

**BEFORE THE**  
**PUBLIC SERVICE COMMISSION OF NORTH DAKOTA**  
**DIRECT TESTIMONY OF**  
**BRUCE R. CHAPMAN**  
**CHRISTENSEN ASSOCIATES ENERGY CONSULTING, LLC**  
**ON BEHALF OF**  
**MONTANA-DAKOTA UTILITIES CO.**

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1 **I. INTRODUCTION**

2 **Q. Would you please state your name and business address?**

3 A. My name is Bruce R. Chapman. My business address is 800 University Bay Drive, Suite  
4 400; Madison, Wisconsin 53705. I am a Vice President with Christensen Associates  
5 Energy Consulting, LLC (“CA Energy Consulting”).

6 **Q. Would you please describe your educational background and employment  
7 experience?**

8 A. I received a Bachelor of Arts degree from the University of Pittsburgh in 1976 and hold a  
9 Master of Arts (in fact, a Ph.D., all but dissertation) in Economics from the University of  
10 Wisconsin - Madison. I majored in Industrial Organization. I have been employed by  
11 three economic consulting firms. Since 1986, I have worked at Christensen Associates  
12 Energy Consulting or its parent, Laurits R. Christensen Associates, Inc., in positions of  
13 increasing responsibility. The focus of my work has been regulated utility costing –  
14 embedded and marginal – and pricing and rate design, both traditional and innovative.  
15 For a decade I have prepared, analyzed, and advised upon both cost of service (“COS”)  
16 studies and COS methodology. I have supervised the design of our firm’s most recent  
17 COS model and an associated rate design model, and I have applied our models in the  
18 service of clients. Additionally, I have undertaken COS studies making use of our  
19 clients’ in-house models, and have provided advice on COS issues on numerous  
20 occasions. Recent projects have included evaluation of various utilities’ COS  
21 methodologies. I testified in late 2013 in regulatory hearings on cost-of-service  
22 methodology issues before the Nova Scotia Utility and Review Board. Earlier this year I  
23 filed written testimony before the Public Utilities Commission of Ohio in support of the

1 Dayton Power & Light Company regarding their COS study, which was submitted as part  
2 of a general rate application. My resume appears as Exhibit BRC-1 of this testimony.

3 **II. PURPOSE OF TESTIMONY**

4 **Q. What is the purpose of your testimony?**

5 A. The purpose of my testimony is to present and explain the COS study filed by Montana-  
6 Dakota Utilities Co. ("Montana-Dakota or "Company") in this proceeding.

7 **Q. Would you please describe your role in preparing the COS Study?**

8 A. The COS Study was conducted under my supervision and control. The COS model  
9 design originated with Montana-Dakota and I reviewed the Company's model for  
10 reasonableness. Montana-Dakota provided the financial data necessary to populate the  
11 model, as well as the original classification information and allocator designations.  
12 Montana-Dakota also provided fixed cost breakdowns by service level and metering  
13 information detail that supported the development of certain allocators. CA Energy  
14 Consulting reviewed Montana-Dakota's selection of allocators and advised the Company  
15 with respect to the development of classification calculations. Subsequently we reviewed  
16 all files and computations that develop classification shares and allocators. Additionally,  
17 CA Energy Consulting reviewed the functioning of the model. I supervised this activity.  
18 My conclusion is that the model records the utility's full costs and reliably computes  
19 costs allocated to the utility's various classes. As a result of my work with Montana-  
20 Dakota in preparing the study and its underlying model I adopt and sponsor the model  
21 and support the study results.

1 Q. Are you sponsoring any statements with your testimony?

2 A. Yes. I am supporting the following statements, which represent Montana-Dakota's COS  
3 study:

4 • Statement M,

5 • Statement M Schedule M-1, and

6 • Statement M Schedule M-2

7 Q. Would you please summarize your testimony?

8 A. Yes. In Section III, I provide an overview of the reasons for conducting a COS study, the  
9 steps involved in a study, and the ways in which the study is used. Section IV reviews  
10 issues in the definition of rate classes. Section V describes the allocation of generation  
11 and transmission costs. Sections VI and VII discuss the classification and allocation of  
12 distribution costs. Section VIII reviews the results of the COS study, referencing  
13 Statement O and the supporting schedules. Section IX presents conclusions.

14 **III. THE NATURE AND PURPOSE OF A COS STUDY**

15 Q. Please explain the basis of and need for a cost of service study.

16 A. An electric COS study separates a utility's total electric investments, revenues, and  
17 expenses among the rate classes or groups within each jurisdiction. The primary goal is  
18 to identify the costs incurred by the utility in providing service to each group of  
19 customers. A study is necessary to enable a regulatory commission to review and  
20 evaluate the contribution made by each rate class within its jurisdiction. Montana-  
21 Dakota, like other electric utilities, maintains its books and records in accordance with

1 the Uniform System of Accounts as directed by the Federal Energy Regulatory  
2 Commission ("FERC") and the Public Service Commission of North Dakota ("PSC" or  
3 "Commission"). This system of accounting does not immediately separate the  
4 company's investments, revenues, and expenses by rate class within the jurisdiction. A  
5 COS study performs this role. A thorough, well-performed COS study can be a useful  
6 (and often the primary) tool for determining the adequacy of current rates for each class  
7 of customers. For those rates that the study reveals to be inadequate at current tariff  
8 levels, the study can be an appropriate tool for determining what rate changes should be  
9 made to achieve revenue adequacy. Ultimately, a COS study establishes cost  
10 responsibility by rate class that enables the utility to determine just and reasonable rates.  
11 The COS study filed in this proceeding accomplishes this objective of separating costs by  
12 rate class groupings.

13 **Q. How are COS studies used in the regulatory process?**

14 A. A COS study is often used as a tool to determine earnings and cost recovery by customer  
15 group/rate class. The regulatory body can use these COS results to judge the adequacy of  
16 rates within the jurisdiction. The National Association of Regulatory Utility  
17 Commissioners ("NARUC") identifies the COS study as a basic tools of ratemaking, and  
18 it is used to attribute costs to different categories of customers based on how those  
19 customers cause costs to be incurred.

20 **Q. Once the COS study was completed, was it used by MDU in this rate filing?**

1 A. Yes. MDU examined the results of the study to determine how well each rate class's  
2 revenues were covering costs. Company Witness Aberle then used the data to develop  
3 the proposed target rate of return and rate design for each tariff class.

4 **Q. In preparing a COS study, is there a guiding principle that a utility should follow?**

5 A. Yes. The overall objective of a COS study is to assign or allocate costs fairly and  
6 equitably to all customers. This objective is accomplished when the resulting study  
7 reflects the principle of "cost causation." This principle states that those customers who  
8 caused a particular cost to be incurred by the company in providing service to them  
9 should be responsible for those costs.

10 When certain costs are readily identified with a particular customer group, the assignment  
11 of those costs to that group reflects cost causation, which is fair and equitable to all  
12 customers. However, it must be recognized that most parts of an electric system are  
13 planned, designed, constructed, operated, and maintained to serve all customers. These  
14 costs are referred to as "joint" or "common" costs. Joint or common costs must be  
15 allocated to customer groups based on the cost-causative nature, or "drivers" of the costs  
16 incurred, and the aggregate requirements and service characteristics of the customers that  
17 caused the costs to be incurred. By adhering to this fundamental and essential principle  
18 of cost causation, the utility strives to make the results of the COS study fair and  
19 equitable to all customers.

20 **Q. What are the major "drivers" that cause costs to be incurred?**

21 A. Costs are normally influenced by three factors that are observable for most customers.  
22 Cost causation can be viewed as: (1) demand-related – costs incurred to serve peak needs

1 for electricity (kW); (2) energy-related – costs that vary with energy consumption (kWh);  
2 and (3) customer-related – costs that vary with the number of customers. Utilities  
3 classify each of their assets and expenses according to their cost-causative factors and  
4 then allocate each set of classified assets and expenses to rate class. Each of these three  
5 drivers has its own separate and appropriate allocators to spread respective costs to rate  
6 groups within the utility.

7 **Q. Would you please summarize the steps undertaken to perform a COS study?**

8 A. Typically, a COS study consists of five major steps. These steps are: (1) functionalization  
9 of the financial accounting data, (2) “levelization” of the data, (3) cost-causative  
10 classification of the financial costs, (4) assignment to rate classes of costs and revenues  
11 readily identified with specific classes, and (5) allocation of common costs. After  
12 completing these steps, one can observe how well customer groupings cover their cost to  
13 serve by comparing revenues with costs by tariff class.

14 **Q. What is the first step, functionalization?**

15 A. Functionalization is the subdivision of a utility’s assets and costs into the main functions  
16 required to provide electricity to customers. Montana-Dakota follows the functional  
17 categories contained in the FERC Uniform System of Accounts, namely production,  
18 transmission, distribution, and general for gross plant and depreciation. Production,  
19 transmission, and distribution categories are used in both operation and maintenance  
20 (O&M) and depreciation expenses. In addition, there is a customer services (customer  
21 accounting, customer assistance, sales) function in O&M expenses.

22 **Q. Please describe the second step, levelization.**

1 A. Levelization is the process of disaggregating costs by the customers' voltage service  
2 levels. The service level designations are a means of identifying and associating  
3 investment and expenses with customers and their loads at established points of service.  
4 In general, the lower the voltage level of service required by the customer, the greater the  
5 cost of providing service, because additional equipment is necessary to deliver lower  
6 voltage service and additional load losses are incurred when stepping down the load to  
7 lower voltages. In principle, customers at higher voltage service levels are not responsible  
8 for the costs associated with service levels below them. For example, a customer at the  
9 primary distribution service level is not responsible for the costs of the secondary level.

10 **Q. At what voltage service levels are MDU's customers served?**

11 A. Montana-Dakota serves customers at secondary and primary distribution levels, and at  
12 the substation level, in which customers are connected directly to the primary voltage  
13 side of a substation. Representative voltage service levels for these groups of customers  
14 are: 1) secondary – 480 V or less; 2) primary – 2.4 to 13.8 kV; and 3) substation (*i.e.*  
15 service taken directly from the substation) – also 2.4 to 13.8 kV.

16 **Q. What is the next step, classification?**

17 A. Classification segregates costs into the three primary "cost-causative" characteristics of  
18 investment and expenses described above. Each type of cost is deemed to vary in  
19 response to changes in one or more of: energy consumed (kWh), peak demand (kW), and  
20 number of customers.

21 **Q. What is included in the assignment step?**

1 A. As noted above, if costs or revenues are the responsibility of certain customers or groups  
2 of customers, these costs can be assigned directly to the customers responsible for them.

3 **Q. What is the allocation step?**

4 A. Allocation is the process of dividing common costs (costs that cannot be assigned to  
5 specific customers) among rate groups. This process requires the development of  
6 allocators. An allocator provides the share of each type of costs for which each rate  
7 group bears responsibility.

8 **Q. Which jurisdictional tariff classes are identified in this COS study?**

9 A. The customer classes used in this COS study are Residential, Small General, Irrigation,  
10 Large General, Optional Time of Day General Service, General Service Space Heating,  
11 Small Municipal, Municipal Lighting, Municipal Pumping, Outdoor Lighting,  
12 Interruptible, and Interruptible Demand Response. Within several of these classes there  
13 are separate tariffs distinguished by voltage service level.

14 **IV. RATE CLASS DETERMINATION**

15 **Q. Has Montana-Dakota retained its current rate class determination for COS or were  
16 changes in rate classes necessary?**

17 A. Montana-Dakota has largely retained its current rate structure, but has found it advisable  
18 to present Rate 31 for primary and secondary distribution levels because of the  
19 emergence of significant load at primary distribution within Rate 31 (Optional Time of  
20 Day General Service).

1 V. ALLOCATION OF GENERATION AND TRANSMISSION COSTS AT  
2 MONTANA-DAKOTA

3 Q. Is Montana-Dakota allocating generation and transmission (G&T) costs in the same  
4 manner as in past COS studies?

5 A. No. In the COS study filed with the 2010 rate case, Montana-Dakota used the Average  
6 and Excess Demand (AED) allocator to allocate G&T costs. I have recommended that the  
7 Company use the twelve-month coincident peak (12 CP) allocator. This allocator  
8 computes a simple average of the demands at the time of system peak in each month of  
9 the year for each class in the North Dakota jurisdiction. The 12 CP allocator is then  
10 based upon the class shares of the total summed across classes.

11 Q. Why are you recommending the use of the 12 CP allocator in preference to AED?

12 A. Both allocators are recognized by the NARUC Cost Allocation Manual<sup>1</sup>, among several  
13 other allocators, and utilities have broad discretion, typically, in selecting an allocation  
14 method. The 12 CP allocator, a well-established peak demand method of allocating G&T  
15 costs, is preferable if one views these costs as being driven by system coincident peak  
16 demands, as many experts do. In addition to being based upon the logical foundation of  
17 system peak demands throughout the year influencing G&T cost causation, the 12 CP  
18 possesses additional useful attributes. This includes recognition of the cost pattern of  
19 scheduled maintenance and alignment with FERC's preference for 12 CP, and OATT  
20 pricing.

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<sup>1</sup> National Association of Regulatory Utility Commissioners, *Electric Utility Cost Allocation Manual*, January 1992, Washington, D.C., P. 39ff.

1 Difficulties in calculating a reliable 12 CP allocator at Montana-Dakota led to the use of  
2 AED in the past. AED requires class annual kWh and annual estimated class  
3 noncoincident-peak demand, while 12 CP requires *monthly* coincident-peak values,  
4 which are more time consuming to acquire and depend upon the availability of reliable  
5 load research data. Montana-Dakota's load research data have improved substantially  
6 since 2010, and the 12 CP approach is now feasible. The AED allocator is an energy  
7 weighting method that is based on the belief, shared by some utilities, that investment in  
8 generation depends not just on meeting peak demand but on meeting overall energy (or  
9 average demand) needs. The approach is implemented by classifying costs according to  
10 system load factor. For example, if system load factor is 55%, then 55% of costs are  
11 deemed energy-related. The remaining share is allocated based on the excess of NCP  
12 over average demand.

13 A theoretical weakness of the AED approach arises from the questionable use of NCP as  
14 an indicator of G&T cost causation, when compared with the methodological soundness  
15 of CP. (Using a CP measure instead of NCP in the AED allocator computation produces  
16 an outcome identical to that of the underlying CP allocator.) This awkwardness, and  
17 another theoretical weakness relating to the illogical use of load factor to classify  
18 generation cost to energy and demand, makes AED less attractive than 12 CP, provided  
19 that the 12 CP method is computationally feasible.<sup>2</sup> Now that Montana-Dakota can  
20 develop a 12 CP allocator, the Company feels that it is appropriate to adopt this allocator.

21 I concur that this reasoning is sensible and within the standards of industry practice.

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<sup>2</sup> Alternative weighted energy approaches, such as the equivalent peaker method, rely explicitly on system planners' views of the uses and costs of various types of generation, rather than simply determining the cost split via the load factor proxy. This method is more data intensive than the AED approach, though. Please see the NARUC *Electric Utility Cost Allocation Manual*, p. 52.

1 VI. CLASSIFICATION OF DISTRIBUTION COSTS AT MONTANA-DAKOTA

2 Q. How do utilities typically classify distribution costs?

3 A. Utilities usually view distribution costs as being driven by a combination of demand-  
4 related and customer-related factors. For some distribution cost accounts, classification  
5 is not an issue, since the cost can be related exclusively to peak demand or number of  
6 customers. For example, substation costs are generally regarded as demand-related,  
7 while meter costs are commonly viewed as customer-related. However, in other cases,  
8 distribution classification is complicated by recognition that both demand and customer  
9 numbers can play a role in causing costs. In particular, assets under FERC account  
10 numbers 364-368 must usually be studied in order to classify costs successfully. Those  
11 accounts cover poles, towers, and fixtures (364); overhead conductors and devices (365);  
12 underground conduit (366); underground conductors and devices (367); and line  
13 transformers (368).

14 Q. What methods are used to classify these accounts?

15 A. Two methods are typically used: "minimum-size" and "minimum-intercept" (or "zero-  
16 intercept"). The former classifies the costs of a hypothetical minimum-size version of the  
17 utility's distribution system capable of connecting to all customers as customer-related,  
18 then classifies all residual costs as demand-related. The analyst examines the assets of  
19 each account, identifying the smallest type of pole, conductor, etc., valuing this smallest  
20 unit and multiplying by the total number of units of that type. Comparison with the value  
21 of all the assets in the account yields the result.

1 The “minimum-intercept” method calculates the costs associated with zero loads by  
2 valuing the costs of all assets in an account and conducting regression analysis of cost on  
3 current-carrying capacity or demand rating to establish the cost of a zero-load system.

4 Each approach has its merits. The minimum-size approach is economical because the  
5 data are available and the computations are straightforward. The minimum-intercept  
6 approach makes use of cost information on assets of all sizes in each class and computes  
7 a zero-load estimate, as opposed to a minimum-load presumption generated by the  
8 minimum-size method. Both methods are acceptable to the industry, as may be seen by  
9 referencing the NARUC *Electric Utility Cost Allocation Manual*.<sup>3</sup>

10 **Q. What method does MDU use?**

11 A. MDU uses the minimum-size method for accounts 364 to 367 and the zero-intercept  
12 method to classify transformers (account 368). The Company’s method for accounts 364  
13 to 367 uses a modeling approach that creates representative one-mile minimum and  
14 normal underground and overhead systems, and then calculates the current replacement  
15 cost of each. The one-mile minimum underground and overhead systems are regarded as  
16 customer-driven systems, while the difference in cost between a normal and a minimum  
17 system is deemed demand-driven. This approach has been used by MDU in past COS  
18 studies in both North Dakota and other jurisdictions.

19 **Q. Is the one-mile minimum construct a reasonable representation of customer-driven**  
20 **cost?**

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<sup>3</sup> See Chapter 6, Section II, pages 90-96.

1 A. Yes, it is, in my opinion. Industry practice offers no single best representation of a  
2 minimum system. The one-mile-of-circuit approach attempts to construct a realistic  
3 representation of an MDU circuit under two situations, and applies the standard minimum  
4 system logic that use of the smallest feasible equipment size to serve that circuit is an  
5 acceptable way to identify customer-driven cost. The approach differs slightly from  
6 another widely-used minimum system approach that scales each type of the minimum  
7 equipment cost up to the cost of system equipment inventories. MDU's approach is  
8 appealing due to its starting point of a hypothetical one-mile circuit that is a realistic  
9 proxy for circuits in MDU's service territory.

10 **Q. How does MDU apply the one-mile minimum system methodology in its COS study?**

11 A. MDU combines its customer and demand shares for accounts 364-367 based on weighted  
12 asset values for each account to derive single percentages for the combined accounts.

13 **Q. How does MDU create classification shares for account 368, line transformers?**

14 A. MDU uses the minimum- or zero-intercept approach for each of three types of  
15 transformer (single- and three-phase padmount transformers, and single-phase line  
16 transformers).<sup>4</sup> The weighted average of the three shares yields shares for the complete  
17 account.

18 **Q. Why does MDU use the minimum-intercept method for account 368, but the**  
19 **minimum system method for the other accounts described above?**

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<sup>4</sup> In each case, the analysis makes use of the transformers that are both currently in use and likely to be reordered as replacements for aging line transformers to determine the zero-intercept value and then uses the entire asset base to calculate shares. This technical detail is adopted to avoid the need to develop replacement prices for transformer sizes that are not going to be reordered at the time that existing transformers of those sizes are to be replaced.

1 A. Line transformers are not readily included in the methodology based on the representative  
2 one mile of circuit. Also, line transformers offer, by their standard equipment types, a  
3 more readily developed zero-intercept analysis. This approach also repeats that used in  
4 the previous rate case.

5 The results of MDU's analysis appear in the table below.<sup>5</sup> The bolded values are inputs  
6 to the COS model. Note that, as with other utilities, FERC account 366, underground  
7 conduit, is assumed to have the same classification properties as underground conductors.

FERC A/C	Account Name	Customer	Demand
364	Poles – Primary	62.9%	37.1%
365	Overhead Conductors	51.4%	48.6%
367	Underground Conductors	56.9%	43.1%
364-367	Weighted Average	<b>57.5%</b>	<b>42.5%</b>
368	Line Transformers	<b>69.4%</b>	<b>30.6%</b>

8

9 **Q. Have you reviewed the information provided by Montana-Dakota on its minimum**  
10 **size and minimum-intercept methods?**

11 A. Yes. I reviewed each account's computations that were used to derive the classification  
12 results. Based on my experience, the computations are reasonable, and should be  
13 accepted by the Commission.

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<sup>5</sup> Classification of FERC account 366, underground conduit, is based on analysis of other accounts. Such practice is common classification methodology.

1 **VII. ALLOCATION OF DISTRIBUTION COSTS AT MONTANA-DAKOTA**

2 **Q. How do utilities typically allocate demand-related distribution costs?**

3 A. Utilities allocate demand-related distribution costs primarily by reference to class shares  
4 of noncoincident peak (“NCP”) demand. Load research reveals each class’s single  
5 maximum level of consumption over the course of a year. The 1 NCP allocator is simply  
6 each class’s share of the sum of these values. (The “1” denotes the single annual  
7 maximum value.) Investment in distribution expenses is presumed to occur in response  
8 to the increase in peak demands of subgroups of customers on individual feeder lines,  
9 with such peak demands not necessarily corresponding in timing to system peak  
10 demands. Accordingly, measuring each subgroup’s peak or, more feasibly, each class’s  
11 peak, and then estimating the class’s share in the sum of the peaks across all classes, is a  
12 reasonable way to judge responsibility for demand-related cost causation applying to  
13 distribution investment.

14 **Q. How does MDU allocate demand-related distribution costs?**

15 A. MDU applies the 1 NCP approach, in line with the practices of many other utilities. As  
16 with other utilities, the allocator has several representations based on the levelization of  
17 costs. Thus, the MDU COS model features two NCP allocators, one applicable at the  
18 generation level and another at the secondary service level. The “NCP – Generation  
19 Level” allocator is based on the peak demands of all customers and allocates demand-  
20 related costs associated with land, station equipment, poles, conductors, and conduit. The  
21 “NCP – Secondary Level” allocator is based on the peak demands of secondary

1 distribution customers and allocates demand-related line transformer costs. The practice  
2 of using the 1 NCP allocator for such costs is common among utilities.<sup>6</sup>

3 **Q. Are you familiar with the development of MDU's 1 NCP allocators?**

4 A. Yes. I have reviewed their development and find them to be reasonable and acceptable  
5 for cost allocation.

6 **Q. How did MDU develop its 1 NCP allocators?**

7 A. MDU possesses load research data for most of its customer classes. For each of these  
8 classes, MDU developed sample usage, coincident peak and class noncoincident peak  
9 data for calendar 2015, then scaled the values based on billed kWh. The result is demand  
10 values that preserve observed load factors of the load research sample. Load research  
11 results are available to Montana-Dakota for about 92% of jurisdictional load. The classes  
12 making up the remaining 8% of load were each matched to a class for which interval data  
13 are available. Demand values were calculated that produce load factors identical to the  
14 class with which each class lacking interval data was matched. For the test year (2017),  
15 Montana-Dakota produced kWh forecasts and demand values that yielded load factors  
16 identical to those of the historical data.

17 **Q. Why do you characterize this process as reasonable?**

18 A. This application of load research data to generate demand-related allocators is  
19 conventional. It is consistent with other utilities' practices and my experience.

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<sup>6</sup> These allocators apply to gross plant. Accumulated depreciation at MDU is allocated based on the resulting shares of gross plant of combined demand- and customer-related costs. Functionally, this matches the practice of classification of depreciation identically with gross plant and allocation using the same allocators as those used to allocate gross plant.

1 **Q. How do utilities typically allocate customer-related distribution costs?**

2 A. Utilities develop customer-related allocators that record the shares of customers by class,  
3 often weighted to represent cost variation across customer classes. For example, a utility  
4 might use customer numbers, weighted by meter cost in each class as a customer-related  
5 allocator of meter costs.

6 **Q. How does MDU allocate customer-related distribution costs?**

7 A. MDU uses allocators based on customer numbers, weighted by costs for certain cost  
8 categories, for various types of assets and expenses. The Company develops six  
9 customer-related allocation factors: customer numbers, customer numbers excluding  
10 lighting; customer meters, weighted by an index of meter costs; customer service drops,  
11 weighted by service cost; customer transformers, weighted by transformer cost; and  
12 customer accounts, weighted by the cost of customer support. The company's forecasts of  
13 test year customer numbers and meter numbers underpin these allocation factors. The  
14 development and application of these allocators is conventional.

15 **VIII. COST-OF-SERVICE RESULTS**

16 **Q. Would you please discuss the schedules that you are sponsoring with your**  
17 **testimony?**

18 A. I am supporting three schedules. They are Statement M, Cost of Service by Component;  
19 Statement M Schedule M-1, Rate Base, Revenue and Expenses, by Class at Current  
20 Rates; and Statement M Schedule M-2, Allocation Factors. The first of these provides a  
21 summary for each rate class's projected test year rate base and revenue requirements for  
22 the class to meet the requested rate of return. The second schedule presents detail by cost

1 and revenue component culminating in projected rate base and rate of return at current  
2 rates. The third schedule provides documentation of the allocation factors used to develop  
3 costs by class.

4 **Q. Would you please describe the contents of Statement M?**

5 A. Statement M, Cost of Service by Component, presents summary information setting out  
6 the revenue requirement at the requested rate of return for each class and cost-causative  
7 component of the class. for the twelve-month test period of calendar 2017. The schedule  
8 contains 16 pages, one for each rate class. The leftmost column of data provides  
9 jurisdictional data while the rightmost presents the total for each class. Other columns  
10 provide the cost-causative components: demand (segmented into production and  
11 transmission, and distribution; energy; and customer cost. The schedule develops  
12 operating income, adjusts for taxes, and derives revenue requirement. Projected billing  
13 units for each cost causative category and the resulting unit cost appear at the bottom of  
14 each page. For example, the first page displays the calculations for the Residential class  
15 (Rate 10). The class's projected rate of return before a rate increase is 3.817%. In  
16 contrast, the jurisdictional projected rate of return is 5.839%. Unit costs for the  
17 Residential class, summed across demand and energy, amount to \$0.087 per kWh, and  
18 \$19.70 per customer-month, assuming that a rate increase sufficient to earn to the parity  
19 rate of return occurs. (The actual rates, of course, will differ from unit costs, partly  
20 because the requested class rate of return may not match the average request.)

21 **Q. What does Statement M Schedule M-1 present?**

1 A. Statement M Schedule M-1, Rate Base, Revenue and Expenses, by Class at Current  
2 Rates, provides the core COS study results. The schedule is voluminous, consisting of  
3 105 pages, and should be considered the source for background information to the first  
4 schedule. A sequence of panels presents rate base, revenues, and expenses, by  
5 component. Each page presents total data for the North Dakota jurisdiction as sponsored  
6 by Mr. Jacobson, the total for the rate class, and detail for the four cost causative factors.  
7 All information for each rate appears together, and requires several pages. The first pages  
8 provide rate base – gross plant and accumulated depreciation – and conclude with Net  
9 Electric Plant in Service. Revenues follow, with detail by type of charge. Expense detail  
10 – O&M, depreciation, and taxes – leads to Total Operating Expenses. Total Operating  
11 Income is the difference between total operating revenues and expenses. (Naturally, the  
12 difference between revenues and expenses for the total rate class is of interest, while the  
13 difference by cost causative factor is not immediately informative.)

14 **Q. What else is noteworthy in this schedule?**

15 A. Each page contains an Allocation Factor (an identification number) in the first column of  
16 data. This factor can be used as a reference in Schedule M-2 to identify how each line of  
17 the study was allocated. (Please see the description of that schedule below for more  
18 detail.)

19 **Q. What does Statement M Schedule M-2 present?**

20 A. As noted immediately above, Schedule M-2 presents the allocation factors used in the  
21 COS study. On the left side of each page, the allocation factor number and title appear,  
22 followed by two lines for each factor. The top line provides the numbers on which the

1 allocation factor is based, while the bottom line presents the allocator shares themselves.  
2 As with the previous schedules, each rate class is segmented by cost causation factor, two  
3 demand factors being followed by an energy and a customer factor. Allocation factors 1  
4 through 12 consist of the familiar energy, demand, and customer allocators used to  
5 allocate rate base. Following these are allocation factors that are derived from the cost  
6 allocation performed by allocators 1 through 12. For example, Allocator 14, Distribution  
7 Plant, is developed following allocation by the demand (4 and 5) and customer (7 through  
8 12) allocators. Allocator 19, Line Transformers, is developed following the allocation of  
9 gross plant by allocator 5, NCP – Secondary Level (for demand-related cost) and  
10 allocator 11, Weighted Customer Transformers (for customer-related cost). This  
11 methodology is widely practiced in the industry.

12 **Q. How were these allocators selected?**

13 A. The allocation factors used in this COS study largely are retained from the 2010 study.  
14 CA Energy Consulting and MDU reviewed the various allocation factors to evaluate  
15 whether any needed modification. CA Energy Consulting concluded that the allocators  
16 largely comport with industry practice and/or have a common-sense basis. However, as  
17 the testimony above has noted, the review determined that one allocator ought to be  
18 changed: the AED allocator for G&T demand-related costs should be replaced by the 12  
19 CP allocator. I recommend that the PSC accept this modification for the reasons stated  
20 above. That change has a secondary implication in that Allocation Factor 3,  
21 Demand/Energy for Wind, now utilizes 12 CP for the demand component of this mixed  
22 allocator.

1 **Q. Are there any other noteworthy changes in cost allocators or allocation?**

2 A. Yes, there is one such change. MDU subdivided its general, common and intangible plant  
3 costs for the first time in this COS study in an effort to improve the accuracy of cost  
4 allocation. There is one change in the list of allocators, the addition of allocation factor 6,  
5 Total Customers. Intangible plant costs (and depreciation of those costs) now consist of a  
6 customer care and billing (CC&B) component and a (larger) residual. CC&B costs are to  
7 be allocated based on allocation factor 6, Total Customers, while other intangible costs  
8 are to be allocated based on their original allocation factor number 13, Production,  
9 Transmission, and Distribution Plant. The use of the Total Customers allocation factor for  
10 CC&B appears to improve accuracy in cost allocation for these clearly customer-related  
11 costs.

12 **Q. Are you confident that these allocators are correctly applied by the model?**

13 A. Yes. CA Energy Consulting reviewed the model in detail and concluded that the  
14 allocators identified in the model utilize the proper allocator values and correctly  
15 calculate class shares.

16 **Q. What are the results of the embedded class cost of service study?**

17 A. The overall North Dakota electric rate of return based on projected 2017 results is  
18 5.839 percent. The returns by customer class are as shown below:

19

<b>Customer Class</b>	<b>ROR (%)</b>
Residential	3.818
Small General	5.395
Irrigation	(1.195)

Large General Primary	7.580
Large General Secondary	8.416
TOD Large General Primary	4.198
TOD Large General Secondary	5.844
Space Heating	6.077
Small Municipal	2.701
Municipal Lighting Primary	13.080
Municipal Lighting Secondary	10.847
Municipal Pumping Primary	2.020
Municipal Pumping Secondary	4.070
Outdoor Lighting	11.879
Interruptible Demand Response	6.616

1

2 **IX. CONCLUSIONS**

3 **Q. What are the conclusions of your testimony?**

4 A. Montana-Dakota's COS Study fairly and accurately presents the functionalization,  
5 classification and allocation of the utility's financial information to its retail customer  
6 classes. Reasonable and well established allocators are used in cost allocation.  
7 Classification percentages are derived in demonstrably reliable computations of cost  
8 shares for the major asset accounts. Classification for other accounts is consistent with  
9 industry standards. Additionally, the COS study reveals the current rate of return for the  
10 utility as a whole and for individual classes, based upon sound cost causation and  
11 provides essential information for guidance in rate setting.

