BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-10________

EXHIBIT NO._____(TLK-5)

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REPRESENTING AVISTA CORPORATION

System Load Research Project

Examining the components of the Avista system load

Avista Corp., Spokane, Washington, March 2010

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1. Executive Summary

1.1 Project Overview

In this project *KEMA* provided assistance to Avista in developing hourly load estimates for Avista rate classes. The analysis detailed in this report focuses on data collected for the 12-month period January 1, 2009 through December 31, 2009. The primary objective of the overall analysis is to develop hourly class load estimates for use in cost allocation, i.e., to develop factors to allocate generation, transmission, and distribution costs to each rate class for cost-of-service purposes.

In order to perform the analysis, Avista provided 60-minute interval load profile data for each customer class. Some customer class loads were estimated using load study samples (when it is not practical to collect load profile data for every customer within the class). The 60-minute load profile load data for these schedules were for specific customers who were randomly selected to be part of a load study.

The load study samples were designed with KEMA's assistance to be representative of Avista's customer classes throughout Avista's service territory (both Washington and Idaho) at a generally-accepted level of statistical precision (confidence that the demand estimates calculated using samples are within ten percent of the "true" population demand for a majority of hours). These samples were used to conduct the load research expansion analysis (that is, estimate the population loads from the sample loads). This project provided statistically reliable data allowing the researchers to develop independent estimates for each class within each jurisdiction.

In addition to the load study samples, some customer classes have hourly load data for all customers in the class (these tend to be large customers, and their load profile data is used for billing purposes). Finally, the project team estimated total class hourly loads for the lighting class based on lighting inventories, daylight hours and sunrise/sunset schedules.

Avista also provided hourly total system load data. Figure 1 shows a vertical EnergyPrint and a two-dimensional time series plot of the Avista system load during the 12-month period ending December 31, 2009. In a vertical energy print, the days are measured on the y-axis and hours of the day on the x-axis. The load is displayed using the color scale shown to the left of the plot. The energy print provides an overview of a load profile. In this case the energy print shows that the Avista system load is winter peaking with the highest demands in the morning (i.e., 6 AM to

11 AM) and evening periods (i.e., 5 PM to 10 PM) during the winter months. The system peaked at 1,763 MW on Tuesday, December 8, 2009 at hour ending 7 PM.

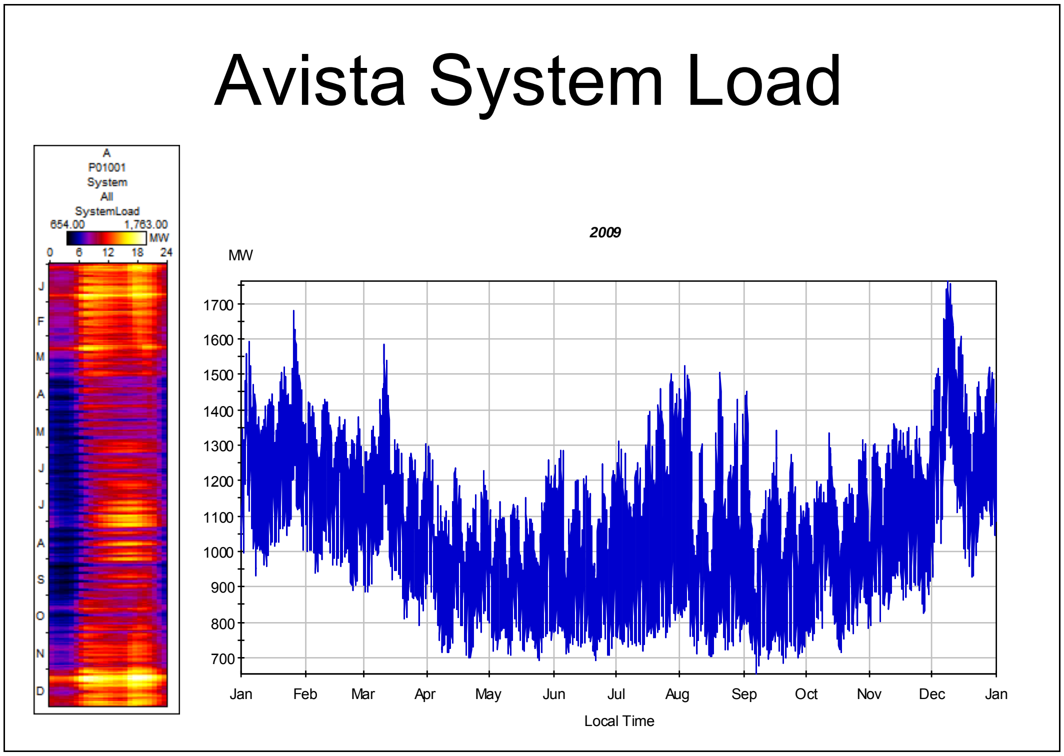

Figure 1 – System Load

The results of this analysis include each customer class's contribution (delivered load plus losses) to Avista's total system hourly demands for the period January 1, 2009 to December 31, 2009. From these results, various energy- and demand-related statistics can be calculated reliably for cost allocation purposes.

1.2 Key Statistics

Table 1 presents a summary of population and energy characteristics for the aggregate classes within the Washington and Idaho jurisdictions. The table includes the total number of customers and annual energy consumption by rate class. In addition, the table includes each rate schedule's contribution to the total for each jurisdiction (Washington and Idaho) and each rate schedule's contribution to the overall Avista total.

Jurisdiction	Rate Code	Class	No. of Customers: Count	% of Juris. Total	% of Avista Total	Annual Usage: kWh	% of Juris. Total	% of Avista Total
Washington	001	Residential	200,134	85.9%	56.4%	2,631,728,751	45.0%	27.8%
Washington	011/012	General Service	27,142	11.6%	7.7%	446,213,347	7.6%	4.7%
Washington	021/022	Large General Service	3,352	1.4%	0.9%	1,668,039,904	28.5%	17.6%
Washington	025	Extra Large General Service	22	0.0%	0.0%	923,220,330	15.8%	9.7%
Washington	031/032	Pumping	2,361	1.0%	0.7%	147,043,989	2.5%	1.6%
Washington	LGT	Street and Area Lights*	-	0.0%	0.0%	28,458,151	0.5%	0.3%
		TOTAL WASHINGTON	233,010	100.0%	65.7%	5,844,704,472	100.0%	61.6%
Idaho	001	Residential	99,580	81.9%	28.1%	1,268,698,311	34.9%	13.4%
Idaho	011/012	General Service	19,245	15.8%	5.4%	346,190,462	9.5%	3.7%
Idaho	021/022	Large General Service	1,458	1.2%	0.4%	755,816,002	20.8%	8.0%
Idaho	25	Extra Large General Service	8	0.0%	0.0%	272,685,547	7.5%	2.9%
Idaho	25P	Extra Large General Service - CP	1	0.0%	0.0%	916,049,902	25.2%	9.7%
Idaho	031/032	Pumping	1,312	1.1%	0.4%	63,429,201	1.7%	0.7%
Idaho	LGT	Street and Area Lights*	-	0.0%	0.0%	14,832,897	0.4%	0.2%
		TOTAL IDAHO	121,604	100.0%	34.3%	3,637,702,321	100.0%	38.4%
		TOTAL AVISTA	354,614		100.0%	9,482,406,794		100.0%

*Note: Street and area light customer counts are not included since lighting customers are counted in a different manner than the rest of the classes (i.e., contracts and/or number of lights).

Table 1 – Number of Customers and Annual Usage

Table 2 presents the class demand at the time of the annual system peak which occurred on Tuesday, December 8, 2009, at hour ending 7 PM. The dominance of the residential class is evident accounting for nearly 1,000 MW of the 1,763 MW Avista system peak demand. The large general service class is next in order of magnitude of load with nearly 350 MW at the time of the Avista peak.

