

1 **Q. Further to PUB-NP-007, please provide in Excel file format, Newfoundland**  
2 **Power’s current estimated winter peak day, winter average day, and other season(s)**  
3 **daily load profiles (24 hour) associated with each of Newfoundland Power’s main**  
4 **customer sectors or rate classes, at whatever level of sectoral or rate class**  
5 **aggregation is available (e.g., residential electric heat; residential non-electric heat;**  
6 **commercial; etc.).**

7  
8 A. The most recent rate class load profile data available was determined from a load  
9 research study completed in 2006. Attachment A to this response is a copy of  
10 Newfoundland Power’s 2006 Load Research Study (“LRS”) report, dated June 16, 2006.<sup>1</sup>

11  
12 Attachment B to this response provides detailed load profile data determined from the  
13 LRS. In particular, Attachment B provides, in separate worksheets, the following data:

- 14  
15 • The totalized 30 minute interval load data by rate class for the period covered by the  
16 LRS study period (December 2003 to March 2006, inclusive).  
17 • The estimated load profiles by rate class for the 3 winter peak days that occurred  
18 during the LRS study period.  
19 • The average winter day load profile for the LRS study period.

20  
21 Attachment B is available in Excel format on Newfoundland Power’s stranded website at  
22 <https://ftp.nfpower.nf.ca>.

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<sup>1</sup> The former rate class Rate #2.2, referenced in Attachment A, was merged into Rate #2.1, effective July 1, 2013, pursuant to Order No. P.U. 13 (2013).

**2006 Load Research Study**

*11. 2006 Load Research Study*

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**2006 Load Research Study**

**June 16, 2006**

**Table of Contents**

	<b>Page</b>
1.0 Executive Summary .....	1
2.0 Introduction.....	1
3.0 Study Scope .....	2
4.0 Study Methodology.....	2
4.1 Design Methodology.....	2
4.1.1 Customer Class Considerations .....	3
4.2 Data Analysis .....	4
5.0 2006 LRP Results .....	4
6.0 Applying Results in Cost of Service Study .....	5
7.0 Differences from 1994 Study.....	7
7.1 Change in Time of System Peak.....	7
7.1.1 Effect on Demand Cost Allocations .....	8
7.2 Class Load Factors.....	9
7.2.1 Domestic Load Factors .....	9
7.2.2 Large General Service Class Load Factors .....	10
7.2.3 Small General Service Class Load Factors .....	11
8.0 Conclusions.....	12
Appendix A: Detailed Sample Design	
Appendix B: System Peak Day Curves	
Appendix C: Class Load Estimates	
Appendix D: Class Load Factor Calculations	
Appendix E: Peak Day Loads by Class	

## 11. 2006 Load Research Study

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### 1.0 EXECUTIVE SUMMARY

Load research data provides estimates of class demands on the system at specific times. The class demand estimates are used in the cost of service study to determine the portion of system demand costs that should be recovered from each customer class.

From December 2003 to March 2006, Newfoundland Power conducted a load research program (the “2006 LRP”). The previous class load estimates were obtained from a load research study conducted over the period 1992 to 1994 (the “1994 Study”).

The 2006 LRP collected data from a statistically representative sample of customers from each metered customer rate class served by Newfoundland Power. Load recorders, that store customer usage by time interval throughout the day<sup>1</sup>, were installed on 470 customer premises. The data collected from the sample was extrapolated to estimate class demands by time interval using a statistical process referred to as ratio estimation.

Generation and transmission demand costs are allocated to customer classes in the cost of service study based on each customer classes’ contribution to the winter system peak. The Hydro winter season system peaks normally occur in the early evening around supertime. Distribution demand costs are allocated to customer classes based on the relative size of the class peak demand. Generally, the Domestic customer class peaks at supertime and General Service customer classes peak in the morning hours during the weekdays.

The 2006 LRP results indicate there are significant changes to the demand allocators for each rate class compared to the 1994 Study. The primary reasons for the differences in the results are:

- (i) a change in the time of Hydro system peak from morning during the period of the 1994 Study to evening peaks during the period of the 2006 LRP; and
- (ii) the 2006 LRP class load estimates for General Service Rates 2.1 and 2.2 were derived from a statistically valid study whereas the cost of service estimates used previously were derived based on coincidence estimates applied to billing demand data.

In general, the results indicate an increase in the demand cost allocations to the Domestic class and a decrease in the demand cost allocations to the General Service classes is warranted. The effect of the change in the demand cost allocators may require the rebalancing of revenue requirements from some classes.

### 2.0 INTRODUCTION

Load research data is used to assess the reasonableness of cost recovery among customer classes. The information gathered is used to determine the portion of system demand costs that should be recovered from each customer class. Load research data provides estimates of class demand on the system at specific times. This differs from the typical energy meter which records the cumulative energy used by customers over a period of time.

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<sup>1</sup> Data is stored for every 15 minute period.

## 11. 2006 Load Research Study

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The load research data being used to estimate class demands in the embedded cost of service study was from the 1994 Study. In Order No. P.U. 19 2003, the Board approved capital expenditures in the amount of \$425,000 for the 2006 LRP.<sup>2</sup> Beginning in December 2003, a comprehensive load research program to encompass the next 3 winter seasons was undertaken. This report provides an analysis of the data collected.

To maximize the efficiency of obtaining load research data for the Province, Newfoundland Power also conducted the sample design and data analysis for both the Island and Labrador interconnected rural customer classes of Newfoundland and Labrador Hydro (Hydro). Hydro was responsible for purchasing and installing the required metering equipment as well as data collection for its customers in Labrador.

### 3.0 STUDY SCOPE

To adequately study the load characteristics of a class of customers, data representative of their population is required. The 2006 LRP included data collection from a sample of customers from all customer rate classes (excluding Street and Area Lighting<sup>3</sup>) served by Newfoundland Power and the interconnected retail customer rate classes (excluding Street and Area Lighting) served by Hydro<sup>4</sup>.

This report summarizes the results of the Newfoundland Power component of the 2006 LRP.

### 4.0 STUDY METHODOLOGY

#### 4.1 Design Methodology

For purposes of designing a statistically accurate load research program, the sample design followed the sample accuracy level formerly specified in U.S. federal legislation, the *Public Utility Regulatory Policies Act* of 1978 (the “PURPA standard”). This standard is also referenced in the AEIC Load Research Manual, 2<sup>nd</sup> Edition. The PURPA standard is  $\pm 10\%$  relative accuracy at a 90% confidence level.

The Island Interconnected System is a winter peaking system; customer demand requirements are approximately twice as high in winter months than in summer months. Generation and transmission demand costs are allocated by customer classes in the cost of service study based on each customer classes’ contribution to the winter system peak (i.e., based on coincident peak).<sup>5</sup> Distribution demand costs are allocated based on the relative size of the class peak demands (i.e., based on non-coincident peak).

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<sup>2</sup> Actual Load Research Capital Costs totaled \$356,373.53.

<sup>3</sup> Class demand estimates for the street and area lighting are derived from a separate study on hours of operation based on hours of darkness determined by operations of photocell devices.

<sup>4</sup> Appendix A contains the detailed sample design.

<sup>5</sup> The single coincident peak method (1 CP). For the purposes of the load research study, the system peak is based on the time of Hydro’s system peak because the majority of the generation and transmission demand costs are related to Hydro’s assets.

11. 2006 Load Research Study

The sample design for each customer class was designed to achieve the desired statistical accuracy of class demand at time of system peak. To minimize the 2006 LRP cost and achieve the PURPA standard of accuracy, stratified random sampling was employed using the Model Based Statistical Sampling methodology.

**4.1.1 Customer Class Considerations**

Due to the predominance of domestic electric heating load served by Newfoundland Power, two subclasses within the Domestic rate class were studied. Separate samples were designed for domestic customers that use electric heat as their primary heating source (“Domestic All-Electric subclass”) and domestic customers that use an alternate primary heating source (“Domestic Regular subclass”)<sup>6</sup>. The separate studies would allow evaluation through the cost of service study of whether cross-subsidization exists between the two Domestic customer subclasses.

The Rate 2.4 customer class includes the Company’s largest General Service customers with annual peak demands of 1,000 kVA and greater. Because of the diverse load patterns of these customers and the relatively small number of customers in the class (approximately 55), load research monitoring equipment (i.e., load recorders) was installed on a large proportion of customers in the class.

The sample size for each class is provided in Table 1 below.

<b>Table 1 2006 LRP Sample Sizes</b>	
<b>Customer Rate Class</b>	<b>Sample Size</b>
<b>Domestic</b>	
1.1 All-Electric	60
1.1 Regular	90
<b>General Service</b>	
2.1 0 – 10 kW	90
2.2 10 – 100 kW	90
2.3 110 kVA- 1000 kVA	90
2.4 1000 kVA and Over	50
<b>Total</b>	<b>470</b>

<sup>6</sup> The distinction between Domestic All-Electric subclass customers that use electric heat as their primary heating source and Domestic Regular subclass customers that use an alternate heating source is based on customer information coded in the Company’s Customer Service System.

## 11. 2006 Load Research Study

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### 4.2 Data Analysis

To interpret the data collected from the sample required the sample results to be expanded to represent the class population characteristics<sup>7</sup>. The method chosen for this expansion of data was the Ratio Estimation method.<sup>8</sup> The output of the Ratio Estimation method is a class demand estimate by time interval and the achieved statistical accuracy level.<sup>9</sup>

The load estimates for each class are combined with load estimates for Street and Area Lighting and system losses to derive total load estimates at peak times. To assess the reasonableness of the results, the class load estimates are totalled and then compared to actual total produced and purchased for the time interval (See Table 2).

### 5.0 2006 LRP RESULTS

This report presents and assesses the results for the 2006 LRP.

For the winter season of 2003/2004, the Hydro system peak occurred on February 16, 2004 at 18:00 hours. For the winter season 2004/2005, the Hydro system peak occurred on December 6, 2004 at 16:45, and for 2005/2006 the peak occurred on January 23, 2006 at 17:45<sup>10</sup>. Graphs showing the load curves for the Newfoundland Power native peak on the Hydro system peak days for the three winter seasons are provided in Appendix B.

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<sup>7</sup> Appendix C contains the load estimates and accuracy level derived from the load research data for each month of the 2006 LRP.

<sup>8</sup> Ratio estimation requires an interval by interval ratio between demand and annual energy for the sample. It then applies those ratios to the population energy to derive the total class load profiles.

<sup>9</sup> A 30 minute interval was chosen to balance data variability while still maintaining the ability to accurately capture load fluctuations.

<sup>10</sup> Frazzle ice conditions at NP's generation facilities reduced generation capability during the morning of January 23<sup>rd</sup>, 2006, causing Hydro system peak to occur at 9:44 am. If Newfoundland Power generation facilities were capable of typical generation levels, the Hydro system peak would have occurred at 5:45 pm. Therefore, for purposes of the load research analysis, the winter peak was assumed to occur at 5:45 pm.



11. 2006 Load Research Study

Table 2 provides the breakdown of the estimated loads by rate class and the percentage of load for each estimated peak.

<b>Table 2 Class Contribution at Time of Hydro System Peak</b>						
	<b>2003/2004 Peak February 16, 2004 18:00</b>		<b>2004/2005 Peak December 6, 2004 16:45</b>		<b>2005/2006 Peak January 23, 2006 17:45</b>	
	<b>Estimated Load (MW)</b>	<b>% of Peak</b>	<b>Estimated Load (MW)</b>	<b>% of Peak</b>	<b>Estimated Load (MW)</b>	<b>% of Peak</b>
Domestic 1.1	676.9	62.1%	743.5	62.7%	695.9	61.9%
GS 2.1	16.8	1.5%	17.4	1.5%	16.8	1.5%
GS 2.2	107.2	9.9%	119.1	10.0%	120.1	10.7%
GS 2.3	141.2	13.0%	147.3	12.4%	140.9	12.5%
GS 2.4	60.6	5.6%	66.0	5.6%	61.7	5.5%
Streetlights	8.5	0.8%	8.5	0.7%	8.5	0.8%
Losses	77.0	7.1%	84.3	7.1%	79.9	7.1%
Estimated NP Native Peak at Hydro System Peak	1,088.2	100%	1,186.1	100%	1123.8	100%
Actual NP Native Peak at Hydro System Peak	1,099.4		1,142.6		1123.3	

To assess the reasonableness of the results, the total of the class load estimates was compared to the actual total produced and purchased for the time interval. The total of the estimated class loads at time of Hydro system peak was within 3.8% of the actual Newfoundland Power load at time of Hydro system peak. The reasonableness of the results is also confirmed as the demand estimates for the system peak hour for each winter season achieved the design accuracy level in each class.

The largest contribution to peak load was from the Rate 1.1 Domestic rate class with a 62.2% average share over the three winter season peaks. Of the general service rate classes, Rate 2.3 was the largest contributor at a 12.6% average share. Each rate classes' relative contribution to system peak remained fairly consistent for each winter season.

## 6.0 APPLYING RESULTS IN COST OF SERVICE STUDY

The class peak demand proportions provided in Table 1 provide reasonable estimates of the customer rate class responsibility for the actual system peaks that occurred over the past three winter seasons. However, on a go-forward basis, differing rates of load growth by class would result in the proportional allocations from Table 1 becoming out-of-date. To address this issue Newfoundland Power uses class load factors rather than proportional load estimates for demand cost allocations in the cost of service study<sup>11</sup>.

<sup>11</sup> Appendix D provides load factor estimates for each class on a coincident and non-coincident peak basis for use in the Cost of Service study.