12 **Q. Does this conclude your direct testimony?**

13 A. Yes.

**Bruce R. Chapman**

RESUME

January 2016

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**Academic Background:**

All course work necessary for PhD, University of Wisconsin-Madison, 1981, Economics  
MA, University of Wisconsin-Madison, 1979, Economics  
BA, University of Pittsburgh, 1976, Economics

**Positions Held:**

Vice President, Christensen Associates Energy Consulting, LLC, 2015-present  
Senior Economist, Christensen Associates Energy Consulting, LLC, 2005-2014  
Senior Economist, Laurits R. Christensen Associates, Inc., 1992-2005  
Economic Analysis Consultant, Laurits R. Christensen Associates, Inc., 1988-1992  
Research Economist, Laurits R. Christensen Associates, Inc., 1986-1988  
Associate Consultant, Coopers & Lybrand Consulting Group, Economics Practice,  
Toronto, Canada, 1985-1986  
Research Assistant, University of Wisconsin-Madison, 1980-1981  
Research Analyst, Woods Gordon (Economics Group), Toronto, Canada, 1979-1980

**Professional Experience:**

I assist clients in the electricity and natural gas industries to improve their costing and pricing capabilities. I advise clients in such areas of expertise as: cost-of-service analysis and rate design based upon established regulatory and market-based principles; innovative rate design including demand response products, renewables pricing, fixed billing, and other market-based retail pricing products; load forecasting and load research analysis. I supervise and conduct analysis of costing and pricing issues for utilities, regulators, customers and other industry stakeholders. Additionally, I have supervised the development of software required for the implementation and support of innovative retail products. Examples include cost-of service and rate design models to

support rate applications, and models to predict customer tariff choice and price response. I regularly present costing and pricing issues and concepts at industry conferences and workshops.

**Major Projects:**

Provided pricing and revenue recovery guidance to a Caribbean utility.

Provided guidance to a Southeast Asian utility in the design of time-of-use rates. Guidance included instruction in simulation of price response.

Directed a cost-of-service study for a large distribution utility.

Assisted a utility to adjust its costing and pricing methods following addition of significant new generation and transmission assets.

Assisted a utility to merge rates of two separate service territories following a corporate merger.

Reviewed a natural gas distribution utility's proposal for a commodity hedging arrangement.

Assisted in developing an electric vehicle tariff for a Midwestern utility.

Assisted in an evaluation of economic development and load retention rates for a Midwestern utility.

Led an evaluation of a Midwest utility's residential time-of-use rate in comparison with other TOU designs and current marginal costs. Evaluated means by which participation could be increased.

Participated in an evaluation of the merits of a special contract for a large customer of an Eastern utility.

Conducted an analysis of the relative cost-of-service implications of creating a separate class for a specialized subset of customers from an existing large customer class.

Assisted a Great Plains utility to develop a renewable tariff for large industrial customers.

Managed a project that assisted a Great Plains public service commission staff to evaluate natural gas utility submissions for safety-related cost recovery via new riders.

Participated in a load research data development project for a Midwestern utility, including sample design and selection, and class interval load profile development.

Conducted an analysis of the cost implications for a Caribbean utility of introducing LED street lighting.

Developed generic cost-of-service and rate design models for use in client rate cases.

Customized company cost-of-service and rate design models for an Asian utility. The project also included support for marginal cost capability development.

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Led a rate case preparation process for a Southeastern utility that included load and energy forecasting, development of revenue requirements, and support for cost of service and rate design.

Participated in a Midwest utility's rate case by reviewing current mass market time-of-use and other rate designs and recommending modifications.

Collaborated in a review of a large Canadian utility's cost-of-service methodology, including a public review process with stakeholders. Testified before regulator regarding recommendations.

Conducted an assessment of a Great Plains public power utility's plans for three pricing concepts: green power, economic development rates, and unbundled retail pricing to facilitate customer choice.

Assisted a distribution utility to review aspects of its distribution cost allocation methodologies by conducting a survey of methodologies across a number of electric utilities.

Assisted a state energy office to review ways in which the state could improve its record of energy efficiency program achievements, as recorded by the ACEEE Scorecard.

Collaborated in the development of rate redesign alternatives for a utility's real-time pricing program structure.

Collaborated in the review of the potential for a Canadian utility to introduce a fuel adjustment mechanism.

Conducted an analysis of probable migration of customers to new time-of-use electricity programs offered by a southeastern utility.

Evaluated the accuracy of an electric utility's fixed bill offer algorithm and recommended modifications.

Led a project which conducted a review of an electric utility's avoided cost calculation and the application of those costs in energy efficiency reviews.

Managed and participated in reviews of rate and gas cost adjustment applications for a Great Plains public service commission's gas division.

Conducted a cost-of-service and rate design study for a Caribbean utility in preparation for a rate submission.

Supported review for an industrial customer group of a large filing by a utility, focusing on non-bypassable riders.

Managed a gas cost review process for a Great Plains regulatory agency.

Analysis of smart grid pricing issues for a Great Plains public power utility.

Contributed to load research sample development for an investor-owned utility.

Managed a review of a large electric and gas utility's costing methodologies.

Managed a cost-of-service and rate design study for a Caribbean utility.

Conducted analysis of distribution costing practices at a large Midwestern investor-owned utility.

Development of a time-of-use rider for two electric utilities.

Management of a study of interruptible pricing program improvements for a large Midwestern utility.

Management of a comprehensive cost-of-service and rate design study for a Caribbean utility.

Strategic pricing for a large hydro-dominated utility.

Evaluation of the net economic benefits of alternative power supply strategies: coal vs. renewables and energy efficiency.

Load forecasting project for a medium-sized electric utility with significant industrial load.

Analysis of alternative means of net metering.

Evaluation of alternative demand response programs for a municipal utility.

Analysis of treatment of margins from real-time pricing.

Analysis of a natural gas energy conservation funding mechanism.

Design and pricing of a small customer Time-of-Use program.

Evaluation of cost of capital for a small Caribbean utility.

Risk pricing of a long-term customer choice retail contract.

Evaluation of response by small customers to fixed billing programs.

Evaluation of response by medium-sized customers to a banded fixed billing program.

Cost-of-service project including marginal cost and traditional cost basis.

Preparation of load research survey sample via stratified random sampling.

Design and pricing of a Critical Peak Pricing product

Evaluation of residential customers' propensity to adopt a voluntary Time-of-Use product

Pricing of a fixed bill product for a new service territory based on response elsewhere

Evaluation of peak period response to a fixed billing product

Development of an electric utility fuel forecast

Customization of fixed bill software for use at a utility site

Design and pricing of a Banded Fixed Billing product.

Long-term wholesale power procurement for an electric utility.

Report on Adoption of Variable Pricing contracts in deregulated retail electricity markets.

Development of Fixed Bill software to generate offers and monitor customer behavior.  
Quantitative evaluation of net benefits of demand response programs.  
Quantitative evaluations of customer response to fixed billing.  
Design and pricing of several pilot and permanent fixed-bill programs.  
Development of Efficient Tariff Prices via Marginal Costing.  
Analysis of Market Data Available to Estimate Marginal Cost of Reliability.  
Evaluation of Risk of Fixed Billing Based on Customer Response.  
Cost Allocation Analysis for Rate Case Filing.  
Analysis of Customer Response to Fixed Billing.  
Fixed Bill Scoping for a Natural Gas Provider.  
Analysis of Risk Implications of Fixed Billing for an Electric Utility.  
Strategic Assessment of an Electric Utility's Retail Tariff Portfolio.  
Guaranteed Bill Product Design and Risk Assessment.  
White Paper on Interruptible/Curtailable Service.  
Marginal Cost-Based Cost of Service Development.  
Software Scoping for Self-Designed Products.  
Flat Bill Offer Software Development.  
Comprehensive Rate Repricing.  
RTP Price Hedging Product Development.  
Retail Pricing Under Competition Conference.  
Rate Optimization Plan.  
Fixed Bill Product Development.  
Weather Hedge Evaluation.  
Real-Time Pricing Product Development.  
Workshop: Creating a Diversified Retail Pricing Portfolio.  
Product Mix Business Plan.  
Prepared material for testimony in Federal District Court on Real-Time Pricing.  
Risk-Based Pricing Workshops.  
Survey of New Electricity Market Players.  
Analysis of Fixed Bill Products.  
Strategic Pricing Plan for a Midwestern Utility.

Product Mix Analysis for Small Customers.  
Real-Time Pricing Workshop.  
Innovative Pricing and Marginal Costing for a Co-op.  
Real-Time Pricing with Multiple Options.  
Real-Time Pricing for a G&T and its Co-ops.  
Product Mix Analysis for Large Customers.  
Real-Time Pricing Service Design for Commercial Customers.  
Advanced Service Design Workshop.  
Real-Time Pricing Program for a Midwestern Utility.  
Evaluation of Customer Response to Real-Time Pricing.  
Real-Time Pricing Program Development for an Eastern Utility.  
Two-Part Pricing Service Design.  
Real-Time Pricing Regional Workshops.  
Real-Time Billing Program Support and Revision.  
Electricity Efficiency Programs.  
Real-Time Pricing Program Redesign for an Eastern Utility.  
Real-Time Pricing Implementation for a Canadian Utility.  
Real-Time Pricing Practitioners' Workshop.  
Real-Time Pricing for a Canadian Utility.  
Customer Evaluation of Real-Time Pricing.  
Review of Competitive Pricing Strategies.  
Evaluation of Process of Marketing Real-Time Pricing.  
Review of Methods for Distinguishing Customer Response to Rate Change.  
Real-Time Pricing Rate for a Southern Utility.  
Review of Accounting and Incentives for a Real-Time Pricing Rate.  
Analysis of Load Impact of Priority Service Alternatives.  
Benefit/Cost Analysis of an Integrated Energy Management System.  
Benefit/Cost Analysis of Marginal Cost-Based Rates for DSM Integrated Resource Plan.  
Impact Evaluation of Curtailable Electric Service.  
Survey of Households Who Were Candidates for Voluntary Time of Use Rates.  
Audit of Energy Management Software.

Real-Time Pricing Rate for a Large Northeastern Public Utility.

Software Design for Real-Time Pricing.

Improved Approaches to Estimating Benefits of DSM Programs.

Load Shapes Assessment Program.

Fuel Purchase Contract Study.

Evaluation of the Effects of Canadian Energy Policy.

Evaluation of Energy Conservation Programs.

**Professional Papers:**

"Pricing of Renewable Energy Made Difficult by Policy Challenges", *Natural Gas & Electricity*, January 2016.

"Hedging Exposure to Volatile Retail Electricity Prices", *The Electricity Journal*, June 2001 (with Ahmad Faruqui, Dan Hansen, and Chris Holmes).

"A Survey of Real-Time Pricing Programs", *The Electricity Journal*, August–September 1993 (with Juliet Mak).

"Real-Time Pricing: DSM at Its Best?", *The Electricity Journal*, August 1990 (with Tom Tramutola).

**Conference Presentations:**

"Net Metering and Solar Energy Pricing", pre-conference workshop at EUCI's Net Energy Metering and Utility Solar Rates Summit, July 2016.

"Pricing the Purchase of Renewable Energy," post-conference workshop at EUCI's 4<sup>th</sup> Annual Southeast Clean Power Summit, March 2015.

"Pricing Perspectives of Regulated Utilities on Solar Power," EUCI's Net Metering 2.0 and Utility Solar Rates Conference, Anaheim, CA, January 2015.

Cost of Service and Rate Design; Current Utility Costing and Pricing Challenges; Pricing Renewable Energy; Feed-in Tariffs and Demand Response Alternatives to Supply. Presentations to the Wisconsin Public Utility Institute's Energy Utility Basics Course, 2009–2015.

"The Bill Please," university course and public presentation within the "Decoding the Energy Industry" series; Wisconsin Public Utility Institute, 2014.

Electric Rate Design Principles and Designs (with Dr. Stephen Braithwait), and Pricing Renewable Resources; presentations to the Rate Design and Regulation Workshop, Wisconsin Public Utility Institute, Madison, Wisconsin, 2014.

"Customer Response to Dynamic Pricing: Who Responds and How?," EUCI's Smart Ratemaking Conference, Oct. 2009, Los Angeles; with Dr. Steven Braithwait.

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Cost-of-Service, preconference workshop, EUCI's Smart Ratemaking Conference, Oct. 2009, Los Angeles.

Critical Peak Pricing: Valuation and Viability, presented at AESP's Innovations in Retail Pricing Conference, Chicago, IL, May 17, 2006.

Georgia Power's FlatBill Program, Risks and Returns, presented, with Monamee Adhikari, Georgia Power Company, at AESP's Innovations in Retail Pricing Conference, Chicago, IL, May 17, 2006.

Retail Pricing for Competitive Power Markets, six presentations on retail pricing and unbundling; Infocast conference February 28-March 2, 2001.

Retail Products and Pricing Under Competition, presented at the Canadian Electricity Association's seminar: Setting Up for New Energy Regulation, April 19, 1999.

Using Risk as the Maker of Prices: Risk-Based Pricing, presented at Infocast's conference: Power Industry Retail Pricing, June 23-25, 1999.

"Designing a Retail Pricing Product Mix for a Competitive Market: A C-VALU Case Study," presented at EPRI's Innovative Pricing Conference, Washington, DC, June 18, 1998, (with Kathleen King and David Kulha).

"Retail Products & Pricing in the Competitive Era," presented at IBC Conference: Successfully Implementing Retail Access, Washington, DC, April 27, 1998.

"Risk-Based Pricing: Making Money in Competitive Markets," EMACS Conference, Atlanta, Georgia, October 14, 1997, (with A. Faruqui, EPRI).

"Real-Time Pricing: Becoming Competitive Before Competition," presented at IBC Conference: Successfully Implementing Retail Profit Projects, Atlanta, Georgia, February 24, 1997, and Las Vegas, Nevada, July 17, 1997.

"Effective Retail Product Design for a Competitive Market," IBC Conference: Developing, Negotiating and Contracting Retail Electricity Prices, Atlanta, Georgia, February 24, 1997, (with Kathleen King).

"Innovative Pricing and Data Requirements," presented at the AEIC Load Research Conference, Washington, DC, August 4-6, 1995.

"Lessons Learned and the Path Forward," presented at EPRI's National Conference on Achieving Success in Evolving Electricity Markets, Atlanta, Georgia, October 10-12, 1995 (with Kathleen King).

"A Real-Time Pricing Primer: Service Design for a Competitive Market," presented at the Missouri Valley Electric Association Marketing Division Conference, Kansas City, Missouri, October 13, 1994.

"Real-Time Pricing: Service Design for a Competitive Market," presented at the American Public Power Association workshop, Scottsdale, Arizona, September 28, 1994.

“Customer Response to Real-Time Pricing: Results from Current Experiments,” presented at the 6th National Demand-Side Management Conference, Miami Beach, Florida, March 25, 1993.

“Electricity Pricing Innovations for Retail Sales,” presented at the Energy Utilities and Regulation Course, Wisconsin Public Utilities Institute, September 13, 1990; revised and presented again in 1992.

“Innovative Pricing in DSM: Recent Field Tests of Real-Time Pricing,” presented at the Energy Demand-Side Research Seminar Series, University of Wisconsin-Madison, April 4, 1990 (with D. W. Caves).

**Testimony:**

Panelist in Cost-of-Service Methodology review hearings on behalf of Nova Scotia Power, before the Nova Scotia Utilities and Review Board, proceeding NSUARB-NSPI-P-892, Matter No. M05473, December 2013.

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY**  
**NORTH DAKOTA**  
Embedded Class Cost of Service Study  
Cost of Service by Component  
Projected 2017  
(000's)

	Total North Dakota	Residential Rate 10			Total Residential Rate 10	
		Demand Prod. & Trans.	Demand Distribution	Energy		
Rate Base	541,766	153,390	34,662	1,328	63,471	252,851
Operating Income for Proposed Return	40,410	11,444	2,585	99	4,734	18,862
Current Operating Income	31,633	(13,771)	(2,472)	26,571	(675)	9,653
Increase in Operating Income	8,777	25,215	5,057	(26,472)	5,409	9,209
Related Taxes for Increase	5,334	15,321	3,073	(16,089)	3,287	5,592
Slate & Federal Income Taxes	14,111	40,536	8,130	(42,561)	8,696	14,801
Total Revenue Before Increase	186,308	1,479	422	62,441	11,195	75,537
Total Cost of Service Required from Rates	200,419	42,015	8,552	19,880	19,891	90,338
Less: Other Operating Revenues (incl Contract Revenue)	9,509	1,479	422	1,213	974	4,088
Revenue Required from Rates	190,910	40,536	8,130	18,667	18,917	86,250
Projected Rate of Return Before Increase	5.839%					3.818%
Projected Billing Units						
Kwh	2,014,529,000	770,939,000	770,939,000	770,939,000		
Kw Demand	3,304,802				960,036	
Bills	1,170,228					
Unit Cost of Service						
\$ per Kwh	0.053	0.011	0.011	0.024		
\$ per Kw Demand						
\$ per Customer Per Month					19.70	
Operating Income/Inverse of Federal income tax rate:						62.1985%
Operating Income for Proposed Return:						7.459%

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Embedded Class Cost of Service Study  
Cost of Service by Component  
Projected 2017  
(000's)

	Small General Rate 20				Total Small General Rate 20
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy Customer	

Rate Base	541,766	22,351	4,505	194	12,281	39,331
Operating Income for Proposed Return	40,410	1,667	336	14	916	2,933
Current Operating Income	31,633	(2,008)	(322)	3,905	547	2,122
Increase in Operating Income	8,777	3,675	658	(3,891)	369	811

Related Taxes for Increase	5,334	2,234	400	(2,365)	224	493
State & Federal Income Taxes	14,111	5,909	1,058	(6,256)	593	1,304

Total Revenue Before Increase	186,308	213	54	9,157	3,126	12,550
Total Cost of Service Required from Rates	200,419	6,122	1,112	2,901	3,719	13,854
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	213	54	147	176	590
Revenue Required from Rates	190,910	5,909	1,058	2,754	3,543	13,264

Projected Rate of Return Before Increase 5.839%

Projected Billing Units	2,014,529,000	112,526,000	112,526,000	112,526,000		
Kwh	3,304,802					
Kw Demand	1,170,228					
Bills					138,144	

Unit Cost of Service						
\$ per Kwh	0.053	0.009	0.024			
\$ per Kw Demand						
\$ per Customer Per Month						25.65

Operating Income/Inverse of Federal income tax rate:  
Operating Income for Proposed Return:

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**NORTH DAKOTA**  
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Cost of Service by Component  
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(000's)

Total North Dakota	Irrigation Rate 25				Total Irrigation Rate 25
	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	

541,766	95	246	2	159	502
40,410	7	18	0	12	37
31,633	(7)	(8)	17	(8)	(6)
8,777	14	26	(17)	20	43

Rate Base  
Operating Income for Proposed Return  
Current Operating Income  
Increase in Operating Income

5,334	9	16	(10)	12	27
14,111	23	42	(27)	32	70

Related Taxes for Increase  
State & Federal Income Taxes  
Total Increase in Revenue

186,308	1	19	59	12	91
200,419	24	61	32	44	161
9,509	1	3	2	1	7
190,910	23	58	30	43	154

Total Revenue Before Increase  
Total Cost of Service Required from Rates  
Less: Other Operating Revenues (Incl Contract Revenue)  
Revenue Required from Rates

Projected Rate of Return Before Increase (1.195%)

2,014,529,000					
3,304,802	8,085	8,085	1,267,000		
1,170,228				552	

Projected Billing Units  
Kwh  
Kw Demand  
Bills

	2.84	7.17	0.024		77.90

Unit Cost of Service  
\$ per Kwh  
\$ per Kw Demand  
\$ per Customer Per Month

Operating Income/Inverse of Federal income tax rate:  
Operating Income for Proposed Return:

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY  
NORTH DAKOTA  
Embedded Class Cost of Service Study  
Cost of Service by Component  
Projected 2017  
(000's)

	Large General Primary Rate 30				Total LG Primary Rate 30
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	

Rate Base	541,766	28,995	6,686	334	239	36,254
Operating Income for Proposed Return	40,410	2,163	499	25	18	2,705
Current Operating Income	31,633	(2,604)	2,084	3,252	16	2,748
Increase in Operating Income	8,777	4,767	(1,585)	(3,227)	2	(43)

Related Taxes for Increase	5,334	2,897	(963)	(1,961)	1	(26)
State & Federal Income Taxes	14,111	7,664	(2,548)	(5,188)	3	(69)

Total Revenue Before Increase	186,308	277	4,186	10,185	53	14,701
Total Cost of Service Required from Rates	200,419	7,941	1,638	4,997	56	14,632
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	277	81	254	4	616
Revenue Required from Rates	190,910	7,664	1,557	4,743	52	14,016

Projected Rate of Return Before Increase 7.580%

Projected Billing Units						
Kwh	2,014,529,000					
Kw Demand	3,304,802	468,864	468,864			
Bills	1,170,228				516	

Unit Cost of Service						
\$ per Kwh				0.024		
\$ per Kw Demand		16.35	3.32			
\$ per Customer Per Month						100.78

Operating Income/Inverse of Federal income tax rate:  
Operating Income for Proposed Return:

**MONTANA-DAKOTA UTILITIES CO.**  
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**NORTH DAKOTA**  
 Embedded Class Cost of Service Study  
 Cost of Service by Component  
 Projected 2017  
 (000's)

	Large General Secondary Rate 30			Total LG Secondary Rate 30
	Total North Dakota	Demand Prod. & Trans. Distribution	Energy Customer	

Rate Base	541,766	135,247	27,538	1,302	11,253	175,340
Operating Income for Proposed Return	40,410	10,088	2,054	97	839	13,078
Current Operating Income	31,633	(12,150)	13,248	13,202	457	14,757
Increase in Operating Income	8,777	22,238	(11,194)	(13,105)	382	(1,679)

Related Taxes for Increase	5,334	13,515	(6,803)	(7,965)	232	(1,021)
Slate & Federal Income Taxes	14,111	35,753	(17,997)	(21,070)	614	(2,700)

Total Revenue Before Increase	186,308	1,290	24,790	40,566	2,636	69,282
Total Cost of Service Required from Rates	200,419	37,043	6,793	19,496	3,250	66,582
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	1,290	333	990	159	2,772
Revenue Required from Rates	190,910	35,753	6,460	18,506	3,091	63,810

Projected Rate of Return Before Increase 8.416%

Projected Billing Units						
Kwh	2,014,529,000					
Kw Demand	3,304,802	2,281,944	2,281,944			
Bills	1,170,228				55,044	

Unit Cost of Service						
\$ per Kwh						
\$ per Kw Demand				0.024		
\$ per Customer Per Month		15.67	2.83			56.16

Operating Income/Inverse of Federal income tax rate:  
 Operating Income for Proposed Return:

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY  
NORTH DAKOTA**

**Embedded Class Cost of Service Study  
Cost of Service by Component  
Projected 2017  
(000's)**

	TOD Large General Rate 31 Primary				Total TOD LG Primary Rate 31
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy Customer	

Rate Base	541,766	308	86	4	7	405
Operating Income for Proposed Return	40,410	23	6	0	1	30
Current Operating Income	31,633	(27)	18	25	1	17
Increase in Operating Income	8,777	50	(12)	(25)	0	13

**Related Taxes for Increase**

State & Federal Income Taxes	5,334	30	(7)	(15)	0	8
Total Increase in Revenue	14,111	80	(19)	(40)	0	21

**Total Revenue Before Increase**

Total Revenue Before Increase	186,308	3	39	92	1	135
Total Cost of Service Required from Rates	200,419	83	20	52	1	156
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	3	0	3	0	6
Revenue Required from Rates	190,910	80	20	49	1	150

**Projected Rate of Return Before Increase**

5.839% 4.198%

**Projected Billing Units**

Kwh	2,014,529,000			2,081,000		
Kw Demand	3,304,802	3,954	3,954			12
Bills	1,170,228					

**Unit Cost of Service**

\$ per Kwh				0.024		
\$ per Kw Demand		20.23	5.06			83.33
\$ per Customer Per Month						

**Operating Income/Inverse of Federal income tax rate:**

Operating Income for Proposed Return:

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY  
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Embedded Class Cost of Service Study  
Cost of Service by Component  
Projected 2017  
(000's)

Total North Dakota	TOD Large General Rate 31 Secondary			Customer	Total TOD LG Seconda Rate 31
	Demand Prod. & Trans.	Demand Distribution	Energy		

541,766	3,166	647	30	195	4,038
40,410	236	48	2	15	301
31,633	(284)	311	207	2	236
8,777	520	(263)	(205)	13	65

Rate Base

Operating Income for Proposed Return  
Current Operating Income  
Increase in Operating Income

Related Taxes for Increase  
State & Federal Income Taxes  
Total Increase in Revenue

5,334	316	(160)	(125)	8	39
14,111	836	(423)	(330)	21	104

Total Revenue Before Increase

Total Cost of Service Required from Rates  
Less: Other Operating Revenues (Incl Contract Revenue)  
Revenue Required from Rates

186,308	29	582	785	39	1,435
200,419	865	159	455	60	1,539
9,509	29	7	23	1	60
190,910	836	152	432	59	1,479

Projected Rate of Return Before Increase

5.839%

5.844%

Projected Billing Units

Kwh

Kw Demand

Bills

2,014,529,000					
3,304,802	46,446		17,694,774		
1,170,228				816	

Unit Cost of Service

\$ per Kwh

\$ per Kw Demand

\$ per Customer Per Month

			0.024		
	18.00	3.27			72.30

Operating Income/Inverse of Federal income tax rate:  
Operating Income for Proposed Return:

**MONTANA-DAKOTA UTILITIES CO.**  
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**NORTH DAKOTA**  
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**Cost of Service by Component**  
**Projected 2017**  
**(000's)**

Total North Dakota	Space Heating Rate 32			Total Space Heating Rate 32
	Demand Prod. & Trans.	Demand Distribution	Energy Customer	

Rate Base	541,766	7,214	2,887	96	286	10,483
Operating Income for Proposed Return	40,410	538	215	7	21	781
Current Operating Income	31,633	(647)	139	1,151	(6)	637
Increase in Operating Income	8,777	1,185	76	(1,144)	27	144

Related Taxes for Increase

State & Federal Income Taxes	5,334	720	46	(695)	16	87
Total Increase in Revenue	14,111	1,905	122	(1,839)	43	231

Total Revenue Before Increase

Total Revenue Before Increase	186,308	69	591	3,282	118	4,060
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Total Cost of Service Required from Rates

Total Cost of Service Required from Rates	200,419	1,974	713	1,443	161	4,291
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	69	35	73	6	183
Revenue Required from Rates	190,910	1,905	678	1,370	155	4,108

Projected Rate of Return Before Increase

Projected Rate of Return Before Increase	5.839%					6.077%
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Projected Billing Units

Kwh	2,014,529,000					
Kw Demand	3,304,802	273,550	273,550	55,941,000		
Bills	1,170,228				7,476	

Unit Cost of Service

\$ per Kwh				0.024		
\$ per Kw Demand		6.96	2.48			
\$ per Customer Per Month						20.73

Operating Income/Inverse of Federal income tax rate:

Operating Income for Proposed Return:

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 (000's)

	Small Municipal Rate 40				Total Sm Municipal Rate 40	
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy		Customer
Rate Base	541,766	749	181	7	396	1,333
Operating Income for Proposed Return	40,410	56	14	1	30	101
Current Operating Income	31,633	(68)	16	81	7	36
Increase in Operating Income	8,777	124	(2)	(80)	23	65
Related Taxes for Increase						
State & Federal Income Taxes	5,334	75	(1)	(49)	14	39
Total Increase in Revenue	14,111	199	(3)	(129)	37	104
Total Revenue Before Increase	186,308	7	50	234	79	370
Total Cost of Service Required from Rates	200,419	206	47	105	116	474
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	7	1	5	4	17
Revenue Required from Rates	190,910	199	46	100	112	457
Projected Rate of Return Before Increase	5.839%					2.701%

2,014,529,000					
3,304,802	9,468	9,468	4,076,000		
1,170,228				3,708	
	21.02	4.86	0.025		30.20

Operating Income/Inverse of Federal income tax rate:  
 Operating Income for Proposed Return:

**MONTANA-DAKOTA UTILITIES CO.**  
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**Cost of Service by Component**  
**Projected 2017**  
**(000's)**

	Municipal Lighting Primary Rate 41				Total Mun Lighting Pri Rate 41
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy Customer	
Rate Base	541,766	122	83	3	237
Operating Income for Proposed Return	40,410	9	6	0	2
Current Operating Income	31,633	(12)	(5)	51	(3)
Increase in Operating Income	8,777	21	11	(51)	5
Related Taxes for Increase					
State & Federal Income Taxes	5,334	13	7	(31)	3
Total Increase in Revenue	14,111	34	18	(82)	8
Total Revenue Before Increase	186,308	1	0	126	0
Total Cost of Service Required from Rates	200,419	35	18	44	8
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	1	0	2	0
Revenue Required from Rates	190,910	34	18	42	8
Projected Rate of Return Before Increase	<b>5.839%</b>				<b>13.080%</b>

	1,719,000	1,719,000	1,719,000
Projected Billing Units			
Kwh	2,014,529,000	1,719,000	1,719,000
Kw Demand	3,304,802		
Bills	1,170,228		
Unit Cost of Service			
\$ per Kwh	0.020	0.010	0.024
\$ per Kw Demand			
\$ per Customer Per Month			

Operating Income/Inverse of Federal income tax rate:  
 Operating Income for Proposed Return:

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Cost of Service by Component  
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Total North Dakota	Municipal Lighting Secondary Rate 41			Total Mun Lighting Sec Rate 41
	Demand Prod. & Trans.	Demand Distribution	Energy Customer	
541,766	1,198	1,301	31	2,264
Operating Income for Proposed Return	40,410	89	97	2
Current Operating Income	31,633	(107)	(92)	603
Increase in Operating Income	8,777	196	189	(601)
				53
Rate Base	5,334	119	115	(365)
Operating Income for Proposed Return	14,111	315	304	(966)
Current Operating Income				32
Increase in Operating Income				85
Related Taxes for Increase				
State & Federal Income Taxes				
Total Increase in Revenue				
Total Revenue Before Increase	186,308	11	16	1,434
Total Cost of Service Required from Rates	200,419	326	320	468
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	11	16	24
Revenue Required from Rates	190,910	315	304	444
Projected Rate of Return Before Increase	5.839%			

10.847%

2,014,529,000	18,127,000	18,127,000	18,127,000
3,304,802			
1,170,228			
Unit Cost of Service			
\$ per Kwh	0.017	0.017	0.024
\$ per Kw Demand			
\$ per Customer Per Month			

Operating Income/Inverse of Federal income tax rate:  
Operating Income for Proposed Return:

**MONTANA-DAKOTA UTILITIES CO.**  
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 Cost of Service by Component  
 Projected 2017  
 (000's)

Total North Dakota	Municipal Pumping Primary Rate 48			Total Mun Pumping Pri Rate 48
	Demand Prod. & Trans.	Demand Distribution	Energy Customer	

Rate Base	541,766	2,164	655	24	28	2,871
Operating Income for Proposed Return	40,410	161	49	2	2	214
Current Operating Income	31,633	(195)	62	190	0	58
Increase in Operating Income	8,777	356	(13)	(188)	2	156

Related Taxes for Increase	5,334	216	(8)	(114)	1	96
State & Federal Income Taxes	14,111	572	(21)	(302)	3	252

Total Revenue Before Increase	186,308	21	184	658	1	864
Total Cost of Service Required from Rates	200,419	593	163	356	4	1,116
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	21	8	18	0	47
Revenue Required from Rates	190,910	572	155	338	4	1,069