State	Rate Code	Class	System Peak: (kW)	% of Juris. Total	% of Avista Total
Washington	001	Residential	709,854	61.4%	40.3%
Washington	011/012	General Service	63,841	5.5%	3.6%
Washington	021/022	Large General Service	232,316	20.1%	13.2%
Washington	025	Extra Large General Service	133,699	11.6%	7.6%
Washington	031/032	Pumping	9,900	0.9%	0.6%
Washington	LGT	Street and Area Lights	6,832	0.6%	0.4%
		TOTAL WASHINGTON	1,156,441	100.0%	65.6%
Idaho	001	Residential	282,619	46.6%	16.0%
Idaho	011/012	General Service	61,401	10.1%	3.5%
Idaho	021/022	Large General Service	114,858	18.9%	6.5%
Idaho	25	Extra Large General Service	39,605	6.5%	2.2%
Idaho	25P	Extra Large General Service - CP	100,671	16.6%	5.7%
Idaho	031/032	Pumping	3,853	0.6%	0.2%
Idaho	LGT	Street and Area Lights	3,551	0.6%	0.2%
		TOTAL IDAHO	606,559	100.0%	34.4%
		TOTAL AVISTA	1,763,000		100.0%

Table 2 – Class Demand at Annual System Peak

Table 3 presents the annual class peak demands including the date and time of the class peak. In addition, the table includes each rate schedule's contribution to the total of the class peak demands for each jurisdiction (Washington and Idaho) and each rate schedule's contribution to the overall Avista total[1].

State	Rate Code	Class	Class Peak Demand			
			Date & Time	(kW)	% of Juris. Total	% of Avista Total
Washington	001	Residential	Tue Dec 8, 2009 7:00PM	709,854	53.2%	33.8%
Washington	011/012	General Service	Mon Aug 3, 2009 4:00PM	97,046	7.3%	4.6%
Washington	021/022	Large General Service	Wed Sep 16, 2009 4:00PM	323,832	24.3%	15.4%
Washington	025	Extra Large General Service	Tue Dec 8, 2009 12:00PM	145,722	10.9%	6.9%
Washington	031/032	Pumping	Fri Jun 5, 2009 6:00PM	49,140	3.7%	2.3%
Washington	LGT	Street and Area Lights	Wed Jan 7, 2009 9:00PM	7,493	0.6%	0.4%
		TOTAL WASHINGTON		1,333,088	100.0%	63.5%
Idaho	001	Residential	Sun Dec 6, 2009 8:00PM	319,343	41.7%	15.2%
Idaho	011/012	General Service	Wed Dec 9, 2009 5:00PM	76,509	10.0%	3.6%
Idaho	021/022	Large General Service	Tue Aug 4, 2009 3:00PM	162,924	21.3%	7.8%
Idaho	25	Extra Large General Service	Wed Sep 2, 2009 1:00PM	41,917	5.5%	2.0%
Idaho	25P	Extra Large General Service - CP	Wed Dec 16, 2009 1:00AM	112,705	14.7%	5.4%
Idaho	031/032	Pumping	Fri Jul 24, 2009 8:00AM	48,192	6.3%	2.3%
Idaho	LGT	Street and Area Lights	Wed Jan 7, 2009 9:00PM	3,895	0.5%	0.2%
		TOTAL IDAHO		765,484	100.0%	36.5%
		TOTAL AVISTA		2,098,572		100.0%

Table 3 –Annual Class Peak Demand

[1] The sum of the class peak demands is not a demand that actually occurred on the system, however, each class's contribution to the total of the class peak demands is used for cost allocation purposes so is included as a key statistic.

Table 4 presents the annual maximum non-coincident class peak demand which is the "theoretical" or potential maximum demand of the class if all individual customers peaked at the same time.

State	Rate Code	Class	Non-Coincident Peak Demand (kW)	% of Juris. Total	% of Avista Total
Washington	001	Residential	1,908,605	66.5%	42.9%
Washington	011/012	General Service	229,430	8.0%	5.2%
Washington	021/022	Large General Service	476,575	16.6%	10.7%
Washington	025	Extra Large General Service	177,799	6.2%	4.0%
Washington	031/032	Pumping	70,203	2.4%	1.6%
Washington	LGT	Street and Area Lights	7,493	0.3%	0.2%
		TOTAL WASHINGTON	2,870,106	100.0%	64.5%
Idaho	001	Residential	916,236	57.9%	20.6%
Idaho	011/012	General Service	159,227	10.1%	3.6%
Idaho	021/022	Large General Service	226,444	14.3%	5.1%
Idaho	25	Extra Large General Service	48,090	3.0%	1.1%
Idaho	25P	Extra Large General Service - CP	172,142	10.9%	3.9%
Idaho	031/032	Pumping	56,742	3.6%	1.3%
Idaho	LGT	Street and Area Lights	3,895	0.2%	0.1%
		TOTAL IDAHO	1,582,777	100.0%	35.5%
		TOTAL AVISTA	4,452,883		100.0%

Table 4 – Annual Non-coincident Peak Demand

Table 5 and Table 6 present selected allocators (kW and %) for each class by jurisdiction and total system. The allocators included in Table 5 are the average 12-month class peak demand and the average 12-month system peak demand.

State	Rate Code	Class	12-Month Class Peak (kW)	% of Juris. Total	% of Avista Total	12-Month System Peak (kW)	% of Juris. Total	% of Avista Total
Washington	001	Residential	506,175	48.3%	30.4%	463,575	49.8%	31.8%
Washington	011/012	General Service	88,013	8.4%	5.3%	75,348	8.1%	5.2%
Washington	021/022	Large General Service	287,992	27.5%	17.3%	252,577	27.1%	17.3%
Washington	025	Extra Large General Service	131,145	12.5%	7.9%	118,996	12.8%	8.2%
Washington	031/032	Pumping	27,840	2.7%	1.7%	18,890	2.0%	1.3%
Washington	LGT	Street and Area Lights	7,189	0.7%	0.4%	1,138	0.1%	0.1%
		TOTAL WASHINGTON	1,048,354	100.0%	62.9%	930,524	100.0%	63.8%
Idaho	001	Residential	233,419	37.8%	14.0%	207,604	39.3%	14.2%
Idaho	011/012	General Service	62,548	10.1%	3.8%	54,729	10.4%	3.8%
Idaho	021/022	Large General Service	145,915	23.6%	8.8%	113,663	21.5%	7.8%
Idaho	25	Extra Large General Service	40,327	6.5%	2.4%	36,919	7.0%	2.5%
Idaho	25P	Extra Large General Service - CP	111,015	18.0%	6.7%	106,611	20.2%	7.3%
Idaho	031/032	Pumping	20,880	3.4%	1.3%	7,721	1.5%	0.5%
Idaho	LGT	Street and Area Lights	3,746	0.6%	0.2%	646	0.1%	0.0%
		TOTAL IDAHO	617,849	100.0%	37.1%	527,893	100.0%	36.2%
		TOTAL AVISTA	1,666,204		100.0%	1,458,417		100.0%

Table 5 – Average 12-Month Class Peak Demand and 12-Month System Peak Demand

Table 6 includes the average of the four winter peaks and the average of the four winter peaks and the three summer peaks.