11. 2006 Load Research Study

Load factor expresses average demand as a percentage of peak demand for a time period (e.g., month or year). The load factors are applied to normalized sales to determine the cost of service demand estimates by class. The demand estimates for each class in the cost of service study are used for demand cost allocation to each class.

Class load factors calculated based on the time of system peak can vary significantly depending on the weather, month it occurs, time of day, and the day of the week. Volatility in cost of service results from year to year can occur if a single peak that occurred at an unusual time period was used in determining demand cost allocations. To ensure reasonable demand cost allocation, Newfoundland Power averages the annual load factors over the period of the study.

Table 3 provides both the annual and average load factors derived for each class based on the data collected. The non-coincident peak class load factors<sup>12</sup> are used in determining distribution demand cost allocations. The coincident-peak class load factors<sup>13</sup> are used in determining generation and transmission demand cost allocations.

Classes with lower load factors are allocated a lower proportion of the system energy costs and a higher proportion of the system demand costs. Whereas classes with high load factors are allocated a higher proportion of the system energy costs and a lower proportion of the system demand costs.

	Non-Coincident Peak				Coincident Peak			
	2003-2004 <sup>14</sup>	2004-2005	2005-2006	Average	2003-2004	2004-2005	2005-2006	Average
Domestic All-Electric	46.2%	45.6%	51.8%	<b>47.9%</b>	48.1%	44.0%	48.3%	<b>46.8%</b>
Domestic Regular	48.7%	41.6%	38.8%	<b>43.0%</b>	53.4%	50.0%	51.9%	<b>51.8%</b>
1.1 Total Domestic	46.4%	44.0%	46.5%	<b>45.6%</b>	49.2%	45.6%	48.9%	<b>47.9%</b>
GS 2.1	49.2%	49.6%	53.9%	<b>50.9%</b>	66.0%	63.8%	65.7%	<b>65.2%</b>
GS 2.2	53.3%	54.4%	50.2%	<b>52.6%</b>	63.1%	57.8%	58.1%	<b>59.7%</b>
GS 2.3	58.4%	58.5%	53.1%	<b>56.7%</b>	68.9%	66.7%	69.7%	<b>68.4%</b>
GS 2.4 <sup>15</sup>	66.0%	64.8%	67.7%	<b>66.2%</b>	75.1%	72.9%	75.3%	<b>74.4%</b>

<sup>12</sup> Non-Coincident peak load factor = (12 months normalized sales ÷ (maximum class demand in 12 months x # of hours in the 12-month period)).

<sup>13</sup> Coincident peak load factor = (12 months normalized sales ÷ (class demand at time of system peak x # of hours in the 12-month period)).

<sup>14</sup> 2003-2004 reflects the time period of April 2003 to March 2004 inclusive. This April to March period was used for each year rather than the calendar year to reflect a full winter season in the calculation of annual load factor.

<sup>15</sup> The class peak for General Service Rate 2.4 occurred in the month of July in both summer seasons of the 2006 LRP.

11. 2006 Load Research Study

**7.0 DIFFERENCES FROM 1994 STUDY**

Table 4 provides a comparison of the class load factors from the 2006 LRP and the 1994 Study. There are significant differences in load factors compared to the 1994 Study. The primary reasons for the differences in the results are:

- (i) a change in the time of Hydro system peak from morning during the period of the 1994 Study to evening peaks during the period of the 2006 LRP; and
- (ii) the 2006 LRP class load estimates for General Service Rates 2.1 and 2.2 were derived from a statistically valid study whereas the cost of service estimates used previously were derived based on coincidence estimates applied to billing demand data.

Further information on the effects of each is provided in the following sections.

<b>Table 4 Change in Class Load Factors (%)</b>						
	<b>Non-Coincident Peak</b>			<b>Coincident Peak</b>		
	<b>2006 LRP</b>	<b>1994 Study</b>	<b>Difference</b>	<b>2006 LRP</b>	<b>1994 Study</b>	<b>Difference</b>
Domestic All-Electric	47.9%	39%	8.9	46.8%	48%	-1.2
Domestic Regular	43.0%	51%	-8.0	51.8%	70%	-18.2
1.1 Total Domestic	45.6%	42%	3.6	47.9%	52%	-4.1
GS 2.1	50.9%	35%	15.9	65.2%	42%	23.2
GS 2.2	52.6%	38%	14.6	59.7%	45%	14.7
GS 2.3	56.7%	51%	5.7	68.4%	52%	16.4
GS 2.4	66.2%	61%	5.2	74.4%	64.8%	9.6

**7.1 Change in Time of System Peak**

For the past nine winter seasons, the Hydro system peak has occurred during the evening hours of 5 pm to 6 pm. The current consistent pattern of evening system peaks is different from the times of the Hydro system peaks during the 1994 Study. Table 5 provides a listing of the time and amount of Hydro’s system peak since 1990.

Morning peaks appear possible given extremely windy and cold morning weather conditions that improve as the day progresses. However, morning peaks are not the norm. Evening peaks occurred for the seven highest system peak days during the three winter seasons of the 2006 LRP. For the years prior to 1992, evening system peaks were also the norm. In addition to weather conditions, the profile of Newfoundland Power’s own generation across the hours of the day will also impact the timing of Hydro’s system peak. A 1 CP allocation method is approved

11. 2006 Load Research Study

for generation and transmission demand related costs in the Cost of Service study<sup>16</sup>. Consistent with this approach, it is reasonable to use load factors based on evening peaks when that single peak is most likely to occur.

<b>Table 5 Hydro System Peaks</b>			
<b>Year</b>	<b>Date</b>	<b>Time</b>	<b>Peak Load (MW)</b>
1989/90	Feb. 3, 1990	18:00	1,316
1990/91	Jan. 26, 1991	18:52	1,281
1991/92	March 2, 1992	11:43	1,303
1992/93	Feb. 8, 1993	09:16	1,288
1993/94	Feb. 9, 1994	11:00	1,305
1994/95	Feb. 13, 1995	11:51	1,250
1995/96	Jan. 16, 1996	16:58	1,318
1996/97	Mar. 10, 1997	08:01	1,229
1997/98	Jan. 7, 1998	17:11	1,289
1998/99	Dec. 23, 1998	17:46	1,295
1999/00	Dec. 23, 1999	17:43	1,265
2000/01	Dec. 24, 2000	17:24	1,240
2001/02	Jan, 31, 2002	17:48	1,403
2002/03	Feb. 15, 2003	18:03	1,402
2003/04	Feb. 16, 2004	18:00	1,405
2004/05	Dec. 6, 2004	16:45	1,402
2005/06	Jan. 23, 2006	17:45 <sup>17</sup>	1,247

**7.1.1 Effect on Demand Cost Allocations**

Because generation demand costs and transmission demand costs are allocated by class based on their load at time of Hydro system peak, the shift from morning system peak to evening system peak can have a significant impact on demand costs allocated by class.

<sup>16</sup> In the 2001 Hydro GRA, Newfoundland Power presented evidence recommending the use of a multiple CP for allocation of generation and transmission demand costs. In Order No. P.U. 7 (2002-2003), the Board approved the use of a 1 CP methodology for allocation of generation and transmission demand costs.

<sup>17</sup> Frazzle ice conditions at NP's generation facilities reduced generation capability during the morning of January 23<sup>rd</sup>, 2006, causing Hydro system peak to occur at 9:44 am. If NP generation facilities were capable of typical generation levels, system peak would have occurred at 5:45 pm. Therefore, for purposes of the load research analysis, the winter peak was assumed to occur at 5:45 pm.

11. 2006 Load Research Study

Appendix E provides the class load data by 30 minute intervals for the winter season peak days. The differences in peak times by class is clearly illustrated in the load curves and data provided.

The peak times for each class over the past three winter seasons are provided in Table 6.

<b>Table 6 Time of Class Peaks</b>			
	<b>2003/04</b>	<b>2004/05</b>	<b>2005/06</b>
Domestic	17:30	18:00	17:30
General Service Rate 2.1	11:00	11:00	10:00
General Service Rate 2.2	11:00	12:30	11:00
General Service Rate 2.3	09:30	11:00	12:00
General Service Rate 2.4	12:00	10:30	11:00

When system peak occurs during the morning hours, a higher percentage of system demand costs are allocated to General Service customers because the peak demand requirements for these customer classes is higher during those hours. Whereas, when system peak occurs in the evening hours, the Domestic class is allocated a higher percentage of demand costs because the Domestic class peak demand requirements are generally greatest in the evening<sup>18</sup>.

The 2006 LRP indicates the Domestic class peaks in the evening when the General Service classes are reducing their load requirements. The higher demand requirements for the Domestic class at the time of system peak results in a higher demand cost allocation to the Domestic class. The lower demand requirements for the General Service classes at the time of system peak results in a lower demand cost allocation to the General Service classes.

**7.2 Class Load Factors**

This section provides a comparison of the load factors derived from the 2006 LRP and those used in the cost of service study filed with the Board in the 2003 Newfoundland Power General Rate Proceeding.

**7.2.1 Domestic Load Factors**

Table 7 indicates that the non-coincident peak load factor for the Total Domestic class has changed from 42% to approximately 45.6%. The non-coincident peak load factor is calculated based on the maximum class demand independent of the time of system peak.

<sup>18</sup> Appendix E provides graphs of each class’s load pattern on peak days for each winter season.

11. 2006 Load Research Study

<b>Table 7 Domestic Load Factors</b>						
	<b>Non-Coincident Peak</b>			<b>Coincident Peak</b>		
	<b>2006 LRP</b>	<b>1994 Study</b>	<b>Difference</b>	<b>2006 LRP</b>	<b>1994 Study</b>	<b>Difference</b>
Domestic All-Electric	47.9%	39%	8.9	46.8%	48%	-1.2
Domestic Regular	43.0%	51%	-8.0	51.8%	70%	-18.2
1.1 Total Domestic	45.6%	42%	3.6	47.9%	52%	-4.1

Table 7 also indicates that the coincident peak load factor for the Total Domestic class has declined from 52% to 47.9%. The coincident peak load factor is calculated based on the class demand at time of system peak so the load factor decline is primarily related to the change in time of system peak.

The decline in coincident peak load factor is most pronounced in the Domestic Regular subclass. The Domestic Regular subclass peaks during the supertime hours and was highly coincident with the time of Hydro system peak during the 2006 LRP. In the 1994 Study, less demand was required to serve the Domestic Regular subclass because the Hydro system peak occurred in mid-morning.

The coincident peak load factors for the Domestic class from 1994 Study would be similar to the results of the 2006 LRP had the system peaks occurred in the evening during the 1994 Study.

**7.2.2 Large General Service Class Load Factors**

The 2006 LRP class load factors for the large general service rate classes (Rate 2.3 and Rate 2.4) are higher than determined in the 1994 Study. See Table 8.

<b>Table 8 Large General Service Class Load Factors</b>						
	<b>Non-Coincident Peak</b>			<b>Coincident Peak</b>		
	<b>2006 LRP</b>	<b>1994 Study</b>	<b>Difference</b>	<b>2006 LRP</b>	<b>1994 Study</b>	<b>Difference</b>
GS 2.3	56.7%	51%	5.7	68.4%	52%	16.4
GS 2.4	66.2%	61%	5.2	74.4%	64.8%	9.6

The non-coincident class load factors from the 2006 LRP were higher than the non-coincident class load factors from the 1994 Study for both the Rate 2.3 and Rate 2.4 rate classes.

11. 2006 Load Research Study

There is an even higher increase in the coincident peak load factors for the large general service classes. This increase is predominantly related to the change in time of system peak from morning to evening. The coincident peak load factors for the large General Service classes from 1994 Study would be similar to the results of the 2006 LRP had the system peaks occurred in the evening during the 1994 Study.

**7.2.3 Small General Service Class Load Factors**

Newfoundland Power did not have load research data from the 1994 Study for its Rate 2.1 or its Rate 2.2 customer classes. The Company has historically used the Bary Curve to estimate load factors for these classes.<sup>19</sup> The Bary Curve uses the class load factor based on billing information for the peak month (i.e., using the sum of the monthly demands and total energy for the class) to estimate the percentage of customer maximum demands being used at time of class peak (i.e., coincidence).

The results of the 2006 LRP indicate significantly higher load factors than have been used in the cost of service study. See Table 9.

<b>Table 9 Small General Service Class Load Factors</b>						
	<b>Non-Coincident Peak</b>			<b>Coincident Peak</b>		
	<b>2006 LRP</b>	<b>Bary Curve</b>	<b>Difference</b>	<b>2006 LRP</b>	<b>Bary Curve</b>	<b>Difference</b>
GS 2.1	50.9%	35%	15.9	65.2%	42%	23.2
GS 2.2	52.6%	38%	14.6	59.7%	45%	14.7

The accuracy level achieved for these classes at the time of system peak is 90% confidence within  $\pm 6.6\%$ . This provides confidence in the reliability of the results. Additional confidence in the results is provided as the load factors derived from the 2006 LRP for these rate classes are comparable with the load factors used by Nova Scotia Power and Maritime Electric for its small general service classes.<sup>20</sup>

<sup>19</sup> The Bary Curve is based on historical load research data from U.S. utilities.

<sup>20</sup> Based on information obtained in 2001. Nova Scotia Power used a load factor of 66% on a coincident peak basis using a 3 CP method for its Small General (<12,000 kWh/year) and General (>12,000 kWh/year) classes of service. Maritime Electric used 61% load factor on a coincident peak basis for its Small General Service class.