Projected Rate of Return Before Increase 2.020%

Projected Billing Units						
Kwh	2,014,529,000			13,894,000		
Kw Demand	3,304,802	35,805		35,805		48
Bills	1,170,228					
Unit Cost of Service						
\$ per Kwh					0.024	
\$ per Kw Demand		15.98		4.33		
\$ per Customer Per Month						83.33

Operating Income/Inverse of Federal income tax rate:  
 Operating Income for Proposed Return:

MONTANA-DAKOTA UTILITIES CO.  
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Cost of Service by Component  
Projected 2017  
(000's)

	Municipal Pumping Secondary Rate 48				Total Mun Pumping Sec Rate 48	
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy Customer		
Rate Base	541,766	4,001	1,376	43	674	6,094
Operating Income for Proposed Return	40,410	298	103	3	50	454
Current Operating Income	31,633	(360)	272	377	(42)	248
Increase in Operating Income	8,777	658	(169)	(374)	92	206
Related Taxes for Increase						
State & Federal Income Taxes	5,334	400	(103)	(227)	56	127
Total Increase in Revenue	14,111	1,058	(272)	(601)	148	333
Total Revenue Before Increase	186,308	38	613	1,250	47	1,948
Total Cost of Service Required from Rates	200,419	1,096	341	649	195	2,281
Less: Other Operating Revenues (Incl Contract Revenue)	9,509	38	16	33	10	97
Revenue Required from Rates	190,910	1,058	325	616	185	2,184
Projected Rate of Return Before Increase						4.070%

5.839%					
Projected Billing Units					
Kwh	2,014,529,000			25,168,000	
Kw Demand	3,304,802	91,118	91,118		3,828
Bills	1,170,228				
Unit Cost of Service					
\$ per Kwh				0.024	
\$ per Kw Demand		11.61	3.57		
\$ per Customer Per Month					48.33

Operating Income/Inverse of Federal income tax rate:  
Operating Income for Proposed Return:

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY  
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Cost of Service by Component  
Projected 2017  
(000's)

Total North Dakota	Outdoor Lighting Rate 52				Total Outdoor Lighting Rate 52
	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	

541,766	787	396	13	656	1,852
40,410	59	30	1	49	139
31,633	(72)	(29)	326	(5)	220
8,777	131	59	(325)	54	(81)

Rate Base  
Operating Income for Proposed Return  
Current Operating Income  
Increase in Operating Income

5,334	80	36	(198)	33	(49)
14,111	211	95	(523)	87	(130)

Related Taxes for Increase  
State & Federal Income Taxes  
Total Increase in Revenue

186,308	8	4	715	209	936
200,419	219	99	192	296	806
9,509	8	4	10	209	231
190,910	211	95	182	87	575

Total Revenue Before Increase  
Total Cost of Service Required from Rates  
Less: Other Operating Revenues (Incl Contract Revenue)  
Revenue Required from Rates

Projected Rate of Return Before Increase 11.879%

2,014,529,000	7,437,000	7,437,000	7,437,000
3,304,802			
1,170,228			
	0.028	0.013	0.024

Projected Billing Units  
Kwh  
Kw Demand  
Bills  
Unit Cost of Service  
\$ per Kwh  
\$ per Kw Demand  
\$ per Customer Per Month

Operating Income/Inverse of Federal income tax rate:  
Operating Income for Proposed Return:

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY  
NORTH DAKOTA  
Embedded Class Cost of Service Study  
Cost of Service by Component  
Projected 2017  
(000's)

Total North Dakota	Interruptible Demand Response Rate 38				Total Demand Response Rate 38
	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	

541,766	4,121	1,189	54	17	5,381
40,410	307	89	4	1	401
31,633	(370)	280	435	10	356
8,777	677	(191)	(431)	(9)	45

Rate Base

Operating Income for Proposed Return  
Current Operating Income  
Increase in Operating Income

Related Taxes for Increase  
State & Federal Income Taxes  
Total Increase in Revenue

5,334	411	(116)	(262)	(5)	29
14,111	1,088	(307)	(693)	(14)	74

Total Revenue Before Increase

Total Cost of Service Required from Rates  
Less: Other Operating Revenues (Incl Contract Revenue)  
Revenue Required from Rates

186,308	39	601	1,507	18	2,165
200,419	1,127	294	814	4	2,239
9,509	39	15	41	0	95
190,910	1,088	279	773	4	2,144

Projected Rate of Return Before Increase

5.839%

6.616%

Projected Billing Units

Kwh  
Kw Demand  
Bills

2,014,529,000			31,911,000	
3,304,802	85,568	85,568		36
1,170,228				

Unit Cost of Service  
\$ per Kwh  
\$ per Kw Demand  
\$ per Customer Per Month

			0.024	
	12.72	3.26		111.11

Operating Income/Inverse of Federal income tax rate:  
Operating Income for Proposed Return:

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Residential Rate 10				Total Residential Rate 10
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
2	458,444	193,237	0	0	0	193,237
3	0	0	0	0	0	0
	458,444	193,237	0	0	0	193,237
2	210,983	88,930	0	0	0	88,930
4	2,646	0	1,096	0	0	1,096
4	54,034	0	22,385	0	0	22,385
7	72,755	0	0	0	60,342	60,342
4	53,775	0	22,280	0	0	22,280
11	34,482	0	0	0	16,088	16,088
5	15,168	0	7,130	0	0	7,130
10	22,690	0	0	0	17,549	17,549
8	12,223	0	0	0	7,105	7,105
Direct	1,303	0	0	0	0	0
Direct	4,397	0	0	0	0	0
	273,473	0	52,891	0	101,084	153,975
13	70,606	21,129	3,961	0	7,569	32,659
6	6,867	0	0	0	5,686	5,686
	77,473	21,129	3,961	0	13,255	38,345
29	7,500	3,162	0	0	0	3,162
	1,027,873	306,458	56,852	0	114,339	477,649

**Rate Base**

Electric Plant in Service  
 Production Plant  
 Wind Production Plant  
 Total Production Plant  
 Transmission Plant  
 Distribution Plant  
 Land & Rights of Way  
 Station Equipment  
 Poles, OH & UG Conductors & Conduit  
 Customer Related 57%  
 Demand Related 43%  
 Line Transformers  
 Customer Related 69%  
 Demand Related 31%  
 Services  
 Meters  
 Installation on Customer Premise  
 Street Light & Signal System  
 Total Distribution Plant  
 General, Common & Intangible Plant  
 Common - Intangible - CC&B  
 General, Common & Intangible Plant, incl. CC&B  
 Acquisition Adjustment  
 Total Electric Plant in Service

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total		Residential Rate 10			Total Residential Rate 10
	North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
2	189,003	79,667	0	0	0	79,667
3	0	0	0	0	0	0
	189,003	79,667	0	0	0	79,667
2	67,877	28,611	0	0	0	28,611
4	123	0	52	0	0	52
4	13,283	0	5,504	0	0	5,504
15	37,424	0	6,590	0	17,847	24,437
19	16,036	0	2,305	0	5,196	7,501
10	13,914	0	0	0	10,763	10,763
8	217	0	0	0	127	127
Direct	600	0	0	0	0	0
Direct	2,224	0	0	0	0	0
	83,821	0	14,451	0	33,933	48,384
13	29,155	8,722	1,635	0	3,126	13,483
6	1,776	0	0	0	1,471	1,471
	30,931	8,722	1,635	0	4,597	14,954
29	7,499	3,162	0	0	0	3,162
	379,131	120,162	16,086	0	38,530	174,778
	648,742	186,296	40,766	0	75,809	302,871
13	11,125	3,330	624	0	1,193	5,147
26	664	200	37	0	74	311
1	3,465	0	0	1,328	0	1,328
26	2,511	746	139	0	279	1,164
2	1,227	518	0	0	0	518
2	(1,151)	(485)	0	0	0	(485)
	17,841	4,309	800	1,328	1,546	7,983
	666,583	190,605	41,566	1,328	77,355	310,854

Less: Accumulated Depreciation

Production Plant

Wind Production Plant

Total Production Plant

Transmission Plant

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Customer Premise

Street Light & Signal System

Total Distribution Plant

General, Common & Intangible Plant

Common - Intangible - CC&B

General, Common & Intangible Plant, incl. CC&B

Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation

Net Electric Plant in Service

Additions

Materials & Supplies

Prepayments

Fuel Stocks

Unamortized Loss on Debt

Gain on Sale of Williston Office

Decommission of Retired Plant

Total Additions

Total Before Deductions

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Residential Rate 10			Total Residential Rate 10	
		Demand Prod. & Trans.	Demand Distribution	Energy Customer		
26	121,984	36,370	6,747	0	13,569	56,686
26	0	0	0	0	0	0
26	2,833	845	157	0	315	1,317
	124,817	37,215	6,904	0	13,884	58,003
	541,766	153,390	34,662	1,328	63,471	252,851
	5.839%					3.818%

Deductions  
 Accumulated Deferred Income Tax  
 Accumulated Investment Tax Credit  
 Customer Advances For Construction  
 Total Deductions  
 Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
 Retail Sales

Residential	71,449	0	0	61,228	10,221	71,449
Small General Electric Service	11,960	0	0	0	0	0
Irrigation	84	0	0	0	0	0
Large General Service - Primary	14,085	0	0	0	0	0
Large General Service - Secondary	66,510	0	0	0	0	0
TOD Large General Service - Primary	129	0	0	0	0	0
TOD Large General Service - Secondary	1,375	0	0	0	0	0
Space Heating - Secondary	3,877	0	0	0	0	0
Small Municipal Electric Service	353	0	0	0	0	0
Municipal Lighting - Primary	124	0	0	0	0	0
Municipal Lighting - Secondary	1,410	0	0	0	0	0
Municipal Pumping - Primary	817	0	0	0	0	0
Municipal Pumping - Secondary	1,851	0	0	0	0	0
Outdoor Lighting	705	0	0	0	0	0
Interruptible Power Service incl. w/contracts	0	0	0	0	0	0
Interruptible Demand Response	2,070	0	0	0	0	0
Contracts	5,838	922	201	1,009	374	2,506
Total Electric Retail Sales Revenues	182,637	922	201	62,237	10,595	73,955

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)

Allocation Factor	Total North Dakota	Residential Rate 10				Total Residential Rate 10
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
Other Revenue						
Miscellaneous						
Reconnect Fees	47	0	0	0	40	40
NSF Check Fees	15	0	0	0	12	12
Other Miscellaneous Service Revenue	7	4	0	0	1	5
Rent from Electric Property						
Facilities Rental	1,360	392	85	0	159	636
Pole Attachments	127	0	24	0	61	85
Street Lights	615	0	0	0	0	0
Yard Lights	200	0	0	0	0	0
Joint Use Facilities	0	0	0	0	0	0
Miscellaneous	68	21	4	0	8	33
Other Electric Revenues						
Power Interchange Service	0	0	0	0	0	0
Fly Ash Sales	28	13	0	0	0	13
Late Payment Revenue	243	3	1	204	35	243
3-Year Average KVAR Penalty	416	0	82	0	154	236
Sales of Construction & Sundry Junk Material	0	0	0	0	0	0
Patronage Dividends	6	4	0	0	1	5
Joint Use Agreements	90	0	0	0	54	54
Wheeling Fees	0	0	0	0	0	0
Miscellaneous	449	120	25	0	75	220
Total Other Revenues	3,671	557	221	204	600	1,582

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Residential Rate 10				Total Residential Rate 10
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
	186,308	1,479	422	62,441	11,195	75,537
Total Operating Revenues						
Operation & Maintenance Expenses						
Production Expense						
Fuel	36,602	0	0	14,025	0	14,025
Purchased Power - Energy	14,869	0	0	5,697	0	5,697
Purchased Power - Capacity	2,695	1,134	0	0	0	1,134
Other Production	18,955	7,990	0	0	0	7,990
Total Production Expense	73,121	9,124	0	19,722	0	28,846
Transmission Expense	5,230	2,205	0	0	0	2,205
Distribution Expense	11,173	0	2,162	0	4,130	6,292
Storm-related Expense	0	0	0	0	0	0
Customer Accounts Expense	2,780	0	0	0	2,039	2,039
Customer Service & Info. Expense	174	0	0	0	127	127
Sales Expense	111	0	0	0	93	93
Administrative & General Expenses	16,996	4,510	956	0	2,826	8,292
Total Electric O&M Expenses	109,585	15,839	3,118	19,722	9,215	47,894
Total Operating Expenses						
Cost of Fuel & Purchased Power	54,166	1,134	0	19,722	0	20,856
Other O&M Expenses	55,419	14,705	3,118	0	9,215	27,038
Total Operation & Maintenance Expenses	109,585	15,839	3,118	19,722	9,215	47,894
Depreciation Expense						
Production Plant	11,923	5,027	0	0	0	5,027
Wind Production Plant	0	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.	11,923	5,027	0	0	0	5,027
Transmission Plant	3,629	1,529	0	0	0	1,529

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Residential Rate 10			Total Residential Rate 10
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
4	4	0	3	0	3
4	1,291	0	533	0	533
15	3,041	0	534	0	1,984
19	1,175	0	169	0	550
10	566	0	0	0	437
8	295	0	0	0	172
Direct	32	0	0	0	0
Direct	105	0	0	0	0
	6,509	0	1,239	0	3,679
	2,498	745	140	0	1,153
	465	0	0	0	385
	2,963	745	140	0	1,538
29	1,837	774	0	0	774
	26,861	8,075	1,379	0	12,547

**Distribution Plant**

Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Line Transformers  
Services  
Meters  
Installation on Cust. Premises  
Street Light & Signal Systems  
Total Distribution Plant

General, Common & Intangible Plant & Amort of Gain/Loss  
Common - Intangible - CC&B  
Total Plant

Amort. Of Decomm. Of Power Plants

Total Depreciation Expense

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Residential Rate 10			Total Residential Rate 10
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
Taxes Other Than Income					
Ad Valorem Taxes					
Production Plant	1,761	744	0	0	744
Transmission Plant	1,221	515	0	0	515
Distribution Plant	1,257	0	243	0	708
General, Common & Intangible Plant	374	112	21	0	173
<b>Total Ad Valorem Taxes</b>	<b>4,613</b>	<b>1,371</b>	<b>264</b>	<b>0</b>	<b>2,140</b>
Other Taxes					
Other Taxes - Payroll, Franchise, Other	2,428	644	137	0	404
<b>Total Taxes Other Than Income Taxes</b>	<b>7,041</b>	<b>2,015</b>	<b>401</b>	<b>0</b>	<b>909</b>
<b>Total Operating Expense</b>	<b>143,487</b>	<b>25,929</b>	<b>4,898</b>	<b>19,722</b>	<b>13,217</b>
Income Taxes					
Interest Expense	12,544	3,603	788	0	1,466
<b>Taxable Income</b>	<b>30,277</b>	<b>(28,053)</b>	<b>(5,264)</b>	<b>42,719</b>	<b>(3,488)</b>
Less: State Income Tax	1,305	(1,210)	(227)	1,841	(150)
<b>Federal Taxable Income</b>	<b>28,972</b>	<b>(26,843)</b>	<b>(5,037)</b>	<b>40,878</b>	<b>(3,338)</b>
Federal Income Tax					
@ Current Rate of 35%	10,140	(9,390)	(1,763)	14,307	(1,168)
<b>State Income Taxes</b>	<b>1,305</b>	<b>(1,210)</b>	<b>(227)</b>	<b>1,841</b>	<b>(150)</b>
Credits and Adjustments					
Production Tax Credit	0	0	0	0	0
Full Normalization	(257)	(79)	(14)	0	(29)
Equity AFUDC Amortization Tax Effect	0	0	0	0	0
<b>Federal and State Income Taxes</b>	<b>11,188</b>	<b>(10,679)</b>	<b>(2,004)</b>	<b>16,148</b>	<b>(1,347)</b>
<b>Total Operating Expenses</b>	<b>154,675</b>	<b>15,250</b>	<b>2,894</b>	<b>35,870</b>	<b>11,870</b>
<b>Total Operating Income</b>	<b>31,633</b>	<b>(13,771)</b>	<b>(2,472)</b>	<b>26,571</b>	<b>(675)</b>

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Small General Rate 20			Total Small General Rate 20
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	28,157	0	0	28,157
3	0	0	0	0	0
	458,444	28,157	0	0	28,157
2	210,983	12,958	0	0	12,958
4	2,646	0	142	0	142
4	54,034	0	2,909	0	2,909
7	72,755	0	0	0	8,412
4	53,775	0	2,895	0	2,895
11	34,482	0	0	0	6,819
5	15,168	0	927	0	927
10	22,690	0	0	0	2,726
8	12,223	0	0	0	1,619
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	0
	273,473	0	6,873	0	19,576
13	70,606	3,079	515	0	1,466
6	6,867	0	0	0	793
	77,473	3,079	515	0	2,259
29	7,500	461	0	0	0
	1,027,873	44,655	7,388	0	21,835
					73,878

**Rate Base**

Electric Plant in Service  
 Production Plant  
 Wind Production Plant  
 Total Production Plant  
 Transmission Plant  
 Distribution Plant  
 Land & Rights of Way  
 Station Equipment  
 Poles, OH & UG Conductors & Conduit  
 Customer Related 57%  
 Demand Related 43%  
 Line Transformers  
 Customer Related 69%  
 Demand Related 31%  
 Services  
 Meters  
 Installation on Customer Premise  
 Street Light & Signal System  
 Total Distribution Plant  
 General, Common & Intangible Plant  
 Common - Intangible - CC&B  
 General, Common & Intangible Plant, incl. CC&B  
 Acquisition Adjustment  
 Total Electric Plant in Service

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Small General Rate 20				Total Small General Rate 20
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
2	189,003	11,608	0	0	0	11,608
3	0	0	0	0	0	0
	189,003	11,608	0	0	0	11,608
2	67,877	4,169	0	0	0	4,169
4	123	0	7	0	0	7
4	13,283	0	715	0	0	715
15	37,424	0	856	0	2,488	3,344
19	16,036	0	299	0	2,202	2,501
10	13,914	0	0	0	1,672	1,672
8	217	0	0	0	29	29
Direct	600	0	0	0	0	0
Direct	2,224	0	0	0	0	0
	83,821	0	1,877	0	6,391	8,268
13	29,155	1,271	213	0	605	2,089
6	1,776	0	0	0	205	205
	30,931	1,271	213	0	810	2,294
29	7,499	461	0	0	0	461
	379,131	17,509	2,090	0	7,201	26,800
	648,742	27,146	5,298	0	14,634	47,078
13	11,125	485	81	0	231	797
26	664	29	5	0	14	48
1	3,465	0	0	194	0	194
26	2,511	109	18	0	53	180
2	1,227	75	0	0	0	75
2	(1,151)	(71)	0	0	0	(71)
	17,841	627	104	194	298	1,223
	666,583	27,773	5,402	194	14,932	48,301

Less: Accumulated Depreciation

Production Plant

Wind Production Plant

Total Production Plant

Transmission Plant

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Customer Premise

Street Light & Signal System

Total Distribution Plant

General, Common & Intangible Plant

Common - Intangible - CC&B

General, Common & Intangible Plant, incl. CC&B

Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation

Net Electric Plant in Service

Additions

Materials & Supplies

Prepayments

Fuel Stocks

Unamortized Loss on Debt

Gain on Sale of Williston Office

Decommission of Retired Plant

Total Additions

Total Before Deductions

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total			Small General Rate 20			Total Small General Rate 20
	North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer		
26	121,984	5,299	877	0	2,591		8,767
26	0	0	0	0	0		0
26	2,833	123	20	0	60		203
	124,817	5,422	897	0	2,651		8,970
	541,766	22,351	4,505	194	12,281		39,331
	5.8339%						5.40%

Deductions  
Accumulated Deferred Income Tax  
Accumulated Investment Tax Credit  
Customer Advances For Construction  
Total Deductions

Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
Retail Sales

Direct	71,449	0	0	0	0	0	0
Direct	11,960	0	0	9,010	2,950		11,960
Direct	84	0	0	0	0		0
Direct	14,085	0	0	0	0		0
Direct	66,510	0	0	0	0		0
Direct	129	0	0	0	0		0
Direct	1,375	0	0	0	0		0
Direct	3,877	0	0	0	0		0
Direct	353	0	0	0	0		0
Direct	124	0	0	0	0		0
Direct	1,410	0	0	0	0		0
Direct	817	0	0	0	0		0
Direct	1,851	0	0	0	0		0
Direct	705	0	0	0	0		0
Direct	0	0	0	0	0		0
Direct	2,070	0	0	0	0		0
Direct 1 & 27	5,838	134	26	147	72		379
	182,637	134	26	9,157	3,022		12,339

Residential  
Small General Electric Service  
Irrigation  
Large General Service - Primary  
Large General Service - Secondary  
TOD Large General Service - Primary  
TOD Large General Service - Secondary  
Space Heating - Secondary  
Small Municipal Electric Service  
Municipal Lighting - Primary  
Municipal Lighting - Secondary  
Municipal Pumping - Primary  
Municipal Pumping - Secondary  
Outdoor Lighting  
Interruptible Power Service incl. w/contracts  
Interruptible Demand Response  
Contracts  
Total Electric Retail Sales Revenues

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total		Small General Rate 20			Total	
	North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	Small General Rate 20	Small General Rate 20
Other Revenue							
Miscellaneous							
Reconnect Fees	47	0	0	0	5	5	5
NSF Check Fees	15	0	0	0	2	2	2
Other Miscellaneous Service Revenue	7	0	0	0	0	0	0
Rent from Electric Property							
Facilities Rental	1,360	57	11	0	31	99	99
Pole Attachments	127	0	3	0	8	11	11
Street Lights	615	0	0	0	0	0	0
Yard Lights	200	0	0	0	0	0	0
Joint Use Facilities	0	0	0	0	0	0	0
Miscellaneous	68	3	1	0	2	6	6
Other Electric Revenues							
Power Interchange Service	0	0	0	0	0	0	0
Fly Ash Sales	28	2	0	0	0	2	2
Late Payment Revenue	243	0	0	0	0	0	0
3-Year Average KVAR Penalty	416	0	10	0	30	40	40
Sales of Construction & Sundry Junk Material	0	0	0	0	0	0	0
Patronage Dividends	6	0	0	0	0	0	0
Joint Use Agreements	90	0	0	0	12	12	12
Wheeling Fees	0	0	0	0	0	0	0
Miscellaneous	449	17	3	0	14	34	34
Total Other Revenues	3,671	79	28	0	104	211	211

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Small General Rate 20			Total Small General Rate 20	
		Demand Prod. & Trans.	Demand Distribution	Energy		Customer
	186,308	213	54	9,157	3,126	12,550
1	36,602	0	0	2,047	0	2,047
1	14,869	0	0	832	0	832
2	2,695	166	0	0	0	166
2	18,955	1,164	0	0	0	1,164
	73,121	1,330	0	2,879	0	4,209
2	5,230	321	0	0	0	321
14	11,173	0	281	0	800	1,081
90	0	0	0	0	0	0
12	2,780	0	0	0	330	330
12	174	0	0	0	21	21
7	111	0	0	0	13	13
24	16,996	657	124	0	515	1,296
	109,585	2,308	405	2,879	1,679	7,271
	54,166	166	0	2,879	0	3,045
	55,419	2,142	405	0	1,679	4,226
	109,585	2,308	405	2,879	1,679	7,271
2	11,923	732	0	0	0	732
3	0	0	0	0	0	0
	11,923	732	0	0	0	732
2	3,629	223	0	0	0	223

Total Operating Revenues

Operation & Maintenance Expenses

Production Expense

Fuel

Purchased Power - Energy

Purchased Power - Capacity

Other Production

Total Production Expense

Transmission Expense

Distribution Expense

Storm-related Expense

Customer Accounts Expense

Customer Service & Info. Expense

Sales Expense

Administrative & General Expenses

Total Electric O&M Expenses

Total Operating Expenses

Cost of Fuel & Purchased Power

Other O&M Expenses

Total Operation & Maintenance Expenses

Depreciation Expense

Production Plant

Wind Production Plant

Total Production Plant + Amor + Def. Gen.

Transmission Plant

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)

Allocation Factor	Total		Small General Rate 20			Total Small General Rate 20
	North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
Rights of Way	4	0	0	0	0	0
Station Equipment	4	1,291	0	70	0	70
Poles, OH & UG Conductors & Conduit	15	3,041	0	70	0	272
Line Transformers	19	1,175	0	22	0	183
Services	10	566	0	0	0	68
Meters	8	295	0	0	0	39
Installation on Cust. Premises	Direct	32	0	0	0	0
Street Light & Signal Systems	Direct	105	0	0	0	0
Total Distribution Plant		6,509	0	162	0	470
General, Common & Intangible Plant & Amort of Gain/Loss	13	2,498	109	18	0	52
Common - Intangible - CC&B	6	465	0	0	0	54
Total Plant		2,963	109	18	0	106
Amort. Of Decomm. Of Power Plants	29	1,837	113	0	0	0
Total Depreciation Expense		26,861	1,177	180	0	576
						1,933

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Small General Rate 20			Total Small General Rate 20
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
29	1,761	108	0	0	108
30	1,221	75	0	0	75
14	1,257	0	32	90	122
13	374	16	3	8	27
	4,613	199	35	98	332
23	2,428	94	18	0	112
	7,041	293	53	172	518
	143,487	3,778	638	2,427	9,722
27	12,544	525	102	0	627
	30,277	(4,090)	(686)	6,278	1,918
44	1,305	(176)	(30)	271	83
	28,972	(3,914)	(656)	6,007	1,835
35.00%	10,140	(1,370)	(230)	2,102	641
44	1,305	(176)	(30)	271	83
3	0	0	0	0	0
26	(257)	(11)	(2)	0	(18)
44	0	0	0	0	0
	11,188	(1,557)	(262)	2,373	706
	154,675	2,221	376	5,252	10,428
	31,633	(2,008)	(322)	3,905	2,122

Taxes Other Than Income Ad Valorem Taxes	
Production Plant	
Transmission Plant	
Distribution Plant	
General, Common & Intangible Plant	
Total Ad Valorem Taxes	
Other Taxes	
Other Taxes - Payroll, Franchise, Other	
Total Taxes Other Than Income Taxes	
Total Operating Expense	
Income Taxes	
Interest Expense	
Taxable Income	
Less: State Income Tax	
Federal Taxable Income	
Federal Income Tax	
@ Current Rate of 35%	
State Income Taxes	
Credits and Adjustments	
Production Tax Credit	
Full Normalization	
Equity AFUDC Amortization Tax Effect	
Federal and State Income Taxes	
Total Operating Expenses	
Total Operating Income	

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Irrigation Rate 25			Total Irrigation Rate 25
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	122	0	0	122
3	0	0	0	0	0
	458,444	122	0	0	122
2	210,983	56	0	0	56
4	2,646	0	8	0	8
4	54,034	0	159	0	159
7	72,755	0	0	0	34
4	53,775	0	158	0	158
11	34,482	0	0	0	184
5	15,168	0	51	0	51
10	22,690	0	0	0	22
8	12,223	0	0	0	18
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	0
	273,473	0	376	0	634
13	70,606	13	28	0	19
6	6,867	0	0	0	3
	77,473	13	28	0	63
29	7,500	2	0	0	2
	1,027,873	193	404	0	877

**Rate Base**

Electric Plant in Service  
Production Plant  
Wind Production Plant  
Total Production Plant  
Transmission Plant  
Distribution Plant  
Land & Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Customer Related 57%  
Demand Related 43%  
Line Transformers  
Customer Related 69%  
Demand Related 31%  
Services  
Meters  
Installation on Customer Premise  
Street Light & Signal System  
Total Distribution Plant  
General, Common & Intangible Plant  
Common - Intangible - CC&B  
General, Common & Intangible Plant, incl. CC&B  
Acquisition Adjustment  
Total Electric Plant in Service

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Irrigation Rate 25			Total Irrigation Rate 25
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	189,003	50	0	0	50
3	0	0	0	0	0
	189,003	50	0	0	50
2	67,877	18	0	0	18
4	123	0	0	0	0
4	13,283	0	39	0	39
15	37,424	0	47	0	57
19	16,036	0	16	0	75
10	13,914	0	0	0	13
8	217	0	0	0	0
Direct	600	0	0	0	0
Direct	2,224	0	0	0	0
	83,821	0	102	0	184
13	29,155	6	12	0	26
6	1,776	0	0	0	1
	30,931	6	12	0	27
29	7,499	2	0	0	2
	379,131	76	114	0	281
	648,742	117	290	0	596
13	11,125	2	4	0	9
26	664	0	0	0	0
1	3,465	0	0	2	2
26	2,511	0	1	0	2
2	1,227	0	0	0	0
2	(1,151)	0	0	0	0
	17,841	2	5	2	13
	666,583	119	295	2	609

Less: Accumulated Depreciation

Production Plant

Wind Production Plant

Total Production Plant

Transmission Plant

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Customer Premise

Street Light & Signal System

Total Distribution Plant

General, Common & Intangible Plant

Common - Intangible - CC&B

General, Common & Intangible Plant, incl. CC&B

Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation

Net Electric Plant in Service

Additions

Materials & Supplies

Prepayments

Fuel Stocks

Unamortized Loss on Debt

Gain on Sale of Williston Office

Decommission of Retired Plant

Total Additions

Total Before Deductions

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Irrigation Rate 25			Total Irrigation Rate 25	
		Demand Prod. & Trans.	Demand Distribution	Energy Customer		
26	121,984	23	48	0	33	104
26	0	0	0	0	0	0
26	2,833	1	1	0	1	3
	124,817	24	49	0	34	107
	541,766	95	246	2	159	502
	5.8339%					(1.20%)

Deductions  
 Accumulated Deferred Income Tax  
 Accumulated Investment Tax Credit  
 Customer Advances For Construction  
 Total Deductions  
 Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
 Retail Sales

Direct Residential	71,449	0	0	0	0	0	0
Direct Small General Electric Service	11,960	0	0	0	0	0	0
Direct Irrigation	84	0	16	57	11	84	84
Direct Large General Service - Primary	14,085	0	0	0	0	0	0
Direct Large General Service - Secondary	66,510	0	0	0	0	0	0
Direct TOD Large General Service - Primary	129	0	0	0	0	0	0
Direct TOD Large General Service - Secondary	1,375	0	0	0	0	0	0
Direct Space Heating - Secondary	3,877	0	0	0	0	0	0
Direct Small Municipal Electric Service	353	0	0	0	0	0	0
Direct Municipal Lighting - Primary	124	0	0	0	0	0	0
Direct Municipal Lighting - Secondary	1,410	0	0	0	0	0	0
Direct Municipal Pumping - Primary	817	0	0	0	0	0	0
Direct Municipal Pumping - Secondary	1,851	0	0	0	0	0	0
Direct Outdoor Lighting	705	0	0	0	0	0	0
Direct Interruptible Power Service incl. w/contracts	0	0	0	0	0	0	0
Direct Interruptible Demand Response	2,070	0	0	0	0	0	0
Direct Contracts	5,838	1	1	2	1	1	5
	182,637	1	17	59	12	89	89

Residential  
 Small General Electric Service  
 Irrigation  
 Large General Service - Primary  
 Large General Service - Secondary  
 TOD Large General Service - Primary  
 TOD Large General Service - Secondary  
 Space Heating - Secondary  
 Small Municipal Electric Service  
 Municipal Lighting - Primary  
 Municipal Lighting - Secondary  
 Municipal Pumping - Primary  
 Municipal Pumping - Secondary  
 Outdoor Lighting  
 Interruptible Power Service incl. w/contracts  
 Interruptible Demand Response  
 Contracts  
 Total Electric Retail Sales Revenues

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Irrigation Rate 25			Total Irrigation Rate 25
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
7	47	0	0	0	0
7	15	0	0	0	0
27	7	0	0	0	0
27	1,360	0	1	0	1
15	127	0	0	0	0
Direct	615	0	0	0	0
Direct	200	0	0	0	0
30	0	0	0	0	0
27	68	0	0	0	0
30	0	0	0	0	0
29	28	0	0	0	0
92	243	0	0	0	0
14	416	0	1	0	1
14	0	0	0	0	0
23	6	0	0	0	0
8	90	0	0	0	0
30	0	0	0	0	0
23	449	0	0	0	0
	3,671	0	2	0	2