State	Rate Code	Class	4-Month Winter Peak (kW)	4-Month Winter Peak % of Juris. Total	4-Month Winter Peak % of Avista Total	7-Month Summer/Winter Peak (kW)	7-Month Summer/Winter Peak % of Juris. Total	7-Month Summer/Winter Peak % of Avista Total
Washington	001	Residential	589,872	56.8%	36.6%	524,033	52.1%	33.6%
Washington	011/012	General Service	73,162	7.0%	4.5%	79,110	7.9%	5.1%
Washington	021/022	Large General Service	242,353	23.4%	15.0%	262,058	26.0%	16.8%
Washington	025	Extra Large General Service	122,613	11.8%	7.6%	122,469	12.2%	7.8%
Washington	031/032	Pumping	8,134	0.8%	0.5%	17,720	1.8%	1.1%
Washington	LGT	Street and Area Lights	1,708	0.2%	0.1%	976	0.1%	0.1%
		TOTAL WASHINGTON	1,037,842	100.0%	64.3%	1,006,366	100.0%	64.5%
Idaho	001	Residential	254,637	44.2%	15.8%	230,523	41.5%	14.8%
Idaho	011/012	General Service	59,300	10.3%	3.7%	57,190	10.3%	3.7%
Idaho	021/022	Large General Service	113,771	19.8%	7.1%	115,905	20.9%	7.4%
Idaho	25	Extra Large General Service	37,554	6.5%	2.3%	37,299	6.7%	2.4%
Idaho	25P	Extra Large General Service - CP	104,793	18.2%	6.5%	106,477	19.2%	6.8%
Idaho	031/032	Pumping	4,803	0.8%	0.3%	7,069	1.3%	0.5%
Idaho	LGT	Street and Area Lights	1,049	0.2%	0.1%	600	0.1%	0.0%
		TOTAL IDAHO	575,908	100.0%	35.7%	555,062	100.0%	35.5%
		TOTAL AVISTA	1,613,750		100.0%	1,561,429		100.0%

Table 6 - Average 4-Month Winter Class Peak Demand and 7-Month Summer/Winter Peak Demand

Table 7 presents additional allocators based on the performance of the class at selected system peak hours. The first allocator is based on the top 25 system load hours followed by the top 75 and the top 200 hours.

State	Rate Code	Class	Top 25 System Hours (kW)	Top 25 % of Juris. Total	Top 25 % of Avista Total	Top 75 System Hours (kW)	Top 75 % of Juris. Total	Top 75 % of Avista Total	Top 200 System Hours (kW)	Top 200 % of Juris. Total	Top 200 % of Avista Total
Washington	001	Residential	634,251	57.7%	37.2%	593,248	56.4%	36.1%	545,831	54.7%	35.0%
Washington	011/012	General Service	75,829	6.9%	4.4%	75,420	7.2%	4.6%	73,071	7.3%	4.7%
Washington	021/022	Large General Service	242,355	22.1%	14.2%	241,900	23.0%	14.7%	238,831	24.0%	15.3%
Washington	025	Extra Large General Service	131,211	11.9%	7.7%	127,971	12.2%	7.8%	124,560	12.5%	8.0%
Washington	031/032	Pumping	10,186	0.9%	0.6%	10,092	1.0%	0.6%	11,293	1.1%	0.7%
Washington	LGT	Street and Area Lights	4,481	0.4%	0.3%	3,677	0.3%	0.2%	3,526	0.4%	0.2%
		TOTAL WASHINGTON	1,098,313	100.0%	64.4%	1,052,307	100.0%	64.1%	997,112	100.0%	63.9%
Idaho	001	Residential	275,125	45.3%	16.1%	262,265	44.5%	16.0%	244,567	43.4%	15.7%
Idaho	011/012	General Service	63,115	10.4%	3.7%	62,242	10.6%	3.8%	59,478	10.6%	3.8%
Idaho	021/022	Large General Service	117,480	19.3%	6.9%	114,562	19.4%	7.0%	110,411	19.6%	7.1%
Idaho	25	Extra Large General Service	38,715	6.4%	2.3%	37,346	6.3%	2.3%	36,320	6.4%	2.3%
Idaho	25P	Extra Large General Service - CP	105,514	17.4%	6.2%	105,593	17.9%	6.4%	105,345	18.7%	6.8%
Idaho	031/032	Pumping	5,478	0.9%	0.3%	5,302	0.9%	0.3%	5,551	1.0%	0.4%
Idaho	LGT	Street and Area Lights	2,420	0.4%	0.1%	1,982	0.3%	0.1%	1,801	0.3%	0.1%
		TOTAL IDAHO	607,847	100.0%	35.6%	589,293	100.0%	35.9%	563,473	100.0%	36.1%
		TOTAL AVISTA	1,706,160		100.0%	1,641,600		100.0%	1,560,585		100.0%

Table 7 – Summary of Top System Hours

2. Management Report

2.1 Introduction

2.1.1 Background

In this project *KEMA* provided assistance to Avista in developing hourly load estimates for various customer classes. The primary goal is to use the results of this load research analysis in the Company's upcoming cost-of-service (COS) analysis. Table 8 presents the customer classes included in the analysis.

State	Rate Code	Class
Washington	001	Residential
Washington	011/012	General Service
Washington	021/022	Large General Service
Washington	025	Extra Large General Service
Washington	031/032	Pumping
Washington	LGT	Street and Area Lights
Idaho	001	Residential
Idaho	011/012	General Service
Idaho	021/022	Large General Service
Idaho	25	Extra Large General Service
Idaho	25P	Extra Large General Service - CP
Idaho	031/032	Pumping
Idaho	LGT	Street and Area Lights

Table 8 – Rate Classes Analyzed

The Company collects 15-minute load profile data for residential, commercial and industrial customers. Primarily, the data are collected by the Company's conventional metering following a statistically stratified sample design. These data are assembled, edited and stored by the Company in the MV90 system and transferred to KEMA for analysis. KEMA conducts a secondary review of the data and transfers the information into Statistical Analysis System (SAS) files.

The analysis detailed in this report focuses on data collected for the 12-month period January 1, 2009 through December 31, 2009. The primary objective of the overall analysis is to develop hourly class load estimates for use in cost allocation, i.e., to develop factors to allocate generation, transmission, and distribution costs to each rate schedule for cost-of-service purposes.

2.1.2 Project Deliverables

The project deliverables include the following:

- An analysis-ready (i.e., validated and edited) dataset suitable for use in the load research expansion analysis.

- A dataset containing class total hourly loads calculated for each class and sector specified in Table 8 either using load study sample data or hourly data for the entire customer class, when available, for the following scenarios:
  - Class hourly loads (before losses and not reconciled to hourly system load);
  - Class hourly loads with losses (not reconciled to hourly system load); and
  - Class hourly loads with losses and reconciled to hourly system load.

- Documentation of load research expansion analysis including:
  - General class statistics;
  - Post-stratification statistics;
  - Comparison of winter and summer average load profiles;
  - Comparison of weekday, weekend, and peak day average profiles;
  - Relative precision of load data used to calculate class estimates; and
  - Class peak (coincident and non-coincident with system) statistics including kW demand, load factor, and coincident factor.

- A series of tables depicting the class contributions for specific cost-of-service calculations including:
  - Class peak at the time of the annual system peak (i.e., coincident peak);
  - Annual class peak (peak times vary, not necessarily coincident with system peak);
  - Annual non-coincident class peak (i.e., hypothetical total class peak if all customers within the class peaked at the same time);
  - Average 12-month class peak;
  - Average 12-month system peak;
  - Average of the four winter peaks;

- Average of the four winter peaks and the three summer peaks;
- Average of the class peaks for the top 25, 75, and 200 system hours;
- Monthly coincident peaks;
- Monthly non-coincident peaks;
- Monthly load factors; and
- On-peak and off-peak energy by month.

2.1.3 Data Provided by Avista

In order to perform our analysis, Avista provided 60-minute interval load profile data for each customer class. Some customer class loads were estimated using load study samples (when it is not practical to collect load profile data for every customer within the class). The 60-minute load profile load data for these schedules were for specific customers who were selected to be part of a load study. These load study samples were used to conduct our load research expansion analysis.

Some customer classes have load profile data for all customers (these tend to be large customers, and their load profile data is used for billing purposes). Examples include a number of the large power classes including Extra Large General Service. The project team estimated total class hourly loads for their lighting schedules based on lighting inventories, daylight hours and sunrise/sunset schedules.

In addition to customer-level or class-level interval data, Avista provided hourly total system load data. All load profile data provided was for the period January 1, 2009 to December 31, 2009.

Avista also provided additional supporting information such as total monthly and annual energy by schedule, customer counts, and annual loss factors by voltage level.

2.1.4 Avista System Load Characteristics

Figure 2 shows a vertical EnergyPrint and a two-dimensional time series plot of the Avista system load during the 12-month period ending December 31, 2009. In a vertical energy print, the days are measured on the y-axis and hours of the day on the x-axis. The load is displayed using the color scale shown to the left of the plot. The energy print provides an overview of a load profile. In this case the energy print shows that the Avista system load is winter peaking with the highest demands in the morning (i.e., 6 AM to 11 AM) and evening periods (i.e., 5 PM to 10 PM) during the winter months. The system peaked at 1,763 MW on Tuesday, December 8, 2009 at hour ending 7 PM.