## 8.0 CONCLUSIONS

The class load factors derived from the 2006 LRP are reasonable to use in the cost allocation process. This conclusion is supported by:

- (i) the achieved accuracy levels of the class load estimates during the peak periods;
- (ii) the reconciliation of the class load estimates to system peak data;
- (iii) the relative consistency in the results over the three winter seasons; and
- (iv) the relative consistency of the class load factors for the small general service classes with those used by other Atlantic Canada utilities.

The materiality of the differences on cost allocations is assessed through the cost of service study. That assessment is not included in this report. However, the significant change in the demand cost allocations that will result from applying the results of the 2006 LRP may require the rebalancing of revenue requirements from some classes.



11. 2006 Load Research Study

**Detailed Sample Design**

**LOAD RESEARCH SAMPLE DESIGN - ISLAND INTERCONNECTED SYSTEM**

Domestic All Electric	From	To	Newfoundland Power			NL Hydro			Total Sample
			Population	Ratio Weight	Sample Size	Population	Ratio Weight	Sample Size	
Stratum 1 kWh Range	0	2000	32117	0.3634	12	3814	0.68671	1	13
Stratum 2 kWh Range	2001	2850	19805	0.22409	12	1003	0.18059	1	13
Stratum 3 kWh Range	2851	3550	16555	0.18732	12	737	0.1327	1	13
Stratum 4 kWh Range	3551	4400	12853	0.14543	12	0			12
Stratum 5 kWh Range	4401	-	7048	0.07975	12	0			12

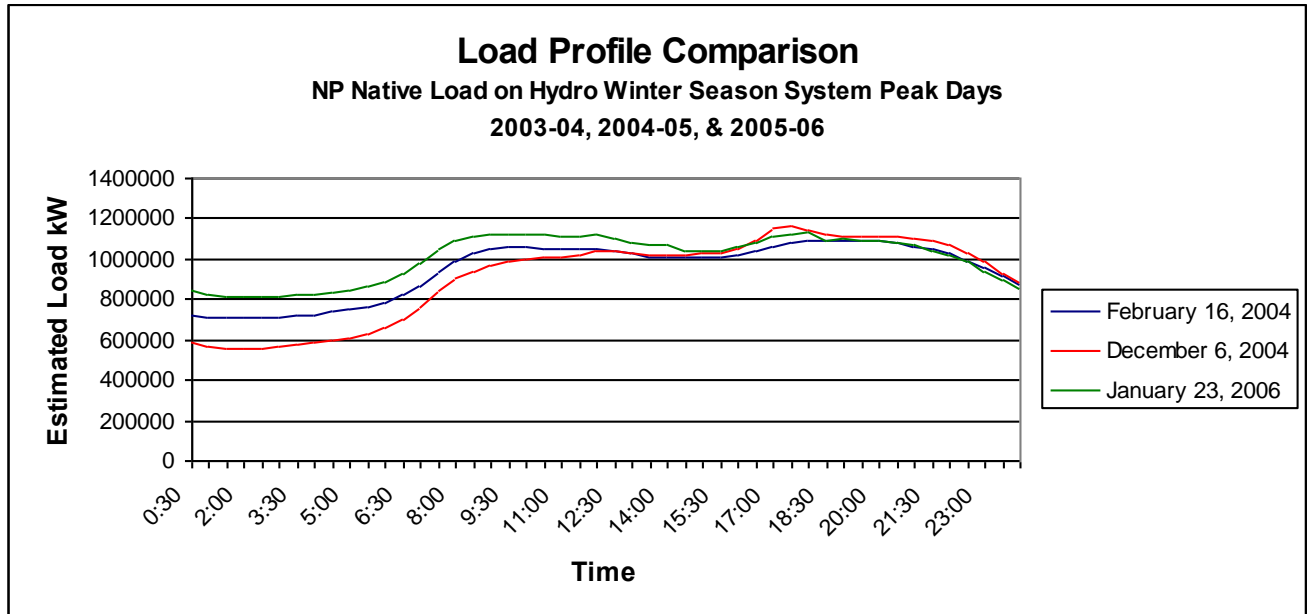
Domestic Regular	From	To	Newfoundland Power			NL Hydro			Total Sample
			Population	Ratio Weight	Sample Size	Population	Ratio Weight	Sample Size	
Stratum 1 kWh Range	0	810	31944	0.42482	18	5167	0.45056	3	21
Stratum 2 kWh Range	811	1140	18834	0.25047	18	3179	0.27721	2	20
Stratum 3 kWh Range	1141	1590	13583	0.18064	18	2115	0.18443	2	20
Stratum 4 kWh Range	1591	2670	7917	0.10529	18	751	0.06549	2	20
Stratum 5 kWh Range	2671	-	2917	0.03879	18	256	0.02232	2	20

G. S. 2.1	From	To	Newfoundland Power			NL Hydro			Total Sample
			Population	Ratio Weight	Sample Size	Population	Ratio Weight	Sample Size	
Stratum 1 kWh Range	0	920	5458	0.61402	18	1146	0.68174	3	21
Stratum 2 kWh Range	921	1560	1426	0.16042	18	263	0.15645	3	21
Stratum 3 kWh Range	1561	2240	944	0.10620	18	145	0.08626	3	21
Stratum 4 kWh Range	2241	3080	661	0.07436	18	99	0.05889	2	20
Stratum 5 kWh Range	3081	-	400	0.04500	18	28	0.01666	2	20

G. S. 2.2	From	To	Newfoundland Power			NL Hydro			Total Sample
			Population	Ratio Weight	Sample Size	Population	Ratio Weight	Sample Size	
Stratum 1 kW Range	0	16	2836	0.39764	18	393	0.4828	2	20
Stratum 2 kW Range	16.1	26	1999	0.28029	18	235	0.2887	2	20
Stratum 3 kW Range	26.1	40	1149	0.16110	18	107	0.13145	2	20
Stratum 4 kW Range	40.1	60	643	0.09016	18	53	0.06511	2	20
Stratum 5 kW Range	60.1	-	505	0.07081	18	26	0.03194	2	20

G. S. 2.3	From	To	Newfoundland Power			NL Hydro			Total Sample
			Population	Ratio Weight	Sample Size	Population	Ratio Weight	Sample Size	
Stratum 1 kW Range	0	138	300	0.32859	18	32	0.4828	3	21
Stratum 2 kW Range	138.1	230	294	0.32202	18	20	0.2887	3	21
Stratum 3 kW Range	230.1	368	169	0.18510	18	4	0.13145	1	19
Stratum 4 kW Range	368.1	553	97	0.10624	18	3	0.06511	1	19
Stratum 5 kW Range	553.1	-	53	0.05805	18	0	0.03194	0	18

### System Peak Day Curves



11. 2006 Load Research Study

<b>Load Profile Data</b>			
<b>Winter Season Peak Days</b>			
<b>2003-04, 2004-05, &amp; 2005-06</b>			
	February 16, 2004	December 6, 2004	January 23, 2006
0:30	724567	588552	842021
1:00	714595	569634	821868
1:30	707529	559172	813981
2:00	706136	555814	809761
2:30	706003	557750	811764
3:00	711094	562430	814670
3:30	718524	572759	820302
4:00	725540	582441	826267
4:30	737435	594338	834561
5:00	749041	610621	844828
5:30	762960	630996	867172
6:00	779516	654657	887852
6:30	826381	701152	926769
7:00	866086	766005	978883
7:30	937215	848803	1052982
8:00	987708	910142	1095147
8:30	1024702	941734	1111981
9:00	1045505	965775	1117455
9:30	1060264	983646	1125273
10:00	1062191	1000390	1124512
10:30	1054260	1007176	1118654
11:00	1049729	1009589	1110966
11:30	1046301	1023922	1114528
12:00	1049798	1044620	1126503
12:30	1037180	1043066	1101470
13:00	1027920	1032957	1085485
13:30	1005664	1022073	1067156
14:00	1007665	1016168	1067482
14:30	1008890	1017257	1040664
15:00	1003892	1024786	1037569
15:30	1010989	1031059	1043351
16:00	1023024	1047858	1056909
16:30	1042293	1093751	1076446
17:00	1058423	1151617	1112951
17:30	1077249	1160710	1126275
18:00	1095358	1146097	1127206
18:30	1088197	1118135	1094649
19:00	1089042	1110743	1096346
19:30	1090973	1114586	1090896
20:00	1086595	1111274	1089371
20:30	1079553	1113445	1080768
21:00	1064203	1104006	1067529
21:30	1048990	1087270	1039844
22:00	1030779	1067321	1016801
22:30	990132	1028390	984066
23:00	959982	987633	940604
23:30	916767	931222	897857
0:00	873958	887880	857877

11. 2006 Load Research Study

Class Load Estimates

Load Estimates - Domestic Regular							
	Dec-2003	Jan-2004	Feb-2004	Mar-2004	Apr-2004	May-2004	Jun-2004
Residential Sample Size (At System Peak)	88	89	90	90	90	90	90
Monthly Billed Energy (kWh)	85,326,031	85,409,678	76,292,208	77,912,046	67,404,654	62,847,091	55,546,625
Residential Peak Load (kW)	217,407	189,649	172,964	171,263	140,709	160,140	122,456
Date/Time	12/24/2003 18:00	1/11/2004 17:30	2/16/2004 19:30	3/18/2004 19:30	4/25/2004 11:30	5/15/2004 17:30	6/6/2004 10:00
Relative Accuracy at 90% Confidence	11.0%	12.4%	17.2%	15.5%	13.6%	17.2%	20.1%
Residential Load at System Peak	165,765	169,097	172,599	118,449	124,031	102,382	133,009
Date/Time	12/8/2003 17:00	1/16/2004 17:30	2/16/2004 18:00	3/18/2004 9:00	4/26/2004 11:30	5/13/2004 9:45	6/5/2004 12:00
Relative Accuracy at 90% Confidence	12.0%	9.6%	8.8%	11.5%	16.3%	17.2%	14.9%
Coincidence Factor	76.2%	89.2%	99.8%	69.2%	88.1%	63.9%	108.6%
NP Load at Hydro System Peak (kW)	928,461	1,012,102	1,099,424	918,612	833,032	716,820	636,553
Contribution as % of System Peak	17.85%	16.71%	15.70%	12.89%	14.89%	14.28%	20.90%

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	Jul-2004	Aug-2004	Sep-2004	Oct-2004	Nov-2004	Dec-2004	Jan-2005
Residential Sample Size (At System Peak)	90	90	90	94	94	95	95
Monthly Billed Energy (kWh)	51,155,628	49,951,680	53,962,437	62,139,275	68,413,897	89,576,601	87,533,456
Residential Peak Load (kW)	147,519	109,371	127,588	159,837	171,648	205,610	222,267
Date/Time	7/1/2004 12:30	8/25/2004 16:00	9/21/2004 20:30	10/30/2004 11:30	11/21/2004 11:30	12/27/2004 17:30	1/22/2005 18:00
Relative Accuracy at 90% Confidence	18.6%	16.7%	14.4%	16.4%	15.1%	8.8%	14.1%
Residential Load at System Peak	85,881	95,741	81,097	112,501	160,701	184,859	230,026
Date/Time	7/12/2004 12:00	8/30/2004 17:00	9/22/2004 12:00	10/29/2004 19:15	11/22/2004 17:15	12/6/2004 16:45	1/6/2005 18:00
Relative Accuracy at 90% Confidence	17.8%	13.0%	16.2%	13.8%	14.7%	11.0%	9.2%
Coincidence Factor	58.2%	87.5%	63.6%	70.4%	93.6%	89.9%	103.5%
NP Load at Hydro System Peak (kW)	539,794	518,595	622,336	785,877	851,521	1,142,661	1,121,749
Contribution as % of System Peak	15.91%	18.46%	13.03%	14.32%	18.87%	16.18%	20.51%

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	Feb-2005	Mar-2005	Apr-2005	May-2005	Jun-2005	Jul-2005	Aug-2005
Residential Sample Size (At System Peak)	99	98	100	100	100	100	100
Monthly Billed Energy (kWh)	73,581,622	77,240,317	67,198,630	61,429,912	53,541,812	49,266,984	49,644,687
Residential Peak Load (kW)	181,109	154,212	151,204	130,318	121,996	112,794	110,993
Date/Time	2/20/2005 11:30	3/6/2005 12:00	4/2/2005 12:00	5/15/2005 10:30	6/19/2005 10:00	7/1/2005 11:00	8/28/2005 10:30
Relative Accuracy at 90% Confidence	16.7%	21.3%	21.7%	15.8%	16.6%	14.8%	18.7%
Residential Load at System Peak	143,603	150,898	134,704	109,695	120,401	81,431	90,607
Date/Time	2/22/2005 8:30	3/5/2005 18:45	3/31/2005 20:00	5/20/2005 12:00	6/14/2005 17:00	7/15/2005 11:45	8/5/2005 12:00
Relative Accuracy at 90% Confidence	12.0%	12.7%	15.8%	17.8%	11.5%	19.8%	19.1%
Coincidence Factor	79.3%	97.9%	89.1%	84.2%	98.7%	72.2%	81.6%
NP Load at Hydro System Peak (kW)	1,049,084	925,250	871,642	725,616	636,815	504,391	500,522
Contribution as % of System Peak	13.7%	16.3%	15.5%	15.1%	18.9%	16.1%	18.1%