Other Revenue  
 Miscellaneous  
 Reconnect Fees  
 NSF Check Fees  
 Other Miscellaneous Service Revenue  
 Rent from Electric Property  
 Facilities Rental  
 Pole Attachments  
 Street Lights  
 Yard Lights  
 Joint Use Facilities  
 Miscellaneous  
 Other Electric Revenues  
 Power Interchange Service  
 Fly Ash Sales  
 Late Payment Revenue  
 3-Year Average KVAR Penalty  
 Sales of Construction & Sundry Junk Material  
 Patronage Dividends  
 Joint Use Agreements  
 Wheeling Fees  
 Miscellaneous  
 Total Other Revenues

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Irrigation Rate 25			Total Irrigation Rate 25	
		Demand Prod. & Trans.	Demand Distribution	Energy		Customer
Total Operating Revenues	186,308	1	19	59	12	91
Operation & Maintenance Expenses						
Production Expense						
Fuel	36,602	0	0	23	0	23
Purchased Power - Energy	14,869	0	0	9	0	9
Purchased Power - Capacity	2,695	1	0	0	0	1
Other Production	18,955	5	0	0	0	5
Total Production Expense	73,121	6	0	32	0	38
Transmission Expense	5,230	1	0	0	0	1
Distribution Expense	11,173	0	15	0	11	26
Storm-related Expense	0	0	0	0	0	0
Customer Accounts Expense	2,780	0	0	0	2	2
Customer Service & Info. Expense	174	0	0	0	0	0
Sales Expense	111	0	0	0	0	0
Administrative & General Expenses	16,996	3	7	0	6	16
Total Electric O&M Expenses	109,585	10	22	32	19	83
Total Operating Expenses						
Cost of Fuel & Purchased Power	54,166	1	0	32	0	33
Other O&M Expenses	55,419	9	22	0	19	50
Total Operation & Maintenance Expenses	109,585	10	22	32	19	83
Depreciation Expense						
Production Plant	11,923	3	0	0	0	3
Wind Production Plant	0	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.	11,923	3	0	0	0	3
Transmission Plant	3,629	1	0	0	0	1

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Irrigation Rate 25			Total Irrigation Rate 25
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
4	4	0	0	0	0
4	1,291	0	4	0	4
15	3,041	0	4	0	5
19	1,175	0	1	0	5
10	566	0	0	0	1
8	295	0	0	0	0
Direct	32	0	0	0	0
Direct	105	0	0	0	0
	<b>6,509</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>15</b>
13	2,498	0	1	0	2
6	465	0	0	0	0
	<b>2,963</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>
29	1,837	0	0	0	0
	<b>26,861</b>	<b>4</b>	<b>10</b>	<b>0</b>	<b>21</b>

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Cust. Premises

Street Light & Signal Systems

Total Distribution Plant

General, Common & Intangible Plant & Amort of Gain/Loss

Common - Intangible - CC&B

Total Plant

Amort. Of Decomm. Of Power Plants

Total Depreciation Expense

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Irrigation Rate 25			Total Irrigation Rate 25
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
Taxes Other Than Income					
Ad Valorem Taxes					
Production Plant	1,761	0	0	0	0
Transmission Plant	1,221	0	0	0	0
Distribution Plant	1,257	0	2	0	3
General, Common & Intangible Plant	374	0	0	0	0
Total Ad Valorem Taxes	4,613	0	2	0	3
Other Taxes					
Other Taxes - Payroll, Franchise, Other	2,428	0	1	0	2
Total Taxes Other Than Income Taxes	7,041	0	3	0	5
Total Operating Expense	143,487	14	35	32	28
Income Taxes					
Interest Expense	12,544	2	6	0	4
Taxable Income	30,277	(15)	(22)	27	(20)
Less: State Income Tax	1,305	(1)	(1)	1	(1)
Federal Taxable Income	28,972	(14)	(21)	26	(19)
Federal Income Tax					
@ Current Rate of 35%	10,140	(5)	(7)	9	(7)
State Income Taxes	1,305	(1)	(1)	1	(1)
Credits and Adjustments					
Production Tax Credit	0	0	0	0	0
Full Normalization	(257)	0	0	0	0
Equity AFUDC Amortization Tax Effect	0	0	0	0	0
Federal and State Income Taxes	11,188	(6)	(8)	10	(8)
Total Operating Expenses	154,675	8	27	42	20
Total Operating Income	31,633	(7)	(8)	17	(8)

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Large General Primary Rate 30			Total LG Primary Rate 30
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	36,527	0	0	36,527
3	0	0	0	0	0
	458,444	36,527	0	0	36,527
2	210,983	16,810	0	0	16,810
4	2,646	0	242	0	242
4	54,034	0	4,932	0	4,932
7	72,755	0	0	0	30
4	53,775	0	4,909	0	4,909
11	34,482	0	0	0	0
5	15,168	0	0	0	0
10	22,690	0	0	0	0
8	12,223	0	0	0	240
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	0
	273,473	0	10,083	0	10,353
13	70,606	3,994	755	0	4,769
6	6,867	0	0	0	3
	77,473	3,994	755	0	4,772
29	7,500	598	0	0	598
	1,027,873	57,929	10,838	0	69,060

**Rate Base**

Electric Plant in Service  
Production Plant  
Wind Production Plant  
Total Production Plant  
Transmission Plant  
Distribution Plant  
Land & Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Customer Related 57%  
Demand Related 43%  
Line Transformers  
Customer Related 69%  
Demand Related 31%  
Services  
Meters  
Installation on Customer Premise  
Street Light & Signal System  
Total Distribution Plant  
General, Common & Intangible Plant  
Common - Intangible - CC&B  
General, Common & Intangible Plant, incl. CC&B  
Acquisition Adjustment  
Total Electric Plant in Service

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Large General Primary Rate 30			Total LG Primary Rate 30
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	189,003	15,059	0	0	15,059
3	0	0	0	0	0
	189,003	15,059	0	0	15,059
2	67,877	5,408	0	0	5,408
4	123	0	11	0	11
4	13,283	0	1,213	0	1,213
15	37,424	0	1,452	0	1,461
19	16,036	0	0	0	0
10	13,914	0	0	0	0
8	217	0	0	0	4
Direct	600	0	0	0	0
Direct	2,224	0	0	0	0
	83,821	0	2,676	0	13
13	29,155	1,649	312	0	8
6	1,776	0	0	0	1
	30,931	1,649	312	0	9
29	7,499	597	0	0	0
	379,131	22,713	2,988	0	22
	648,742	35,216	7,850	0	271
13	11,125	629	119	0	3
26	664	37	7	0	0
1	3,465	0	0	334	0
26	2,511	142	26	0	1
2	1,227	98	0	0	0
2	(1,151)	(92)	0	0	0
	17,841	814	152	334	4
	666,583	36,030	8,002	334	275
					44,641

Less: Accumulated Depreciation

Production Plant

Wind Production Plant

Total Production Plant

Transmission Plant

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Customer Premise

Street Light & Signal System

Total Distribution Plant

General, Common & Intangible Plant

Common - Intangible - CC&B

General, Common & Intangible Plant, incl. CC&B

Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation

Net Electric Plant in Service

Additions

Materials & Supplies

Prepayments

Fuel Stocks

Unamortized Loss on Debt

Gain on Sale of Williston Office

Decommission of Retired Plant

Total Additions

Total Before Deductions

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)

Allocation Factor	Total North Dakota	Large General Primary Rate 30			Total LG Primary Rate 30	
		Demand Prod. & Trans.	Demand Distribution	Energy Customer		
26	121,984	6,875	1,286	0	35	8,196
26	0	0	0	0	0	0
26	2,833	160	30	0	1	191
	124,817	7,035	1,316	0	36	8,387
	541,766	28,995	6,686	334	239	36,254
	5.839%					7.58%

Deductions  
Accumulated Deferred Income Tax  
Accumulated Investment Tax Credit  
Customer Advances For Construction  
Total Deductions

Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
Retail Sales

Direct	71,449	0	0	0	0	0
Direct	11,960	0	0	0	0	0
Direct	84	0	0	0	0	0
Direct	14,085	0	4,105	9,931	49	14,085
Direct	66,510	0	0	0	0	0
Direct	129	0	0	0	0	0
Direct	1,375	0	0	0	0	0
Direct	3,877	0	0	0	0	0
Direct	353	0	0	0	0	0
Direct	124	0	0	0	0	0
Direct	1,410	0	0	0	0	0
Direct	817	0	0	0	0	0
Direct	1,851	0	0	0	0	0
Direct	705	0	0	0	0	0
Direct	0	0	0	0	0	0
Direct	2,070	0	0	0	0	0
1 & 27	5,838	174	39	254	1	468
	182,637	174	4,144	10,185	50	14,553

Residential  
Small General Electric Service  
Irrigation  
Large General Service - Primary  
Large General Service - Secondary  
TOD Large General Service - Primary  
TOD Large General Service - Secondary  
Space Heating - Secondary  
Small Municipal Electric Service  
Municipal Lighting - Primary  
Municipal Lighting - Secondary  
Municipal Pumping - Primary  
Municipal Pumping - Secondary  
Outdoor Lighting  
Interruptible Power Service incl. w/contracts  
Interruptible Demand Response  
Contracts

Total Electric Retail Sales Revenues

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Large General Primary Rate 30			Total LG Primary Rate 30
		Demand Prod. & Trans.	Demand Distribution	Energy	
Other Revenue					
Miscellaneous					
Reconnect Fees	47	0	0	0	0
NSF Check Fees	15	0	0	0	0
Other Miscellaneous Service Revenue	7	0	0	0	0
Rent from Electric Property					
Facilities Rental	1,360	74	16	0	1
Pole Attachments	127	0	5	0	0
Street Lights	615	0	0	0	0
Yard Lights	200	0	0	0	0
Joint Use Facilities	0	0	0	0	0
Miscellaneous	68	4	1	0	0
Other Electric Revenues					
Power Interchange Service	0	0	0	0	0
Fly Ash Sales	28	2	0	0	0
Late Payment Revenue	243	0	0	0	0
3-Year Average KVAR Penalty	416	0	15	0	0
Sales of Construction & Sundry Junk Material	0	0	0	0	0
Patronage Dividends	6	0	0	0	0
Joint Use Agreements	90	0	0	0	2
Wheeling Fees	0	0	0	0	0
Miscellaneous	449	23	5	0	0
Total Other Revenues	3,671	103	42	0	3

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Large General Primary Rate 30			Total LG Primary Rate 30
		Demand Prod. & Trans.	Demand Distribution	Energy	
	186,308	277	4,186	10,185	53
Total Operating Revenues					14,701
Operation & Maintenance Expenses					
Production Expense					
Fuel	36,602	0	0	3,525	0
Purchased Power - Energy	14,869	0	0	1,432	0
Purchased Power - Capacity	2,695	215	0	0	0
Other Production	18,955	1,510	0	0	0
Total Production Expense	73,121	1,725	0	4,957	0
Transmission Expense	5,230	417	0	0	0
Distribution Expense	11,173	0	412	0	11
Storm-related Expense	0	0	0	0	0
Customer Accounts Expense	2,780	0	0	0	3
Customer Service & Info. Expense	174	0	0	0	0
Sales Expense	111	0	0	0	0
Administrative & General Expenses	16,996	852	182	0	6
Total Electric O&M Expenses	109,585	2,994	594	4,957	20
Total Operating Expenses					
Cost of Fuel & Purchased Power	54,166	215	0	4,957	0
Other O&M Expenses	55,419	2,779	594	0	20
Total Operation & Maintenance Expenses	109,585	2,994	594	4,957	20
Depreciation Expense					
Production Plant	11,923	950	0	0	0
Wind Production Plant	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.	11,923	950	0	0	0
Transmission Plant	3,629	289	0	0	0

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Large General Primary Rate 30			Total LG Primary Rate 30
		Demand Prod. & Trans.	Demand Distribution	Energy	
4	4	0	0	0	0
4	1,291	0	118	0	118
15	3,041	0	118	0	119
19	1,175	0	0	0	0
10	566	0	0	0	0
8	295	0	0	0	6
Direct	32	0	0	0	0
Direct	105	0	0	0	0
	6,509	0	236	0	243
	2,498	141	27	0	169
	465	0	0	0	0
	2,963	141	27	0	169
	1,837	146	0	0	146
	26,861	1,526	263	0	1,797

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Large General Primary Rate 30				Total LG Primary Rate 30
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
29	1,761	140	0	0	0	140
30	1,221	97	0	0	0	97
14	1,257	0	46	0	1	47
13	374	21	4	0	0	25
	4,613	258	50	0	1	309
<b>Taxes Other Than Income Ad Valorem Taxes</b>						
	Production Plant					
	Transmission Plant					
	Distribution Plant					
	General, Common & Intangible Plant					
	Total Ad Valorem Taxes					
<b>Other Taxes</b>						
23	2,428	122	26	0	1	149
	7,041	380	76	0	2	458
	143,487	4,900	933	4,957	30	10,820
<b>Income Taxes</b>						
27	12,544	681	152	0	5	838
	30,277	(5,304)	3,101	5,228	18	3,043
44	1,305	(229)	134	225	1	131
	28,972	(5,075)	2,967	5,003	17	2,912
<b>Federal Income Tax @ Current Rate of 35%</b>						
35.00%	10,140	(1,776)	1,038	1,751	6	1,019
44	1,305	(229)	134	225	1	131
<b>State Income Taxes Credits and Adjustments</b>						
3	0	0	0	0	0	0
26	(257)	(14)	(3)	0	0	(17)
44	0	0	0	0	0	0
	11,188	(2,019)	1,169	1,976	7	1,133
	154,675	2,881	2,102	6,933	37	11,953
	31,633	(2,604)	2,084	3,252	16	2,748
<b>Total Operating Income</b>						

Production Tax Credit  
Full Normalization  
Equity AFUDC Amortization Tax Effect  
Federal and State Income Taxes

Total Operating Expenses  
Total Operating Income

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Large General Secondary Rate 30			Total LG Secondary Rate 30
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	170,383	0	0	170,383
3	0	0	0	0	0
	458,444	170,383	0	0	170,383
2	210,983	78,413	0	0	78,413
4	2,646	0	871	0	871
4	54,034	0	17,782	0	17,782
7	72,755	0	0	0	3,127
4	53,775	0	17,696	0	17,696
11	34,482	0	0	0	10,065
5	15,168	0	5,664	0	5,664
10	22,690	0	0	0	1,983
8	12,223	0	0	0	2,602
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	0
	273,473	0	42,013	0	17,777
13	70,606	18,630	3,146	0	1,331
6	6,867	0	0	0	295
	77,473	18,630	3,146	0	1,626
29	7,500	2,787	0	0	0
	1,027,873	270,213	45,159	0	19,403
					334,775

**Rate Base**

Electric Plant in Service  
 Production Plant  
 Wind Production Plant  
 Total Production Plant  
 Transmission Plant  
 Distribution Plant  
 Land & Rights of Way  
 Station Equipment  
 Poles, OH & UG Conductors & Conduit  
 Customer Related 57%  
 Demand Related 43%  
 Line Transformers  
 Customer Related 69%  
 Demand Related 31%  
 Services  
 Meters  
 Installation on Customer Premise  
 Street Light & Signal System  
 Total Distribution Plant  
 General, Common & Intangible Plant  
 Common - Intangible - CC&B  
 General, Common & Intangible Plant, incl. CC&B  
 Acquisition Adjustment  
 Total Electric Plant in Service



**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Large General Secondary Rate 30			Total LG Secondary Rate 30	
		Demand Prod. & Trans.	Demand Distribution	Energy Customer		
26	121,984	32,068	5,359	0	2,303	39,730
26	0	0	0	0	0	0
26	2,833	745	124	0	53	922
	124,817	32,813	5,483	0	2,356	40,652
	541,766	135,247	27,538	1,302	11,253	175,340

Rate of Return - Per Books

8.42%

**Electric Operating Revenues  
Retail Sales**

Residential	71,449	0	0	0	0	0
Small General Electric Service	11,960	0	0	0	0	0
Irrigation	84	0	0	0	0	0
Large General Service - Primary	14,085	0	0	0	0	0
Large General Service - Secondary	66,510	0	0	0	0	0
TOD Large General Service - Primary	129	0	24,457	39,576	2,477	66,510
TOD Large General Service - Secondary	1,375	0	0	0	0	0
Space Heating - Secondary	3,877	0	0	0	0	0
Small Municipal Electric Service	353	0	0	0	0	0
Municipal Lighting - Primary	124	0	0	0	0	0
Municipal Lighting - Secondary	1,410	0	0	0	0	0
Municipal Pumping - Primary	817	0	0	0	0	0
Municipal Pumping - Secondary	1,851	0	0	0	0	0
Outdoor Lighting	705	0	0	0	0	0
Interruptible Power Service incl. w/contracts	0	0	0	0	0	0
Interruptible Demand Response	2,070	0	0	0	0	0
Contracts	5,838	811	160	990	66	2,027
<b>Total Electric Retail Sales Revenues</b>	<b>182,637</b>	<b>811</b>	<b>24,617</b>	<b>40,566</b>	<b>2,543</b>	<b>68,537</b>

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Large General Secondary Rate 30			Total LG Secondary Rate 30
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
7	47	0	0	0	2
7	15	0	0	0	1
27	7	2	0	0	2
27	1,360	344	68	0	28
15	127	0	18	0	3
Direct	615	0	0	0	0
Direct	200	0	0	0	0
30	0	0	0	0	0
27	68	17	3	0	1
30	0	0	0	0	0
29	28	10	0	0	0
92	243	0	0	0	0
14	416	0	64	0	27
14	0	0	0	0	0
23	6	1	0	0	0
8	90	0	0	0	19
30	0	0	0	0	0
23	449	105	20	0	12
	3,671	479	173	0	93
Other Revenue					
Miscellaneous					
Reconnect Fees					
NSF Check Fees					
Other Miscellaneous Service Revenue					
Rent from Electric Property					
Facilities Rental					
Pole Attachments					
Street Lights					
Yard Lights					
Joint Use Facilities					
Miscellaneous					
Other Electric Revenues					
Power Interchange Service					
Fly Ash Sales					
Late Payment Revenue					
3-Year Average KVAR Penalty					
Sales of Construction & Sundry Junk Material					
Patronage Dividends					
Joint Use Agreements					
Wheeling Fees					
Miscellaneous					
Total Other Revenues					

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Large General Secondary Rate 30				Total LG Secondary Rate 30
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
Total Operating Revenues	186,308	1,290	24,790	40,566	2,636	69,282
Operation & Maintenance Expenses						
Production Expense						
Fuel	36,602	0	0	13,753	0	13,753
Purchased Power - Energy	14,869	0	0	5,587	0	5,587
Purchased Power - Capacity	2,695	1,002	0	0	0	1,002
Other Production	18,955	7,045	0	0	0	7,045
Total Production Expense	73,121	8,047	0	19,340	0	27,387
Transmission Expense	5,230	1,944	0	0	0	1,944
Distribution Expense	11,173	0	1,716	0	726	2,442
Storm-related Expense	0	0	0	0	0	0
Customer Accounts Expense	2,780	0	0	0	241	241
Customer Service & Info. Expense	174	0	0	0	15	15
Sales Expense	111	0	0	0	5	5
Administrative & General Expenses	16,996	3,976	759	0	437	5,172
Total Electric O&M Expenses	109,585	13,967	2,475	19,340	1,424	37,206
Total Operating Expenses						
Cost of Fuel & Purchased Power	54,166	1,002	0	19,340	0	20,342
Other O&M Expenses	55,419	12,965	2,475	0	1,424	16,864
Total Operation & Maintenance Expenses	109,585	13,967	2,475	19,340	1,424	37,206
Depreciation Expense						
Production Plant	11,923	4,431	0	0	0	4,431
Wind Production Plant	0	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.	11,923	4,431	0	0	0	4,431
Transmission Plant	3,629	1,349	0	0	0	1,349

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Large General Secondary Rate 30			Total LG Secondary Rate 30
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
4	4	0	1	0	1
4	1,291	0	425	0	425
15	3,041	0	425	0	500
19	1,175	0	134	0	372
10	566	0	0	0	49
8	295	0	0	0	63
Direct	32	0	0	0	0
Direct	105	0	0	0	0
	6,509	0	985	0	1,410
13	2,498	659	111	0	817
6	465	0	0	0	20
	2,963	659	111	0	837
29	1,837	683	0	0	683
	26,861	7,122	1,096	0	8,710



**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Primary			Customer	Total TOD LG Primary Rate 31
		Demand Prod. & Trans.	Demand Distribution	Energy		
2	458,444	388	0	0	0	388
3	0	0	0	0	0	0
	458,444	388	0	0	0	388
2	210,983	179	0	0	0	179
4	2,646	0	3	0	0	3
4	54,034	0	64	0	0	64
7	72,755	0	0	0	1	1
4	53,775	0	63	0	0	63
11	34,482	0	0	0	0	0
5	15,168	0	0	0	0	0
10	22,690	0	0	0	0	0
8	12,223	0	0	0	6	6
Direct	1,303	0	0	0	0	0
Direct	4,397	0	0	0	0	0
	273,473	0	130	0	7	137
13	70,606	42	10	0	1	53
6	6,867	0	0	0	0	0
	77,473	42	10	0	1	53
29	7,500	6	0	0	0	6
	1,027,873	615	140	0	8	763

**Rate Base**

Electric Plant in Service	
Production Plant	
Wind Production Plant	
Total Production Plant	
Transmission Plant	
Distribution Plant	
Land & Rights of Way	
Station Equipment	
Poles, OH & UG Conductors & Conduit	
Customer Related 57%	
Demand Related 43%	
Line Transformers	
Customer Related 69%	
Demand Related 31%	
Services	
Meters	
Installation on Customer Premise	
Street Light & Signal System	
Total Distribution Plant	
General, Common & Intangible Plant	
Common - Intangible - CC&B	
General, Common & Intangible Plant, incl. CC&B	
Acquisition Adjustment	
Total Electric Plant in Service	

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Primary			Total TOD LG Primary Rate 31
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	189,003	160	0	0	160
3	0	0	0	0	0
	189,003	160	0	0	160
2	67,877	57	0	0	57
4	123	0	0	0	0
4	13,283	0	16	0	16
15	37,424	0	19	0	19
19	16,036	0	0	0	0
10	13,914	0	0	0	0
8	217	0	0	0	0
Direct	600	0	0	0	0
Direct	2,224	0	0	0	0
	83,821	0	35	0	35
13	29,155	18	4	0	22
6	1,776	0	0	0	0
	30,931	18	4	0	22
29	7,499	6	0	0	6
	379,131	241	39	0	280
	648,742	374	101	0	483
13	11,125	7	2	0	9
26	664	0	0	0	0
1	3,465	0	0	4	4
26	2,511	2	0	0	2
2	1,227	1	0	0	1
2	(1,151)	(1)	0	0	(1)
	17,841	9	2	4	15
	666,583	383	103	4	498

Less: Accumulated Depreciation

Production Plant

Wind Production Plant

Total Production Plant

Transmission Plant

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Customer Premise

Street Light & Signal System

Total Distribution Plant

General, Common & Intangible Plant

Common - Intangible - CC&B

General, Common & Intangible Plant, incl. CC&B

Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation

Net Electric Plant in Service

Additions

Materials & Supplies

Prepayments

Fuel Stocks

Unamortized Loss on Debt

Gain on Sale of Williston Office

Decommission of Retired Plant

Total Additions

Total Before Deductions

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Primary			Total TOD LG Primary Rate 31
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
26	121,984	73	17	0	1
26	0	0	0	0	0
26	2,833	2	0	0	0
	124,817	75	17	0	1
	541,766	308	86	4	7
	5.839%				4.20%

**Deductions**

Accumulated Deferred Income Tax	
Accumulated Investment Tax Credit	
Customer Advances For Construction	
<b>Total Deductions</b>	

**Total Rate Base**

**Rate of Return - Per Books**

**Electric Operating Revenues**  
**Retail Sales**

Residential	71,449	0	0	0	0	0
Small General Electric Service	11,960	0	0	0	0	0
Irrigation	84	0	0	0	0	0
Large General Service - Primary	14,085	0	0	0	0	0
Large General Service - Secondary	66,510	0	0	0	0	0
TOD Large General Service - Primary	129	0	39	89	1	129
TOD Large General Service - Secondary	1,375	0	0	0	0	0
Space Heating - Secondary	3,877	0	0	0	0	0
Small Municipal Electric Service	353	0	0	0	0	0
Municipal Lighting - Primary	124	0	0	0	0	0
Municipal Lighting - Secondary	1,410	0	0	0	0	0
Municipal Pumping - Primary	817	0	0	0	0	0
Municipal Pumping - Secondary	1,851	0	0	0	0	0
Outdoor Lighting	705	0	0	0	0	0
Interruptible Power Service incl. w/contracts	0	0	0	0	0	0
Interruptible Demand Response	2,070	0	0	0	0	0
Contracts	5,838	2	0	3	0	5
<b>Total Electric Retail Sales Revenues</b>	<b>182,637</b>	<b>2</b>	<b>39</b>	<b>92</b>	<b>1</b>	<b>134</b>

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Primary			Total TOD LG Primary Rate 31
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
Other Revenue					
Miscellaneous					
Reconnect Fees	47	0	0	0	0
NSF Check Fees	15	0	0	0	0
Other Miscellaneous Service Revenue	7	0	0	0	0
Rent from Electric Property					
Facilities Rental	1,360	1	0	0	1
Pole Attachments	127	0	0	0	0
Street Lights	615	0	0	0	0
Yard Lights	200	0	0	0	0
Joint Use Facilities	0	0	0	0	0
Miscellaneous	68	0	0	0	0
Other Electric Revenues					
Power Interchange Service	0	0	0	0	0
Fly Ash Sales	28	0	0	0	0
Late Payment Revenue	243	0	0	0	0
3-Year Average KVAR Penalty	416	0	0	0	0
Sales of Construction & Sundry Junk Material	0	0	0	0	0
Patronage Dividends	6	0	0	0	0
Joint Use Agreements	90	0	0	0	0
Wheeling Fees	0	0	0	0	0
Miscellaneous	449	0	0	0	0
<b>Total Other Revenues</b>	<b>3,671</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Primary			Total TOD LG Primary Rate 31
		Demand Prod. & Trans.	Demand Distribution	Energy	
	186,308	3	39	92	1
Total Operating Revenues					
Operation & Maintenance Expenses					
Production Expense					
Fuel	36,602	0	0	37	0
Purchased Power - Energy	14,869	0	0	15	0
Purchased Power - Capacity	2,695	2	0	0	0
Other Production	18,955	16	0	0	0
Total Production Expense	73,121	18	0	52	0
Transmission Expense	5,230	4	0	0	0
Distribution Expense	11,173	0	5	0	0
Storm-related Expense	0	0	0	0	0
Customer Accounts Expense	2,780	0	0	0	0
Customer Service & Info. Expense	174	0	0	0	0
Sales Expense	111	0	0	0	0
Administrative & General Expenses	16,996	9	2	0	0
Total Electric O&M Expenses	109,585	31	7	52	0
Total Operating Expenses					
Cost of Fuel & Purchased Power	54,166	2	0	52	0
Other O&M Expenses	55,419	29	7	0	0
Total Operation & Maintenance Expenses	109,585	31	7	52	0
Depreciation Expense					
Production Plant	11,923	10	0	0	0
Wind Production Plant	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.	11,923	10	0	0	0
Transmission Plant	3,629	3	0	0	0

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Primary			Total TOD LG Primary Rate 31
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
Distribution Plant					
Rights of Way	4	0	0	0	0
Station Equipment	4	1,291	0	0	2
Poles, OH & UG Conductors & Conduit	15	3,041	0	0	2
Line Transformers	19	1,175	0	0	0
Services	10	566	0	0	0
Meters	8	295	0	0	0
Installation on Cust. Premises	Direct	32	0	0	0
Street Light & Signal Systems	Direct	105	0	0	0
Total Distribution Plant		6,509	0	4	4
General, Common & Intangible Plant & Amort of Gain/Loss	13	2,498	2	0	2
Common - Intangible - CC&B	6	465	0	0	0
Total Plant		2,963	2	0	2
Amort. Of Decomm. Of Power Plants	29	1,837	2	0	0
Total Depreciation Expense		26,861	17	4	0
					21



**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Secondary				Total TOD LG Secondary Rate 31
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
2	189,003	1,644	0	0	0	1,644
3	0	0	0	0	0	0
	189,003	1,644	0	0	0	1,644
2	67,877	590	0	0	0	590
4	123	0	1	0	0	1
4	13,283	0	102	0	0	102
15	37,424	0	122	0	13	135
19	16,036	0	43	0	48	91
10	13,914	0	0	0	37	37
8	217	0	0	0	1	1
Direct	600	0	0	0	0	0
Direct	2,224	0	0	0	0	0
	83,821	0	268	0	99	367
13	29,155	180	30	0	10	220
6	1,776	0	0	0	1	1
	30,931	180	30	0	11	221
29	7,499	65	0	0	0	65
	379,131	2,479	298	0	110	2,887
	648,742	3,845	759	0	232	4,836
13	11,125	69	12	0	4	85
26	664	4	1	0	0	5
1	3,465	0	0	30	0	30
26	2,511	15	3	0	1	19
2	1,227	11	0	0	0	11
2	(1,151)	(10)	0	0	0	(10)
	17,841	89	16	30	5	140
	666,583	3,934	775	30	237	4,976

Less: Accumulated Depreciation

Production Plant

Wind Production Plant

Total Production Plant

Transmission Plant

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Customer Premise

Street Light & Signal System

Total Distribution Plant

General, Common & Intangible Plant

Common - Intangible - CC&B

General, Common & Intangible Plant, incl. CC&B

Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation

Net Electric Plant in Service

Additions

Materials & Supplies

Prepayments

Fuel Stocks

Unamortized Loss on Debt

Gain on Sale of Williston Office

Decommission of Retired Plant

Total Additions

Total Before Deductions

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Secondary			Total TOD LG Secondary Rate 31
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	3,988	0	0	3,988
3	0	0	0	0	0
	458,444	3,988	0	0	3,988
2	210,983	1,835	0	0	1,835
4	2,646	0	20	0	20
4	54,034	0	416	0	416
7	72,755	0	0	0	43
4	53,775	0	414	0	414
11	34,482	0	0	0	150
5	15,168	0	133	0	133
10	22,690	0	0	0	60
8	12,223	0	0	0	61
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	0
	273,473	0	983	0	314
13	70,606	436	74	0	534
6	6,867	0	0	0	4
	77,473	436	74	0	538
29	7,500	65	0	0	65
	1,027,873	6,324	1,057	0	342
					7,723

**Rate Base**  
 Electric Plant in Service  
 Production Plant  
 Wind Production Plant  
 Total Production Plant  
 Transmission Plant  
 Distribution Plant  
 Land & Rights of Way  
 Station Equipment  
 Poles, OH & UG Conductors & Conduit  
 Customer Related 57%  
 Demand Related 43%  
 Line Transformers  
 Customer Related 69%  
 Demand Related 31%  
 Services  
 Meters  
 Installation on Customer Premise  
 Street Light & Signal System  
 Total Distribution Plant  
 General, Common & Intangible Plant  
 Common - Intangible - CC&B  
 General, Common & Intangible Plant, incl. CC&B  
 Acquisition Adjustment  
 Total Electric Plant in Service

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Secondary			Total TOD LG Secondary Rate 31	
		Demand Prod. & Trans.	Demand Distribution	Energy Customer		
26	121,984	751	125	0	41	917
26	0	0	0	0	0	0
26	2,833	17	3	0	1	21
	124,817	768	128	0	42	938
	541,766	3,166	647	30	195	4,038
	5.839%					5.84%