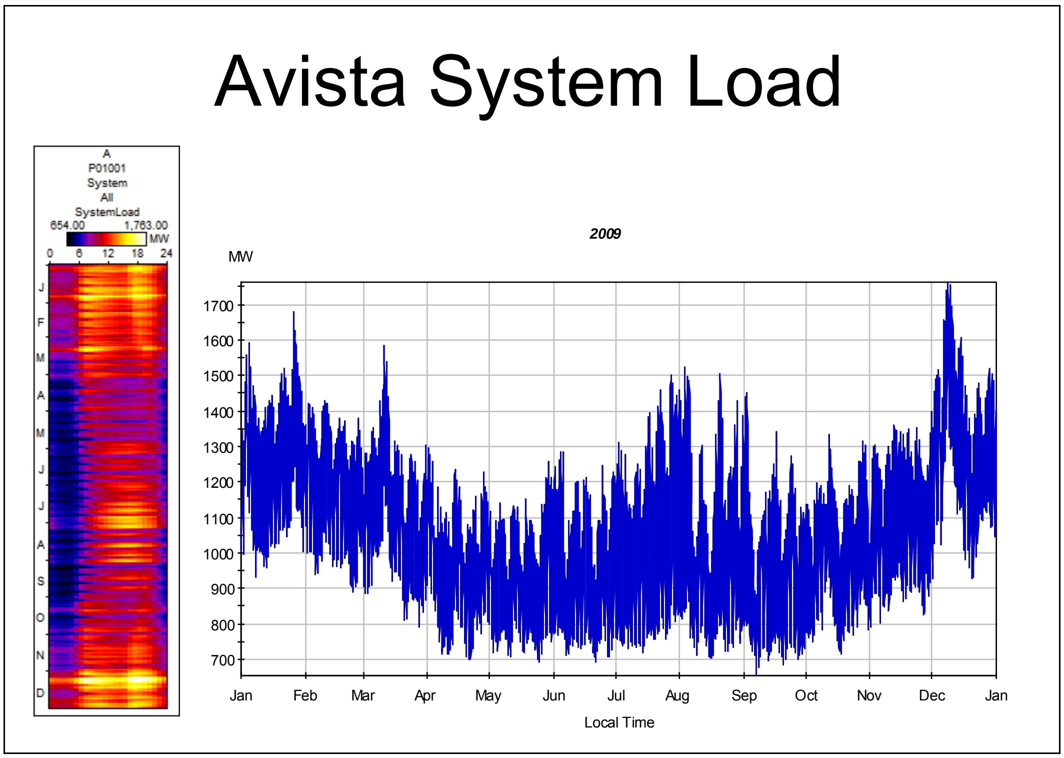

Figure 2 – Avista System Load Characteristics

Table 9 summarizes the monthly statistics from the system load for the 12 months ending December 31, 2009. The total monthly peak demand varied from a low of 1,258 MW in May to the high of 1,763 MW in December. The annual system peak occurred on Tuesday, December 8 at hour ending 7 PM. The monthly load factor of the system varied from 66.8% to 83.0%.

Month	Monthly Usage (MWh)	System Peak Date & Time	System Peak (MW)	Average Demand (MW)	Load Factor (%)
Jan-09	946,653	Mon Jan 26, 2009 8:00AM	1,678	1,272	75.8%
Feb-09	796,895	Tue Feb 10, 2009 8:00AM	1,429	1,186	83.0%
Mar-09	834,847	Wed Mar 11, 2009 8:00AM	1,585	1,122	70.8%
Apr-09	705,751	Wed Apr 1, 2009 11:00AM	1,295	980	75.7%
May-09	708,039	Fri May 29, 2009 4:00PM	1,258	952	75.7%
Jun-09	704,569	Thu Jun 4, 2009 6:00PM	1,286	979	76.1%
Jul-09	786,248	Mon Jul 27, 2009 5:00PM	1,502	1,057	70.4%
Aug-09	769,272	Mon Aug 3, 2009 5:00PM	1,522	1,034	67.9%
Sep-09	697,311	Wed Sep 2, 2009 5:00PM	1,451	968	66.8%
Oct-09	754,475	Mon Oct 12, 2009 8:00AM	1,332	1,014	76.1%
Nov-09	795,840	Mon Nov 30, 2009 6:00PM	1,400	1,105	79.0%
Dec-09	982,507	Tue Dec 8, 2009 7:00PM	1,763	1,321	74.9%
Annual	9,482,407	Tue Dec 8, 2009 7:00PM	1,763	1,082	61.4%

Table 9 – System Load Summary Statistics

Figure 3 shows these results graphically. Please note that the scale is *not* set at zero on the load factor plot so this graph exaggerates the variation from month to month.

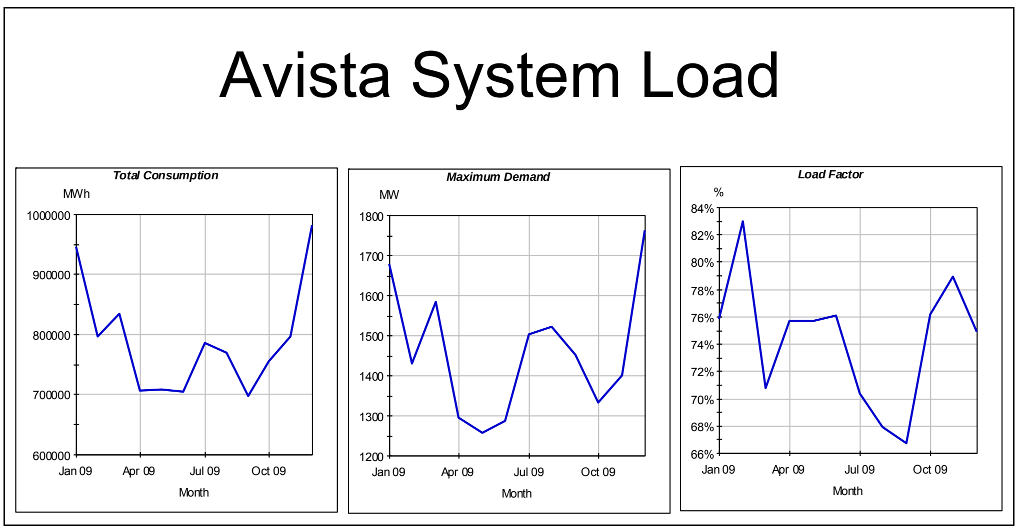

Figure 3 – Monthly Summary Statistics

Figure 4 shows the 24-hour profile of the total system load on the August and December peak days. The summer peak shows a gradually increasing load throughout the day with a late afternoon peak. The winter peak is slightly bi-modal with an early morning and late evening peak. The base winter load is nearly as high as the peak summer load.

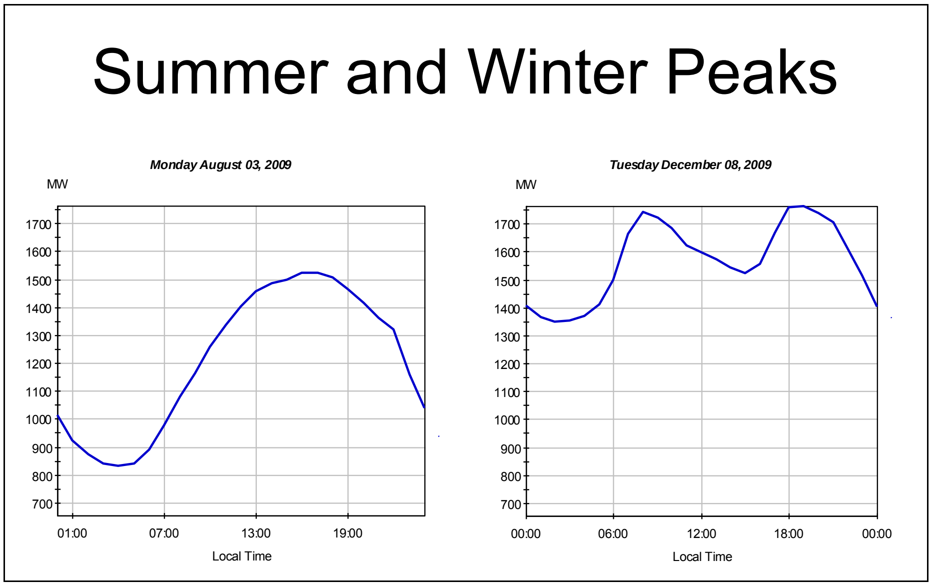

Figure 4 – System Summer and Winter Peaks

KEMA

2.1.5 Annual kWh Sales by Rate Class

In this section, we will discuss information developed from the current billing data. Table 10 shows the number of accounts, total annual sales in kWh, and the average kWh sales per account in each rate class from the Avista "books and records." In addition, the table includes each rate schedule's contribution to the total load for each jurisdiction (Washington and Idaho) and each rate schedule's contribution to the overall total Avista system load.