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	Sep-2005	Oct-2005	Nov-2005	Dec-2005	Jan-2006	Feb-2006	Mar-2006
Residential Sample Size (At System Peak)	100	99	99	99	95	98	97
Residential Billed Energy (MWh)	51,710,134	61,507,680	65,662,690	86,596,566	82,190,170	74,251,713	76,250,505
Residential Peak Load (kW)	130,732	125,381	118,776	235,058	226,196	198,227	149,085
Date/Time	9/18/2005 11:00	10/26/2005 18:30	11/29/2005 8:00	12/24/2005 17:30	1/2/2006 17:00	2/25/2006 17:30	3/11/2006 9:00
Relative Accuracy at 90% Confidence	16.7%	10.7%	16.6%	11.7%	13.2%	12.2%	13.9%
Residential Load at System Peak	100,016	117,281	149,150	181,902	175,535	140,721	139,159
Date/Time	9/12/2005 17:15	10/12/2005 19:30	11/28/2005 17:30	12/22/2005 19:15	1/23/2006 17:45	2/23/2006 8:45	3/1/2006 8:15
Relative Accuracy at 90% Confidence	15.8%	11.5%	10.9%	10.3%	9.6%	11.4%	12.3%
Coincidence Factor	76.5%	93.5%	125.6%	77.4%	77.6%	71.0%	93.3%
System Peak (kW)	565,831	685,036	847,527	1,040,708	1,123,322	1,026,356	1,003,642
Contribution as % of System Peak	17.7%	17.1%	17.6%	17.5%	15.6%	13.7%	13.9%

11. 2006 Load Research Study

Load Estimates - Domestic All-Electric								
	Dec-2003	Jan-2004	Feb-2004	Mar-2004	Apr-2004	May-2004	Jun-2004	
Residential Sample Size (At System Peak)	60	60	60	61	60	59	59	
Monthly Billed Energy (kWh)	235,388,690	269,918,521	243,460,519	241,039,146	184,873,202	155,597,889	118,229,232	
Residential Peak Load (kW)	483,894	519,347	537,116	474,963	420,827	326,276	321,629	
Date/Time	12/24/2003 18:00	1/11/2004 17:30	2/16/2004 19:30	3/18/2004 19:30	4/25/2004 11:30	5/15/2004 17:30	6/6/2004 10:00	
Relative Accuracy at 90% Confidence	20.3%	13.0%	9.5%	11.0%	13.9%	16.5%	17.2%	
Residential Load at System Peak	429,408	483,787	500,611	391,578	401,925	268,727	298,911	
Date/Time	12/8/2003 17:00	1/16/2004 17:30	2/16/2004 18:00	3/18/2004 9:00	4/26/2004 11:30	5/13/2004 9:45	6/5/2004 12:00	
Relative Accuracy at 90% Confidence	26.4%	11.8%	10.4%	12.0%	18.6%	18.0%	19.1%	
Coincidence Factor	88.7%	93.2%	93.2%	82.4%	95.5%	82.4%	92.9%	
NP Load at Hydro System Peak (kW)	928,461	1,012,102	1,099,424	918,612	833,032	716,820	636,553	
Contribution as % of System Peak	46.2%	47.8%	45.5%	42.6%	48.2%	37.5%	47.0%	
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	Jul-2004	Aug-2004	Sep-2004	Oct-2004	Nov-2004	Dec-2004	Jan-2005	
Residential Sample Size (At System Peak)	59	59	59	59	59	60	59	
Monthly Billed Energy (kWh)	87,800,315	79,359,674	101,378,704	142,768,784	194,440,867	259,009,990	291,361,937	
Residential Peak Load (kW)	173,560	205,976	274,028	372,417	416,887	549,311	544,572	
Date/Time	7/1/2004 12:30	8/25/2004 16:00	9/21/2004 20:30	10/30/2004 11:30	11/21/2004 11:30	12/27/2004 17:30	1/22/2005 18:00	
Relative Accuracy at 90% Confidence	25.2%	18.9%	16.5%	12.2%	13.2%	9.7%	9.4%	
Residential Load at System Peak	167,786	203,072	173,457	315,255	370,708	560,739	507,868	
Date/Time	7/12/2004 12:00	8/30/2004 17:00	9/22/2004 12:00	10/29/2004 19:15	11/22/2004 17:15	12/6/2004 16:45	1/6/2005 18:00	
Relative Accuracy at 90% Confidence	17.1%	26.6%	22.7%	11.1%	9.8%	6.9%	9.4%	
Coincidence Factor	96.7%	98.6%	63.3%	84.7%	88.9%	102.1%	93.3%	
NP Load at Hydro System Peak (kW)	539,794	518,595	622,336	785,877	851,521	1,142,661	1,121,749	
Contribution as % of System Peak	31.1%	39.2%	27.9%	40.1%	43.5%	49.1%	45.3%	
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	Feb-2005	Mar-2005	Apr-2005	May-2005	Jun-2005	Jul-2005	Aug-2005	
Residential Sample Size (At System Peak)	62	62	62	62	62	62	62	
Monthly Billed Energy (kWh)	238,172,553	245,656,100	195,439,699	155,545,991	114,893,778	84,566,508	83,254,888	
Residential Peak Load (kW)	492,619	441,945	356,954	390,586	298,881	190,309	185,192	
Date/Time	2/20/2005 11:30	3/6/2005 12:00	4/2/2005 12:00	5/15/2005 10:30	6/19/2005 10:00	7/1/2005 11:00	8/28/2005 10:30	
Relative Accuracy at 90% Confidence	12.1%	10.2%	13.1%	14.8%	18.4%	23.4%	21.2%	
Residential Load at System Peak	493,598	406,662	386,538	292,618	244,520	124,890	142,285	
Date/Time	2/22/2005 8:30	3/5/2005 18:45	3/31/2005 20:00	5/20/2005 12:00	6/14/2005 17:00	7/15/2005 11:45	8/5/2005 12:00	
Relative Accuracy at 90% Confidence	11.3%	9.5%	13.1%	15.2%	20.4%	19.7%	26.8%	
Coincidence Factor	100.2%	92.0%	108.3%	74.9%	81.8%	65.6%	76.8%	
NP Load at Hydro System Peak (kW)	1,049,084	925,250	871,642	725,616	636,815	504,391	500,522	
Contribution as % of System Peak	47.1%	44.0%	44.3%	40.3%	38.4%	24.8%	28.4%	
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	Sep-2005	Oct-2005	Nov-2005	Dec-2005	Jan-2006	Feb-2006	Mar-2006	
Residential Sample Size (At System Peak)	62	63	63	62	62	61	62	
Monthly Billed Energy (kWh)	94,728,649	144,580,505	183,007,448	246,431,641	262,424,182	248,160,180	244,247,555	
Residential Peak Load (kW)	219,191	367,530	431,440	481,918	479,698	474,518	493,598	
Date/Time	9/18/2005 11:00	10/26/2005 18:30	11/29/2005 8:00	12/24/2005 17:30	1/2/2006 17:00	2/25/2006 17:30	3/1/2006 9:00	
Relative Accuracy at 90% Confidence	16.0%	15.0%	11.6%	9.0%	8.9%	8.1%	9.1%	
Residential Load at System Peak	198,141	283,627	383,435	486,571	516,635	503,737	489,151	
Date/Time	9/12/2005 17:15	10/12/2005 19:30	11/28/2005 17:30	12/22/2005 19:15	1/23/2006 17:45	2/23/2006 8:15	3/1/2006 8:15	
Relative Accuracy at 90% Confidence	14.4%	11.7%	11.0%	7.1%	8.7%	8.1%	8.5%	
Coincidence Factor	90.4%	77.2%	88.9%	101.0%	107.7%	106.2%	99.1%	
NP Load at Hydro System Peak (kW)	565,831	685,036	847,527	1,040,708	1,123,322	1,026,356	1,003,642	
Contribution as % of System Peak	35.0%	41.4%	45.2%	46.8%	46.0%	49.1%	48.7%	

11. 2006 Load Research Study

Load Estimates - Total Domestic Rate 1.1							
	Dec-2003	Jan-2004	Feb-2004	Mar-2004	Apr-2004	May-2004	Jun-2004
Residential Sample Size (At System Peak)	148	149	150	151	150	149	149
Monthly Billed Energy (kWh)	320,141,976	355,614,588	318,809,595	319,282,639	253,270,237	217,100,374	174,370,276
Residential Peak Load (kW)	708,643	715,973	710,966	650,607	558,655	491,997	438,667
Date/Time	12/24/2003 18:00	1/11/2004 17:30	2/16/2004 19:30	3/18/2004 19:30	4/25/2004 11:30	5/15/2004 17:30	6/6/2004 10:00
Relative Accuracy at 90% Confidence	15.4%	10.0%	8.3%	8.9%	11.1%	12.4%	13.8%
Residential Load at System Peak	596,370	657,114	676,820	508,052	520,699	369,629	430,615
Date/Time	12/8/2003 17:00	1/16/2004 17:30	2/16/2004 18:00	3/18/2004 9:00	4/26/2004 11:30	5/13/2004 9:45	6/5/2004 12:00
Relative Accuracy at 90% Confidence	19.6%	9.1%	8.0%	9.7%	14.8%	13.9%	14.0%
Coincidence Factor	84.2%	91.8%	95.2%	78.1%	93.2%	75.1%	98.2%
NP Load at Hydro System Peak (kW)	928,461	1,012,102	1,099,424	918,612	833,032	716,820	636,553
Contribution as % of System Peak	64.2%	64.9%	61.6%	55.3%	62.5%	51.6%	67.6%
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	Jul-2004	Aug-2004	Sep-2004	Oct-2004	Nov-2004	Dec-2004	Jan-2005
Residential Sample Size (At System Peak)	149	149	149	153	153	155	155
Monthly Billed Energy (kWh)	138,955,943	129,311,354	155,341,141	204,908,059	262,854,764	348,586,591	378,895,393
Residential Peak Load (kW)	330,310	311,691	397,819	531,780	594,825	758,470	774,423
Date/Time	7/1/2004 12:30	8/25/2004 16:00	9/21/2004 20:30	10/30/2004 11:30	11/21/2004 11:30	12/27/2004 17:30	1/22/2005 18:00
Relative Accuracy at 90% Confidence	16.5%	14.0%	12.3%	9.8%	10.3%	7.4%	7.8%
Residential Load at System Peak	251,303	293,029	252,220	422,562	539,034	743,539	747,906
Date/Time	7/12/2004 12:00	8/30/2004 17:00	9/22/2004 12:00	10/29/2004 19:15	11/22/2004 17:15	12/6/2004 16:45	1/6/2005 18:00
Relative Accuracy at 90% Confidence	12.9%	18.6%	16.7%	9.1%	8.2%	5.9%	7.0%
Coincidence Factor	76.1%	94.0%	63.4%	79.5%	90.6%	98.0%	96.6%
NP Load at Hydro System Peak (kW)	539,794	518,595	622,336	785,877	851,521	1,142,661	1121749
Contribution as % of System Peak	46.6%	56.5%	40.5%	53.8%	63.3%	65.1%	66.7%
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	Feb-2005	Mar-2005	Apr-2005	May-2005	Jun-2005	Jul-2005	Aug-2005
Residential Sample Size (At System Peak)	161	160	162	162	162	162	162
Monthly Billed Energy (kWh)	311,754,175	322,896,417	262,638,329	216,975,903	168,435,590	133,833,492	132,899,575
Residential Peak Load (kW)	681,341	601,363	517,311	515,098	417,196	303,480	296,302
Date/Time	2/20/2005 11:30	3/6/2005 12:00	4/2/2005 12:00	5/15/2005 10:30	6/19/2005 10:00	7/1/2005 11:00	8/28/2005 10:30
Relative Accuracy at 90% Confidence	9.9%	9.2%	11.0%	11.8%	14.2%	15.7%	15.0%
Residential Load at System Peak	669,965	565,423	525,736	400,889	366,295	208,020	234,082
Date/Time	2/22/2005 8:30	3/5/2005 18:45	3/31/2005 20:00	5/20/2005 12:00	6/14/2005 17:00	7/15/2005 11:45	8/5/2005 12:00
Relative Accuracy at 90% Confidence	7.8%	7.7%	10.4%	12.1%	14.2%	14.1%	17.8%
Coincidence Factor	98%	94%	102%	78%	88%	69%	79%
NP Load at Hydro System Peak (kW)	1,049,084	925,250	871,642	725,616	636,815	504,391	500,522
Contribution as % of System Peak	63.9%	61.1%	60.3%	55.2%	57.5%	41.2%	46.8%
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	Sep-2005	Oct-2005	Nov-2005	Dec-2005	Jan-2006	Feb-2006	Mar-2006
Residential Sample Size (At System Peak)	162	162	162	161	155	159	159
Monthly Billed Energy (kWh)	146,438,783	206,088,185	248,670,138	333,028,207	344,614,352	322,411,893	320,498,060
Residential Peak Load (kW)	352,382	484,861	539,947	734,032	726,452	693,739	641,333
Date/Time	9/18/2005 11:00	10/26/2005 18:30	11/29/2005 8:00	12/24/2005 17:30	1/2/2006 17:00	2/25/2006 17:30	3/1/2006 9:00
Relative Accuracy at 90% Confidence	11.7%	11.4%	9.8%	7.2%	7.1%	11.7%	7.8%
Residential Load at System Peak	296,370	400,075	535,884	671,307	695,863	649,286	624,660
Date/Time	9/12/2005 17:15	10/12/2005 19:30	11/28/2005 17:30	12/22/2005 19:15	1/23/2006 17:45	2/23/2006 8:15	3/1/2006 8:15
Relative Accuracy at 90% Confidence	11.1%	8.9%	8.5%	5.9%	6.9%	10.4%	7.2%
Coincidence Factor	84.1%	82.5%	99.2%	91.5%	95.8%	93.6%	97.4%
NP Load at Hydro System Peak (kW)	565,831	685,036	847,527	1,040,708	1,123,322	1,026,356	1,003,642
Contribution as % of System Peak	52.4%	58.4%	63.2%	64.5%	61.9%	63.3%	62.2%