**Deductions**

Accumulated Deferred Income Tax	
Accumulated Investment Tax Credit	
Customer Advances For Construction	
<b>Total Deductions</b>	

**Total Rate Base**

**Rate of Return - Per Books**

**Electric Operating Revenues**  
**Retail Sales**

Residential	71,449	0	0	0	0	0	0
Small General Electric Service	11,960	0	0	0	0	0	0
Irrigation	84	0	0	0	0	0	0
Large General Service - Primary	14,085	0	0	0	0	0	0
Large General Service - Secondary	66,510	0	0	0	0	0	0
TOD Large General Service - Primary	129	0	0	0	0	0	0
TOD Large General Service - Secondary	1,375	575	762	38	1,375		
Space Heating - Secondary	3,877	0	0	0	0	0	0
Small Municipal Electric Service	353	0	0	0	0	0	0
Municipal Lighting - Primary	124	0	0	0	0	0	0
Municipal Lighting - Secondary	1,410	0	0	0	0	0	0
Municipal Pumping - Primary	817	0	0	0	0	0	0
Municipal Pumping - Secondary	1,851	0	0	0	0	0	0
Outdoor Lighting	705	0	0	0	0	0	0
Interruptible Power Service incl. w/contracts	0	0	0	0	0	0	0
Interruptible Demand Response	2,070	0	0	0	0	0	0
Contracts	5,838	19	4	23	1	47	
<b>Total Electric Retail Sales Revenues</b>	<b>182,637</b>	<b>19</b>	<b>579</b>	<b>785</b>	<b>39</b>	<b>1,422</b>	

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Secondary			Total TOD LG Secondary Rate 31
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
7	47	0	0	0	0
7	15	0	0	0	0
27	7	0	0	0	0
27	1,360	8	2	0	10
15	127	0	0	0	0
Direct	615	0	0	0	0
Direct	200	0	0	0	0
30	0	0	0	0	0
27	68	0	0	0	0
30	0	0	0	0	0
29	28	0	0	0	0
92	243	0	0	0	0
14	416	0	1	0	1
14	0	0	0	0	0
23	6	0	0	0	0
8	90	0	0	0	0
30	0	0	0	0	0
23	449	2	0	0	2
	3,671	10	3	0	13

Other Revenue  
Miscellaneous  
Reconnect Fees  
NSF Check Fees  
Other Miscellaneous Service Revenue  
Rent from Electric Property  
Facilities Rental  
Pole Attachments  
Street Lights  
Yard Lights  
Joint Use Facilities  
Miscellaneous  
Other Electric Revenues  
Power Interchange Service  
Fly Ash Sales  
Late Payment Revenue  
3-Year Average KVAR Penalty  
Sales of Construction & Sundry Junk Material  
Patronage Dividends  
Joint Use Agreements  
Wheeling Fees  
Miscellaneous  
Total Other Revenues

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Secondary			Total TOD LG Secondary Rate 31
		Demand Prod. & Trans.	Demand Distribution	Energy	
	186,308	29	582	785	39

Total Operating Revenues									
Operation & Maintenance Expenses									
Production Expense									
Fuel	1	36,602	0	0	322	0	0	0	322
Purchased Power - Energy	1	14,869	0	0	131	0	0	0	131
Purchased Power - Capacity	2	2,695	23	0	0	0	0	0	23
Other Production	2	18,955	165	0	0	0	0	0	165
Total Production Expense		73,121	188	0	453	0	0	0	641
Transmission Expense	2	5,230	45	0	0	0	0	0	45
Distribution Expense	14	11,173	0	40	0	0	13	0	53
Storm-related Expense	90	0	0	0	0	0	0	0	0
Customer Accounts Expense	12	2,780	0	0	0	0	6	0	6
Customer Service & Info. Expense	12	174	0	0	0	0	0	0	0
Sales Expense	7	111	0	0	0	0	0	0	0
Administrative & General Expenses	24	16,996	93	18	0	0	8	0	119
Total Electric O&M Expenses		109,585	326	58	453	0	27	0	864

Total Operating Expenses									
Cost of Fuel & Purchased Power		54,166	23	0	453	0	0	0	476
Other O&M Expenses		55,419	303	58	0	0	27	0	388
Total Operation & Maintenance Expenses		109,585	326	58	453	0	27	0	864

Depreciation Expense									
Production Plant	2	11,923	104	0	0	0	0	0	104
Wind Production Plant	3	0	0	0	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.		11,923	104	0	0	0	0	0	104
Transmission Plant	2	3,629	32	0	0	0	0	0	32

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	TOD Large General Rate 31 Secondary				Total TOD LG Secondary Rate 31
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
4	4	0	0	0	0	0
4	1,291	0	10	0	0	10
15	3,041	0	10	0	1	11
19	1,175	0	3	0	4	7
10	566	0	0	0	2	2
8	295	0	0	0	1	1
Direct	32	0	0	0	0	0
Direct	105	0	0	0	0	0
	6,509	0	23	0	8	31
13	2,498	15	3	0	1	19
6	465	0	0	0	0	0
	2,963	15	3	0	1	19
29	1,837	16	0	0	0	16
	26,861	167	26	0	9	202

Distribution Plant

Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Line Transformers  
Services  
Meters  
Installation on Cust. Premises  
Street Light & Signal Systems  
Total Distribution Plant

General, Common & Intangible Plant & Amort of Gain/Loss  
Common - Intangible - CC&B  
Total Plant

Amort. Of Decomm. Of Power Plants

Total Depreciation Expense



MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)

Allocation Factor	Total North Dakota	Space Heating Rate 32			Total Space Heating Rate 32
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	9,089	0	0	9,089
3	0	0	0	0	0
	458,444	9,089	0	0	9,089
2	210,983	4,183	0	0	4,183
4	2,646	0	91	0	91
4	54,034	0	1,864	0	1,864
7	72,755	0	0	0	27
4	53,775	0	1,855	0	1,855
11	34,482	0	0	0	0
5	15,168	0	594	0	594
10	22,690	0	0	0	0
8	12,223	0	0	0	293
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	0
	273,473	0	4,404	0	320
13	70,606	994	330	0	24
6	6,867	0	0	0	3
	77,473	994	330	0	27
29	7,500	149	0	0	0
	1,027,873	14,415	4,734	0	347
					19,496

Rate Base

Electric Plant in Service

Production Plant

Wind Production Plant

Total Production Plant

Transmission Plant

Distribution Plant

Land & Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Customer Related 57%

Demand Related 43%

Line Transformers

Customer Related 69%

Demand Related 31%

Services

Meters

Installation on Customer Premise

Street Light & Signal System

Total Distribution Plant

General, Common & Intangible Plant

Common - Intangible - CC&B

General, Common & Intangible Plant, incl. CC&B

Acquisition Adjustment

Total Electric Plant in Service

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)

Allocation Factor	Total North Dakota	Space Heating Rate 32			Total Space Heating Rate 32
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	189,003	3,747	0	0	3,747
3	0	0	0	0	0
	189,003	3,747	0	0	3,747
2	67,877	1,346	0	0	1,346
4	123	0	4	0	4
4	13,283	0	458	0	458
15	37,424	0	549	0	557
19	16,036	0	192	0	192
10	13,914	0	0	0	0
8	217	0	0	0	5
Direct	600	0	0	0	0
Direct	2,224	0	0	0	0
	83,821	0	1,203	0	1,216
13	29,155	410	136	0	556
6	1,776	0	0	0	1
	30,931	410	136	0	557
29	7,499	149	0	0	149
	379,131	5,652	1,339	0	7,015
	648,742	8,763	3,395	0	12,481
13	11,125	157	52	0	213
26	664	9	3	0	12
1	3,465	0	0	96	96
26	2,511	35	12	0	48
2	1,227	24	0	0	24
2	(1,151)	(23)	0	0	(23)
	17,841	202	67	96	370
	666,583	8,965	3,462	96	12,851

Less: Accumulated Depreciation  
Production Plant  
Wind Production Plant  
Total Production Plant  
Transmission Plant  
Distribution Plant  
Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Line Transformers  
Services  
Meters  
Installation on Customer Premise  
Street Light & Signal System  
Total Distribution Plant  
General, Common & Intangible Plant  
Common - Intangible - CC&B  
General, Common & Intangible Plant, incl. CC&B  
Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation  
Net Electric Plant in Service

Additions  
Materials & Supplies  
Prepayments  
Fuel Stocks  
Unamortized Loss on Debt  
Gain on Sale of Williston Office  
Decommission of Retired Plant  
Total Additions  
Total Before Deductions

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Space Heating Rate 32			Total Space Heating Rate 32	
		Demand Prod. & Trans.	Demand Distribution	Energy Customer		
26	121,984	1,711	562	0	41	2,314
26	0	0	0	0	0	0
26	2,833	40	13	0	1	54
	124,817	1,751	575	0	42	2,368
	541,766	7,214	2,887	96	286	10,483
	5.839%					6.08%

Deductions  
Accumulated Deferred Income Tax  
Accumulated Investment Tax Credit  
Customer Advances For Construction  
Total Deductions  
Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
Retail Sales

Direct	71,449	0	0	0	0	0
Direct	11,960	0	0	0	0	0
Direct	84	0	0	0	0	0
Direct	14,085	0	0	0	0	0
Direct	66,510	0	0	0	0	0
Direct	129	0	0	0	0	0
Direct	1,375	0	0	0	0	0
Direct	3,877	0	556	3,209	112	3,877
Direct	353	0	0	0	0	0
Direct	124	0	0	0	0	0
Direct	1,410	0	0	0	0	0
Direct	817	0	0	0	0	0
Direct	1,851	0	0	0	0	0
Direct	705	0	0	0	0	0
Direct	0	0	0	0	0	0
Direct	2,070	0	0	0	0	0
Direct	5,838	43	17	73	2	135
1 & 27	182,637	43	573	3,282	114	4,012

Residential  
Small General Electric Service  
Irrigation  
Large General Service - Primary  
Large General Service - Secondary  
TOD Large General Service - Primary  
TOD Large General Service - Secondary  
Space Heating - Secondary  
Small Municipal Electric Service  
Municipal Lighting - Primary  
Municipal Lighting - Secondary  
Municipal Pumping - Primary  
Municipal Pumping - Secondary  
Outdoor Lighting  
Interruptible Power Service incl. w/contracts  
Interruptible Demand Response  
Contracts  
Total Electric Retail Sales Revenues

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
 Embedded Class Cost of Service Study  
 Projected 2017  
 (000's)

Allocation Factor	Total North Dakota	Space Heating Rate 32			Total Space Heating Rate 32
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
7	47	0	0	0	0
7	15	0	0	0	0
27	7	0	0	0	0
27	1,360	18	7	0	1
15	127	0	2	0	0
Direct	615	0	0	0	0
Direct	200	0	0	0	0
30	0	0	0	0	0
27	68	1	0	0	0
30	0	0	0	0	0
29	28	1	0	0	0
92	243	0	0	0	0
14	416	0	7	0	0
14	0	0	0	0	0
23	6	0	0	0	0
8	90	0	0	0	2
30	0	0	0	0	0
23	449	6	2	0	1
	3,671	26	18	0	4

Other Revenue  
 Miscellaneous  
 Reconnect Fees  
 NSF Check Fees  
 Other Miscellaneous Service Revenue  
 Rent from Electric Property  
 Facilities Rental  
 Pole Attachments  
 Street Lights  
 Yard Lights  
 Joint Use Facilities  
 Miscellaneous  
 Other Electric Revenues  
 Power Interchange Service  
 Fly Ash Sales  
 Late Payment Revenue  
 3-Year Average KVAR Penalty  
 Sales of Construction & Sundry Junk Material  
 Patronage Dividends  
 Joint Use Agreements  
 Wheeling Fees  
 Miscellaneous  
 Total Other Revenues

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota		Space Heating Rate 32			Total Space Heating Rate 32
	North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
Total Operating Revenues	186,308	69	591	3,282	118	4,060
Operation & Maintenance Expenses						
Production Expense						
Fuel						
Purchased Power - Energy	36,602	0	0	1,018	0	1,018
Purchased Power - Capacity	14,869	0	0	413	0	413
Other Production	2,695	53	0	0	0	53
Total Production Expense	18,955	376	0	0	0	376
Transmission Expense	73,121	429	0	1,431	0	1,860
Distribution Expense	5,230	104	0	0	0	104
Storm-related Expense	11,173	0	180	0	13	193
Customer Accounts Expense	0	0	0	0	0	0
Customer Service & Info. Expense	2,780	0	0	0	64	64
Sales Expense	174	0	0	0	4	4
Administrative & General Expenses	111	0	0	0	0	0
Total Electric O&M Expenses	16,996	212	80	0	36	328
Total Operating Expenses	109,585	745	260	1,431	117	2,553
Cost of Fuel & Purchased Power	54,166	53	0	1,431	0	1,484
Other O&M Expenses	55,419	692	260	0	117	1,069
Total Operation & Maintenance Expenses	109,585	745	260	1,431	117	2,553
Depreciation Expense						
Production Plant	11,923	236	0	0	0	236
Wind Production Plant	0	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.	11,923	236	0	0	0	236
Transmission Plant	3,629	72	0	0	0	72

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Space Heating Rate 32			Total Space Heating Rate 32
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
4	4	0	0	0	0
4	1,291	0	45	0	45
15	3,041	0	45	0	46
19	1,175	0	14	0	14
10	566	0	0	0	0
8	295	0	0	0	7
Direct	32	0	0	0	0
Direct	105	0	0	0	0
	<b>6,509</b>	<b>0</b>	<b>104</b>	<b>0</b>	<b>112</b>
	<b>2,498</b>	<b>35</b>	<b>12</b>	<b>0</b>	<b>48</b>
	<b>465</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>2,963</b>	<b>35</b>	<b>12</b>	<b>0</b>	<b>48</b>
	<b>1,837</b>	<b>36</b>	<b>0</b>	<b>0</b>	<b>36</b>
	<b>26,861</b>	<b>379</b>	<b>116</b>	<b>0</b>	<b>504</b>

Distribution Plant

Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Line Transformers  
Services  
Meters  
Installation on Cust. Premises  
Street Light & Signal Systems  
Total Distribution Plant

General, Common & Intangible Plant & Amort of Gain/Loss  
Common - Intangible - CC&B  
Total Plant

Amort. Of Decomm. Of Power Plants

Total Depreciation Expense

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Space Heating Rate 32			Total Space Heating Rate 32
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
29	1,761	35	0	0	35
30	1,221	24	0	0	24
14	1,257	0	20	0	21
13	374	5	2	0	7
	4,613	64	22	0	87
23	2,428	30	11	0	5
	7,041	94	33	0	6
	143,487	1,218	409	1,431	132
					3,190
27	12,544	169	66	0	6
	30,277	(1,318)	116	1,851	(20)
	1,305	(57)	5	80	(1)
	28,972	(1,261)	111	1,771	(19)
					602
35.00%	10,140	(441)	39	620	(7)
44	1,305	(57)	5	80	(1)
3	0	0	0	0	0
26	(257)	(4)	(1)	0	(5)
44	0	0	0	0	0
	11,188	(502)	43	700	(8)
	154,675	716	452	2,131	124
	31,633	(647)	139	1,151	(6)
					3,423
					637

Taxes Other Than Income  
Ad Valorem Taxes  
Production Plant  
Transmission Plant  
Distribution Plant  
General, Common & Intangible Plant  
Total Ad Valorem Taxes

Other Taxes  
Other Taxes - Payroll, Franchise, Other  
Total Taxes Other Than Income Taxes  
Total Operating Expense

Income Taxes  
Interest Expense  
Taxable Income  
Less: State Income Tax  
Federal Taxable Income  
Federal Income Tax  
@ Current Rate of 35%  
State Income Taxes  
Credits and Adjustments  
Production Tax Credit  
Full Normalization  
Equity AFUDC Amortization Tax Effect  
Federal and State Income Taxes  
Total Operating Expenses  
Total Operating Income

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Small Municipal Rate 40			Total Sm Municipal Rate 40
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	941	0	0	941
3	0	0	0	0	0
	458,444	941	0	0	941
2	210,983	433	0	0	433
4	2,646	0	6	0	6
4	54,034	0	116	0	116
7	72,755	0	0	0	211
4	53,775	0	115	0	115
11	34,482	0	0	0	301
5	15,168	0	37	0	37
10	22,690	0	0	0	64
8	12,223	0	0	0	51
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	0
	273,473	0	274	0	901
13	70,606	103	21	0	47
6	6,867	0	0	0	20
	77,473	103	21	0	67
29	7,500	15	0	0	15
	1,027,873	1,492	295	0	694
					2,481

**Rate Base**

Electric Plant in Service  
 Production Plant  
 Wind Production Plant  
 Total Production Plant  
 Transmission Plant  
 Distribution Plant  
 Land & Rights of Way  
 Station Equipment  
 Poles, OH & UG Conductors & Conduit  
 Customer Related 57%  
 Demand Related 43%  
 Line Transformers  
 Customer Related 69%  
 Demand Related 31%  
 Services  
 Meters  
 Installation on Customer Premise  
 Street Light & Signal System  
 Total Distribution Plant  
 General, Common & Intangible Plant  
 Common - Intangible - CC&B  
 General, Common & Intangible Plant, incl. CC&B  
 Acquisition Adjustment  
 Total Electric Plant in Service

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Small Municipal Rate 40			Total Sm Municipal Rate 40
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	189,003	388	0	0	388
3	0	0	0	0	0
	189,003	388	0	0	388
2	67,877	139	0	0	139
4	123	0	0	0	0
4	13,283	0	28	0	28
15	37,424	0	34	0	34
19	16,036	0	12	0	12
10	13,914	0	0	0	0
8	217	0	0	0	0
Direct	600	0	0	0	0
Direct	2,224	0	0	0	0
	83,821	0	74	0	74
13	29,155	42	8	0	50
6	1,776	0	0	0	0
	30,931	42	8	0	50
29	7,499	15	0	0	15
	379,131	584	82	0	666
	648,742	908	213	0	1,121
13	11,125	16	3	0	19
26	664	1	0	0	1
1	3,465	0	0	7	7
26	2,511	4	1	0	5
2	1,227	3	0	0	3
2	(1,151)	(2)	0	0	(2)
	17,841	22	4	7	33
	666,583	930	217	7	1,154

Less: Accumulated Depreciation

Production Plant

Wind Production Plant

Total Production Plant

Transmission Plant

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Customer Premise

Street Light & Signal System

Total Distribution Plant

General, Common & Intangible Plant

Common - Intangible - CC&B

General, Common & Intangible Plant, incl. CC&B

Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation

Net Electric Plant in Service

Additions

Materials & Supplies

Prepayments

Fuel Stocks

Unamortized Loss on Debt

Gain on Sale of Williston Office

Decommission of Retired Plant

Total Additions

Total Before Deductions

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)

Allocation Factor	Total North Dakota	Small Municipal Rate 40			Total Sm Municipal Rate 40
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
26	121,984	177	35	0	82
26	0	0	0	0	0
26	2,833	4	1	0	2
	124,817	181	36	0	84
	541,766	749	181	7	396

5.839%  
2.70%

Deductions  
Accumulated Deferred Income Tax  
Accumulated Investment Tax Credit  
Customer Advances For Construction  
Total Deductions

Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
Retail Sales

Direct	71,449	0	0	0	0	0
Direct	11,960	0	0	0	0	0
Direct	84	0	0	0	0	0
Direct	14,085	0	0	0	0	0
Direct	66,510	0	0	0	0	0
Direct	129	0	0	0	0	0
Direct	1,375	0	0	0	0	0
Direct	3,877	0	0	0	0	0
Direct	353	0	49	229	75	353
Direct	124	0	0	0	0	0
Direct	1,410	0	0	0	0	0
Direct	817	0	0	0	0	0
Direct	1,851	0	0	0	0	0
Direct	705	0	0	0	0	0
Direct	0	0	0	0	0	0
Direct	2,070	0	0	0	0	0
1 & 27	5,838	4	1	5	2	12
	182,637	4	50	234	77	365

Residential  
Small General Electric Service  
Irrigation  
Large General Service - Primary  
Large General Service - Secondary  
TOD Large General Service - Primary  
TOD Large General Service - Secondary  
Space Heating - Secondary  
Small Municipal Electric Service  
Municipal Lighting - Primary  
Municipal Lighting - Secondary  
Municipal Pumping - Primary  
Municipal Pumping - Secondary  
Outdoor Lighting  
Interruptible Power Service incl. w/contracts  
Interruptible Demand Response  
Contracts

Total Electric Retail Sales Revenues

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)

Allocation Factor	Total North Dakota	Small Municipal Rate 40				Total Sm Municipal Rate 40
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
Other Revenue						
Miscellaneous						
Reconnect Fees	47	0	0	0	0	0
NSF Check Fees	15	0	0	0	0	0
Other Miscellaneous Service Revenue	7	0	0	0	0	0
Rent from Electric Property						
Facilities Rental	1,360	2	0	0	1	3
Pole Attachments	127	0	0	0	0	0
Street Lights	615	0	0	0	0	0
Yard Lights	200	0	0	0	0	0
Joint Use Facilities	0	0	0	0	0	0
Miscellaneous	68	0	0	0	0	0
Other Electric Revenues						
Power Interchange Service	0	0	0	0	0	0
Fly Ash Sales	28	0	0	0	0	0
Late Payment Revenue	243	0	0	0	0	0
3-Year Average KVAR Penalty	416	0	0	0	1	1
Sales of Construction & Sundry Junk Material	0	0	0	0	0	0
Patronage Dividends	6	0	0	0	0	0
Joint Use Agreements	90	0	0	0	0	0
Wheeling Fees	0	0	0	0	0	0
Miscellaneous	449	1	0	0	0	1
Total Other Revenues	3,671	3	0	0	2	5

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Small Municipal Rate 40			Total Sm Municipal Rate 40	
		Demand Prod. & Trans.	Demand Distribution	Energy		
	186,308	7	50	234	79	370
Total Operating Revenues						
Operation & Maintenance Expenses						
Production Expense						
Fuel						
Purchased Power - Energy	36,602	0	0	74	0	74
Purchased Power - Capacity	14,869	0	0	30	0	30
Other Production	2,695	6	0	0	0	6
Total Production Expense	18,955	39	0	0	0	39
Transmission Expense	73,121	45	0	104	0	149
Distribution Expense	5,230	11	0	0	0	11
Storm-related Expense	11,173	0	11	0	26	37
Customer Accounts Expense	0	0	0	0	0	0
Customer Service & Info. Expense	2,780	0	0	0	8	8
Sales Expense	174	0	0	0	1	1
Administrative & General Expenses	111	0	0	0	0	0
	16,996	22	5	0	15	42
Total Electric O&M Expenses	109,585	78	16	104	50	248
Total Operating Expenses						
Cost of Fuel & Purchased Power	54,166	6	0	104	0	110
Other O&M Expenses	55,419	72	16	0	50	138
Total Operation & Maintenance Expenses	109,585	78	16	104	50	248
Depreciation Expense						
Production Plant	11,923	24	0	0	0	24
Wind Production Plant	0	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.	11,923	24	0	0	0	24
Transmission Plant	3,629	7	0	0	0	7

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Small Municipal Rate 40			Total Sm Municipal Rate 40
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
Distribution Plant					
Rights of Way	4	0	0	0	0
Station Equipment	4	1,291	3	0	3
Poles, OH & UG Conductors & Conduit	15	3,041	3	0	8
Line Transformers	19	1,175	1	0	8
Services	10	566	0	0	2
Meters	8	295	0	0	1
Installation on Cust. Premises	Direct	32	0	0	0
Street Light & Signal Systems	Direct	105	0	0	0
Total Distribution Plant		6,509	7	0	22
General, Common & Intangible Plant & Amort of Gain/Loss	13	2,498	4	1	7
Common - Intangible - CC&B	6	465	0	0	1
Total Plant		2,963	4	1	8
Amort. Of Decomm. Of Power Plants	29	1,837	4	0	4
Total Depreciation Expense		26,861	39	8	18
					65

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Small Municipal Rate 40			Total Sm Municipal Rate 40
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
Taxes Other Than Income					
Ad Valorem Taxes					
Production Plant	1,761	4	0	0	4
Transmission Plant	1,221	3	0	0	3
Distribution Plant	1,257	0	1	0	1
General, Common & Intangible Plant	374	1	0	0	1
Total Ad Valorem Taxes	4,613	8	1	0	9
Other Taxes					
Other Taxes - Payroll, Franchise, Other	2,428	3	1	0	4
Total Taxes Other Than Income Taxes	7,041	11	2	0	13
Total Operating Expense	143,487	128	26	104	258
Income Taxes					
Interest Expense	12,544	18	4	0	22
Taxable Income	30,277	(139)	20	130	11
Less: State Income Tax	1,305	(6)	1	6	1
Federal Taxable Income	28,972	(133)	19	124	15
Federal Income Tax	10,140	(47)	7	43	6
@ Current Rate of 35%	1,305	(6)	1	6	1
State Income Taxes					
Credits and Adjustments	0	0	0	0	0
Production Tax Credit	(257)	0	0	0	(257)
Full Normalization	0	0	0	0	0
Equity AFUDC Amortization Tax Effect	0	0	0	0	0
Federal and State Income Taxes	11,188	(53)	8	49	11,188
Total Operating Expenses	154,675	75	34	153	334
Total Operating Income	31,633	(68)	16	81	31,633

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Primary Rate 41			Total Mun Lighting Pri Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	151	0	0	151
3	0	0	0	0	0
	458,444	151	0	0	151
2	210,983	70	0	0	70
4	2,646	0	3	0	3
4	54,034	0	62	0	62
7	72,755	0	0	0	37
4	53,775	0	61	0	61
11	34,482	0	0	0	0
5	15,168	0	0	0	0
10	22,690	0	0	0	0
8	12,223	0	0	0	4
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	0
	273,473	0	126	0	167
13	70,606	17	9	0	29
6	6,867	0	0	0	4
	77,473	17	9	0	33
29	7,500	2	0	0	2
	1,027,873	240	135	0	48

**Rate Base**

Electric Plant in Service  
Production Plant  
Wind Production Plant  
Total Production Plant  
Transmission Plant  
Distribution Plant  
Land & Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Customer Related 57%  
Demand Related 43%  
Line Transformers  
Customer Related 69%  
Demand Related 31%  
Services  
Meters  
Installation on Customer Premise  
Street Light & Signal System  
Total Distribution Plant  
General, Common & Intangible Plant  
Common - Intangible - CC&B  
General, Common & Intangible Plant, incl. CC&B  
Acquisition Adjustment  
Total Electric Plant in Service

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Primary Rate 41			Total Mun Lighting Pri Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	189,003	62	0	0	62
3	0	0	0	0	0
	189,003	62	0	0	62
2	67,877	22	0	0	22
4	123	0	0	0	0
4	13,283	0	15	0	15
15	37,424	0	18	0	18
19	16,036	0	0	0	0
10	13,914	0	0	0	0
8	217	0	0	0	0
Direct	600	0	0	0	0
Direct	2,224	0	0	0	0
	83,821	0	33	0	33
13	29,155	7	4	0	11
6	1,776	0	0	0	0
	30,931	7	4	0	11
29	7,499	2	0	0	2
	379,131	93	37	0	130
	648,742	147	98	0	245
13	11,125	3	1	0	4
26	664	0	0	0	0
1	3,465	0	0	3	3
26	2,511	1	0	0	1
2	1,227	0	0	0	0
2	(1,151)	0	0	0	0
	17,841	4	1	3	8
	666,583	151	99	3	253

Less: Accumulated Depreciation  
Production Plant  
Wind Production Plant  
Total Production Plant  
Transmission Plant  
Distribution Plant  
Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Line Transformers  
Services  
Meters  
Installation on Customer Premise  
Street Light & Signal System  
Total Distribution Plant  
General, Common & Intangible Plant  
Common - Intangible - CC&B  
General, Common & Intangible Plant, incl. CC&B  
Acquisition Adjustment  
Less: Total Accumulated Reserve for Depreciation  
Net Electric Plant in Service  
Additions  
Materials & Supplies  
Prepayments  
Fuel Stocks  
Unamortized Loss on Debt  
Gain on Sale of Williston Office  
Decommission of Retired Plant  
Total Additions  
Total Before Deductions

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Primary Rate 41			Total Mun Lighting Pri Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
26	121,984	28	16	0	6
26	0	0	0	0	0
26	2,833	1	0	0	1
	124,817	29	16	0	6
	541,766	122	83	3	29
	5.8399%				13.08%

Deductions  
Accumulated Deferred Income Tax  
Accumulated Investment Tax Credit  
Customer Advances For Construction  
Total Deductions

Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
Retail Sales

Direct	71,449	0	0	0	0	0
Direct	11,960	0	0	0	0	0
Direct	84	0	0	0	0	0
Direct	14,085	0	0	0	0	0
Direct	66,510	0	0	0	0	0
Direct	129	0	0	0	0	0
Direct	1,375	0	0	0	0	0
Direct	3,877	0	0	0	0	0
Direct	353	0	0	0	0	0
Direct	124	0	0	124	0	124
Direct	1,410	0	0	0	0	0
Direct	817	0	0	0	0	0
Direct	1,851	0	0	0	0	0
Direct	705	0	0	0	0	0
Direct	0	0	0	0	0	0
Direct	2,070	0	0	0	0	0
1 & 27	5,838	1	0	0	2	3
	182,637	1	0	126	0	127

Residential  
Small General Electric Service  
Irrigation  
Large General Service - Primary  
Large General Service - Secondary  
TOD Large General Service - Primary  
TOD Large General Service - Secondary  
Space Heating - Secondary  
Small Municipal Electric Service  
Municipal Lighting - Primary  
Municipal Lighting - Secondary  
Municipal Pumping - Primary  
Municipal Pumping - Secondary  
Outdoor Lighting  
Interruptible Power Service incl. w/contracts  
Interruptible Demand Response  
Contracts  
Total Electric Retail Sales Revenues

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Primary Rate 41			Total Mun Lighting Pri Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
Other Revenue					
Miscellaneous					
Reconnect Fees	47	0	0	0	0
NSF Check Fees	15	0	0	0	0
Other Miscellaneous Service Revenue	7	0	0	0	0
Rent from Electric Property					
Facilities Rental	1,360	0	0	0	0
Pole Attachments	127	0	0	0	0
Street Lights	615	0	0	0	0
Yard Lights	200	0	0	0	0
Joint Use Facilities	0	0	0	0	0
Miscellaneous	68	0	0	0	0
Other Electric Revenues					
Power Interchange Service	0	0	0	0	0
Fly Ash Sales	28	0	0	0	0
Late Payment Revenue	243	0	0	0	0
3-Year Average KVAR Penalty	416	0	0	0	0
Sales of Construction & Sundry Junk Material	0	0	0	0	0
Patronage Dividends	6	0	0	0	0
Joint Use Agreements	90	0	0	0	0
Wheeling Fees	0	0	0	0	0
Miscellaneous	449	0	0	0	0
<b>Total Other Revenues</b>	<b>3,671</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Primary Rate 41			Total Mun Lighting Pri Rate 41	
		Demand Prod. & Trans.	Demand Distribution	Energy		
	186,308	1	0	126	0	127
Total Operating Revenues						
Operation & Maintenance Expenses						
Production Expense						
Fuel	36,602	0	0	31	0	31
Purchased Power - Energy	14,869	0	0	13	0	13
Purchased Power - Capacity	2,695	1	0	0	0	1
Other Production	18,955	6	0	0	0	6
Total Production Expense	73,121	7	0	44	0	51
Transmission Expense	5,230	2	0	0	0	2
Distribution Expense	11,173	0	5	0	2	7
Storm-related Expense	0	0	0	0	0	0
Customer Accounts Expense	2,780	0	0	0	1	1
Customer Service & Info. Expense	174	0	0	0	0	0
Sales Expense	111	0	0	0	0	0
Administrative & General Expenses	16,996	4	2	0	1	7
Total Electric O&M Expenses	109,585	13	7	44	4	68
Total Operating Expenses						
Cost of Fuel & Purchased Power	54,166	1	0	44	0	45
Other O&M Expenses	55,419	12	7	0	4	23
Total Operation & Maintenance Expenses	109,585	13	7	44	4	68
Depreciation Expense						
Production Plant	11,923	4	0	0	0	4
Wind Production Plant	0	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.	11,923	4	0	0	0	4
Transmission Plant	3,629	1	0	0	0	1