Jurisdiction	Rate Schedule	Description	Number of Accounts	Total Annual Energy Use (kWh)	Average Annual Energy Use (kWh)	Percent of Jurisdictional Total	Percent of Avista Total
Washington	001	Residential	199,842	2,447,261,373	12,246	44.6%	27.4%
Washington	011/012	General Service	27,161	418,437,869	15,406	7.6%	4.7%
Washington	021/022	Large General Service	3,347	1,574,380,056	470,385	28.7%	17.7%
Washington	025	Extra Large General Service	22	889,056,291	40,411,650	16.2%	10.0%
Washington	031/032	Pumping	2,364	136,399,767	57,699	2.5%	1.5%
Washington	LGT	Street and Area Lights	-	26,610,041	-	0.5%	0.3%
		Washington Totals	232,736	5,492,145,397	23,598	100.0%	61.6%
Idaho	001	Residential	99,827	1,179,605,988	11,817	34.4%	13.2%
Idaho	011/012	General Service	19,288	321,565,148	16,672	9.4%	3.6%
Idaho	021/022	Large General Service	1,426	690,899,548	484,502	20.2%	7.7%
Idaho	25	Extra Large General Service	10	275,745,808	27,574,581	8.0%	3.1%
Idaho	25P	Extra Large General Service - CP	1	887,049,080	887,049,080	25.9%	9.9%
Idaho	031/032	Pumping	1,316	58,556,595	44,496	1.7%	0.7%
Idaho	LGT	Street and Area Lights	-	13,839,105	-	0.4%	0.2%
		Idaho Totals	121,868	3,427,261,272	28,123	100.0%	38.4%
		AVISTA Totals	354,604	8,919,406,669	25,153		100.0%

*Note: Street and area light customer counts are not included since lighting customers are counted in a different manner than the rest of the classes (i.e., contracts and/or number of lights), therefore the average annual energy use is not meaningful in this context.

Table 10 – "Books and Records" Population Counts and Consumption Data

2.1.6 Sample Design

For some customer classes, i.e., residential, small general service, large general service and pumping, it is not practical to collect load profile data for every customer within the class. For these classes, load study samples were designed with KEMA's assistance to be representative of Avista's customer classes throughout Avista's service territory (both Washington and Idaho) at a generally-accepted level of statistical precision (confidence that the demand estimates calculated using samples are within ten percent of the "true" population demand for a majority of hours). For these classes, customers were randomly selected to be part of a load study following a stratified sample design using the annual use of the customer as the primary stratification variable. After selection, Avista installed recording device on the statistically selected samples of customers, periodically collected data from the load recording devices, routinely conducted quality assurance, stored the data from the sample and transferred the data to KEMA for analysis. KEMA used the resultant data to conduct the load research expansion analysis (that is, estimate the population loads from the sample loads).

At the sample design phase, population billing data were provided to KEMA by Avista for use in constructing efficient sample designs for the following rate classes:

- Residential
- General Service
- Large General Service
- Public Pumping

The objective of sampling is to provide a statistically reliable estimate of the total demand in a particular class of customers. The analysis KEMA performed for Avista is grounded on the theory of Model Based Statistical Sampling (MBSS) which is discussed in more detail in the "Statistical Methodology" section of this report. Using the ratio model, stratified samples were constructed for each rate class and *expected* relative precisions were calculated.

State	Rate Code	Class	Error Ratio	Sample	Expected Relative Precision
Washington	001	Residential	0.900	168	± 11.60%
Idaho	001	Residential	0.900	82	± 16.69%
Total	001	Residential	0.900	250	± 9.52%
Washington	011/012	General Service	0.810	115	± 13.05%
Idaho	011/012	General Service	0.787	85	± 14.68%
Total	011/012	General Service	0.800	200	± 9.75%
Washington	021/022	Large General Service	0.498	52	± 11.47%
Idaho	021/022	Large General Service	0.505	23	± 17.56%
Total	021/022	Large General Service	0.500	75	± 9.61%
Washington	031/032	Pumping	0.985	50	± 23.72%
Idaho	031/032	Pumping	1.034	25	± 35.82%
Total	031/032	Pumping	1.000	75	± 19.78%

Table 11 – Sample Design Expected Relative Precision

The anticipated relative precisions for each of the samples at the time of the sample design are presented in Table 11, including the overall rate class precision, and the precision by rate class and jurisdiction. The Residential, General Service, and Large General Service classes overall were expected to achieve precision within ten percent, and the classes broken out by jurisdiction follow closely with slightly higher precision percentages (as expected given their smaller sample sizes). Higher relative precision percentages are common for irrigation or pumping customers given the high variability of customer loads within the class.

The results of this project were in line with the anticipated precisions presented above ensuring that the project has provided statistically reliable data for developing independent estimates for each class within each jurisdiction.

2.2 Analysis Approach

2.2.1 Overview of Class Load Profile Development

KEMA performed the following steps to conduct the analysis presented in this report:

1) Load profile data validation and estimation,
2) Identified the monthly system peak days, hours and collection of hours using the Avista system load data,
3) Post stratified the available hourly load data using the current billing data to calculate case weights for use in the expansion analysis,
4) Using the case weights expanded the 2009 load data to estimate the class load contributions for the various schedules of interest. The expansions yielded estimates of totals, means, error bounds for the totals, error bounds for the means, achieved relative precision and error ratios for each target variable of interest,
5) Applied loss factors provided by Avista to the load research class expansions,
6) The revised hourly expansions for each rate class were summed and compared to the actual system load (this results in a residual load known as unaccounted for energy[2], or "UFE", and
7) Finally, the UFE was applied to each rate class based on the proportion of the rate class's contribution to the individual hour yielding the reconciled class load.

Several classes had hourly data available for all the customers within the rate class, so the total class loads were simply calculated by adding together the individual customer loads. Rate classes with data available for all customers included the Extra Large

[2] Unaccounted for energy (UFE) refers to the difference between the total of the class estimates and the actual system load data which can result from sampling error. UFE is not referring to unaccounted for energy that results from theft or "lost" meters.

General Service (WA), Extra Large General Service (ID), and Extra Large General Service – CP (ID).

In addition, certain class loads were estimated using "deemed" profiles which provides an estimate or calculation of the total class load and is carried into the raw analysis without adjustment. That is, no post-stratification or expansion occurs for deemed profiles, as they are the total class load profile. Street and Area Lights class loads are deemed profiles in this analysis.

2.2.2 Verification and Editing of the Class Interval Data

One of the first tasks undertaken was to systematically and thoroughly examine each available interval load point for the schedules with load study sample data. The objective of the examination was to identify and correct anomalous points and missing data. Where appropriate, the acceptable data was used to derive an estimate for this data. The first step in this task was to review each site using *KEMA*'s proprietary Visualize-IT software program. The purpose of this examination was to identify anomalous data points, such as spikes, or changes in multipliers.

For example, Figure 5 shows the load shape for an individual site. For a brief number of intervals, this site exhibited a spike in demand 10 times larger than the typical demand. Accordingly, it was deemed anomalous, and eliminated from the individual customer profile. Figure 6 shows the same site with the anomalous data omitted.