11. 2006 Load Research Study

Load Estimates - Rate 2.1- General Service 0-10 kw							
	Dec-2003	Jan-2004	Feb-2004	Mar-2004	Apr-2004	May-2004	Jun-2004
Rate 2.1 Sample Size at System Peak	92	93	93	93	92	91	91
Monthly Billed Energy (kWh)	9,220,003	10,393,724	9,593,927	9,817,972	8,110,608	7,371,997	6,591,345
Rate 2.1 Peak Load (kW)	20,171	20,394	22,504	21,386	18,953	19,715	19,152
Date/Time	12/22/2003 10:00	1/15/2004 11:30	2/17/2004 11:00	3/9/2004 10:30	4/1/2004 10:30	5/10/2004 10:30	6/1/2004 10:00
Relative Accuracy at 90% Confidence	12.4%	8.2%	8.2%	13.2%	14.4%	23.8%	22.9%
Rate 2.1 Load at System Peak	14,524	15,194	16,773	16,599	17,509	15,704	11,583
Date/Time	12/8/2003 17:00	1/16/2004 17:30	2/16/2004 18:00	3/18/2004 9:00	4/26/2004 11:30	5/13/2004 9:45	6/5/2004 12:00
Relative Accuracy at 90% Confidence	7.5%	6.9%	5.7%	6.3%	15.1%	8.6%	11.1%
Coincidence Factor	72.0%	74.5%	74.5%	77.6%	92.4%	79.7%	60.5%
NP Load at Hydro System Peak (kW)	928,461	1,012,102	1,099,424	918,612	833,032	716,820	636,553
Rate 2.1 Contribution as % of System Peak	1.56%	1.50%	1.5%	1.8%	2.1%	2.2%	1.8%
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	Jul-2004	Aug-2004	Sep-2004	Oct-2004	Nov-2004	Dec-2004	Jan-2005
Rate 2.1 Sample Size at System Peak	91	91	91	95	95	96	97
Monthly Billed Energy (kWh)	6,371,885	6,266,352	6,254,607	7,064,375	8,204,611	9,714,333	10,826,617
Rate 2.1 Peak Load (kW)	16,886	16,890	16,618	17,521	20,200	22,405	21,711
Date/Time	7/30/2004 10:30	8/10/2004 11:00	9/22/2004 12:00	10/29/2004 10:00	11/29/2004 11:30	12/7/2004 11:00	1/10/2005 11:30
Relative Accuracy at 90% Confidence	19.2%	26.7%	19.9%	17.6%	16.5%	11.7%	9.9%
Rate 2.1 Load at System Peak	12,332	8,095	16,618	11,476	12,315	17,435	17,605
Date/Time	7/12/2004 12:00	8/30/2004 17:00	9/22/2004 12:00	10/29/2004 19:15	11/22/2004 17:15	12/6/2004 16:45	1/6/2005 18:00
Relative Accuracy at 90% Confidence	16.7%	13.9%	19.9%	8.7%	7.1%	6.6%	6.6%
Coincidence Factor	73.0%	47.9%	100.0%	65.5%	61.0%	77.8%	81.1%
NP Load at Hydro System Peak (kW)	539,794	518,595	622,336	785,877	851,521	1,142,661	1,121,749
Rate 2.1 Contribution as % of System Peak	2.3%	1.6%	2.7%	1.5%	1.4%	1.5%	1.6%
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	Feb-2005	Mar-2005	Apr-2005	May-2005	Jun-2005	Jul-2005	Aug-2005
Rate 2.1 Sample Size at System Peak	100	101	101	102	104	104	105
Monthly Billed Energy (kWh)	9,236,664	9,626,168	8,134,658	7,324,631	6,441,744	6,307,202	6,248,167
Rate 2.1 Peak Load (kW)	23,866	21,063	20,889	18,523	17,678	17,458	16,429
Date/Time	2/22/2005 11:00	3/1/2005 15:30	4/19/2005 11:00	5/24/2005 12:30	6/14/2005 10:30	7/14/2005 12:00	8/22/2005 10:30
Relative Accuracy at 90% Confidence	20.3%	27.7%	17.9%	29.1%	19.4%	25.3%	20.6%
Rate 2.1 Load at System Peak	16,380	13,954	17,792	13,990	10,431	10,279	14,161
Date/Time	2/22/2005 8:30	3/5/2005 18:45	3/31/2005 20:00	5/20/2005 12:00	6/14/2005 17:00	7/15/2005 11:45	8/5/2005 12:00
Relative Accuracy at 90% Confidence	7.8%	6.4%	23.7%	11.3%	13.6%	12.6%	14.1%
Coincidence Factor	68.6%	66.2%	85.2%	75.5%	59.0%	58.9%	86.2%
NP Load at Hydro System Peak (kW)	1,049,084	925,250	871,642	725,616	636,815	504,391	500,522
Rate 2.1 Contribution as % of System Peak	1.6%	1.5%	2.0%	1.9%	1.6%	2.0%	2.8%
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	Sep-2005	Oct-2005	Nov-2005	Dec-2005	Jan-2006	Feb-2006	Mar-2006
Rate 2.1 Sample Size at System Peak	102	102	103	98	99	100	98
Monthly Billed Energy (kWh)	6,051,657	6,972,161	7,740,881	9,052,402	9,898,852	9,105,961	9,214,934
Rate 2.1 Peak Load (kW)	15,158	17,177	18,274	20,176	19,613	20,351	18,742
Date/Time	9/29/2005 10:30	10/27/2005 13:00	11/28/2005 10:00	12/22/2005 9:30	1/23/2006 10:30	2/20/2006 10:00	3/1/2006 9:30
Relative Accuracy at 90% Confidence	21.1%	28.5%	22.0%	17.2%	8.5%	16.2%	7.8%
Rate 2.1 Load at System Peak	7,683	10,706	12,451	14,879	16,750	16,681	15,121
Date/Time	9/12/2005 17:15	10/12/2005 19:30	11/28/2005 17:30	12/22/2005 19:15	1/23/2006 17:45	2/23/2006 8:15	3/1/2006 8:15
Relative Accuracy at 90% Confidence	7.9%	9.9%	9.4%	7.1%	5.6%	7.7%	6.0%
Coincidence Factor	50.7%	62.3%	68.1%	73.7%	85.4%	82.0%	80.7%
NP Load at Hydro System Peak (kW)	565,831	685,036	847,527	1,040,708	1,130,873	1,026,356	1,003,642
Rate 2.1 Contribution as % of System Peak	1.4%	1.6%	1.5%	1.4%	1.5%	1.6%	1.5%

11. 2006 Load Research Study

Load Estimates - Rate 2.2 - General Service 10 - 100 kw							
	Dec-2003	Jan-2004	Feb-2004	Mar-2004	Apr-2004	May-2004	Jun-2004
Rate 2.2 Sample Size at System Peak	90	90	90	90	90	90	90
Monthly Billed Energy (kWh)	55,311,753	64,349,693	59,187,147	60,546,723	49,550,308	44,824,863	40,266,774
Rate 2.2 Peak Load (kW)	113,997	123,577	126,947	112,851	106,633	97,204	93,056
Date/Time	12/15/2003 10:30	1/15/2004 10:00	2/16/2004 11:00	3/9/2004 10:30	4/26/2004 10:30	5/19/2004 10:00	6/1/2004 10:30
Relative Accuracy at 90% Confidence	5.7%	4.9%	5.3%	4.6%	5.8%	8.3%	8.5%
Rate 2.2 Load at System Peak	93,834	95,330	107,215	102,948	99,720	96,740	72,295
Date/Time	12/8/2003 17:00	1/16/2004 17:30	2/16/2004 18:00	3/18/2004 9:00	4/26/2004 11:30	5/13/2004 9:45	6/5/2004 12:00
Relative Accuracy at 90% Confidence	4.8%	4.8%	3.8%	4.7%	5.8%	6.7%	6.8%
Coincidence Factor	82.3%	77.1%	84.5%	91.2%	93.5%	99.5%	77.7%
NP Load at Hydro System Peak (kW)	928,461	1,012,102	1,099,424	918,612	833,032	716,820	636,553
Rate 2.2 Contribution as % of System Peak	10.1%	9.4%	9.8%	11.2%	12.0%	13.5%	11.4%
	Jul-2004	Aug-2004	Sep-2004	Oct-2004	Nov-2004	Dec-2004	Jan-2005
Rate 2.2 Sample Size at System Peak	90	88	88	92	93	94	95
Monthly Billed Energy (kWh)	39,581,329	38,987,597	38,276,013	43,231,744	51,194,588	60,029,849	67,536,084
Rate 2.2 Peak Load (kW)	85,282	83,665	91,954	97,741	108,144	124,334	126,967
Date/Time	7/15/2004 10:30	8/9/2004 11:00	9/21/2004 9:30	10/29/2004 10:30	11/22/2004 11:00	12/6/2004 11:30	1/6/2005 12:30
Relative Accuracy at 90% Confidence	7.4%	7.1%	9.4%	6.6%	7.2%	4.9%	4.3%
Rate 2.2 Load at System Peak	68,024	54,508	77,897	72,136	83,636	119,149	110,478
Date/Time	7/12/2004 12:00	8/30/2004 17:00	9/22/2004 12:00	10/29/2004 19:15	11/22/2004 17:15	12/6/2004 16:45	1/6/2005 18:00
Relative Accuracy at 90% Confidence	5.8%	6.1%	7.2%	7.0%	4.7%	4.4%	3.4%
Coincidence Factor	79.8%	65.1%	84.7%	73.8%	77.3%	95.8%	87.0%
NP Load at Hydro System Peak (kW)	539,794	518,595	622,336	785,877	851,521	1,142,661	1,121,749
Rate 2.2 Contribution as % of System Peak	12.6%	10.5%	12.5%	9.2%	9.8%	10.4%	9.8%
	Feb-2005	Mar-2005	Apr-2005	May-2005	Jun-2005	Jul-2005	Aug-2005
Rate 2.2 Sample Size at System Peak	98	98	98	98	98	98	98
Monthly Billed Energy (kWh)	57,935,121	61,155,318	51,797,670	45,758,378	39,833,633	39,866,302	38,943,156
Rate 2.2 Peak Load (kW)	124,479	114,671	107,746	98,989	86,598	84,228	80,794
Date/Time	2/15/2005 10:00	3/1/2005 10:00	4/14/2005 9:00	200505/16 10:30	6/8/2005 10:00	7/20/2005 10:30	8/22/2005 13:30
Relative Accuracy at 90% Confidence	4.4%	5.1%	7.4%	8.0%	7.5%	6.9%	8.2%
Rate 2.2 Load at System Peak	107,432	89,245	95,777	93,817	61,478	78,965	72,971
Date/Time	2/22/2005 8:30	3/5/2005 18:45	3/31/2005 20:00	5/20/2005 12:00	6/14/2005 17:00	7/15/2005 11:45	8/5/2005 12:00
Relative Accuracy at 90% Confidence	4.1%	5.1%	7.2%	5.7%	6.0%	5.1%	6.4%
Coincidence Factor	86.3%	77.8%	88.9%	94.8%	71.0%	93.8%	90.3%
NP Load at Hydro System Peak (kW)	1,049,084	925,250	871,642	725,616	636,815	504,391	500,522
Rate 2.2 Contribution as % of System Peak	10.2%	9.6%	11.0%	12.9%	9.7%	15.7%	14.6%
	Sep-2005	Oct-2005	Nov-2005	Dec-2005	Jan-2006	Feb-2006	Mar-2006
Rate 2.2 Sample Size at System Peak	97	97	96	97	97	97	97
Monthly Billed Energy (kWh)	37,919,781	44,037,851	49,512,018	57,262,756	64,153,511	60,078,257	60,881,052
Rate 2.2 Peak Load (kW)	83,229	94,017	104,777	117,102	138,979	126,718	118,419
Date/Time	9/26/2005 11:00	10/12/2005 10:30	11/29/2005 11:00	12/22/2005 10:00	1/23/2006 11:00	2/28/2006 11:00	3/1/2006 10:00
Relative Accuracy at 90% Confidence	8.8%	7.3%	6.4%	5.3%	4.9%	5.1%	4.9%
Rate 2.2 Load at System Peak	53,474	65,981	83,394	95,557	120,112	107,247	108,404
Date/Time	9/12/2005 17:15	10/12/2005 19:30	11/28/2005 17:30	12/22/2005 19:15	1/23/2005 17:45	2/23/2006 8:15	3/1/2006 8:15
Relative Accuracy at 90% Confidence	4.9%	5.8%	5.2%	5.9%	4.4%	5.1%	4.5%
Coincidence Factor	64.2%	70.2%	79.6%	81.6%	86.4%	84.6%	91.5%
NP Load at Hydro System Peak (kW)	565,831	685,036	847,527	1,040,708	1,123,322	1,026,356	1,003,642
Rate 2.2 Contribution as % of System Peak	9.5%	9.6%	9.8%	9.2%	10.7%	10.4%	10.8%