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Primary Rate 41			Total Mun Lighting Pri Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
4	4	0	0	0	0
4	1,291	0	1	0	1
15	3,041	0	1	0	2
19	1,175	0	0	0	0
10	566	0	0	0	0
8	295	0	0	0	0
Direct	32	0	0	0	0
Direct	105	0	0	0	0
	6,509	0	2	0	3
13	2,498	1	0	0	1
6	465	0	0	0	0
	2,963	1	0	0	1
29	1,837	1	0	0	1
	26,861	7	2	0	10

Distribution Plant

Rights of Way  
 Station Equipment  
 Poles, OH & UG Conductors & Conduit  
 Line Transformers  
 Services  
 Meters  
 Installation on Cust. Premises  
 Street Light & Signal Systems  
 Total Distribution Plant

General, Common & Intangible Plant & Amort of Gain/Loss  
 Common - Intangible - CC&B  
 Total Plant

Amort. Of Decomm. Of Power Plants

Total Depreciation Expense

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Primary Rate 41				Total Mun Lighting Pri Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
29	1,761	1	0	0	0	1
30	1,221	0	0	0	0	0
14	1,257	0	1	0	0	1
13	374	0	0	0	0	0
	4,613	1	1	0	0	2
23	2,428	1	0	0	0	1
	7,041	2	1	0	0	3
	143,487	22	10	44	5	81
27	12,544	3	2	0	1	6
	30,277	(24)	(12)	82	(6)	40
44	1,305	(1)	(1)	4	0	2
	28,972	(23)	(11)	78	(6)	38
35.00%	10,140	(8)	(4)	27	(2)	13
44	1,305	(1)	(1)	4	0	2
3	0	0	0	0	0	0
26	(257)	0	0	0	0	0
44	0	0	0	0	0	0
	11,188	(9)	(5)	31	(2)	15
	154,675	13	5	75	3	96
	31,633	(12)	(5)	51	(3)	31

Taxes Other Than Income  
Ad Valorem Taxes

Production Plant  
Transmission Plant  
Distribution Plant  
General, Common & Intangible Plant  
Total Ad Valorem Taxes

Other Taxes

Other Taxes - Payroll, Franchise, Other

Total Taxes Other Than Income Taxes

Total Operating Expense

Income Taxes

Interest Expense

Taxable Income

Less: State Income Tax

Federal Taxable Income

Federal Income Tax

@ Current Rate of 35%

State Income Taxes

Credits and Adjustments

Production Tax Credit

Full Normalization

Equity AFUDC Amortization Tax Effect

Federal and State Income Taxes

Total Operating Expenses

Total Operating Income

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Secondary Rate 41			Total Mun Lighting Sec Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	1,510	0	0	1,510
3	0	0	0	0	0
	458,444	1,510	0	0	1,510
2	210,983	695	0	0	695
4	2,646	0	41	0	41
4	54,034	0	840	0	840
7	72,755	0	0	0	271
4	53,775	0	836	0	836
11	34,482	0	0	0	240
5	15,168	0	268	0	268
10	22,690	0	0	0	131
8	12,223	0	0	0	34
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	4,397
	273,473	0	1,985	0	5,073
13	70,606	165	149	0	380
6	6,867	0	0	0	26
	77,473	165	149	0	406
29	7,500	25	0	0	25
	1,027,873	2,395	2,134	0	5,479
					10,008

**Rate Base**

Electric Plant in Service  
Production Plant  
Wind Production Plant  
Total Production Plant  
Transmission Plant  
Distribution Plant  
Land & Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Customer Related 57%  
Demand Related 43%  
Line Transformers  
Customer Related 69%  
Demand Related 31%  
Services  
Meters  
Installation on Customer Premise  
Street Light & Signal System  
Total Distribution Plant  
General, Common & Intangible Plant  
Common - Intangible - CC&B  
General, Common & Intangible Plant, incl. CC&B  
Acquisition Adjustment  
Total Electric Plant in Service

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Secondary Rate 41			Total Mun Lighting Sec Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	189,003	623	0	0	623
3	0	0	0	0	0
	189,003	623	0	0	623
2	67,877	224	0	0	224
4	123	0	2	0	2
4	13,283	0	206	0	206
15	37,424	0	247	0	327
19	16,036	0	87	0	165
10	13,914	0	0	0	80
8	217	0	0	0	1
Direct	600	0	0	0	0
Direct	2,224	0	0	0	2,224
	83,821	0	542	0	2,463
13	29,155	68	61	0	157
6	1,776	0	0	0	7
	30,931	68	61	0	164
29	7,499	25	0	0	25
	379,131	940	603	0	2,627
	648,742	1,455	1,531	0	2,852
13	11,125	26	23	0	60
26	664	2	1	0	4
1	3,465	0	0	31	0
26	2,511	6	5	0	13
2	1,227	4	0	0	4
2	(1,151)	(4)	0	0	(4)
	17,841	34	29	31	77
	666,583	1,489	1,560	31	2,929
					6,009

Less: Accumulated Depreciation

Production Plant

Wind Production Plant

Total Production Plant

Transmission Plant

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Customer Premise

Street Light & Signal System

Total Distribution Plant

General, Common & Intangible Plant

Common - Intangible - CC&B

General, Common & Intangible Plant, incl. CC&B

Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation

Net Electric Plant in Service

Additions

Materials & Supplies

Prepayments

Fuel Stocks

Unamortized Loss on Debt

Gain on Sale of Williston Office

Decommission of Retired Plant

Total Additions

Total Before Deductions

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)

Allocation Factor	Total North Dakota	Municipal Lighting Secondary Rate 41			Total Mun Lighting Sec Rate 41	
		Demand Prod. & Trans.	Demand Distribution	Energy Customer		
26	121,984	284	253	0	650	1,187
26	0	0	0	0	0	0
26	2,833	7	6	0	15	28
	124,817	291	259	0	665	1,215
	541,766	1,198	1,301	31	2,264	4,794
	5.839%					10.85%

Deductions  
Accumulated Deferred Income Tax  
Accumulated Investment Tax Credit  
Customer Advances For Construction  
Total Deductions

Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
Retail Sales

Direct	71,449	0	0	0	0	0
Direct	11,960	0	0	0	0	0
Direct	84	0	0	0	0	0
Direct	14,085	0	0	0	0	0
Direct	66,510	0	0	0	0	0
Direct	129	0	0	0	0	0
Direct	1,375	0	0	0	0	0
Direct	3,877	0	0	0	0	0
Direct	353	0	0	0	0	0
Direct	124	0	0	0	0	0
Direct	1,410	0	0	1,410	0	1,410
Direct	817	0	0	0	0	0
Direct	1,851	0	0	0	0	0
Direct	705	0	0	0	0	0
Direct	0	0	0	0	0	0
Direct	2,070	0	0	0	0	0
Direct	5,838	7	8	24	14	53
1 & 27	182,637	7	8	1,434	14	1,463

Residential  
Small General Electric Service  
Irrigation  
Large General Service - Primary  
Large General Service - Secondary  
TOD Large General Service - Primary  
TOD Large General Service - Secondary  
Space Heating - Secondary  
Small Municipal Electric Service  
Municipal Lighting - Primary  
Municipal Lighting - Secondary  
Municipal Pumping - Primary  
Municipal Pumping - Secondary  
Outdoor Lighting  
Interruptible Power Service incl. w/contracts  
Interruptible Demand Response  
Contracts  
Total Electric Retail Sales Revenues

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Secondary Rate 41			Total Mun Lighting Sec Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
7	47	0	0	0	0
7	15	0	0	0	0
27	7	0	0	0	0
27	1,360	3	3	0	6
15	127	0	1	0	1
Direct	615	0	0	0	615
Direct	200	0	0	0	0
30	0	0	0	0	0
27	68	0	0	0	0
30	0	0	0	0	0
29	28	0	0	0	0
92	243	0	0	0	0
14	416	0	3	0	8
14	0	0	0	0	0
23	6	0	0	0	0
8	90	0	0	0	0
30	0	0	0	0	0
23	449	1	1	0	3
	3,671	4	8	0	632

Other Revenue  
Miscellaneous  
Reconnect Fees  
NSF Check Fees  
Other Miscellaneous Service Revenue  
Rent from Electric Property  
Facilities Rental  
Pole Attachments  
Street Lights  
Yard Lights  
Joint Use Facilities  
Miscellaneous  
Other Electric Revenues  
Power Interchange Service  
Fly Ash Sales  
Late Payment Revenue  
3-Year Average KVAR Penalty  
Sales of Construction & Sundry Junk Material  
Patronage Dividends  
Joint Use Agreements  
Wheeling Fees  
Miscellaneous  
Total Other Revenues

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Secondary Rate 41				Total Mun Lighting Sec Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
	186,308	11	16	1,434	646	2,107
Total Operating Revenues						
Operation & Maintenance Expenses						
Production Expense						
Fuel	36,602	0	0	330	0	330
Purchased Power - Energy	14,869	0	0	134	0	134
Purchased Power - Capacity	2,695	9	0	0	0	9
Other Production	18,955	62	0	0	0	62
Total Production Expense	73,121	71	0	464	0	535
Transmission Expense	5,230	17	0	0	0	17
Distribution Expense	11,173	0	81	0	207	288
Storm-related Expense	0	0	0	0	0	0
Customer Accounts Expense	2,780	0	0	0	13	13
Customer Service & Info. Expense	174	0	0	0	1	1
Sales Expense	111	0	0	0	0	0
Administrative & General Expenses	16,996	35	36	0	98	169
Total Electric O&M Expenses	109,585	123	117	464	319	1,023
Total Operating Expenses						
Cost of Fuel & Purchased Power	54,166	9	0	464	0	473
Other O&M Expenses	55,419	114	117	0	319	550
Total Operation & Maintenance Expenses	109,585	123	117	464	319	1,023
Depreciation Expense						
Production Plant	11,923	39	0	0	0	39
Wind Production Plant	0	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.	11,923	39	0	0	0	39
Transmission Plant	3,629	12	0	0	0	12

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Secondary Rate 41			Total Mun Lighting Sec Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
4	4	0	0	0	0
4	1,291	0	20	0	20
15	3,041	0	20	0	27
19	1,175	0	6	0	12
10	566	0	0	0	3
8	295	0	0	0	1
Direct	32	0	0	0	0
Direct	105	0	0	0	105
	6,509	0	46	0	122
13	2,498	6	5	0	13
6	465	0	0	0	2
	2,963	6	5	0	15
29	1,837	6	0	0	6
	26,861	63	51	0	137
					251

Distribution Plant

Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Line Transformers  
Services  
Meters  
Installation on Cust. Premises  
Street Light & Signal Systems  
Total Distribution Plant

General, Common & Intangible Plant & Amort of Gain/Loss  
Common - Intangible - CC&B  
Total Plant

Amort. Of Decomm. Of Power Plants

Total Depreciation Expense

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Municipal Lighting Secondary Rate 41			Total Mun Lighting Sec Rate 41
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
29	1,761	6	0	0	6
30	1,221	4	0	0	4
14	1,257	0	9	0	23
13	374	1	1	0	2
	4,613	11	10	0	25
23	2,428	5	5	0	14
	7,041	16	15	0	39
	143,487	202	183	464	495
27	12,544	28	30	0	55
	30,277	(219)	(197)	970	96
44	1,305	(9)	(8)	42	4
	28,972	(210)	(189)	928	92
35.00%	10,140	(74)	(66)	325	32
44	1,305	(9)	(8)	42	4
3	0	0	0	0	0
26	(257)	(1)	(1)	0	(1)
44	0	0	0	0	0
	11,188	(84)	(75)	367	35
	154,675	118	108	831	530
	31,633	(107)	(92)	603	116
					1,587
					520

Taxes Other Than Income

Ad Valorem Taxes

Production Plant

Transmission Plant

Distribution Plant

General, Common & Intangible Plant

Total Ad Valorem Taxes

Other Taxes

Other Taxes - Payroll, Franchise, Other

Total Taxes Other Than Income Taxes

Total Operating Expense

Income Taxes

Interest Expense

Taxable Income

Less: State Income Tax

Federal Taxable Income

Federal Income Tax

@ Current Rate of 35%

State Income Taxes

Credits and Adjustments

Production Tax Credit

Full Normalization

Equity AFUDC Amortization Tax Effect

Federal and State Income Taxes

Total Operating Expenses

Total Operating Income

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Pumping Primary Rate 48			Total Mun Pumping Pri Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	2,726	0	0	2,726
3	0	0	0	0	0
	458,444	2,726	0	0	2,726
2	210,983	1,255	0	0	1,255
4	2,646	0	24	0	24
4	54,034	0	483	0	483
7	72,755	0	0	0	3
4	53,775	0	480	0	480
11	34,482	0	0	0	0
5	15,168	0	0	0	0
10	22,690	0	0	0	0
8	12,223	0	0	0	30
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	0
	273,473	0	987	0	33
13	70,606	298	74	0	2
6	6,867	0	0	0	0
	77,473	298	74	0	2
29	7,500	45	0	0	0
	1,027,873	4,324	1,061	0	35
					5,420

**Rate Base**

- Electric Plant in Service
- Production Plant
- Wind Production Plant
- Total Production Plant
- Transmission Plant
- Distribution Plant
- Land & Rights of Way
- Station Equipment
- Poles, OH & UG Conductors & Conduit
- Customer Related 57%
- Demand Related 43%
- Line Transformers
- Customer Related 69%
- Demand Related 31%
- Services
- Meters
- Installation on Customer Premise
- Street Light & Signal System
- Total Distribution Plant
- General, Common & Intangible Plant
- Common - Intangible - CC&B
- General, Common & Intangible Plant, incl. CC&B
- Acquisition Adjustment
- Total Electric Plant in Service

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Pumping Primary Rate 48			Total Mun Pumping Pri Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	189,003	1,124	0	0	1,124
3	0	0	0	0	0
	189,003	1,124	0	0	1,124
2	67,877	404	0	0	404
4	123	0	1	0	1
4	13,283	0	119	0	119
15	37,424	0	142	0	143
19	16,036	0	0	0	0
10	13,914	0	0	0	0
8	217	0	0	0	1
Direct	600	0	0	0	0
Direct	2,224	0	0	0	0
	83,821	0	262	0	264
13	29,155	123	31	0	155
6	1,776	0	0	0	0
	30,931	123	31	0	155
29	7,499	45	0	0	45
	379,131	1,696	293	0	1,992
	648,742	2,628	768	0	3,428
13	11,125	47	12	0	59
26	664	3	1	0	4
1	3,465	0	0	24	24
26	2,511	11	3	0	14
2	1,227	7	0	0	7
2	(1,151)	(7)	0	0	(7)
	17,841	61	16	24	101
	666,583	2,689	784	24	3,529

Less: Accumulated Depreciation

Production Plant

Wind Production Plant

Total Production Plant

Transmission Plant

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Customer Premise

Street Light & Signal System

Total Distribution Plant

General, Common & Intangible Plant

Common - Intangible - CC&B

General, Common & Intangible Plant, incl. CC&B

Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation

Net Electric Plant in Service

Additions

Materials & Supplies

Prepayments

Fuel Stocks

Unamortized Loss on Debt

Gain on Sale of Williston Office

Decommission of Retired Plant

Total Additions

Total Before Deductions

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Pumping Primary Rate 48			Total Mun Pumping Pri Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
26	121,984	513	126	0	4
26	0	0	0	0	0
26	2,833	12	3	0	0
	124,817	525	129	0	4
	541,766	2,164	655	24	28
	5.839%				2.02%

Deductions  
 Accumulated Deferred Income Tax  
 Accumulated Investment Tax Credit  
 Customer Advances For Construction  
 Total Deductions

Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
 Retail Sales

Residential	Direct	71,449	0	0	0	0	0	0	0
Small General Electric Service	Direct	11,960	0	0	0	0	0	0	0
Irrigation	Direct	84	0	0	0	0	0	0	0
Large General Service - Primary	Direct	14,085	0	0	0	0	0	0	0
Large General Service - Secondary	Direct	66,510	0	0	0	0	0	0	0
TOD Large General Service - Primary	Direct	129	0	0	0	0	0	0	0
TOD Large General Service - Secondary	Direct	1,375	0	0	0	0	0	0	0
Space Heating - Secondary	Direct	3,877	0	0	0	0	0	0	0
Small Municipal Electric Service	Direct	353	0	0	0	0	0	0	0
Municipal Lighting - Primary	Direct	124	0	0	0	0	0	0	0
Municipal Lighting - Secondary	Direct	1,410	0	0	0	0	0	0	0
Municipal Pumping - Primary	Direct	817	0	176	640	1	817	1	817
Municipal Pumping - Secondary	Direct	1,851	0	0	0	0	0	0	0
Outdoor Lighting	Direct	705	0	0	0	0	0	0	0
Interruptible Power Service incl. w/contracts	Direct	0	0	0	0	0	0	0	0
Interruptible Demand Response	Direct	2,070	0	0	0	0	0	0	0
Contracts	1 & 27	5,838	13	4	18	0	35	0	35
<b>Total Electric Retail Sales Revenues</b>		<b>182,637</b>	<b>13</b>	<b>180</b>	<b>658</b>	<b>1</b>	<b>852</b>	<b>1</b>	<b>852</b>

**MONTANA-DAKOTA UTILITIES CO.  
 ELECTRIC UTILITY - NORTH DAKOTA  
 Embedded Class Cost of Service Study  
 Projected 2017  
 (000's)**

Allocation Factor	Total North Dakota	Municipal Pumping Primary Rate 48			Total Mun Pumping Pri Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
7	47	0	0	0	0
7	15	0	0	0	0
27	7	0	0	0	0
27	1,360	6	2	0	8
15	127	0	0	0	0
Direct	615	0	0	0	0
Direct	200	0	0	0	0
30	0	0	0	0	0
27	68	0	0	0	0
30	0	0	0	0	0
29	28	0	0	0	0
92	243	0	0	0	0
14	416	0	2	0	2
14	0	0	0	0	0
23	6	0	0	0	0
8	90	0	0	0	0
30	0	0	0	0	0
23	449	2	0	0	2
	3,671	8	4	0	12

Other Revenue  
 Miscellaneous  
 Reconnect Fees  
 NSF Check Fees  
 Other Miscellaneous Service Revenue  
 Rent from Electric Property  
 Facilities Rental  
 Pole Attachments  
 Street Lights  
 Yard Lights  
 Joint Use Facilities  
 Miscellaneous  
 Other Electric Revenues  
 Power Interchange Service  
 Fly Ash Sales  
 Late Payment Revenue  
 3-Year Average KVAR Penalty  
 Sales of Construction & Sundry Junk Material  
 Patronage Dividends  
 Joint Use Agreements  
 Wheeling Fees  
 Miscellaneous  
 Total Other Revenues

**MONTANA-DAKOTA UTILITIES CO.  
 ELECTRIC UTILITY - NORTH DAKOTA  
 Embedded Class Cost of Service Study  
 Projected 2017  
 (000's)**

Allocation Factor	Total North Dakota	Municipal Pumping Primary Rate 48			Total Mun Pumping Pri Rate 48	
		Demand Prod. & Trans.	Demand Distribution	Energy		
	186,308	21	184	658	1	864
Total Operating Revenues						
Operation & Maintenance Expenses						
Production Expense						
Fuel	36,602	0	0	250	0	250
Purchased Power - Energy	14,869	0	0	102	0	102
Purchased Power - Capacity	2,695	16	0	0	0	16
Other Production	18,955	113	0	0	0	113
Total Production Expense	73,121	129	0	352	0	481
Transmission Expense	5,230	31	0	0	0	31
Distribution Expense	11,173	0	40	0	1	41
Storm-related Expense	0	0	0	0	0	0
Customer Accounts Expense	2,780	0	0	0	0	0
Customer Service & Info. Expense	174	0	0	0	0	0
Sales Expense	111	0	0	0	0	0
Administrative & General Expenses	16,996	64	18	0	0	82
Total Electric O&M Expenses	109,585	224	58	352	1	635
Total Operating Expenses						
Cost of Fuel & Purchased Power	54,166	16	0	352	0	368
Other O&M Expenses	55,419	208	58	0	1	267
Total Operation & Maintenance Expenses	109,585	224	58	352	1	635
Depreciation Expense						
Production Plant	11,923	71	0	0	0	71
Wind Production Plant	0	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.	11,923	71	0	0	0	71
Transmission Plant	3,629	22	0	0	0	22

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Pumping Primary Rate 48			Total Mun Pumping Pri Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
4	4	0	0	0	0
4	1,291	0	12	0	12
15	3,041	0	12	0	12
19	1,175	0	0	0	0
10	566	0	0	0	0
8	295	0	0	0	1
Direct	32	0	0	0	0
Direct	105	0	0	0	0
	6,509	0	24	0	1
	2,498	11	3	0	14
	465	0	0	0	0
	2,963	11	3	0	14
29	1,837	11	0	0	11
	26,861	115	27	0	143

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Cust. Premises

Street Light & Signal Systems

Total Distribution Plant

General, Common & Intangible Plant & Amort of Gain/Loss

Common - Intangible - CC&B

Total Plant

Amort. Of Decomm. Of Power Plants

Total Depreciation Expense

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Pumping Primary Rate 48			Total Mun Pumping Pri Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
29	1,761	10	0	0	10
30	1,221	7	0	0	7
14	1,257	0	5	0	5
13	374	2	0	0	2
	4,613	19	5	0	24
Taxes Other Than Income					
Ad Valorem Taxes					
	Production Plant				
	Transmission Plant				
	Distribution Plant				
	General, Common & Intangible Plant				
	Total Ad Valorem Taxes				
Other Taxes					
23	2,428	9	3	0	12
	7,041	28	8	0	36
	143,487	367	93	352	814
Income Taxes					
27	12,544	51	15	0	67
	30,277	(397)	76	306	(17)
44	1,305	(17)	3	13	(1)
	28,972	(380)	73	293	(16)
Federal Income Tax					
35.00%	10,140	(133)	26	103	(6)
44	1,305	(17)	3	13	(1)
Credits and Adjustments					
3	0	0	0	0	0
26	(257)	(1)	0	0	(1)
44	0	0	0	0	0
	11,188	(151)	29	116	(8)
	154,675	216	122	468	806
	31,633	(195)	62	190	58
Equity AFUDC Amortization Tax Effect					
Federal and State Income Taxes					
Total Operating Expenses					
Total Operating Income					

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
 Embedded Class Cost of Service Study  
 Projected 2017  
 (000's)

Allocation Factor	Total North Dakota	Municipal Pumping Secondary Rate 48			Total Mun Pumping Sec Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	5,041	0	0	5,041
3	0	0	0	0	0
	458,444	5,041	0	0	5,041
2	210,983	2,320	0	0	2,320
4	2,646	0	43	0	43
4	54,034	0	888	0	888
7	72,755	0	0	0	215
4	53,775	0	884	0	884
11	34,482	0	0	0	635
5	15,168	0	283	0	283
10	22,690	0	0	0	102
8	12,223	0	0	0	118
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	0
	273,473	0	2,098	0	1,070
13	70,606	551	157	0	80
6	6,867	0	0	0	20
	77,473	551	157	0	100
29	7,500	82	0	0	82
	1,027,873	7,994	2,255	0	1,170
					11,419

**Rate Base**

Electric Plant in Service  
 Production Plant  
 Wind Production Plant  
 Total Production Plant  
 Transmission Plant  
 Distribution Plant  
 Land & Rights of Way  
 Station Equipment  
 Poles, OH & UG Conductors & Conduit  
 Customer Related 57%  
 Demand Related 43%  
 Line Transformers  
 Customer Related 69%  
 Demand Related 31%  
 Services  
 Meters  
 Installation on Customer Premise  
 Street Light & Signal System  
 Total Distribution Plant  
 General, Common & Intangible Plant  
 Common - Intangible - CC&B  
 General, Common & Intangible Plant, incl. CC&B  
 Acquisition Adjustment  
 Total Electric Plant in Service

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Pumping Secondary Rate 48			Total Mun Pumping Sec Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	189,003	2,078	0	0	2,078
3	0	0	0	0	0
	189,003	2,078	0	0	2,078
2	67,877	746	0	0	746
4	123	0	2	0	2
4	13,283	0	218	0	218
15	37,424	0	261	0	261
19	16,036	0	91	0	91
10	13,914	0	0	0	0
8	217	0	0	0	0
Direct	600	0	0	0	0
Direct	2,224	0	0	0	0
	83,821	0	572	0	572
13	29,155	228	65	0	293
6	1,776	0	0	0	0
	30,931	228	65	0	293
29	7,499	82	0	0	82
	379,131	3,134	637	0	3,771
	648,742	4,860	1,618	0	6,478
13	11,125	87	25	0	112
26	664	5	1	0	670
1	3,465	0	0	43	3,508
26	2,511	20	6	0	2,537
2	1,227	13	0	0	1,240
2	(1,151)	(13)	0	0	(1,164)
	17,841	112	32	43	18,028
	666,583	4,972	1,650	43	682,208
Less: Accumulated Depreciation					
Production Plant					
Wind Production Plant					
Total Production Plant					
Transmission Plant					
Distribution Plant					
Rights of Way					
Station Equipment					
Poles, OH & UG Conductors & Conduit					
Line Transformers					
Services					
Meters					
Installation on Customer Premise					
Street Light & Signal System					
Total Distribution Plant					
General, Common & Intangible Plant					
Common - Intangible - CC&B					
General, Common & Intangible Plant, incl. CC&B					
Acquisition Adjustment					
Less: Total Accumulated Reserve for Depreciation					
Net Electric Plant in Service					
Additions					
Materials & Supplies					
Prepayments					
Fuel Stocks					
Unamortized Loss on Debt					
Gain on Sale of Williston Office					
Decommission of Retired Plant					
Total Additions					
Total Before Deductions					

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)

Allocation Factor	Total North Dakota	Municipal Pumping Secondary Rate 48			Total Mun Pumping Sec Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
26	121,984	949	268	0	1,356
26	0	0	0	0	0
26	2,833	22	6	0	31
	124,817	971	274	0	1,387
	541,766	4,001	1,376	43	6,094

5.839%

4.07%

Deductions  
Accumulated Deferred Income Tax  
Accumulated Investment Tax Credit  
Customer Advances For Construction  
Total Deductions

Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
Retail Sales

Direct	71,449	0	0	0	0	0
Direct	11,960	0	0	0	0	0
Direct	84	0	0	0	0	0
Direct	14,085	0	0	0	0	0
Direct	66,510	0	0	0	0	0
Direct	129	0	0	0	0	0
Direct	1,375	0	0	0	0	0
Direct	3,877	0	0	0	0	0
Direct	353	0	0	0	0	0
Direct	124	0	0	0	0	0
Direct	1,410	0	0	0	0	0
Direct	817	0	0	0	0	0
Direct	1,851	0	597	1,217	37	1,851
Direct	705	0	0	0	0	0
Direct	0	0	0	0	0	0
Direct	2,070	0	0	0	0	0
Direct 1 & 27	5,838	24	8	33	4	69
	182,637	24	605	1,250	41	1,920

Residential  
Small General Electric Service  
Irrigation  
Large General Service - Primary  
Large General Service - Secondary  
TOD Large General Service - Primary  
TOD Large General Service - Secondary  
Space Heating - Secondary  
Small Municipal Electric Service  
Municipal Lighting - Primary  
Municipal Lighting - Secondary  
Municipal Pumping - Primary  
Municipal Pumping - Secondary  
Outdoor Lighting  
Interruptible Power Service incl. w/contracts  
Interruptible Demand Response  
Contracts  
Total Electric Retail Sales Revenues

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)

Allocation Factor	Total North Dakota	Municipal Pumping Secondary Rate 48				Total Mun Pumping Sec Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
Other Revenue						
Miscellaneous						
Reconnect Fees	47	0	0	0	0	0
NSF Check Fees	15	0	0	0	0	0
Other Miscellaneous Service Revenue	7	0	0	0	0	0
Rent from Electric Property						
Facilities Rental	1,360	10	3	0	2	15
Pole Attachments	127	0	1	0	0	1
Street Lights	615	0	0	0	0	0
Yard Lights	200	0	0	0	0	0
Joint Use Facilities	0	0	0	0	0	0
Miscellaneous	68	1	0	0	0	1
Other Electric Revenues						
Power Interchange Service	0	0	0	0	0	0
Fly Ash Sales	28	0	0	0	0	0
Late Payment Revenue	243	0	0	0	0	0
3-Year Average KVAR Penalty	416	0	3	0	2	5
Sales of Construction & Sundry Junk Material	0	0	0	0	0	0
Patronage Dividends	6	0	0	0	0	0
Joint Use Agreements	90	0	0	0	1	1
Wheeling Fees	0	0	0	0	0	0
Miscellaneous	449	3	1	0	1	5
Total Other Revenues	3,671	14	8	0	6	28

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Pumping Secondary Rate 48			Total Mun Pumping Sec Rate 48
		Demand Prod. & Trans	Demand Distribution	Energy Customer	
	186,308	38	613	1,250	47
Total Operating Revenues					
Operation & Maintenance Expenses					
Production Expense					
Fuel	1	36,602	0	458	0
Purchased Power - Energy	1	14,869	0	186	0
Purchased Power - Capacity	2	2,695	30	0	0
Other Production	2	18,955	208	0	0
Total Production Expense		73,121	238	644	0
Transmission Expense	2	5,230	58	0	0
Distribution Expense	14	11,173	0	86	44
Storm-related Expense	90	0	0	0	0
Customer Accounts Expense	12	2,780	0	0	13
Customer Service & Info. Expense	12	174	0	0	1
Sales Expense	7	111	0	0	0
Administrative & General Expenses	24	16,996	118	38	26
Total Electric O&M Expenses		109,585	414	124	84
Total Operating Expenses					
Cost of Fuel & Purchased Power		54,166	30	644	0
Other O&M Expenses		55,419	384	124	84
Total Operation & Maintenance Expenses		109,585	414	124	84
Depreciation Expense					
Production Plant	2	11,923	131	0	0
Wind Production Plant	3	0	0	0	0
Total Production Plant + Amor + Def. Gen.		11,923	131	0	0
Transmission Plant	2	3,629	40	0	0

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Pumping Secondary Rate 48				Total Mun Pumping Sec Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
4	4	0	0	0	0	0
4	1,291	0	21	0	0	21
15	3,041	0	21	0	5	26
19	1,175	0	7	0	15	22
10	566	0	0	0	3	3
8	295	0	0	0	3	3
Direct	32	0	0	0	0	0
Direct	105	0	0	0	0	0
	6,509	0	49	0	26	75
13	2,498	20	6	0	3	29
6	465	0	0	0	1	1
	2,963	20	6	0	4	30
29	1,837	20	0	0	0	20
	26,861	211	55	0	30	296

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Municipal Pumping Secondary Rate 48			Total Mun Pumping Sec Rate 48
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
29	1,761	19	0	0	19
30	1,221	13	0	0	13
14	1,257	0	10	0	15
13	374	3	1	0	4
	4,613	35	11	0	51
23	2,428	17	5	0	4
	7,041	52	16	0	9
	143,487	677	195	644	123
					1,639
27	12,544	94	31	0	15
	30,277	(733)	387	606	(91)
	1,305	(32)	17	26	(4)
	28,972	(701)	370	580	(87)
					162
35.00%	10,140	(245)	130	203	(30)
44	1,305	(32)	17	26	(4)
					7
3	0	0	0	0	0
26	(257)	(2)	(1)	0	(3)
44	0	0	0	0	0
	11,188	(279)	146	229	(34)
	154,675	398	341	873	89
	31,633	(360)	272	377	(42)
					248