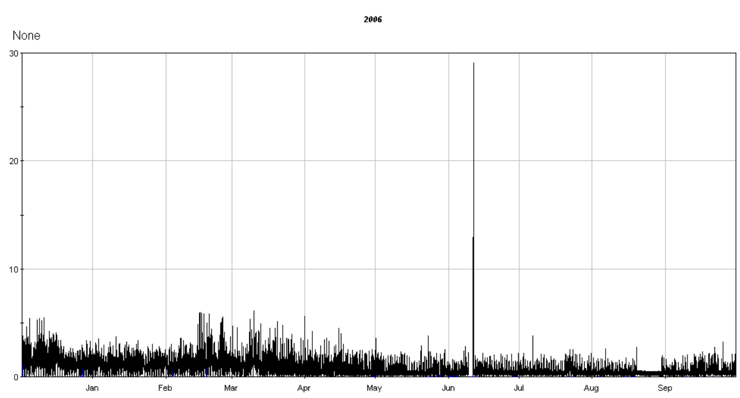

Figure 5 – Example of an Anomalous Spike

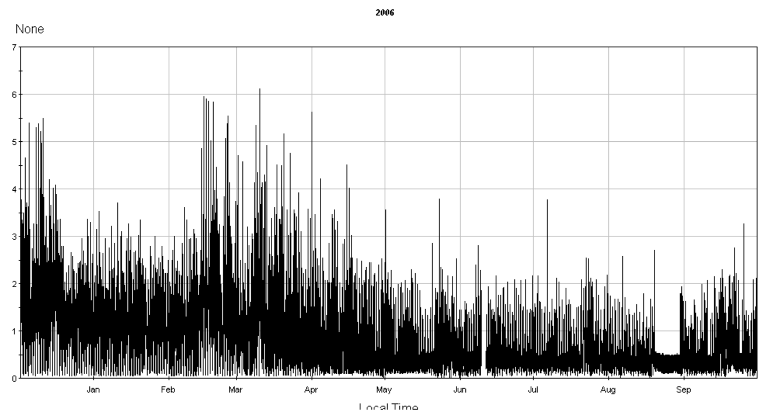

Figure 6 – Load Shape with the Spike Corrected

The second step was to correct the anomalies and fill in the missing intervals. For the classes that showed weather sensitive load we developed temperature response models for use in filling in the missing intervals. Using the valid, non missing data for a site, models were developed by day-of-week for each hour of the day. The development of the temperature demand models follow a seven-step procedure:

1. **Identify Holidays:** After reading in the hourly load data and checking for anomalous data, holidays are identified and reassigned. Since holidays tend to have a unique load pattern similar to a weekend these were reclassified as Sundays for this analysis. The holidays include New Years Day, Memorial Day, July 4th, Labor Day, Thanksgiving, and Christmas.
2. **Determine the Base Load:** The next step determines the base loads. The demands for each customer are calculated by day of the week and time of day. The median of the lowest five non-zero loads by day of the week and time are designated as the base load of the customer.
3. **Determine the Variable Load:** The third step determines the variable load. For each customer the base load is matched to the total load by day of the week and time. The variable load is calculated as the difference between the total load and the base load. If the variable load is less than zero, the variable load is set equal to zero.
4. **Merge Load Information with Temperature Data:** The next step matches the customer loads to the temperature file. Temperature data from the Spokane NOAA weather station was used.
5. **Initial Regression Analysis:** For each customer an initial regression analysis will be performed. Using the model shown below:

$$VL_{lrid,dow,time} = \beta_0 + \beta_1 * HDD + \beta_2 * CDD$$

Where:

$VL_{lrid,dow,time}$ is the Variable Load for customer 'LRID', on day of the week 'DOW' at hour ending 'Time'.

HDD are the heating degree-days (varying temperature base based on optimal customer response)

CDD are the cooling degree-days (varying temperature base based on optimal customer response)

The results of this model are used to identify outliers. Any observation with a studentized residual of greater than 3 will be trimmed from the analysis data set.

6. **Final Regression Analysis:** Using the analysis trimmed data set, the final regression analysis was performed. For each day of the week and hour of the day, a model is developed.

A family of models is examined for each customer by day of the week and time of day. These models include only cooling degree-days, models that include heating degree-days and models that include both heating and cooling degree-days.

To further optimize the selection of the models, a range of degree-day set points are considered for each test group model. For heating degree-days the considered set points will range from 500 to 700. For cooling degree-days the considered set points will range from 640 to 780. Mathematically, the models under consideration can be expressed as follows:

$$VL_{lrid,dow,time}=\beta_0 + \beta_1 * HDD(\tau_1) + \beta_2*CDD(\tau_2)$$

Where

$VL_{lrid,dow,time}$ is the same as above

$HDD(\tau_1)$ are the heating degree-days with a τ_1 base

$CDD(\tau_2)$ are the cooling degree-days with a τ_2 base

For each test group, for each day of the week for each hour 840 models are considered. The optimal model amongst the 840 alternatives is determined based on the minimization of the mean squared error of the residuals (MSE)[3]. Using this selection method, 168 optimal models are chosen for each customer.

[3] Alternative models, with different numbers of independent variables, introduce a challenge to choosing an optimal model. One approach would rely on the maximization of R^2 to indicate the optimal model. However, in building mathematical regression models, the R^2 statistic has a tendency to increase as the number of independent variables increases. Therefore, when comparing models with different numbers of regressors, the maximum R^2 criteria may not lead to choosing the optimal model between alternative models. To avoid this possibility, an alternative method to determine the optimal model was used, the minimization of the mean squared error of the residuals (MS_E). The MS_E accounts for the decrease in the degrees of freedom when an

7. **Prediction of Missing Data:** After the models are verified, demands for missing period are determined using the hourly temperature of the specific period.

For classes that appeared to have distinct patterns of consumption depending on time of day and day of week, we used data for similar hours for similar days of the week within season.

The third editing step was to reexamine each individual site using Visualize-IT. This examination compared the original and filled data for the site. Figure 7 shows an example of an original and filled load shape. As evidenced, the "corrected" profile provides a very good estimate of what the original profile was likely to have done during the missing data periods.

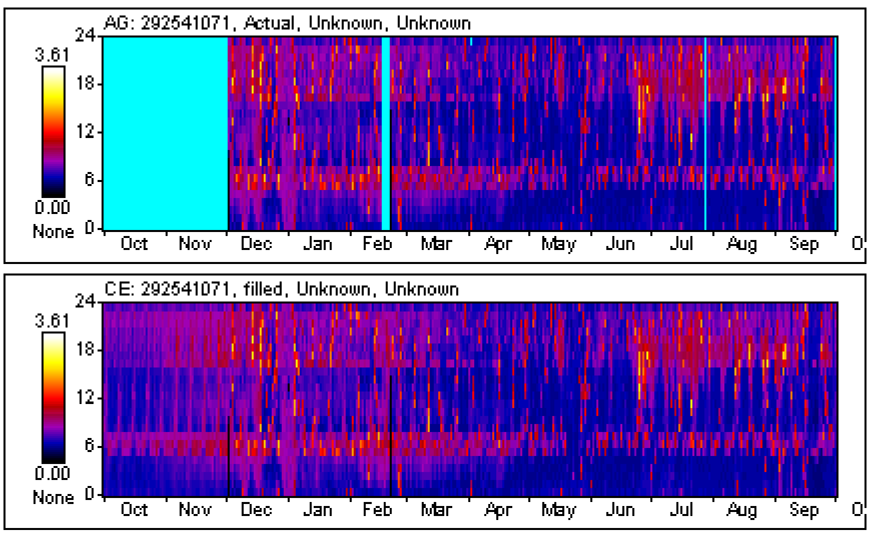

Figure 7 -- Comparison of Original and Filled Load Shape

Table 12 presents a recapitulation of the editing procedure. This table shows that there were over 5.4 million intervals examined. Of these, 5.2 million (97%) were accepted as valid. About 2.7% of the intervals were filled due to missing data or they were deemed anomalous and corrected. Only 0.87% of the intervals were left missing.

additional regressor is added to the equation. Therefore, the model that minimized the MS_E was chosen as the optimal model to represent the temperature versus demand relationship.