11. 2006 Load Research Study

**Load Estimates - Rate 2.3 - General Service 110-100 KVA**

	Dec-2003	Jan-2004	Feb-2004	Mar-2004	Apr-2004	May-2004	Jun-2004
Rate 2.3 Sample Size	89	90	90	90	90	90	90
Monthly Billed Energy (kWh)	78,059,352	86,923,871	81,151,214	82,657,669	69,945,367	66,398,322	60,203,210
Rate 2.3 Peak Load (kW)	151,415	166,883	166,827	152,848	138,435	134,875	118,803
Date/Time	12/3/2003 9:30	1/15/2004 9:30	2/17/2004 10:30	3/18/2004 9:00	4/21/2004 8:30	5/31/2004 8:30	6/1/2004 8:30
Relative Accuracy at 90% Confidence	12.1%	4.1%	4.6%	5.0%	5.1%	6.0%	11.8%
Rate 2.3 Load at System Peak	122,204	131,371	141,160	152,848	130,453	131,183	87,337
Date/Time	12/8/2003 17:00	1/16/2004 17:30	2/16/2004 18:00	3/18/2004 9:00	4/26/2004 11:30	5/13/2004 9:45	6/5/2004 12:00
Relative Accuracy at 90% Confidence	4.6%	4.1%	4.4%	5.0%	5.7%	4.9%	11.6%
Coincidence Factor	80.7%	78.7%	84.6%	100.0%	94.2%	97.3%	73.5%
NP Load at Hydro System Peak (kW)	928,461	1,012,102	1,099,424	918,612	833,032	716,820	636,553
Rate 2.3 Contribution as % of System Peak	13.2%	13.0%	12.8%	16.6%	15.7%	18.3%	13.7%

	Jul-2004	Aug-2004	Sep-2004	Oct-2004	Nov-2004	Dec-2004	Jan-2005
Rate 2.3 Sample Size	90	90	90	95	95	95	94
Monthly Billed Energy (kWh)	61,121,862	58,489,761	58,956,453	66,151,396	73,818,218	82,244,428	91,086,984
Rate 2.3 Peak Load (kW)	117,011	108,537	122,844	142,652	145,203	167,945	166,919
Date/Time	7/7/2004 10:30	8/12/2004 10:00	9/22/2004 9:30	10/29/2004 10:00	11/29/2004 10:30	12/7/2004 11:00	1/10/2005 10:00
Relative Accuracy at 90% Confidence	9.7%	4.3%	9.1%	12.2%	6.9%	4.9%	4.8%
Rate 2.3 Load at System Peak	100,253	80,305	114,331	105,512	115,447	147,305	137,673
Date/Time	7/12/2004 12:00	8/30/2004 17:00	9/22/2004 12:00	10/29/2004 19:15	11/22/2004 17:15	12/6/2004 16:45	1/6/2005 18:00
Relative Accuracy at 90% Confidence	5.9%	4.5%	7.4%	8.4%	6.0%	5.5%	4.4%
Coincidence Factor	85.7%	74.0%	93.1%	74.0%	79.5%	87.7%	82.5%
NP Load at Hydro System Peak (kW)	539,794	518,595	622,336	785,877	851,521	1,142,661	1,121,749
Rate 2.3 Contribution as % of System Peak	18.6%	15.5%	18.4%	13.4%	13.6%	12.9%	12.3%

	Feb-2005	Mar-2005	Apr-2005	May-2005	Jun-2005	Jul-2005	Aug-2005
Rate 2.3 Sample Size	97	97	97	96	96	96	96
Monthly Billed Energy (kWh)	78,123,788	82,322,865	71,858,575	65,774,476	60,405,101	60,818,345	58,181,489
Rate 2.3 Peak Load (kW)	165,787	156,448	144,710	135,216	122,153	113,185	111,949
Date/Time	2/22/2005 9:00	3/1/2005 9:30	4/15/2005 8:30	5/16/2005 10:00	6/14/2005 8:30	7/12/2005 10:00	8/31/2005 14:00
Relative Accuracy at 90% Confidence	5.1%	6.1%	4.9%	6.2%	7.8%	5.5%	5.9%
Rate 2.3 Load at System Peak	163,805	121,523	111,284	122,123	88,850	108,303	98,965
Date/Time	2/22/2005 8:30	3/5/2005 18:45	3/31/2005 20:00	5/20/2005 12:00	6/14/2005 17:00	7/15/2005 11:45	8/5/2005 12:00
Relative Accuracy at 90% Confidence	4.9%	4.8%	4.0%	5.2%	4.7%	4.4%	4.3%
Coincidence Factor	98.8%	77.7%	76.9%	90.3%	72.7%	95.7%	88.4%
NP Load at Hydro System Peak (kW)	1,049,084	925,250	871,642	725,616	636,815	504,391	500,522
Rate 2.3 Contribution as % of System Peak	15.6%	13.1%	12.8%	16.8%	14.0%	21.5%	19.8%

	Sep-2005	Oct-2005	Nov-2005	Dec-2005	Jan-2006	Feb-2006	Mar-2006
Rate 2.3 Sample Size	93	96	97	96	93	93	91
Monthly Billed Energy (kWh)	56,619,196	66,247,316	71,311,846	78,600,505	85,694,678	79,576,642	80,070,965
Rate 2.3 Peak Load (kW)	112,128	135,254	147,561	153,748	184,962	167,604	152,821
Date/Time	9/13/2005 10:30	10/26/2005 9:30	11/7/2005 10:00	12/22/2005 9:30	1/23/2006 12:00	2/28/2006 9:00	3/1/2006 9:00
Relative Accuracy at 90% Confidence	7.4%	6.6%	7.2%	5.3%	5.6%	5.9%	6.9%
Rate 2.3 Load at System Peak	82,522	95,508	114,914	112,973	140,877	163,932	152,253
Date/Time	9/12/2005 17:15	10/12/2005 19:30	11/28/2005 17:30	12/22/2005 19:15	1/23/2006 17:45	2/23/2006 8:15	3/1/2006 8:15
Relative Accuracy at 90% Confidence	6.5%	4.8%	4.6%	4.7%	4.3%	5.7%	6.3%
Coincidence Factor	73.6%	70.6%	77.9%	73.5%	76.2%	97.8%	99.6%
NP Load at Hydro System Peak (kW)	565,831	685,036	847,527	1,040,708	1,123,322	1,026,356	1,003,642
Rate 2.3 Contribution as % of System Peak	14.6%	13.9%	13.6%	10.9%	12.5%	16.0%	15.2%

11. 2006 Load Research Study

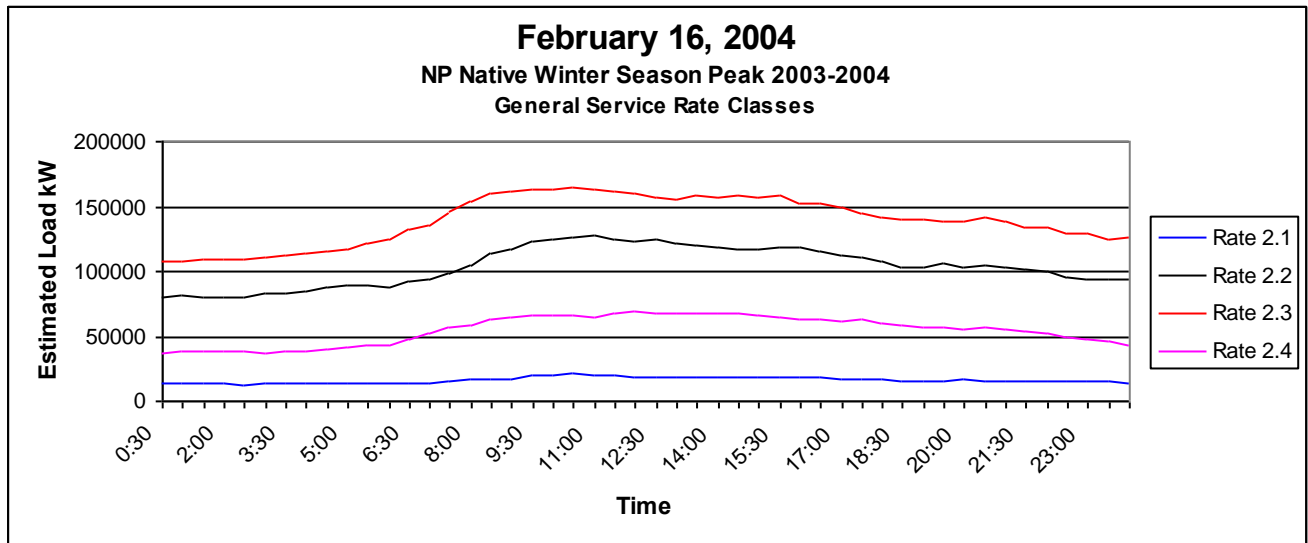
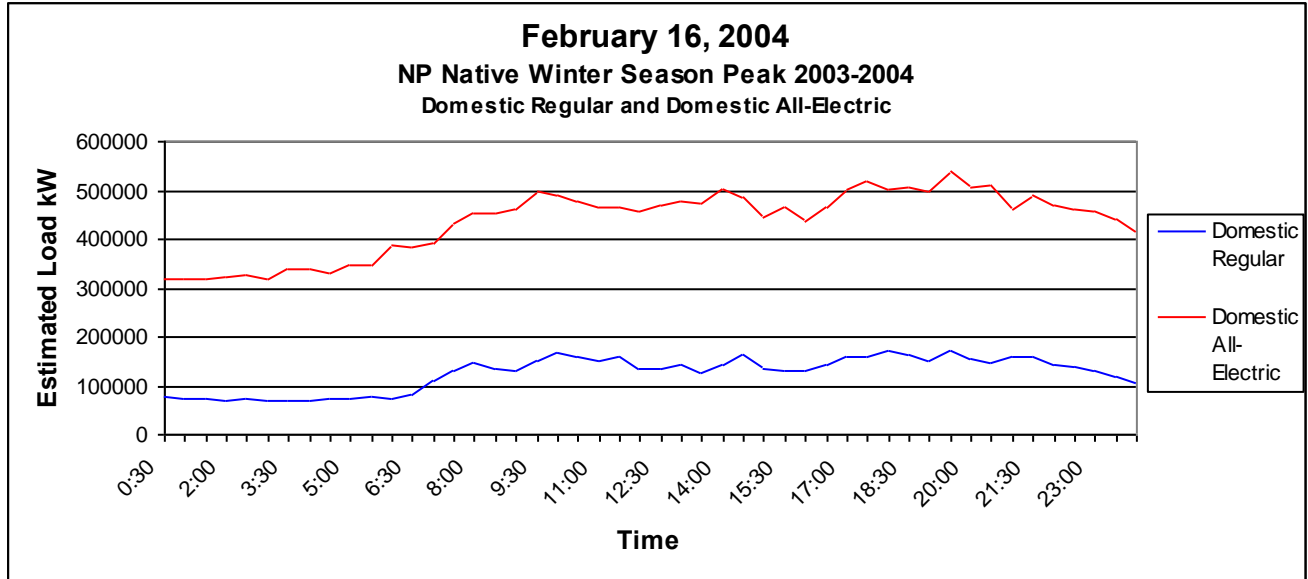
Load Estimates - Rate 2.4 - 1000 KVA and Over							
	Dec-2003	Jan-2004	Feb-2004	Mar-2004	Apr-2004	May-2004	Jun-2004
Rate 2.4 Sample Size	13	17	17	16	19	19	19
Monthly Billed Energy (kWh)	33,252,409	35,619,245	32,324,557	34,120,939	31,288,583	33,584,492	33,751,017
Rate 2.4 Peak Load (kW)	67,303	68,292	68,928	66,422	63,182	64,657	65,860
Date/Time	12/15/2003 12:00	1/8/2004 11:30	2/16/2004 12:00	3/17/2004 13:00	4/16/2004 12:00	5/19/2004 11:00	6/22/2004 11:00
Relative Accuracy at 90% Confidence	8.7%	7.3%	5.9%	5.9%	9.8%	4.8%	5.8%
Rate 2.4 Load at System Peak	58,432	56,689	60,625	64,290	56,502	63,419	47,022
Date/Time	12/8/2003 17:00	1/16/2004 17:30	2/16/2004 18:00	3/18/2004 9:00	4/26/2004 11:30	5/13/2004 9:45	6/5/2004 12:00
Relative Accuracy at 90% Confidence	6.5%	4.0%	4.5%	10.1%	6.7%	6.3%	7.5%
Coincidence Factor	86.8%	83.0%	88.0%	96.8%	89.4%	98.1%	71.4%
NP Load at Hydro System Peak (kW)	928,461	1,012,102	1,099,424	918,612	833,032	716,820	636,553
Rate 2.4 Contribution as % of System Peak	6.3%	5.6%	5.5%	7.0%	6.8%	8.8%	7.4%
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	Jul-2004	Aug-2004	Sep-2004	Oct-2004	Nov-2004	Dec-2004	Jan-2005
Rate 2.4 Sample Size	21	21	27	30	36	38	44
Monthly Billed Energy (kWh)	35,253,152	34,885,833	32,792,508	33,639,271	34,011,430	35,244,055	36,961,841
Rate 2.4 Peak Load (kW)	70,485	66,282	70,061	65,165	66,818	67,870	60,379
Date/Time	7/23/2004 10:30	8/3/2004 11:00	9/16/2004 10:30	10/19/2004 14:00	11/4/2004 12:30	12/7/2004 10:30	1/10/2005 12:00
Relative Accuracy at 90% Confidence	5.6%	4.5%	10.4%	12.6%	7.5%	4.4%	7.5%
Rate 2.4 Load at System Peak	57,235	53,622	57,451	48,513	59,141	66,009	52,171
Date/Time	7/12/2004 12:00	8/30/2004 17:00	9/22/2004 12:00	10/29/2004 19:15	11/22/2004 17:15	12/6/2004 16:45	1/6/2005 18:00
Relative Accuracy at 90% Confidence	5.9%	4.3%	4.9%	13.4%	4.4%	5.1%	4.1%
Coincidence Factor	81.2%	80.9%	82.0%	74.4%	88.5%	97.3%	86.4%
NP Load at Hydro System Peak (kW)	539,794	518,595	622,336	785,877	851,521	1,142,661	1121749
Rate 2.4 Contribution as % of System Peak	10.6%	10.3%	9.2%	6.2%	6.9%	5.8%	4.7%
<hr/>							
	Feb-2005	Mar-2005	Apr-2005	May-2005	Jun-2005	Jul-2005	Aug-2005
Rate 2.4 Sample Size	39	38	37	31	31	32	37
Monthly Billed Energy (kWh)	31,942,129	35,344,297	32,400,256	33,744,929	34,356,267	37,327,117	35,061,771
Rate 2.4 Peak Load (kW)	64,588	64,035	60,356	68,735	65,154	71,850	64,783
Date/Time	2/21/2005 11:30	3/11/2005 11:30	4/27/2005 10:30	5/30/2005 11:30	6/27/2005 12:30	7/13/2005 11:00	8/11/2005 11:30
Relative Accuracy at 90% Confidence	3.4%	6.0%	5.7%	10.7%	5.9%	4.8%	4.3%
Rate 2.4 Load at System Peak	59,834	49,227	53,554	58,445	61,492	69,401	58,975
Date/Time	2/22/2005 8:30	3/5/2005 18:45	3/31/2005 20:00	5/20/2005 12:00	6/14/2005 17:00	7/15/2005 11:45	8/5/2005 12:00
Relative Accuracy at 90% Confidence	2.6%	3.4%	2.7%	4.6%	26.2%	6.4%	4.0%
Coincidence Factor	92.6%	76.9%	88.7%	85.0%	94.4%	96.6%	91.0%
NP Load at Hydro System Peak (kW)	1,049,084	925,250	871,642	725,616	636,815	504,391	500,522
Rate 2.4 Contribution as % of System Peak	5.7%	5.3%	6.1%	8.1%	9.7%	13.8%	11.8%
<hr/>							
	Sep-2005	Oct-2005	Nov-2005	Dec-2005	Jan-2006	Feb-2006	Mar-2006
Rate 2.4 Sample Size	38	40	44	45	45	45	45
Monthly Billed Energy (kWh)	31,980,988	32,766,861	32,670,366	33,743,819	34,644,416	31,736,116	35,811,810
Rate 2.4 Peak Load (kW)	68,834	65,398	64,614	60,987	65,307	62,719	65,309
Date/Time	9/1/2005 13:00	10/12/2005 12:30	11/3/2005 15:00	12/19/2005 10:00	1/24/2006 10:00	2/23/2006 13:30	3/1/2006 13:30
Relative Accuracy at 90% Confidence	9.5%	12.8%	10.7%	5.2%	2.8%	3.1%	2.2%
Rate 2.4 Load at System Peak	44,937	58,495	55,861	50,136	61,695	59,338	59,347
Date/Time	9/12/2005 17:15	10/12/2005 19:30	11/28/2005 17:30	12/22/2005 19:15	1/23/2006 17:45	2/23/2006 8:15	3/1/2006 8:15
Relative Accuracy at 90% Confidence	8.1%	12.9%	7.8%	4.4%	4.7%	3.1%	2.4%
Coincidence Factor	65.3%	89.4%	86.5%	82.2%	94.5%	94.6%	90.9%
NP Load at Hydro System Peak (kW)	565,831	685,036	847,527	1,040,708	1,123,322	1,026,356	1,003,642
Rate 2.4 Contribution as % of System Peak	7.9%	8.5%	6.6%	4.8%	5.5%	5.8%	5.9%