Taxes Other Than Income

Ad Valorem Taxes

Production Plant

Transmission Plant

Distribution Plant

General, Common & Intangible Plant

Total Ad Valorem Taxes

Other Taxes

Other Taxes - Payroll, Franchise, Other

Total Taxes Other Than Income Taxes

Total Operating Expense

Income Taxes

Interest Expense

Taxable Income

Less: State Income Tax

Federal Taxable Income

Federal Income Tax

@ Current Rate of 35%

State Income Taxes

Credits and Adjustments

Production Tax Credit

Full Normalization

Equity AFUDC Amortization Tax Effect

Federal and State Income Taxes

Total Operating Expenses

Total Operating Income

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Outdoor Lighting Rate 52			Total Outdoor Lighting Rate 52
		Demand Prod. & Trans.	Demand Distribution	Customer Energy	
2	458,444	990	0	0	990
3	0	0	0	0	0
	458,444	990	0	0	990
2	210,983	456	0	0	456
4	2,646	0	13	0	13
4	54,034	0	256	0	256
7	72,755	0	0	0	0
4	53,775	0	255	0	255
11	34,482	0	0	0	0
5	15,168	0	81	0	81
10	22,690	0	0	53	53
8	12,223	0	0	24	24
Direct	1,303	0	0	1,303	1,303
Direct	4,397	0	0	0	0
	273,473	0	605	0	1,380
13	70,606	108	45	103	256
6	6,867	0	0	11	11
	77,473	108	45	114	267
29	7,500	16	0	0	16
	1,027,873	1,570	650	0	1,494
					3,714

**Rate Base**

Electric Plant in Service	
Production Plant	
Wind Production Plant	
Total Production Plant	
Transmission Plant	
Distribution Plant	
Land & Rights of Way	
Station Equipment	
Poles, OH & UG Conductors & Conduit	
Customer Related 57%	
Demand Related 43%	
Line Transformers	
Customer Related 69%	
Demand Related 31%	
Services	
Meters	
Installation on Customer Premise	
Street Light & Signal System	
Total Distribution Plant	
General, Common & Intangible Plant	
Common - Intangible - CC&B	
General, Common & Intangible Plant, incl. CC&B	
Acquisition Adjustment	
Total Electric Plant in Service	

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Outdoor Lighting Rate 52			Total Outdoor Lighting Rate 52
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	189,003	408	0	0	408
3	0	0	0	0	0
	189,003	408	0	0	408
2	67,877	147	0	0	147
4	123	0	1	0	1
4	13,283	0	63	0	63
15	37,424	0	75	0	75
19	16,036	0	26	0	26
10	13,914	0	0	0	32
8	217	0	0	0	0
Direct	600	0	0	0	600
Direct	2,224	0	0	0	0
	83,821	0	165	0	632
13	29,155	45	19	0	43
6	1,776	0	0	0	3
	30,931	45	19	0	46
29	7,499	16	0	0	16
	379,131	616	184	0	678
	648,742	954	466	0	816
13	11,125	17	7	0	16
26	664	1	0	0	1
1	3,465	0	0	13	13
26	2,511	4	2	0	4
2	1,227	3	0	0	3
2	(1,151)	(2)	0	0	(2)
	17,841	23	9	13	21
	666,583	977	475	13	837
					2,302

Less: Accumulated Depreciation

Production Plant

Wind Production Plant

Total Production Plant

Transmission Plant

Distribution Plant

Rights of Way

Station Equipment

Poles, OH & UG Conductors & Conduit

Line Transformers

Services

Meters

Installation on Customer Premise

Street Light & Signal System

Total Distribution Plant

General, Common & Intangible Plant

Common - Intangible - CC&B

General, Common & Intangible Plant, incl. CC&B

Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation

Net Electric Plant in Service

Additions

Materials & Supplies

Prepayments

Fuel Stocks

Unamortized Loss on Debt

Gain on Sale of Williston Office

Decommission of Retired Plant

Total Additions

Total Before Deductions

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Outdoor Lighting Rate 52			Total Outdoor Lighting Rate 52
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
26	121,984	186	77	0	177
26	0	0	0	0	0
26	2,833	4	2	0	4
	124,817	190	79	0	181
	541,766	787	396	13	656
	5.839%				11.88%

Deductions  
Accumulated Deferred Income Tax  
Accumulated Investment Tax Credit  
Customer Advances For Construction  
Total Deductions  
Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
Retail Sales

Direct	71,449	0	0	0	0	0
Direct	11,960	0	0	0	0	0
Direct	84	0	0	0	0	0
Direct	14,085	0	0	0	0	0
Direct	66,510	0	0	0	0	0
Direct	129	0	0	0	0	0
Direct	1,375	0	0	0	0	0
Direct	3,877	0	0	0	0	0
Direct	353	0	0	0	0	0
Direct	124	0	0	0	0	0
Direct	1,410	0	0	0	0	0
Direct	817	0	0	0	0	0
Direct	1,851	0	0	0	0	0
Direct	705	0	0	705	0	705
Direct	0	0	0	0	0	0
Direct	2,070	0	0	0	0	0
Direct	5,838	5	2	10	4	21
1 & 27	182,637	5	2	715	4	726

Residential  
Small General Electric Service  
Irrigation  
Large General Service - Primary  
Large General Service - Secondary  
TOD Large General Service - Primary  
TOD Large General Service - Secondary  
Space Heating - Secondary  
Small Municipal Electric Service  
Municipal Lighting - Primary  
Municipal Lighting - Secondary  
Municipal Pumping - Primary  
Municipal Pumping - Secondary  
Outdoor Lighting  
Interruptible Power Service incl. w/contracts  
Interruptible Demand Response  
Contracts  
Total Electric Retail Sales Revenues

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)

Allocation Factor	Total North Dakota	Outdoor Lighting Rate 52			Total Outdoor Lighting Rate 52
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
Other Revenue					
Miscellaneous					
Reconnect Fees	47	0	0	0	0
NSF Check Fees	15	0	0	0	0
Other Miscellaneous Service Revenue	7	0	0	0	0
Rent from Electric Property					
Facilities Rental	1,360	2	1	0	2
Pole Attachments	127	0	0	0	0
Street Lights	615	0	0	0	0
Yard Lights	200	0	0	0	200
Joint Use Facilities	0	0	0	0	0
Miscellaneous	68	0	0	0	0
Other Electric Revenues					
Power Interchange Service	0	0	0	0	0
Fly Ash Sales	28	0	0	0	0
Late Payment Revenue	243	0	0	0	0
3-Year Average KVAR Penalty	416	0	1	0	2
Sales of Construction & Sundry Junk Material	0	0	0	0	0
Patronage Dividends	6	0	0	0	0
Joint Use Agreements	90	0	0	0	0
Wheeling Fees	0	0	0	0	0
Miscellaneous	449	1	0	0	1
Total Other Revenues	3,671	3	2	0	205
					210

**MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY - NORTH DAKOTA  
Embedded Class Cost of Service Study  
Projected 2017  
(000's)**

Allocation Factor	Total North Dakota	Outdoor Lighting Rate 52			Total Outdoor Lighting Rate 52	
		Demand Prod. & Trans.	Demand Distribution	Energy Customer		
	186,308	8	4	715	209	936

Total Operating Revenues

Operation & Maintenance Expenses

Production Expense

Fuel

Purchased Power - Energy

Purchased Power - Capacity

Other Production

Total Production Expense

Transmission Expense

Distribution Expense

Storm-related Expense

Customer Accounts Expense

Customer Service & Info. Expense

Sales Expense

Administrative & General Expenses

Total Electric O&M Expenses

Total Operating Expenses

Cost of Fuel & Purchased Power

Other O&M Expenses

Total Operation & Maintenance Expenses

Depreciation Expense

Production Plant

Wind Production Plant

Total Production Plant + Amor + Def. Gen.

Transmission Plant

1	36,602	0	0	135	0	135
1	14,869	0	0	55	0	55
2	2,695	6	0	0	0	6
2	18,955	41	0	0	0	41
	73,121	47	0	190	0	237
2	5,230	11	0	0	0	11
14	11,173	0	25	0	56	81
90	0	0	0	0	0	0
12	2,780	0	0	0	60	60
12	174	0	0	0	4	4
7	111	0	0	0	0	0
24	16,996	23	11	0	53	87
	109,585	81	36	190	173	480

	54,166	6	0	190	0	196
	55,419	75	36	0	173	284
	109,585	81	36	190	173	480

2	11,923	26	0	0	0	26
3	0	0	0	0	0	0
	11,923	26	0	0	0	26
2	3,629	8	0	0	0	8

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Outdoor Lighting Rate 52			Total Outdoor Lighting Rate 52
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
4	4	0	0	0	0
4	1,291	0	6	0	6
15	3,041	0	6	0	6
19	1,175	0	2	0	2
10	566	0	0	0	1
8	295	0	0	0	1
Direct	32	0	0	0	32
Direct	105	0	0	0	0
	6,509	0	14	0	34
	2,498	4	2	0	4
	465	0	0	0	1
	2,963	4	2	0	5
	1,837	4	0	0	0
	26,861	42	16	0	39

Distribution Plant

Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Line Transformers  
Services  
Meters  
Installation on Cust. Premises  
Street Light & Signal Systems  
Total Distribution Plant

General, Common & Intangible Plant & Amort of Gain/Loss  
Common - Intangible - CC&B  
Total Plant

Amort. Of Decomm. Of Power Plants

Total Depreciation Expense

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Outdoor Lighting Rate 52			Total Outdoor Lighting Rate 52
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
29	1,761	4	0	0	4
30	1,221	3	0	0	3
14	1,257	0	3	0	9
13	374	1	0	0	2
	<b>4,613</b>	<b>8</b>	<b>3</b>	<b>0</b>	<b>18</b>
23	2,428	3	2	0	8
	<b>7,041</b>	<b>11</b>	<b>5</b>	<b>0</b>	<b>15</b>
	<b>143,487</b>	<b>134</b>	<b>57</b>	<b>190</b>	<b>227</b>
27	12,544	18	9	0	16
	<b>30,277</b>	<b>(144)</b>	<b>(62)</b>	<b>525</b>	<b>(34)</b>
44	1,305	(6)	(3)	23	(1)
	<b>28,972</b>	<b>(138)</b>	<b>(59)</b>	<b>502</b>	<b>(33)</b>
35.00%	10,140	(48)	(21)	176	(12)
44	1,305	(6)	(3)	23	(1)
3	0	0	0	0	0
26	(257)	0	0	0	0
44	0	0	0	0	0
	<b>11,188</b>	<b>(54)</b>	<b>(24)</b>	<b>199</b>	<b>(13)</b>
	<b>154,675</b>	<b>80</b>	<b>33</b>	<b>389</b>	<b>214</b>
	<b>31,633</b>	<b>(72)</b>	<b>(29)</b>	<b>326</b>	<b>(5)</b>

Taxes Other Than Income  
 Ad Valorem Taxes  
 Production Plant  
 Transmission Plant  
 Distribution Plant  
 General, Common & Intangible Plant  
 Total Ad Valorem Taxes

Other Taxes  
 Other Taxes - Payroll, Franchise, Other  
 Total Taxes Other Than Income Taxes  
 Total Operating Expense

Income Taxes  
 Interest Expense  
 Taxable Income  
 Less: State Income Tax  
 Federal Taxable Income  
 Federal Income Tax  
 @ Current Rate of 35%  
 State Income Taxes  
 Credits and Adjustments  
 Production Tax Credit  
 Full Normalization  
 Equity AFUDC Amortization Tax Effect  
 Federal and State Income Taxes  
 Total Operating Expenses  
 Total Operating Income

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Interruptible Demand Response Rate 38			Total IT Demand Response Rate 38
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	458,444	5,194	0	0	5,194
3	0	0	0	0	0
	458,444	5,194	0	0	5,194
2	210,983	2,390	0	0	2,390
4	2,646	0	43	0	43
4	54,034	0	878	0	878
7	72,755	0	0	0	2
4	53,775	0	874	0	874
11	34,482	0	0	0	0
5	15,168	0	0	0	0
10	22,690	0	0	0	0
8	12,223	0	0	18	18
Direct	1,303	0	0	0	0
Direct	4,397	0	0	0	0
	273,473	0	1,795	0	1,815
13	70,606	568	134	0	703
6	6,867	0	0	0	0
	77,473	568	134	0	703
29	7,500	85	0	0	85
	1,027,873	8,237	1,929	0	10,187

**Rate Base**

Electric Plant in Service  
Production Plant  
Wind Production Plant  
Total Production Plant  
Transmission Plant  
Distribution Plant  
Land & Rights of Way  
Station Equipment  
Poles, OH & UG Conductors & Conduit  
Customer Related 57%  
Demand Related 43%  
Line Transformers  
Customer Related 69%  
Demand Related 31%  
Services  
Meters  
Installation on Customer Premise  
Street Light & Signal System  
Total Distribution Plant  
General, Common & Intangible Plant  
Common - Intangible - CC&B  
General, Common & Intangible Plant, incl. CC&B  
Acquisition Adjustment  
Total Electric Plant in Service

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Interruptible Demand Response Rate 38			Total Demand Response Rate 38
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
2	189,003	2,141	0	0	2,141
3	0	0	0	0	0
	189,003	2,141	0	0	2,141
2	67,877	769	0	0	769
4	123	0	2	0	2
4	13,283	0	216	0	216
15	37,424	0	259	0	260
19	16,036	0	0	0	0
10	13,914	0	0	0	0
8	217	0	0	0	0
Direct	600	0	0	0	0
Direct	2,224	0	0	0	0
	83,821	0	477	0	478
13	29,155	235	56	0	292
6	1,776	0	0	0	0
	30,931	235	56	0	292
29	7,499	85	0	0	85
	379,131	3,230	533	0	3,765
	648,742	5,007	1,396	0	6,422
13	11,125	89	21	0	110
26	664	5	1	0	6
1	3,465	0	0	54	54
26	2,511	20	5	0	25
2	1,227	14	0	0	14
2	(1,151)	(13)	0	0	(13)
	17,841	115	27	54	196
	666,583	5,122	1,423	54	6,618

Less: Accumulated Depreciation  
 Production Plant  
 Wind Production Plant  
 Total Production Plant  
 Transmission Plant  
 Distribution Plant  
 Rights of Way  
 Station Equipment  
 Poles, OH & UG Conductors & Conduit  
 Line Transformers  
 Services  
 Meters  
 Installation on Customer Premise  
 Street Light & Signal System  
 Total Distribution Plant  
 General, Common & Intangible Plant  
 Common - Intangible - CC&B  
 General, Common & Intangible Plant, incl. CC&B  
 Acquisition Adjustment

Less: Total Accumulated Reserve for Depreciation

Net Electric Plant in Service

Additions

Materials & Supplies  
 Prepayments  
 Fuel Stocks  
 Unamortized Loss on Debt  
 Gain on Sale of Williston Office  
 Decommission of Retired Plant  
 Total Additions

Total Before Deductions

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Interruptible Demand Response Rate 38			Total IT Demand Response Rate 38	
		Demand Prod. & Trans.	Demand Distribution	Energy Customer		
26	121,984	978	229	0	2	1,209
26	0	0	0	0	0	0
26	2,833	23	5	0	0	28
	124,817	1,001	234	0	2	1,237
	541,766	4,121	1,189	54	17	5,381

5.839%

6.62%

Deductions  
Accumulated Deferred Income Tax  
Accumulated Investment Tax Credit  
Customer Advances For Construction  
Total Deductions

Total Rate Base

Rate of Return - Per Books

Electric Operating Revenues  
Retail Sales

Residential	71,449	0	0	0	0	0	0	0
Small General Electric Service	11,960	0	0	0	0	0	0	0
Irrigation	84	0	0	0	0	0	0	0
Large General Service - Primary	14,085	0	0	0	0	0	0	0
Large General Service - Secondary	66,510	0	0	0	0	0	0	0
TOD Large General Service - Primary	129	0	0	0	0	0	0	0
TOD Large General Service - Secondary	1,375	0	0	0	0	0	0	0
Space Heating - Secondary	3,877	0	0	0	0	0	0	0
Small Municipal Electric Service	353	0	0	0	0	0	0	0
Municipal Lighting - Primary	124	0	0	0	0	0	0	0
Municipal Lighting - Secondary	1,410	0	0	0	0	0	0	0
Municipal Pumping - Primary	817	0	0	0	0	0	0	0
Municipal Pumping - Secondary	1,851	0	0	0	0	0	0	0
Outdoor Lighting	705	0	0	0	0	0	0	0
Interruptible Power Service incl. w/contracts	0	0	0	0	0	0	0	0
Interruptible Demand Response	2,070	0	586	1,466	18	2,070		
Contracts	5,838	25	7	41	0	73		
<b>Total Electric Retail Sales Revenues</b>	<b>182,637</b>	<b>25</b>	<b>593</b>	<b>1,507</b>	<b>18</b>	<b>2,143</b>		

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Interruptible Demand Response Rate 38				Total Demand Response Rate 38
		Demand Prod. & Trans.	Demand Distribution	Energy	Customer	
Other Revenue						
Miscellaneous						
Reconnect Fees	47	0	0	0	0	0
NSF Check Fees	15	0	0	0	0	0
Other Miscellaneous Service Revenue	7	0	0	0	0	0
Rent from Electric Property						
Facilities Rental	1,360	10	3	0	0	13
Pole Attachments	127	0	1	0	0	1
Street Lights	615	0	0	0	0	0
Yard Lights	200	0	0	0	0	0
Joint Use Facilities	0	0	0	0	0	0
Miscellaneous	68	1	0	0	0	1
Other Electric Revenues						
Power Interchange Service	0	0	0	0	0	0
Fly Ash Sales	28	0	0	0	0	0
Late Payment Revenue	243	0	0	0	0	0
3-Year Average KVAR Penalty	416	0	3	0	0	3
Sales of Construction & Sundry Junk Material	0	0	0	0	0	0
Patronage Dividends	6	0	0	0	0	0
Joint Use Agreements	90	0	0	0	0	0
Wheeling Fees	0	0	0	0	0	0
Miscellaneous	449	3	1	0	0	4
<b>Total Other Revenues</b>	<b>3,671</b>	<b>14</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>22</b>

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Interruptible Demand Response Rate 38			Total IT Demand Response Rate 38	
		Demand Prod. & Trans.	Demand Distribution	Customer		
Total Operating Revenues	186,308	39	601	1,507	18	2,165
Operation & Maintenance Expenses						
Production Expense						
Fuel						
Purchased Power - Energy	36,602	0	0	574	0	574
Purchased Power - Capacity	14,869	0	0	233	0	233
Other Production	2,695	31	0	0	0	31
Total Production Expense	18,955	215	0	0	0	215
Transmission Expense	73,121	246	0	807	0	1,053
Distribution Expense	5,230	59	0	0	0	59
Storm-related Expense	11,173	0	73	0	1	74
Customer Accounts Expense	0	0	0	0	0	0
Customer Service & Info. Expense	2,780	0	0	0	0	0
Sales Expense	174	0	0	0	0	0
Administrative & General Expenses	111	0	0	0	0	0
Total Electric O&M Expenses	16,996	121	32	0	0	153
Total Operating Expenses	109,585	426	105	807	1	1,339
Cost of Fuel & Purchased Power	54,166	31	0	807	0	838
Other O&M Expenses	55,419	395	105	0	1	501
Total Operation & Maintenance Expenses	109,585	426	105	807	1	1,339
Depreciation Expense						
Production Plant	11,923	135	0	0	0	135
Wind Production Plant	0	0	0	0	0	0
Total Production Plant + Amor + Def. Gen.	11,923	135	0	0	0	135
Transmission Plant	3,629	41	0	0	0	41

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Interruptible Demand Response Rate 38			Total Demand Response Rate 38
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
4	4	0	0	0	0
4	1,291	0	21	0	21
15	3,041	0	21	0	21
19	1,175	0	0	0	0
10	566	0	0	0	0
8	295	0	0	0	0
Direct	32	0	0	0	0
Direct	105	0	0	0	0
	6,509	0	42	0	42
	2,498	20	5	0	25
	465	0	0	0	0
	2,963	20	5	0	25
29	1,837	21	0	0	21
	26,861	217	47	0	264

Distribution Plant

- Rights of Way
- Station Equipment
- Poles, OH & UG Conductors & Conduit
- Line Transformers
- Services
- Meters
- Installation on Cust. Premises
- Street Light & Signal Systems
- Total Distribution Plant

General, Common & Intangible Plant & Amort of Gain/Loss  
Common - Intangible - CC&B  
Total Plant

Amort. Of Decomm. Of Power Plants

Total Depreciation Expense

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY - NORTH DAKOTA**  
**Embedded Class Cost of Service Study**  
**Projected 2017**  
**(000's)**

Allocation Factor	Total North Dakota	Interruptible Demand Response Rate 38			Total Demand Response Rate 38
		Demand Prod. & Trans.	Demand Distribution	Energy Customer	
29	1,761	20	0	0	20
30	1,221	14	0	0	14
14	1,257	0	8	0	8
13	374	3	1	0	4
	<b>4,613</b>	<b>37</b>	<b>9</b>	<b>0</b>	<b>46</b>
23	2,428	17	5	0	22
	<b>7,041</b>	<b>54</b>	<b>14</b>	<b>0</b>	<b>68</b>
	<b>143,487</b>	<b>697</b>	<b>166</b>	<b>807</b>	<b>1,671</b>
27	12,544	97	27	0	124
	<b>30,277</b>	<b>(755)</b>	<b>408</b>	<b>700</b>	<b>370</b>
44	1,305	(33)	18	30	16
	<b>28,972</b>	<b>(722)</b>	<b>390</b>	<b>670</b>	<b>354</b>
35.00%	10,140	(253)	137	235	124
44	1,305	(33)	18	30	16
3	0	0	0	0	0
26	(257)	(2)	0	0	(2)
44	0	0	0	0	0
	<b>11,188</b>	<b>(288)</b>	<b>155</b>	<b>265</b>	<b>138</b>
	<b>154,675</b>	<b>409</b>	<b>321</b>	<b>1,072</b>	<b>1,809</b>
	<b>31,633</b>	<b>(370)</b>	<b>280</b>	<b>435</b>	<b>356</b>

Taxes Other Than Income  
Ad Valorem Taxes  
Production Plant  
Transmission Plant  
Distribution Plant  
General, Common & Intangible Plant  
Total Ad Valorem Taxes

Other Taxes  
Other Taxes - Payroll, Franchise, Other  
Total Taxes Other Than Income Taxes  
Total Operating Expense

Income Taxes  
Interest Expense  
Taxable Income  
Less: State Income Tax  
Federal Taxable Income  
Federal Income Tax  
@ Current Rate of 35%  
State Income Taxes  
Credits and Adjustments  
Production Tax Credit  
Full Normalization  
Equity AFUDC Amortization Tax Effect  
Federal and State Income Taxes  
Total Operating Expenses  
Total Operating Income

**MONTANA-DAKOTA UTILITIES CO.**  
**ELECTRIC UTILITY**  
**NORTH DAKOTA**  
**EMBEDDED CLASS COST OF SERVICE STUDY**  
**Allocation Factor Report**  
**Projected 2017**

	Residential Rate 10				Small General Rate 20				
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	Prod. & Trans	Demand Distribution	Energy	Customer
1 Energy at Generation Level	2,167,314,139	0	0	830,448,274	0	0	0	121,211,954	0
	100.000002%	0.000000%	0.000000%	38.316932%	0.000000%	0.000000%	0.000000%	5.592727%	0.000000%
2 Demand - 12 CP	380,695	160,464	0	0	0	23,382	0	0	0
	100.000001%	42.150203%	0.000000%	0.000000%	0.000000%	6.141944%	0.000000%	0.000000%	0.000000%
3 Demand/Energy for Wind	1,733,927,451	664,390,712	0	0	0	96,974,240	0	0	0
	100.000001%	39.083586%	0.000000%	0.000000%	0.000000%	5.702570%	0.000000%	0.000000%	0.000000%
4 NCP - Generation Level	598,681	0	248,019	0	0	0	32,234	0	0
	100.000002%	0.000000%	41.427621%	0.000000%	0.000000%	0.000000%	5.384159%	0.000000%	0.000000%
5 NCP - Secondary Level	465,328	0	218,764	0	0	0	28,432	0	0
	99.999999%	0.000000%	47.012843%	0.000000%	0.000000%	0.000000%	6.110045%	0.000000%	0.000000%
6 Total Customers	95,832	0	0	0	79,355	0	0	0	11,063
	99.999998%	0.000000%	0.000000%	0.000000%	82.806369%	0.000000%	0.000000%	0.000000%	11.544161%
7 Total Customers less Rate 52	95,681	0	0	0	79,355	0	0	0	11,063
	100.000001%	0.000000%	0.000000%	0.000000%	82.937051%	0.000000%	0.000000%	0.000000%	11.562379%
8 Weighted Customer Meters	141,363	0	0	0	82,163	0	0	0	18,727
	100.000001%	0.000000%	0.000000%	0.000000%	58.121998%	0.000000%	0.000000%	0.000000%	13.247455%

1 Energy at Generation Level

2 Demand - 12 CP

3 Demand/Energy for Wind

4 NCP - Generation Level

5 NCP - Secondary Level

6 Total Customers

7 Total Customers less Rate 52

8 Weighted Customer Meters

**MONTANA-DAKOTA UTILITIES CO.**  
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**NORTH DAKOTA**  
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	Residential Rate 10				Small General Rate 20			
	Demand		Demand		Demand		Demand	
	North Dakota	Prod. & Trans. Distribution	Energy	Customer	North Dakota	Prod. & Trans. Distribution	Energy	Customer
10	106,230	0	0	82,163	0	0	0	12,763
	99.9999999%	0.000000%	0.000000%	77.344441%	0.000000%	0.000000%	0.000000%	12.014497%
11	170,077	0	0	79,355	0	0	0	33,632
	100.000000%	0.000000%	0.000000%	46.658278%	0.000000%	0.000000%	0.000000%	19.774573%
12	108,211	0	0	79,355	0	0	0	12,833
	99.9999999%	0.000000%	0.000000%	73.333580%	0.000000%	0.000000%	0.000000%	11.859238%
13	942,900	282,167	52,891	101,084	41,115	6,873	0	19,576
	100.000001%	29.925443%	5.609397%	10.720543%	4.360484%	0.728921%	0.000000%	2.076148%
14	273,473	0	52,891	101,084	0	6,873	0	19,576
	99.9999999%	0.000000%	19.340483%	36.963064%	0.000000%	2.513228%	0.000000%	7.158294%
15	126,530	0	22,280	60,342	0	2,895	0	8,412
	100.000001%	0.000000%	17.608472%	47.689876%	0.000000%	2.287995%	0.000000%	6.648226%
19	49,650	0	7,130	16,088	0	927	0	6,819
	100.000001%	0.000000%	14.360524%	32.402820%	0.000000%	1.867069%	0.000000%	13.734139%
23	55,419	14,705	3,118	9,215	2,142	405	0	1,679
	100.000001%	26.534221%	5.626229%	16.627871%	3.865100%	0.730796%	0.000000%	3.029647%
24	38,423	10,195	2,162	6,389	1,485	281	0	1,164
	100.000000%	26.533587%	5.626838%	16.628060%	3.864873%	0.731333%	0.000000%	3.029435%
26	1,027,873	306,458	56,852	114,339	44,655	7,388	0	21,835
	100.000002%	29.814773%	5.531034%	11.123845%	4.344408%	0.718766%	0.000000%	2.124290%
27	648,742	186,296	40,766	75,809	27,146	5,298	0	14,634
	100.000000%	28.716501%	6.283854%	11.685539%	4.184406%	0.816657%	0.000000%	2.255750%

MONTANA-DAKOTA UTILITIES CO.  
ELECTRIC UTILITY  
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	Residential Rate 10				Small General Rate 20				
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	Demand Prod. & Trans.	Demand Distribution	Energy	Customer
29 Production Plant	458,444	193,237	0	0	0	28,157	0	0	0
	100.000001%	42.150623%	0.000000%	0.000000%	0.000000%	6.141862%	0.000000%	0.000000%	0.000000%
30 Transmission Plant	210,983	88,930	0	0	0	12,958	0	0	0
	100.000000%	42.150315%	0.000000%	0.000000%	0.000000%	6.141727%	0.000000%	0.000000%	0.000000%
44 Taxable Income	30,277	(28,053)	(5,264)	42,719	(3,488)	(4,090)	(686)	6,278	416
	100.000001%	-97.654490%	-17.386135%	141.093900%	-11.520296%	-13.508604%	-2.265746%	20.735212%	1.373980%
90 Transmission & Distribution Plant	484,456	88,930	52,891	0	101,084	12,958	6,873	0	19,576
	100.000003%	18.356672%	10.917607%	0.000000%	20.865466%	2.674753%	1.418705%	0.000000%	4.040821%
91 Billed Demand KW	3,358,562	0	0	0	0	0	0	0	0
	99.999999%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%
92 Residential Sales Revenues	73,955	922	201	62,237	10,595	0	0	0	0
	100.000000%	1.246704%	0.271787%	84.155230%	14.326279%	0.000000%	0.000000%	0.000000%	0.000000%

**MONTANA-DAKOTA UTILITIES CO.**  
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**NORTH DAKOTA**  
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	Irrigation Rate 25			Large General Primary Rate 30					
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	Demand Prod. & Trans.	Demand Distribution	Energy	Customer
1 Energy at Generation Level	2,167,314,139	0	0	1,364,801	0	0	0	208,731,047	0
	100.000002%	0.000000%	0.000000%	0.062972%	0.000000%	0.000000%	0.000000%	9.630863%	0.000000%
2 Demand - 12 CP	380,695	101	0	0	0	30,332	0	0	0
	100.000001%	0.026563%	0.000000%	0.000000%	0.000000%	7.967649%	0.000000%	0.000000%	0.000000%
3 Demand/Energy for Wind	1,733,927,451	1,091,861	0	0	0	166,990,904	0	0	0
	100.000001%	0.055690%	0.000000%	0.000000%	0.000000%	9.298220%	0.000000%	0.000000%	0.000000%
4 NCP - Generation Level	598,681	0	1,761	0	0	0	54,649	0	0
	100.000002%	0.000000%	0.294090%	0.000000%	0.000000%	0.000000%	9.128224%	0.000000%	0.000000%
5 NCP - Secondary Level	465,328	0	1,553	0	0	0	0	0	0
	99.999999%	0.000000%	0.333738%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%
6 Total Customers	95,832	0	0	0	45	0	0	0	40
	99.999998%	0.000000%	0.000000%	0.000000%	0.046957%	0.000000%	0.000000%	0.000000%	0.041740%
7 Total Customers less Rate 52	95,681	0	0	0	45	0	0	0	40
	100.000001%	0.000000%	0.000000%	0.000000%	0.047031%	0.000000%	0.000000%	0.000000%	0.041806%
8 Weighted Customer Meters	141,363	0	0	0	213	0	0	0	2,776
	100.000001%	0.000000%	0.000000%	0.000000%	0.150676%	0.000000%	0.000000%	0.000000%	1.963739%