Jurisdiction	Rate Schedule	Description	Original Non-Missing Intervals Accepted	Original Intervals Kept Missing (Not Filled)	Intervals Filled	Total Intervals	Percent of Intervals Filled
Washington	001	Residential	1,527,562	0	22,958	1,550,520	1.5%
Washington	011/012	General Service	896,598	18,269	31,213	946,080	3.3%
Washington	021/022	Large General Service	438,491	0	8,269	446,760	1.9%
Washington	025	Extra Large General Service	181,745	0	2,215	183,960	1.2%
Washington	031/032	Pumping	356,313	15,329	22,558	394,200	5.7%
		Washington Totals	3,400,709	33,598	87,213	3,521,520	2.5%
Idaho	001	Residential	658,272	0	16,248	674,520	2.4%
Idaho	011/012	General Service	710,185	0	25,655	735,840	3.5%
Idaho	021/022	Large General Service	242,265	7,018	4,757	254,040	1.9%
Idaho	25	Extra Large General Service	64,097	0	5,983	70,080	8.5%
Idaho	25P	Extra Large General Service - CP	17,520	0	0	17,520	0.0%
Idaho	031/032	Pumping	197,518	6,988	5,734	210,240	2.7%
		Idaho Totals	1,889,857	14,006	58,377	1,962,240	3.0%
		AVISTA Totals	5,290,566	47,604	145,590	5,483,760	2.7%

Table 12 – Edit Procedure Summary Table

2.2.3 Statistical Methodology

This analysis is grounded on the theory of Model Based Statistical Sampling (MBSS). Most of the principles and methods of MBSS theory are discussed in Sarndal, Swensson and Wretman, *Model Assisted Survey Sampling* and Wright, *Methods and Tools of Load Research*. The methods are also taught in the AEIC's *Advanced Application of Load Research* seminar.

The objective of sampling is to provide a statistically reliable estimate of the total demand in a particular class of customers. The MBSS methodology improves the statistical precision by taking advantage of the correlation between the measure of demand of interest, called the target variable, and the auxiliary information available from the billing data. We usually use prior load data or general experience to estimate a model between a particular target variable *y*, e.g., the kW in an individual hour or the average kW in the 12 monthly system peak hours, and a supporting variable *x,* such as annual kWh, that is known in the population. Once the parameters of the model have been estimated, we can apply the model to the values of *x* in the population to assess the expected statistical precision for the target variable, and to develop efficiently stratified sample designs.

We assume the MBSS ratio model relating *y* to *x*. The primary equation of the model is:

$$y_i = \beta x_i + \varepsilon_i \tag{1}$$

This is similar to a zero-intercept regression model, except that we assume that the standard deviation of the random term ε_i varies from one customer *i* to another, depending on the value of x_i, according to the secondary equation:

$$sd(y_i \mid x_i) = sd(\varepsilon_i) = \sigma_0 (x_i)^{\gamma} \qquad (2)$$

Here β , σ_0 and γ are parameters that are assumed to be constant from customer to customer in a given class of *N* customers labeled $i = 1, 2, \ldots, N$. We denote $\sigma_i = sd(\varepsilon_i)$ and $\mu_i = \beta x_i$.

Then we define the error ratio as:

$$er = \frac{\sum_{i=1}^{N} \sigma_i}{\sum_{i=1}^{N} \mu_i} \qquad (3)$$

A model-based design suitable for stratified ratio or regression estimators can usually be developed from just two parameters: the error ratio, *er* and the parameter, γ , written as gamma.

The error ratio measures the total residual standard deviation in the population. Given the error ratio, the expected relative precision at the 90% level of confidence can be estimated using the following equation:

$$rp = 1.64 \sqrt{1 - \frac{n}{N}} \frac{er}{\sqrt{n}} \qquad (4)$$

Here *N* is the number of units in the population and *n* is the planned sample size. This assumes the use of an efficiently stratified sample design and a combined ratio estimator. Gamma, γ, characterizes the degree of heteroscedasticity in the secondary equation (2) and is used to develop the efficiently stratified sample design.

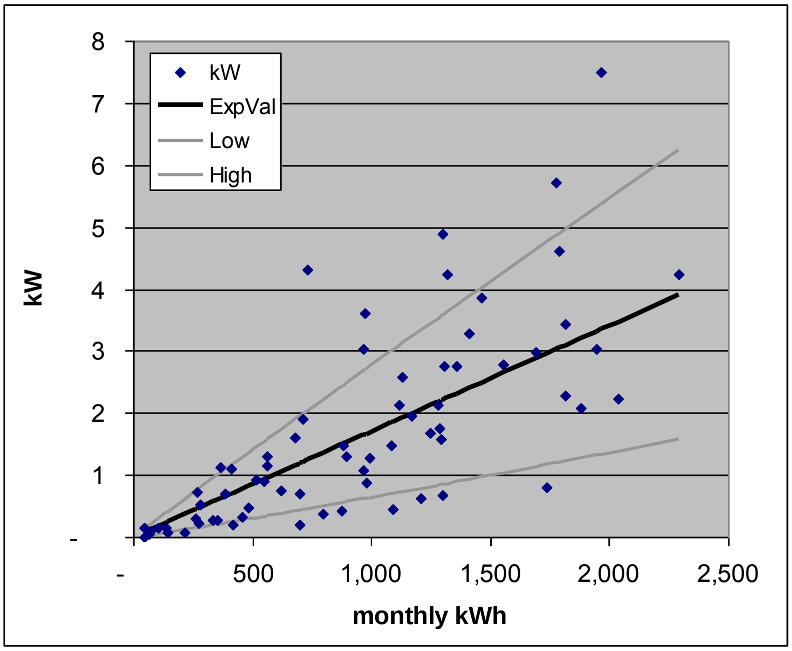

Figure 8 – The MBSS Model

Figure 8 illustrates these ideas. The figure shows a typical scatter plot of sample data. The variable (*x*) plotted on the horizontal axis is the average monthly kWh energy use of each sample customer, known from billing data. The variable (*y*) plotted on the vertical axis is the customer's kW demand coincident with the hour of the system peak. The dark trend line is the expected demand of each customer as a function of the monthly kWh of the customer. The lighter lines are the expected demand plus and minus one standard deviation. These three lines reflect the parameters of the estimated model. The key parameter is the error ratio, which in this case is 0.63. This indicates that one standard deviation is equal to about 0.63 times the expected value of demand for this population in this hour. In this particular case, gamma was found to be approximately equal to one, but 0.8 is more typical and can be used in most applications.

We used the following data to inform our MBSS analysis:

- Hourly load data for each sample customer in the current load study for each of the rate classes and domains of interest,
- System load data for the 12-month period ending December 31, 2009, and
- Current billing data for each customer in each class, especially annual kWh consumption.

2.3 Class Load Profiles - Washington State

The following sections present the results of the reconciled class load for each of the rate classes in Washington State.

2.3.1 Residential (WA)

The sample data was expanded by post-stratifying the Residential (WA) class. Table 13 presents the post-stratification used in the sample expansion analysis. The table presents the jurisdiction, schedule, rate class, strata, maximum annual use[4] in each stratum, the population total annual use in the stratum, the population count, the minimum available sample points in the historical sample and the case weight calculated as the population count divided by the minimum available sample. Please note that these statistics vary slightly from Table 10 due to slight timing differences between data in the population billing file and those used as the accounting "books and records." The data in Table 13 was used to construct appropriate weights, whereas the data in Table 10 was used in the preliminary expansion analysis.