### Class Load Factor Calculations

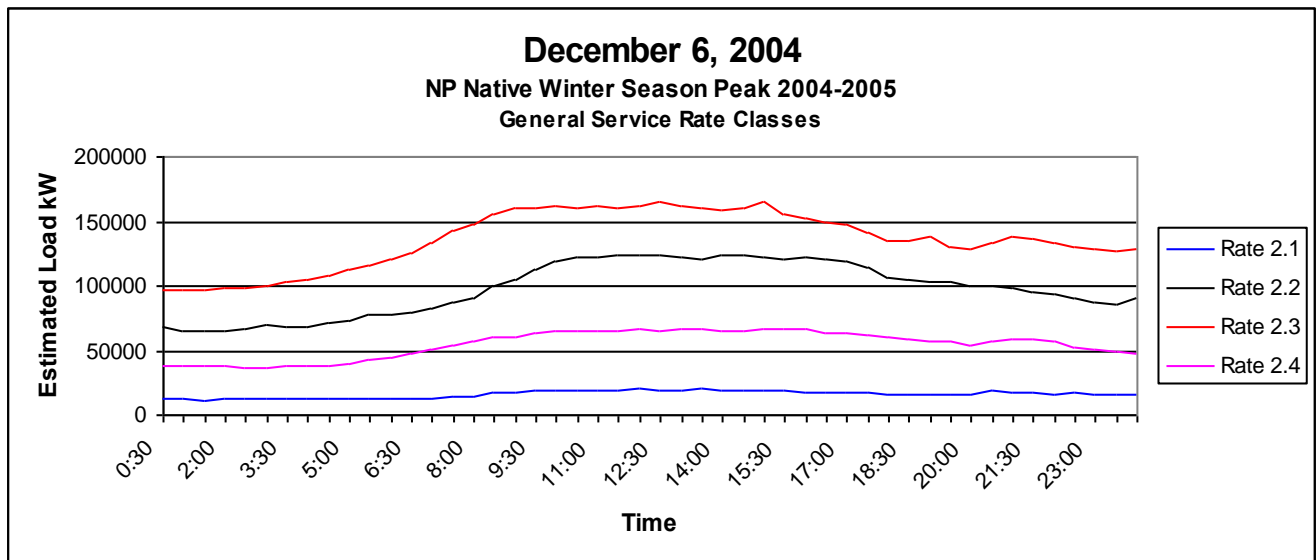
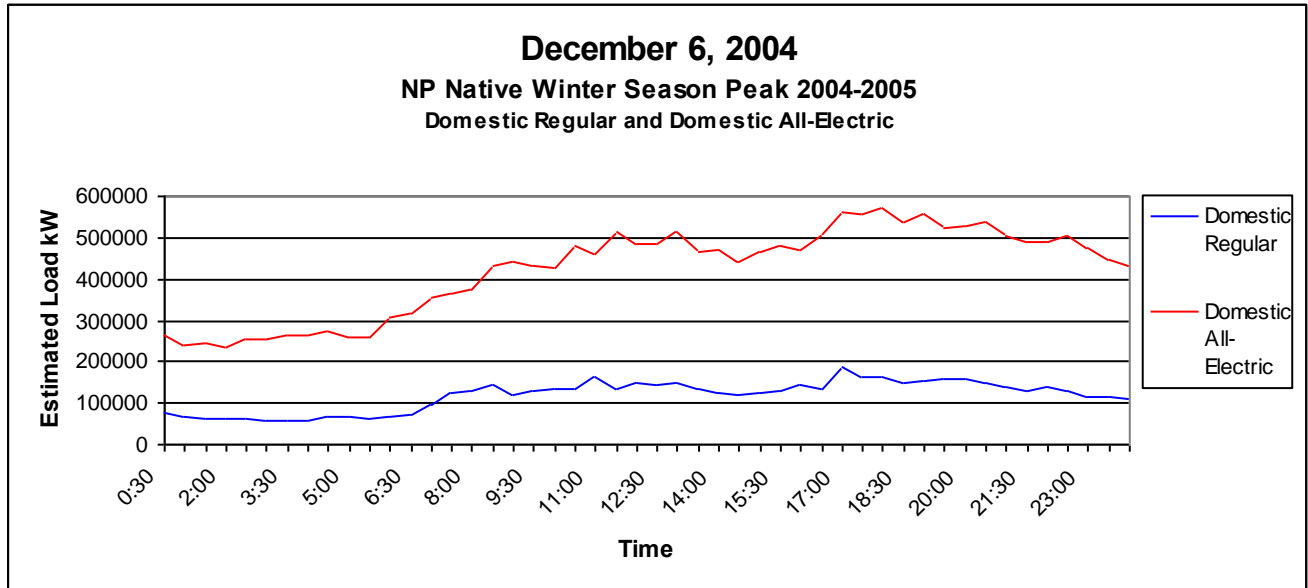
Class Load Factor Calculations							
	Rate 110	Rate 112	Domestic 1.1	Rate 2.1	Rate 2.2	Rate 2.3	Rate 2.4
<b>Coincident Peak</b>							
<b>Winter Season 2003-04</b>							
Normalised Class Sales	809,910,748	2,114,058,340	2,923,969,088	97,284,741	594,730,894	854,001,710	399,808,549
Class Load	172,599	500,611	676,820	16,773	107,215	141,160	60,625
Load Factor	53.4%	48.1%	49.2%	66.0%	63.1%	68.9%	75.1%
<b>Winter Season 2004-05</b>							
Normalised Class Sales	812,000,172	2,166,701,315	2,978,701,487	97,676,482	604,721,394	863,108,020	408,167,994
Class Load	184,859	560,739	743,539	17,435	119,149	147,305	63,779
Load Factor	50.0%	44.0%	45.6%	63.8%	57.8%	66.7%	72.9%
<b>Winter Season 2005-06</b>							
Normalised Class Sales	797,935,013	2,183,698,232	2,981,633,245	96,474,771	611,599,514	860,460,640	406,909,087
Class Load	175,535	516,635	695,863	16,750	120,112	140,877	61,695
Load Factor	51.9%	48.3%	48.9%	65.7%	58.1%	69.7%	75.3%
<b>Average Load Factor</b>	<b>51.8%</b>	<b>46.8%</b>	<b>47.9%</b>	<b>65.2%</b>	<b>59.7%</b>	<b>68.4%</b>	<b>74.4%</b>
<b>Non-Coincident Peak</b>							
<b>2003 - 04</b>							
Date	1/11/2004	1/11/2004	1/11/2004	2/17/2004	2/16/2004	1/15/2004	2/16/2004
Normalised Class Sales	808,556,975	2,099,950,115	2,908,507,090	97,284,741	594,730,894	854,001,710	399,808,549
Class Load	189,649	519,347	715,973	22,504	126,947	166,883	68,928
Load Factor	48.7%	46.2%	46.4%	49.2%	53.3%	58.4%	66.0%
<b>2004 - 05</b>							
Date	1/22/2005	1/22/2005	1/22/2005	12/7/2004	1/6/2005	12/7/2004	7/23/2004
Normalised Class Sales	812,672,623	2,180,034,351	2,992,706,974	97,676,482	606,374,677	863,108,020	401,291,307
Class Load	222,267	544,572	774,423	22,405	126,967	167,945	70,485
Load Factor	41.6%	45.6%	44.0%	49.6%	54.4%	58.5%	64.8%
<b>2005 - 06</b>							
Date	12/24/2005	12/24/2005	12/24/2005	2/20/2006	1/23/2006	1/23/2006	7/13/2005
Normalised Class Sales	799,377,228	2,187,686,976	2,987,064,204	96,056,444	611,599,514	860,460,640	426,155,293
Class Load	235,058	481,918	734,032	20,351	138,979	184,962	71,850
Load Factor	38.8%	51.8%	46.5%	53.9%	50.2%	53.1%	67.7%
<b>Average Load Factor</b>	<b>43.0%</b>	<b>47.9%</b>	<b>45.6%</b>	<b>50.9%</b>	<b>52.6%</b>	<b>56.7%</b>	<b>66.2%</b>

\* Note: The Domestic & All-Electric subclass (Rates 110 & 112) Non-Coincident Peak load factors are calculated based upon the subclass demands at time of class peak. For this reason it is possible for the non-coincident peak load factors to be higher than the coincident load factors for the domestic subclasses.

