arbitrarily" assigned the price of plastic tube price to all distribution pipes (plastic and steel pipes), the main outcome of MERC's use of the plastic mains cost of $9.787 per foot in determining the minimum system cost is to under-state customer-related distribution system costs. Here, MERC has incorporated into the cost study real-world constraints operating on rate design. The Department appears to emphasize that rate design should follow the cost study, not the other way round. While Staff does not favor a cost study that is dovetailed to meet rate design concerns, working in the constraints may make sense in certain circumstances. For example, in the calculation of joint-vacation costs of two families, if one family cannot be charged for certain meals, there is little point in estimating such costs with great accuracy as they have to be absorbed by the other family. The cost study might just as well reflect this reality.

Notwithstanding the Department's assertion that the "record did not include any reasonable justification for the Company's use of this single intercept value,"[63] MERC cited two specific reasons for its action. First, MERC had committed to not raise its residential customer charges and, second, the cost of steel pipes from the zero-intercept method was actually higher than the current installed cost of steel pipes. This latter point should not be ignored.

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[61] Findings of Fact, Conclusions, and Order, G-011/GR-15-736, October 31, 2016, p. 34.
[62] Nelson Rebuttal Testimony, p. 307 of 476.
[63] Ouanes Surrebuttal Testimony, p. 4.

The ALJ has not made a "hard" recommendation regarding the zero-intercept studies. His most emphatic recommendation, however, was to give no consideration to the basic system and average-and-excess methods.

Staff urges the Commission to weigh the ALJ's recommendations ¶366 and ¶367 and also consider the Department's recommendation of "approval of MERC's proposed apportionment of revenue responsibility"[64] and determine that MERC's recommended zero-intercept model and the Department's recommended zero-intercept model both provide useful information for the Commission to consider.

Decision Options

Issue: Should the Commission adopt the ALJ's recommendation to approve MERC's Zero-Intercept CCOSS model incorporating the two modifications suggested by the Department?

205. Adopt the ALJ's recommendation.

206. Modify the ALJ's recommendation by acknowledging that the Commission would consider MERC's recommended zero-intercept model and the Department's recommended zero-intercept model in making its determination on class revenue apportionment.

207. Reject the ALJ's analysis and recommendations and adopt the OAG's position noted above.

[64] Peirce Surrebuttal Testimony, p. 6.

2. Should the Commission adopt the ALJ's recommendation to require MERC to file only one CCOSS in its next rate case?

As the ALJ stated:

> ¶350. MERC requested that it not be required to conduct and file such a study in future rate case proceedings. The Company requested that it be: (a) required to file only one CCOSS in such a proceeding; (b) permitted to file a minimum-size classification in lieu of a minimum-size CCOSS; and (c) allowed to produce other class cost of services studies "in response to information requests by other parties as long as the methodologies requested by those parties are clearly defined, supported, and consistent, including a detailed explanation and justification for any deviation from previously made requests."
>
> ¶360. With respect to the Company's compliance recommendation, the OAG did not object to MERC only being required to file at least one CCOSS in its next rate case, but proposed that that other parties be granted "wide latitude in getting the Company to deliver additional CCOSSs if requested." Meernik Surrebuttal, p. 10, p. 21.
>
> ¶368. The Administrative Law Judge further agrees that it is appropriate to limit the class cost of service submissions that MERC will be required to make when it initiates its next rate case. It is reasonable to limit those filings to one CCOSS and a minimum-size classification calculation, without the added burden of submitting a complete minimum-size CCOSS. [emphasis supplied]
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> ¶369. The Administrative Law Judge does not agree, however, that MERC has offered an appropriate limiting principle when reserving the right to refuse requests for other cost studies. MERC claims the right to refuse study-development requests that are not "clearly defined, supported, and consistent, including a detailed explanation and justification for any deviation from previously made requests."
>
> ¶370. The impacts that serial requests for information have upon overall ratemaking expense are very real, but the standard that MERC suggests is the wrong one. A better approach is for the Commission to detail the initial filing requirements for the next rate case, and to provide further that it is presumptively reasonable for any other intervening party to request two additional class cost of service studies. The Commission could further state that if more than two studies are requested, or if a request is not clearly defined, MERC may seek protection from the Administrative Law Judge under Minn. R. 1400.6700, subp. 4 (2017). This rule provides shelter from discovery requests that place undue burdens and expense upon a party.

Staff Comment:

There is no controversy with regard to this issue.

The minimum size study is primarily used as a check on the zero-intercept study. Staff is not certain that authorizing MERC to carry out the minimum size study only until the classification stage would serve to validate the zero-intercept study. The purpose of classification is to derive the ratio of customer- and demand-related costs for gas distribution mains.

As proposed by the ALJ (¶368), MERC is required to file a minimum-size classification calculation in the next rate case, without the submitting a complete minimum-size CCOSS. This calculation will provide a check on the zero-intercept method only with respect to the percent split between customer- and demand-related costs. The impact of the classification percentages on the revenue requirements by customer class will not be known unless the allocation of costs is also done.

The Commission may wish to inquire of the parties whether MERC should also perform the allocation stage of the minimum size study.

Decision Options

Issue: Should the Commission adopt the ALJ's recommendation to require MERC to file only one CCOSS in its next rate case?

208. Adopt the ALJ's recommendations, as broken-down below:

Require MERC to file:

a. one CCOSS in future rate cases; and
b. a minimum-size classification in lieu of a full-blown minimum-size CCOSS;

and provide

c. that intervening parties may request two additional class cost of service studies; and
d. if more than two studies are requested, or if a request is not clearly defined, MERC may seek protection from the Administrative Law Judge under Minn. R. 1400.6700, subp. 4 (2017).[65]

[65] "The judge may issue a protective order as justice requires to protect a party or person from annoyance, embarrassment, oppression, or undue burden or expense due to a discovery request. When a party is asked to reveal material considered to be proprietary information or trade secrets, or not public data, that party may bring the matter to the attention of the judge, who shall make such protective orders as are reasonable and necessary or as otherwise provided by law."

209. Modify the ALJ's recommendations, as broken-down below:

Require MERC to file:

a. one CCOSS in future rate cases, in addition to a minimum-size CCOSS;

and provide

b. that intervening parties may request two additional class cost of service studies; and
c. if more than two studies are requested, or if a request is not clearly defined, MERC may seek protection from the Administrative Law Judge under Minn. R. 1400.6700, subp. 4 (2017).