**MONTANA-DAKOTA UTILITIES CO.**  
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	Irrigation Rate 25			Large General Primary Rate 30					
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	Demand Prod. & Trans.	Demand Distribution	Energy	Customer
10 Weighted Customer Services	106,230	0	0	0	103	0	0	0	0
	99.9999999%	0.0000000%	0.0000000%	0.0000000%	0.096959%	0.0000000%	0.0000000%	0.0000000%	0.0000000%
11 Weighted Customer Transformers	170,077	0	0	0	909	0	0	0	0
	100.0000000%	0.0000000%	0.0000000%	0.0000000%	0.534464%	0.0000000%	0.0000000%	0.0000000%	0.0000000%
12 Weighted Customer Accounts	108,211	0	0	0	94	0	0	0	119
	99.9999999%	0.0000000%	0.0000000%	0.0000000%	0.086867%	0.0000000%	0.0000000%	0.0000000%	0.109970%
13 Production, Transmission, & Distribution Plant	942,900	178	376	0	258	53,337	10,083	0	270
	100.000001%	0.018878%	0.039877%	0.0000000%	0.027362%	5.656697%	1.069360%	0.0000000%	0.028635%
14 Distribution Plant	273,473	0	376	0	258	0	10,083	0	270
	99.9999999%	0.0000000%	0.137491%	0.0000000%	0.094342%	0.0000000%	3.687018%	0.0000000%	0.098730%
15 Poles, OH & UG Conductor & Conduits	126,530	0	158	0	34	0	4,909	0	30
	100.000001%	0.0000000%	0.124872%	0.0000000%	0.026871%	0.0000000%	3.87912%	0.0000000%	0.023710%
19 Line Transformers	49,650	0	51	0	184	0	0	0	0
	100.000001%	0.0000000%	0.102719%	0.0000000%	0.370594%	0.0000000%	0.0000000%	0.0000000%	0.0000000%
23 O & M Excluding Fuel & Purch. Power	55,419	9	22	0	19	2,779	594	0	20
	100.000001%	0.016240%	0.039698%	0.0000000%	0.034284%	5.014526%	1.071835%	0.0000000%	0.036089%
24 O & M Excluding Fuel, Purch. Power and A&G	38,423	6	15	0	13	1,927	412	0	14
	100.0000000%	0.015616%	0.039039%	0.0000000%	0.033834%	5.015225%	1.072274%	0.0000000%	0.036437%
26 Total Electric Plant in Service	1,027,873	193	404	0	280	57,929	10,838	0	293
	100.000002%	0.018777%	0.039304%	0.0000000%	0.027241%	5.635813%	1.054410%	0.0000000%	0.028505%
27 Net Electric Plant in Service	648,742	117	290	0	189	35,216	7,850	0	271
	100.000000%	0.018035%	0.044702%	0.0000000%	0.029133%	5.428352%	1.210034%	0.0000000%	0.041773%

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	Irrigation Rate 25			Large General Primary Rate 30		
	Demand	Demand	Demand	Demand	Demand	Demand
North Dakota	Prod. & Trans.	Distribution	Energy	Customer	Prod. & Trans.	Distribution
458,444	122	0	0	0	36,527	0
100.0000001%	0.076612%	0.000000%	0.000000%	0.000000%	7.967603%	0.000000%
210,983	56	0	0	0	16,810	0
100.0000000%	0.026542%	0.000000%	0.000000%	0.000000%	7.967467%	0.000000%
30,277	(15)	(22)	27	(20)	(5,304)	3,101
100.000001%	-0.049543%	-0.072662%	0.089177%	-0.066057%	-17.518248%	10.242098%
484,456	56	376	0	258	16,810	10,083
100.000003%	0.011559%	0.077613%	0.000000%	0.053256%	3.469871%	2.081304%
3,358,562	0	8,085	0	0	0	468,864
99.9999999%	0.000000%	0.240716%	0.000000%	0.000000%	0.000000%	13.960268%
73,955	0	0	0	0	0	0
100.0000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%

29 Production Plant

30 Transmission Plant

44 Taxable Income

90 Transmission & Distribution Plant

91 Billed Demand KW

92 Residential Sales Revenues

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	Large General Secondary Rate 30			TOD Large General Rate 31 Primary					
	Total North Dakota	Demand Prod. & Trans	Demand Distribution	Energy	Customer	Demand Prod. & Trans	Demand Distribution	Energy	Customer
1 Energy at Generation Level	2,167,314,139	0	0	814,338,054	0	0	0	2,218,830	0
	100.000002%	0.000000%	0.000000%	37.573605%	0.000000%	0.000000%	0.000000%	0.102377%	0.000000%
2 Demand - 12 CP	380,695	141,488	0	0	0	322	0	0	0
	100.000001%	37.165573%	0.000000%	0.000000%	0.000000%	0.084697%	0.000000%	0.000000%	0.000000%
3 Demand/Energy for Wind	1,733,927,451	651,498,741	0	0	0	1,775,129	0	0	0
	100.000001%	37.491999%	0.000000%	0.000000%	0.000000%	0.098841%	0.000000%	0.000000%	0.000000%
4 NCP - Generation Level	598,681	0	197,016	0	0	0	706	0	0
	100.000002%	0.000000%	32.908335%	0.000000%	0.000000%	0.000000%	0.117982%	0.000000%	0.000000%
5 NCP - Secondary Level	465,328	0	173,777	0	0	0	0	0	0
	99.999999%	0.000000%	37.344996%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%
6 Total Customers	95,832	0	0	0	4,113	0	0	0	1
	99.999998%	0.000000%	0.000000%	0.000000%	4.291886%	0.000000%	0.000000%	0.000000%	0.001043%
7 Total Customers less Rate 52	95,681	0	0	0	4,113	0	0	0	1
	100.000001%	0.000000%	0.000000%	0.000000%	4.298659%	0.000000%	0.000000%	0.000000%	0.001045%
8 Weighted Customer Meters	141,363	0	0	0	30,090	0	0	0	69
	100.000001%	0.000000%	0.000000%	0.000000%	21.285626%	0.000000%	0.000000%	0.000000%	0.048811%

1 Energy at Generation Level

2 Demand - 12 CP

3 Demand/Energy for Wind

4 NCP - Generation Level

5 NCP - Secondary Level

6 Total Customers

7 Total Customers less Rate 52

8 Weighted Customer Meters

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Large General Secondary Rate 30      TOD Large General Rate 31 Primary

	Total		Large General Secondary Rate 30		TOD Large General Rate 31 Primary				
	North Dakota	Customer	Demand Prod. & Trans.	Demand Distribution	Energy	Demand Prod. & Trans.	Demand Distribution	Energy	Customer
10 Weighted Customer Services	106,230	0	0	0	0	9,284	0	0	0
	99.999999%	0.000000%	0.000000%	0.000000%	0.000000%	8.739527%	0.000000%	0.000000%	0.000000%
11 Weighted Customer Transformers	170,077	0	0	0	0	49,644	0	0	0
	100.000000%	0.000000%	0.000000%	0.000000%	0.000000%	29.189132%	0.000000%	0.000000%	0.000000%
12 Weighted Customer Accounts	108,211	0	0	0	0	9,378	0	0	6
	99.999999%	0.000000%	0.000000%	0.000000%	0.000000%	8.666402%	0.000000%	0.000000%	0.005545%
13 Production, Transmission, & Distribution Plant	942,900	248,796	42,013	0	17,777	567	130	0	7
	100.000001%	26.386255%	4.455722%	0.000000%	1.885354%	0.060134%	0.013787%	0.000000%	0.000742%
14 Distribution Plant	273,473	0	42,013	0	17,777	0	130	0	7
	99.999999%	0.000000%	15.362760%	0.000000%	6.500459%	0.000000%	0.047537%	0.000000%	0.002560%
15 Poles, OH & UG Conductor & Conduits	126,530	0	17,696	0	3,127	0	63	0	1
	100.000001%	0.000000%	13.985616%	0.000000%	2.471351%	0.000000%	0.049791%	0.000000%	0.000790%
19 Line Transformers	49,650	0	5,664	0	10,065	0	0	0	0
	100.000001%	0.000000%	11.407855%	0.000000%	20.271903%	0.000000%	0.000000%	0.000000%	0.000000%
23 O & M Excluding Fuel & Purch. Power	55,419	12,965	2,475	0	1,424	29	7	0	0
	100.000001%	23.394504%	4.465977%	0.000000%	2.569516%	0.052329%	0.012631%	0.000000%	0.000000%
24 O & M Excluding Fuel, Purch. Power and A&G	38,423	8,989	1,716	0	987	20	5	0	0
	100.000000%	23.394842%	4.466075%	0.000000%	2.568774%	0.052052%	0.013013%	0.000000%	0.000000%
26 Total Electric Plant in Service	1,027,873	270,213	45,159	0	19,403	615	140	0	8
	100.000002%	26.288559%	4.393442%	0.000000%	1.887685%	0.059832%	0.013620%	0.000000%	0.000778%
27 Net Electric Plant in Service	648,742	164,262	32,386	0	13,339	374	101	0	8
	100.000000%	25.320081%	4.991123%	0.000000%	2.056133%	0.057650%	0.015569%	0.000000%	0.001233%



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TOD Large General Rate 31 Secondary      Space Heating Rate 32

	TOD Large General Rate 31 Secondary			Space Heating Rate 32		
	Total North Dakota	Demand Prod. & Trans. Distribution	Energy Customer	Demand Prod. & Trans. Distribution	Energy Customer	Customer
1 Energy at Generation Level	2,167,314,139	0	19,060,645	0	0	60,259,122
	100.000002%	0.000000%	0.879459%	0.000000%	0.000000%	2.780359%
2 Demand - 12 CP	380,695	3,312	0	0	7,547	0
	100.000001%	0.869909%	0.000000%	0.000000%	1.982544%	0.000000%
3 Demand/Energy for Wind	1,733,927,451	15,249,178	0	0	48,208,807	0
	100.000001%	0.877549%	0.000000%	0.000000%	2.620796%	0.000000%
4 NCP - Generation Level	598,681	0	4,611	0	0	20,653
	100.000002%	0.000000%	0.770263%	0.000000%	0.000000%	3.449715%
5 NCP - Secondary Level	465,328	0	4,067	0	0	18,217
	99.999999%	0.000000%	0.874108%	0.000000%	0.000000%	3.914801%
6 Total Customers	95,832	0	0	56	0	0
	99.999998%	0.000000%	0.000000%	0.058436%	0.000000%	0.000000%
7 Total Customers less Rate 52	95,681	0	0	56	0	0
	100.000001%	0.000000%	0.000000%	0.058528%	0.000000%	0.000000%
8 Weighted Customer Meters	141,363	0	0	702	0	3,384
	100.000001%	0.000000%	0.000000%	0.496594%	0.000000%	2.393837%

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	TOD Large General Rate 31 Secondary			Space Heating Rate 32							
	Total North Dakota	Demand Prod. & Trans. Distribution	Demand Energy Customer	Demand Prod. & Trans. Distribution	Demand Energy Customer	Demand Energy Customer					
10 Weighted Customer Services	106,230	0	0	0	282	0	0	0	0	0	0
	99.9999999%	0.0000000%	0.0000000%	0.0000000%	0.265462%	0.0000000%	0.0000000%	0.0000000%	0.0000000%	0.0000000%	0.0000000%
11 Weighted Customer Transformers	170,077	0	0	0	740	0	0	0	0	0	0
	100.0000000%	0.0000000%	0.0000000%	0.0000000%	0.435097%	0.0000000%	0.0000000%	0.0000000%	0.0000000%	0.0000000%	0.0000000%
12 Weighted Customer Accounts	108,211	0	0	0	236	0	0	0	0	0	2,492
	99.9999999%	0.0000000%	0.0000000%	0.0000000%	0.218092%	0.0000000%	0.0000000%	0.0000000%	0.0000000%	0.0000000%	2.302908%
13 Production, Transmission, & Distribution Plant	942,900	5,823	983	0	314	13,272	4,404	0	320	0	0
	100.000001%	0.617563%	0.104253%	0.000000%	0.033302%	1.407572%	0.467070%	0.000000%	0.000000%	0.000000%	0.033938%
14 Distribution Plant	273,473	0	983	0	314	0	4,404	0	320	0	0
	99.9999999%	0.0000000%	0.359450%	0.000000%	0.114819%	0.000000%	1.610397%	0.000000%	0.000000%	0.000000%	0.117013%
15 Poles, OH & UG Conductor & Conduits	126,530	0	414	0	43	0	1,855	0	27	0	0
	100.000001%	0.000000%	0.327195%	0.000000%	0.033984%	0.000000%	1.466055%	0.000000%	0.000000%	0.000000%	0.021339%
19 Line Transformers	49,650	0	133	0	150	0	594	0	0	0	0
	100.000001%	0.000000%	0.267875%	0.000000%	0.302115%	0.000000%	1.196375%	0.000000%	0.000000%	0.000000%	0.000000%
23 O & M Excluding Fuel & Purch. Power	55,419	303	58	0	27	692	260	0	117	0	0
	100.000001%	0.546744%	0.104657%	0.000000%	0.048720%	1.248669%	0.469153%	0.000000%	0.211119%	0.000000%	0.000000%
24 O & M Excluding Fuel, Purch. Power and A&G	38,423	210	40	0	19	480	180	0	81	0	0
	100.000000%	0.546548%	0.104104%	0.000000%	0.049450%	1.249252%	0.468469%	0.000000%	0.210811%	0.000000%	0.000000%
26 Total Electric Plant in Service	1,027,873	6,324	1,057	0	342	14,415	4,734	0	347	0	0
	100.000002%	0.615251%	0.102834%	0.000000%	0.033273%	1.402411%	0.460563%	0.000000%	0.033759%	0.000000%	0.000000%
27 Net Electric Plant in Service	648,742	3,845	759	0	232	8,763	3,395	0	323	0	0
	100.000000%	0.592686%	0.116996%	0.000000%	0.035762%	1.350768%	0.523321%	0.000000%	0.049789%	0.000000%	0.000000%



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	Small Municipal Rate 40			Municipal Lighting Primary Rate 41					
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	Demand Prod. & Trans.	Demand Distribution	Energy	Customer
1 Energy at Generation Level	2,167,314,139	0	0	4,390,629	0	0	0	1,832,854	0
	100.000002%	0.000000%	0.000000%	0.202584%	0.000000%	0.000000%	0.000000%	0.084568%	0.000000%
2 Demand - 12 CP	380,695	782	0	0	0	126	0	0	0
	100.000001%	0.205342%	0.000000%	0.000000%	0.000000%	0.032970%	0.000000%	0.000000%	0.000000%
3 Demand/Energy for Wind	1,733,927,451	3,512,660	0	0	0	1,466,308	0	0	0
	100.000001%	0.203136%	0.000000%	0.000000%	0.000000%	0.074248%	0.000000%	0.000000%	0.000000%
4 NCP - Generation Level	598,681	0	1,284	0	0	0	682	0	0
	100.000002%	0.000000%	0.214410%	0.000000%	0.000000%	0.000000%	0.113984%	0.000000%	0.000000%
5 NCP - Secondary Level	465,328	0	1,132	0	0	0	0	0	0
	99.999999%	0.000000%	0.243316%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%
6 Total Customers	95,832	0	0	0	278	0	0	0	49
	99.999998%	0.000000%	0.000000%	0.000000%	0.290091%	0.000000%	0.000000%	0.000000%	0.051131%
7 Total Customers less Rate 52	95,681	0	0	0	278	0	0	0	49
	100.000001%	0.000000%	0.000000%	0.000000%	0.290549%	0.000000%	0.000000%	0.000000%	0.051212%
8 Weighted Customer Meters	141,363	0	0	0	595	0	0	0	49
	100.000001%	0.000000%	0.000000%	0.000000%	0.420902%	0.000000%	0.000000%	0.000000%	0.034663%

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	Small Municipal Rate 40			Municipal Lighting Primary Rate 41			
	Total North Dakota	Demand Prod. & Trans. Distribution	Energy	Customer	Demand Prod. & Trans. Distribution	Energy	Customer
10 Weighted Customer Services	106,230	0	0	299	0	0	0
	99.999999%	0.000000%	0.000000%	0.281465%	0.000000%	0.000000%	0.000000%
11 Weighted Customer Transformers	170,077	0	0	1,485	0	0	0
	100.000000%	0.000000%	0.000000%	0.873134%	0.000000%	0.000000%	0.000000%
12 Weighted Customer Accounts	108,211	0	0	317	0	0	49
	99.999999%	0.000000%	0.000000%	0.292946%	0.000000%	0.000000%	0.045281%
13 Production, Transmission, & Distribution Plant	942,900	1,374	274	627	221	126	41
	100.000001%	0.145721%	0.029059%	0.066497%	0.023438%	0.013363%	0.004348%
14 Distribution Plant	273,473	0	274	627	0	126	41
	99.999999%	0.000000%	0.100193%	0.229273%	0.000000%	0.046074%	0.014992%
15 Poles, OH & UG Conductor & Conduits	126,530	0	115	211	0	61	37
	100.000001%	0.000000%	0.090888%	0.166759%	0.000000%	0.048210%	0.029242%
19 Line Transformers	49,650	0	37	301	0	0	0
	100.000001%	0.000000%	0.074522%	0.606244%	0.000000%	0.000000%	0.000000%
23 O & M Excluding Fuel & Purch. Power	55,419	72	16	50	12	7	4
	100.000001%	0.129919%	0.028871%	0.090222%	0.021653%	0.012631%	0.007218%
24 O & M Excluding Fuel, Purch. Power and A&G	38,423	50	11	35	8	5	3
	100.000000%	0.130130%	0.028629%	0.091091%	0.020821%	0.013013%	0.007808%
26 Total Electric Plant in Service	1,027,873	1,492	295	694	240	135	48
	100.000002%	0.145154%	0.028700%	0.067518%	0.023349%	0.013134%	0.004670%
27 Net Electric Plant in Service	648,742	908	213	471	147	98	35
	100.000000%	0.139963%	0.032833%	0.072602%	0.022659%	0.015106%	0.005395%

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	Small Municipal Rate 40			Municipal Lighting Primary Rate 41					
	North Dakota	Prod. & Trans.	Demand Distribution	Energy	Customer	Prod. & Trans.	Demand Distribution	Energy	Customer
29 Production Plant	458,444	941	0	0	0	151	0	0	0
	100.000001%	0.205260%	0.000000%	0.000000%	0.000000%	0.032938%	0.000000%	0.000000%	0.000000%
30 Transmission Plant	210,983	433	0	0	0	70	0	0	0
	100.000000%	0.205230%	0.000000%	0.000000%	0.000000%	0.033178%	0.000000%	0.000000%	0.000000%
44 Taxable Income	30,277	(139)	20	130	(3)	(24)	(12)	82	(6)
	100.000001%	-0.459094%	0.066057%	0.429369%	-0.009909%	-0.079268%	-0.039634%	0.270833%	-0.019817%
90 Transmission & Distribution Plant	484,456	433	274	0	627	70	126	0	41
	100.000003%	0.089379%	0.056558%	0.000000%	0.129424%	0.014449%	0.026009%	0.000000%	0.008463%
91 Billed Demand KW	3,358,562	0	9,468	0	0	0	0	0	0
	99.999999%	0.000000%	0.281909%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%
92 Residential Sales Revenues	73,955	0	0	0	0	0	0	0	0
	100.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%

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	Municipal Lighting Secondary Rate 41			Municipal Pumping Primary Rate 48					
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	Demand Prod. & Trans.	Demand Distribution	Energy	Customer
1 Energy at Generation Level	2,167,314,139	0	0	19,576,235	0	0	0	14,814,237	0
	100.000002%	0.000000%	0.000000%	0.900942%	0.000000%	0.000000%	0.000000%	0.683553%	0.000000%
2 Demand - 12 CP	380,695	1,254	0	0	0	2,264	0	0	0
	100.000001%	0.329444%	0.000000%	0.000000%	0.000000%	0.594622%	0.000000%	0.000000%	0.000000%
3 Demand/Energy for Wind	1,733,927,451	15,621,239	0	0	0	11,851,843	0	0	0
	100.000001%	0.786642%	0.000000%	0.000000%	0.000000%	0.665748%	0.000000%	0.000000%	0.000000%
4 NCP - Generation Level	598,681	0	9,306	0	0	0	5,349	0	0
	100.000002%	0.000000%	1.554343%	0.000000%	0.000000%	0.000000%	0.893488%	0.000000%	0.000000%
5 NCP - Secondary Level	465,328	0	8,208	0	0	0	0	0	0
	99.999999%	0.000000%	1.763898%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%
6 Total Customers	95,832	0	0	0	356	0	0	0	4
	99.999998%	0.000000%	0.000000%	0.000000%	0.371483%	0.000000%	0.000000%	0.000000%	0.004174%
7 Total Customers less Rate 52	95,681	0	0	0	356	0	0	0	4
	100.000001%	0.000000%	0.000000%	0.000000%	0.372070%	0.000000%	0.000000%	0.000000%	0.004181%
8 Weighted Customer Meters	141,363	0	0	0	398	0	0	0	347
	100.000001%	0.000000%	0.000000%	0.000000%	0.281545%	0.000000%	0.000000%	0.000000%	0.245467%

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	Municipal Lighting Secondary Rate 41			Municipal Pumping Primary Rate 48				
	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	Prod. & Trans.	Demand Distribution	Energy	Customer
10 Weighted Customer Services	106,230	0	0	613	0	0	0	0
	99.999999%	0.000000%	0.000000%	0.577050%	0.000000%	0.000000%	0.000000%	0.000000%
11 Weighted Customer Transformers	170,077	0	0	1,182	0	0	0	0
	100.000000%	0.000000%	0.000000%	0.694979%	0.000000%	0.000000%	0.000000%	0.000000%
12 Weighted Customer Accounts	108,211	0	0	490	0	0	0	17
	99.999999%	0.000000%	0.000000%	0.452819%	0.000000%	0.000000%	0.000000%	0.015710%
13 Production, Transmission, & Distribution Plant	942,900	2,205	1,985	5,073	3,981	987	0	33
	100.000001%	0.233853%	0.210521%	0.538021%	0.422208%	0.104677%	0.000000%	0.003500%
14 Distribution Plant	273,473	0	1,985	5,073	0	987	0	33
	99.999999%	0.000000%	0.725849%	1.855028%	0.000000%	0.360913%	0.000000%	0.012067%
15 Poles, OH & UG Conductor & Conduits	126,530	0	836	271	0	480	0	3
	100.000001%	0.000000%	0.560713%	0.214178%	0.000000%	0.379357%	0.000000%	0.002371%
19 Line Transformers	49,650	0	268	240	0	0	0	0
	100.000001%	0.000000%	0.539778%	0.483384%	0.000000%	0.000000%	0.000000%	0.000000%
23 O & M Excluding Fuel & Purch. Power	55,419	114	117	319	208	58	0	1
	100.000001%	0.205706%	0.211119%	0.575615%	0.375323%	0.104657%	0.000000%	0.001804%
24 O & M Excluding Fuel, Purch. Power and A&G	38,423	79	81	221	144	40	0	1
	100.000000%	0.205606%	0.210811%	0.575176%	0.374776%	0.104104%	0.000000%	0.002603%
26 Total Electric Plant in Service	1,027,873	2,395	2,134	5,479	4,324	1,061	0	35
	100.000002%	0.233005%	0.207613%	0.533043%	0.420675%	0.103223%	0.000000%	0.003405%
27 Net Electric Plant in Service	648,742	1,455	1,531	2,852	2,628	768	0	32
	100.000000%	0.224280%	0.235995%	0.439620%	0.405092%	0.118383%	0.000000%	0.004933%

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	Municipal Lighting Secondary Rate 41			Municipal Pumping Primary Rate 48		
	Demand Prod. & Trans.	Demand Distribution	Customer	Demand Prod. & Trans.	Demand Distribution	Customer
<b>Total</b>						
North Dakota						
458,444	1,510	0	0	2,726	0	0
100.000001%	0.329375%	0.000000%	0.000000%	0.594620%	0.000000%	0.000000%
210,983	695	0	0	1,255	0	0
100.000000%	0.329410%	0.000000%	0.000000%	0.594835%	0.000000%	0.000000%
30,277	(219)	(197)	96	(397)	76	306
100.000001%	-0.723321%	-0.650659%	0.317072%	-1.311226%	0.251016%	1.010668%
						(2)
484,456	695	1,985	0	1,255	987	0
100.000003%	0.143460%	0.409738%	0.000000%	0.259053%	0.203734%	0.000000%
3,358,562	0	0	0	0	35,805	0
99.999999%	0.000000%	0.000000%	0.000000%	0.000000%	1.066090%	0.000000%
73,955	0	0	0	0	0	0
100.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%	0.000000%

29 Production Plant

30 Transmission Plant

44 Taxable Income

90 Transmission & Distribution Plant

91 Billed Demand KW

92 Residential Sales Revenues

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	Municipal Pumping Secondary Rate 48			Outdoor Lighting Rate 52					
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy	Customer	Demand Prod. & Trans.	Demand Distribution	Energy	Customer
1 Energy at Generation Level	2,167,314,139	0	0	27,110,734	0	0	0	8,010,924	0
	100.000002%	0.000000%	0.000000%	1.250891%	0.000000%	0.000000%	0.000000%	0.369625%	0.000000%
2 Demand - 12 CP	380,695	4,186	0	0	0	822	0	0	0
	100.000001%	1.099556%	0.000000%	0.000000%	0.000000%	0.215963%	0.000000%	0.000000%	0.000000%
3 Demand/Energy for Wind	1,733,927,451	21,689,424	0	0	0	6,408,904	0	0	0
	100.000001%	1.220624%	0.000000%	0.000000%	0.000000%	0.338893%	0.000000%	0.000000%	0.000000%
4 NCP - Generation Level	598,681	0	9,839	0	0	0	2,839	0	0
	100.000002%	0.000000%	1.643526%	0.000000%	0.000000%	0.000000%	0.474145%	0.000000%	0.000000%
5 NCP - Secondary Level	465,328	0	8,679	0	0	0	2,500	0	0
	99.999999%	0.000000%	1.865104%	0.000000%	0.000000%	0.000000%	0.537150%	0.000000%	0.000000%
6 Total Customers	95,832	0	0	0	283	0	0	0	151
	99.999998%	0.000000%	0.000000%	0.000000%	0.295308%	0.000000%	0.000000%	0.000000%	0.157567%
7 Total Customers less Rate 52	95,681	0	0	0	283	0	0	0	0
	100.000001%	0.000000%	0.000000%	0.000000%	0.295775%	0.000000%	0.000000%	0.000000%	0.000000%
8 Weighted Customer Meters	141,363	0	0	0	1,361	0	0	0	281
	100.000001%	0.000000%	0.000000%	0.000000%	0.962770%	0.000000%	0.000000%	0.000000%	0.198779%

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Municipal Pumping Secondary Rate 48      Outdoor Lighting Rate 52

	Total		Municipal Pumping Secondary Rate 48		Outdoor Lighting Rate 52	
	North Dakota	Customer	Demand	Energy	Demand	Energy
	Prod. & Trans.	Distribution	Prod. & Trans.	Distribution	Prod. & Trans.	Distribution
10 Weighted Customer Services	106,230	0	0	0	476	0
	99.999999%	0.000000%	0.000000%	0.000000%	0.448084%	0.000000%
11 Weighted Customer Transformers	170,077	0	0	0	3,130	0
	100.000000%	0.000000%	0.000000%	0.000000%	1.840343%	0.000000%
12 Weighted Customer Accounts	108,211	0	0	0	495	0
	99.999999%	0.000000%	0.000000%	0.000000%	0.457440%	0.000000%
13 Production, Transmission, & Distribution Plant	942,900	7,361	2,098	0	1,070	605
	100.000001%	0.780677%	0.222505%	0.000000%	0.113480%	0.064164%
14 Distribution Plant	273,473	0	2,098	0	1,070	605
	99.999999%	0.000000%	0.767169%	0.000000%	0.391263%	0.221228%
15 Poles, OH & UG Conductor & Conduits	126,530	0	884	0	215	255
	100.000001%	0.000000%	0.698649%	0.000000%	0.169920%	0.201533%
19 Line Transformers	49,650	0	283	0	635	81
	100.000001%	0.000000%	0.569990%	0.000000%	1.278953%	0.163142%
23 O & M Excluding Fuel & Purch. Power	55,419	384	124	0	84	36
	100.000001%	0.692903%	0.223750%	0.000000%	0.151573%	0.135333%
24 O & M Excluding Fuel, Purch. Power and A&G	38,423	266	86	0	58	25
	100.000000%	0.692294%	0.223824%	0.000000%	0.150951%	0.065065%
26 Total Electric Plant in Service	1,027,873	7,994	2,255	0	1,170	650
	100.000002%	0.777233%	0.219385%	0.000000%	0.113827%	0.063237%
27 Net Electric Plant in Service	648,742	4,860	1,618	0	799	466
	100.000000%	0.749142%	0.249406%	0.000000%	0.123161%	0.071831%



**MONTANA-DAKOTA UTILITIES CO.**  
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**EMBEDDED CLASS COST OF SERVICE STUDY**  
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	Interruptible Demand Response Rate 38			
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy Customer
1 Energy at Generation Level	2,167,314,139	0	0	33,995,798
	100.000002%	0.000000%	0.000000%	1.568568%
2 Demand - 12 CP	380,695	4,313	0	0
	100.000001%	1.133022%	0.000000%	0.000000%
3 Demand/Energy for Wind	1,733,927,451	27,197,501	0	0
	100.000001%	1.481459%	0.000000%	0.000000%
4 NCP - Generation Level	598,681	0	9,733	0
	100.000002%	0.000000%	1.625717%	0.000000%
5 NCP - Secondary Level	465,328	0	0	0
	99.999999%	0.000000%	0.000000%	0.000000%
6 Total Customers	95,832	0	0	3
	99.999998%	0.000000%	0.000000%	0.003130%
7 Total Customers less Rate 52	95,681	0	0	3
	100.000001%	0.000000%	0.000000%	0.003135%
8 Weighted Customer Meters	141,363	0	0	208
	100.000001%	0.000000%	0.000000%	0.147139%

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Interruptible Demand Response Rate 38

	Interruptible Demand Response Rate 38			
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy Customer
10 Weighted Customer Services	106.230	0	0	0
	99.999999%	0.000000%	0.000000%	0.000000%
11 Weighted Customer Transformers	170.077	0	0	0
	100.000000%	0.000000%	0.000000%	0.000000%
12 Weighted Customer Accounts	108.211	0	0	11
	99.999999%	0.000000%	0.000000%	0.010165%
13 Production, Transmission, & Distribution Plant	942.900	7.584	1.795	0
	100.000001%	0.804327%	0.190370%	0.000000%
14 Distribution Plant	273.473	0	1.795	0
	99.999999%	0.000000%	0.656372%	0.000000%
15 Poles, OH & UG Conductor & Conduits	126.530	0	874	0
	100.000001%	0.000000%	0.690745%	0.000000%
19 Line Transformers	49.650	0	0	0
	100.000001%	0.000000%	0.000000%	0.000000%
23 O & M Excluding Fuel & Purch. Power	55.419	395	105	0
	100.000001%	0.712752%	0.189466%	0.000000%
24 O & M Excluding Fuel, Purch. Power and A&G	38.423	274	73	0
	100.000000%	0.713115%	0.189990%	0.000000%
25 Total Electric Plant in Service	1,027.873	8,237	1,929	0
	100.000002%	0.801364%	0.187669%	0.000000%
27 Net Electric Plant in Service	648.742	5,007	1,396	0
	100.000000%	0.771801%	0.215186%	0.000000%

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	Interruptible Demand Response Rate 38			
	Total North Dakota	Demand Prod. & Trans.	Demand Distribution	Energy Customer
29 Production Plant	458,444	5,194	0	0
	100.000001%	1.132963%	0.000000%	0.000000%
30 Transmission Plant	210,983	2,390	0	0
	100.000000%	1.132793%	0.000000%	0.000000%
44 Taxable Income	30,277	(755)	408	700
	100.000001%	-2.493642%	1.347558%	2.311986%
90 Transmission & Distribution Plant	484,456	2,390	1,795	0
	100.000003%	0.493337%	0.370519%	0.000000%
91 Billed Demand KW	3,358,562	0	85,568	0
	99.999999%	0.000000%	2.547769%	0.000000%
92 Residential Sales Revenues	73,955	0	0	0
	100.000000%	0.000000%	0.000000%	0.000000%