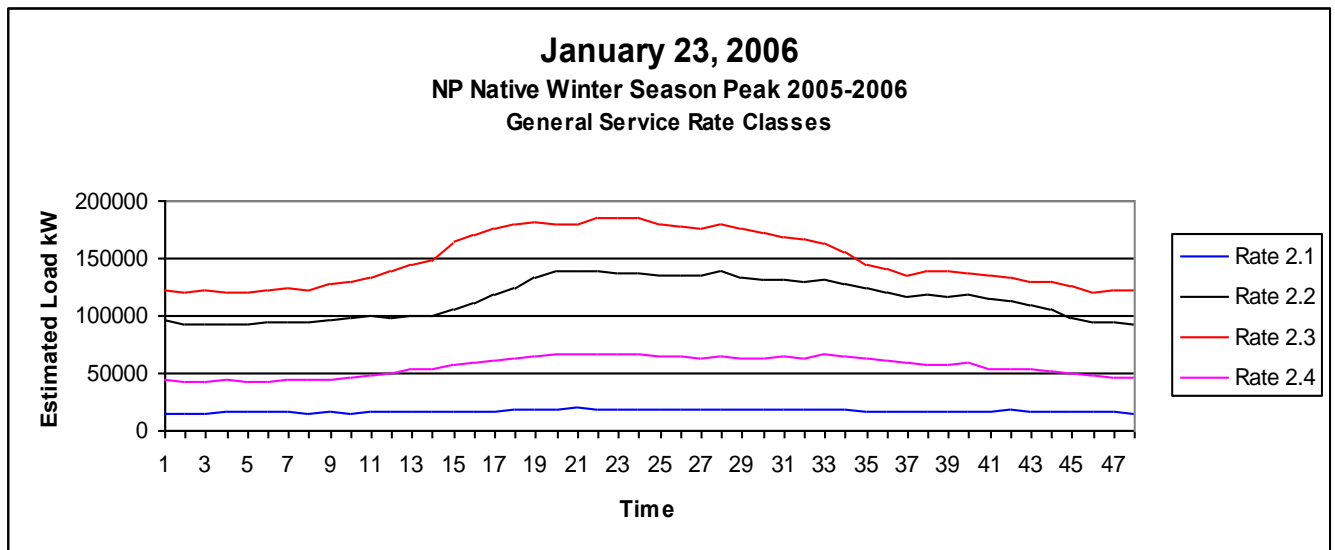
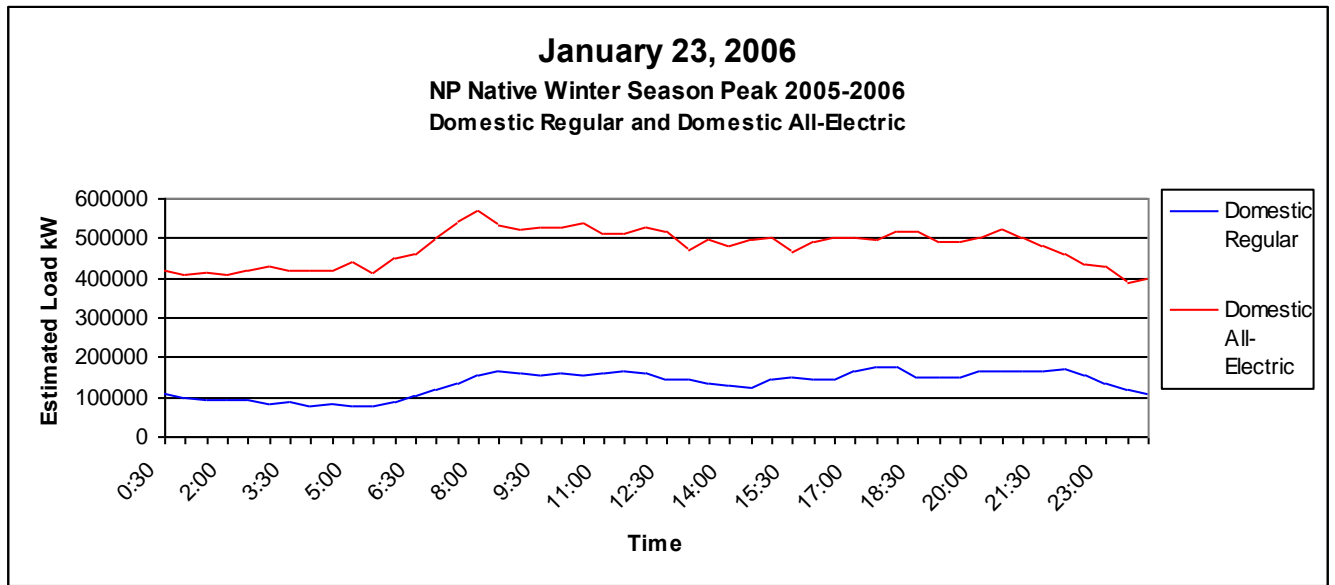
**Peak Day Loads by Class**



11. 2006 Load Research Study



11. 2006 Load Research Study



## 11. 2006 Load Research Study

## Appendix E

Load Profile Data February 16, 2004 NP Native Winter Season Peak 2003 - 2004								
	Domestic Regular	Domestic All-Electric	Rate 2.1	Rate 2.2	Rate 2.3	Rate 2.4	Losses	Streetlights
0:30	77928	317284	13369	80732	107738	37448	38668	8496
1:00	75501	318816	13386	81044	108384	38030	37696	8496
1:30	72445	317607	13460	79827	108693	38481	37317	8496
2:00	69057	322942	13628	80459	108831	38575	37240	8496
2:30	74426	326176	12992	80726	109238	38264	37230	8496
3:00	69493	317940	13696	82933	110626	37515	37496	8496
3:30	70476	340413	13921	83733	113023	38560	37880	8496
4:00	68710	340158	13705	84675	113535	38810	38246	8496
4:30	73382	332377	13942	87744	115855	40058	39742	8496
5:00	75493	347653	14008	89342	116508	40925	40362	8496
5:30	79323	345078	14139	89632	121850	42774	42052	8496
6:00	75260	386292	13984	87231	124456	43244	42964	8496
6:30	83366	383605	13839	93000	131955	47581	47107	0
7:00	108470	391467	14302	93782	134660	52783	51653	0
7:30	131131	430741	15049	98560	146107	56177	58446	0
8:00	147277	453422	16381	103928	153083	58411	64377	0
8:30	135859	451325	16866	113124	159502	62421	68264	0
9:00	130836	459221	17646	117405	162060	65197	70398	0
9:30	151222	499773	19855	122433	163136	65907	72960	0
10:00	166849	488576	19820	125083	163221	66652	73123	0
10:30	158651	479224	21023	125832	164828	66120	72619	0
11:00	149054	465000	20008	126947	163605	65109	72323	0
11:30	158154	466571	19379	125059	161287	68308	71358	0
12:00	136596	455743	18666	122922	160465	68928	72376	0
12:30	136052	469581	18962	124897	156476	67594	69994	0
13:00	140841	479421	18824	121050	155723	67832	69339	0
13:30	127860	475319	18863	119388	158806	68162	66385	0
14:00	143895	500356	18685	117696	157397	67600	66494	0
14:30	162183	485262	18971	117551	159093	67655	66554	0
15:00	134489	446628	19043	116678	156306	66469	66215	0
15:30	132083	466610	18726	119081	157710	64422	66680	0
16:00	128612	436201	19168	118496	152949	63665	68228	0
16:30	141484	465626	19101	114875	152990	63182	70262	0
17:00	157166	501769	17443	112645	148876	62228	72904	0
17:30	160044	517533	17254	110569	144149	62456	74955	0
18:00	172599	500611	16773	107215	141160	60625	76995	8496
18:30	164979	504499	15965	103809	139349	58472	76497	8496
19:00	151401	499009	15773	103469	140608	57133	76554	8496
19:30	172909	537116	15745	106188	138651	56464	76678	8496
20:00	155032	505253	16197	102780	138855	56049	76373	8496
20:30	148253	508223	15844	105019	140900	56667	75073	8496
21:00	157678	461323	15560	102357	138334	55117	73232	8496
21:30	161110	488724	15177	101139	133956	54563	71442	8496
22:00	141635	470439	15660	100445	133136	51776	69455	8496
22:30	140674	460331	15920	95781	129541	49131	64590	8496
23:00	129314	458098	16040	94198	128606	47785	61269	8496
23:30	118747	442660	15503	94261	125333	46221	56587	8496
0:00	106793	411598	14191	93900	125575	43325	52159	8496

## 11. 2006 Load Research Study

## Appendix E

Load Profile Data December 6, 2004 NP Native Winter Season Peak 2004 - 2005								
	Domestic Regular	Domestic All-Electric	Rate 2.1	Rate 2.2	Rate 2.3	Rate 2.4	Losses	Streetlights
0:30	74930	264045	11929	68213	96069	37430	28484	8496
1:00	65775	237914	12032	64857	97325	38039	27030	8496
1:30	63430	242799	11901	64345	97215	37529	26534	8496
2:00	61431	237545	12297	64754	98856	37403	26366	8496
2:30	64618	254833	12319	66531	98252	37113	26454	8496
3:00	57292	256012	12237	69803	100243	37221	26677	8496
3:30	59464	266333	12190	68759	103510	38166	27166	8496
4:00	59420	264326	12434	68618	104873	38025	27898	8496
4:30	65551	272621	12297	71063	108627	38075	28748	8496
5:00	67209	259750	12457	73248	112746	39738	29837	8496
5:30	62374	259076	12825	77468	116251	43471	31141	8496
6:00	67040	305641	12413	77668	120343	44102	32990	8496
6:30	74387	315589	12865	78975	125800	47791	36507	8496
7:00	93605	353191	13438	82408	132784	50453	41705	8496
7:30	123979	364415	14331	88055	142156	53996	49456	0
8:00	127559	374957	14733	90048	147734	56762	55460	0
8:30	145478	432210	16730	99581	154871	59575	58700	0
9:00	121790	439594	17304	105538	160673	60961	61576	0
9:30	129145	433015	19391	111997	160111	63246	63424	0
10:00	132634	425292	19382	119547	161122	64717	65951	0
10:30	136571	480418	18512	122620	161044	65164	66410	0
11:00	163166	462677	19437	122302	161268	64625	66563	0
11:30	133948	513662	19451	124334	161066	65707	68277	0
12:00	148409	484356	19937	124265	162415	66244	71167	0
12:30	145803	485068	19396	124185	164385	64474	70269	0
13:00	149475	513725	19629	121721	161947	65903	69582	0
13:30	135027	466178	20982	121201	159611	66053	68863	0
14:00	123792	469397	19773	123939	158564	65667	66992	0
14:30	118838	441868	19329	123405	159725	65567	67041	0
15:00	123453	466743	19052	122124	164569	67254	69007	0
15:30	128462	481821	18509	120727	155378	66019	69429	0
16:00	145947	468644	17630	122175	152251	66005	71306	0
16:30	136138	510330	17540	120369	148420	63353	76818	0
17:00	184859	560739	17435	119149	147305	63779	84292	8496
17:30	163410	558552	17185	114448	141885	61998	42242	8496
18:00	164219	573149	15762	107038	135684	59567	83839	8496
18:30	149118	539641	16090	104091	135291	58705	80136	8496
19:00	153065	558683	15535	103465	137344	57740	79602	8496
19:30	159347	524727	15599	102445	130246	57256	79870	8496
20:00	159366	525607	16166	99963	128371	54597	79621	8496
20:30	146628	537062	18346	99368	132723	57042	79759	8496
21:00	140115	504674	17761	98675	138020	58088	77468	8496
21:30	130533	490869	17135	95515	136005	59021	76296	8496
22:00	137087	487425	16437	94265	132779	57120	73325	8496
22:30	128733	501856	16998	89802	130123	52890	68424	8496
23:00	117136	476676	16467	87914	128696	51473	64299	8496
23:30	117269	446379	15819	85727	126439	49630	58023	8496
0:00	109162	430190	16371	89794	127789	48019	53471	8496



Load Profile Data January 23, 2006 NP Native Winter Season Peak 2005 - 2006								
	Domestic Regular	Domestic All- Electric	Rate 2.1	Rate 2.2	Rate 2.3	Rate 2.4	Losses	Streetlights
0:30	106515	421277	15659	95514	121925	43563	47936	8538
1:00	97412	408018	15348	92843	120742	43241	45737	8538
1:30	91117	414771	15491	93218	121798	42761	45298	8538
2:00	92982	408940	16579	93065	121149	43712	45063	8538
2:30	90889	419562	16502	92513	120888	42932	45175	8538
3:00	84297	428865	16065	95050	121606	43415	45336	8538
3:30	85657	418537	15851	93984	124676	43904	45650	8538
4:00	79963	417640	15705	93564	123051	44658	46511	8538
4:30	84328	417447	15870	95994	127477	44084	47512	8538
5:00	78652	439564	15592	98012	129710	45689	48096	8538
5:30	79389	412967	16183	100340	133649	47688	50495	8538
6:00	90227	448626	16046	98487	137968	49600	52291	8538
6:30	105237	460078	15808	99599	144058	53622	56440	8538
7:00	119859	500672	16336	100224	148964	53355	61641	8538
7:30	136160	543463	16154	105602	163916	57643	70758	0
8:00	155796	569629	16984	111632	170560	59224	75158	0
8:30	163103	533809	17158	118726	176804	61721	77116	0
9:00	159733	523841	18289	123256	179699	62726	77496	0
9:30	156238	528031	18661	133210	182101	64678	79669	0
10:00	160985	525867	18971	138614	179850	65952	79615	0
10:30	157442	537968	19613	138658	180233	66348	77579	0
11:00	161154	510403	18765	138979	184736	65939	77045	0
11:30	167902	514325	18918	137760	184640	65972	77292	0
12:00	161384	528691	19374	137838	184962	66581	79756	0
12:30	144382	519767	18571	135028	179296	64886	76387	0
13:00	142921	472102	18835	135277	177547	65079	73704	0
13:30	131947	497358	18241	135893	176753	62351	72460	0
14:00	128936	479688	17919	138172	179028	64509	72482	0
14:30	124548	495372	18513	133668	175116	63100	69173	0
15:00	142672	502309	18349	131312	172621	63059	68967	0
15:30	147806	466835	18053	131932	168746	63931	69352	0
16:00	142585	490279	18580	130396	167577	63708	70253	0
16:30	146908	500282	18590	132177	163568	67447	73091	0
17:00	163439	503191	17806	127843	155052	64947	77183	8538
17:30	175197	498843	17540	124121	145313	62257	79796	8538
18:00	175535	516636	16750	120112	140877	61695	79862	8538
18:30	151624	514684	16759	117197	135227	58428	75126	8538
19:00	149810	490884	16931	119048	138067	57812	76032	8538
19:30	148770	493489	16758	117172	138733	57747	74072	8538
20:00	167751	502828	16759	117694	136664	59126	73968	8538
20:30	165951	521908	16778	113967	134530	54128	73384	8538
21:00	163286	501351	17802	112968	133519	54498	71726	8538
21:30	163039	481592	17040	109922	130106	53032	69118	8538
22:00	168379	459317	16546	105466	128952	51621	66143	8538
22:30	155880	434971	16117	98922	125392	49125	61964	8538
23:00	136074	429277	15790	95053	120871	48362	57935	8538
23:30	120369	386767	15975	93649	122157	47060	53467	8538
0:00	107752	396494	15385	93272	121900	46258	49404	8538