Jurisdiction	Schedule	Rate Class	Strata	Maximum Value Annual kWh	Population Total (Annual kWh)	Population Count	Sample Size	Case Weight
WA	1	Residential	1	8,769	417,294,539	71,878	41	1,753.1
WA	1	Residential	2	12,067	462,415,795	44,628	37	1,206.2
WA	1	Residential	3	15,861	489,635,562	35,486	39	909.9
WA	1	Residential	4	21,651	518,456,857	28,256	28	1,009.1
WA	1	Residential	5	229,940	568,442,333	20,019	32	625.6
Class Totals					2,456,245,085	200,267	177	

Table 13 – Residential (WA) Post-Stratification

In the second stage of the analysis, a loss factor of 1.079 (provided by Avista) was applied to the hourly expansions.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class's contribution to the system demand for that particular

[4] There were a handful of accounts with extreme usage values associated with them. Their inclusion will not materially affect the results of the analysis.

hour. The residential class in Washington represents approximately 33% of the total system load and therefore received about one-third of the UFE[5].

Figure 9 presents the results of the reconciled hourly expansion analysis for the Residential (WA) rate class. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. The dominance of the winter load is clearly evident with bi-modal peaks occurring in the morning and early evening periods. The Residential (WA) class peaks on Tuesday, December 8, 2009 at 7 PM. The peak demand was 710 MW.

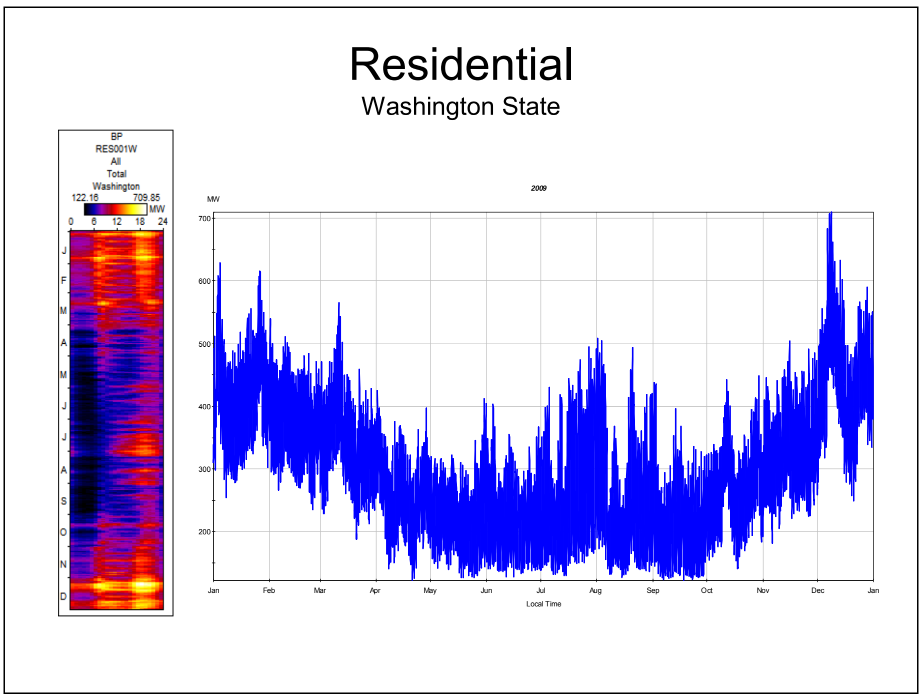

Figure 9 – Residential (WA) Class Load

[5] The UFE varied on an interval by interval basis.

Figure 10 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The winter bi-modal peak is clearly evident in the weekday and peak day profiles. The weekend profiles display a similar level of magnitude with a slightly higher load factor (i.e., flatter load shape) when compared to the weekday profiles.

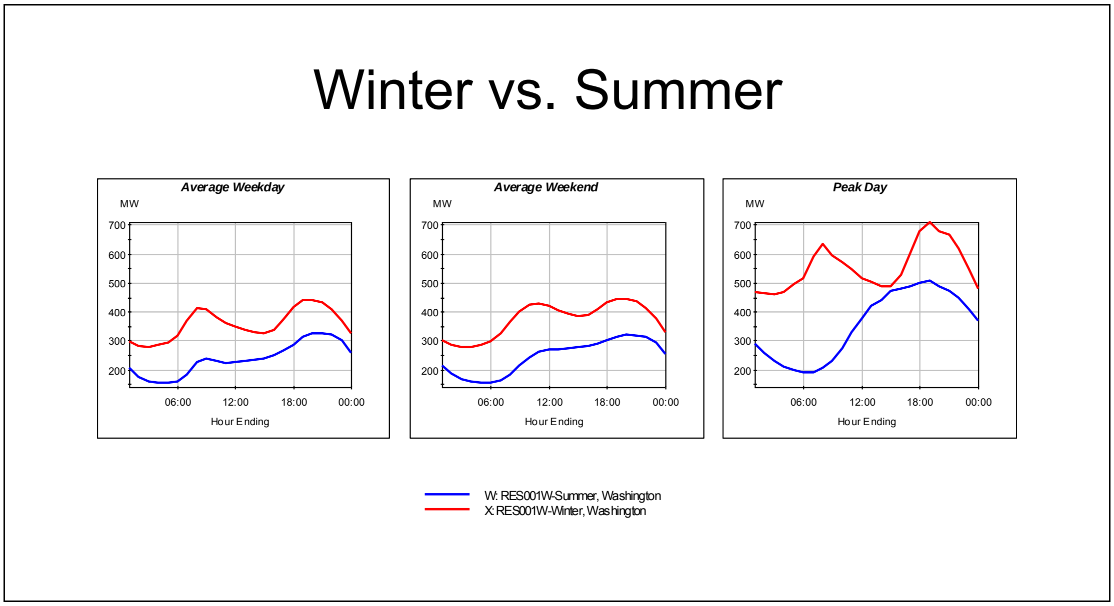

Figure 10 – Residential (WA) Winter vs. Summer

Figure 11 presents a summary of the achieved relative precision[6] associated with the Residential (WA) class analysis. The figure presents the percentage of time the achieved precision was at or below the specific level. For example, 65% of all hours are at or below a precision of ±10%. The majority of hours (i.e., 95% of all hours) were at or below ±11.9%.

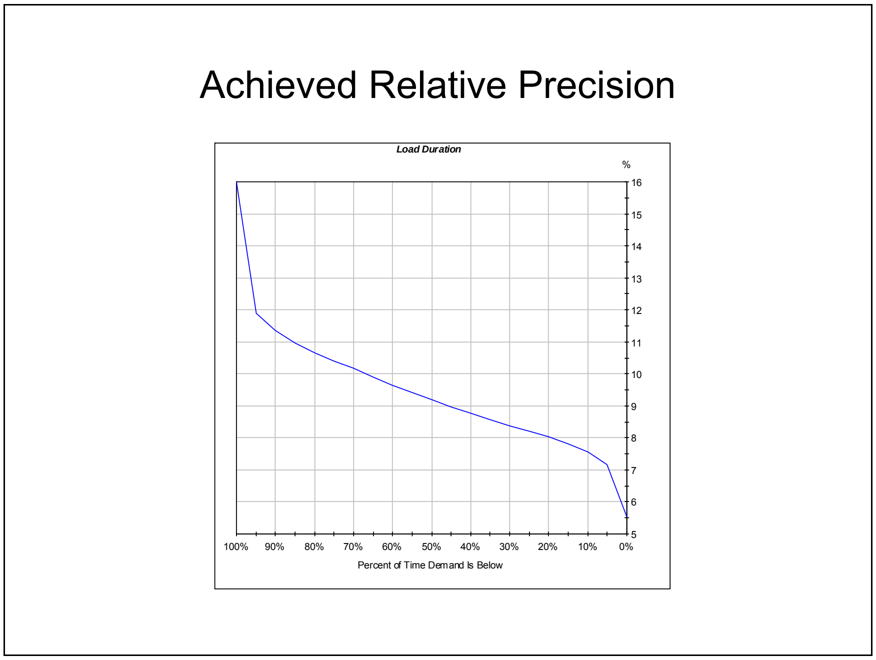

Figure 11 – Residential (WA) Achieved Relative Precision

Table 14 presents summary statistics for the Residential (WA) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

[6] Statistical precision is a measure of how much customer-to-customer variation there is in the data and is used to construct boundaries around our estimates. In load research applications we typically target precision levels of ±10% for the majority of hours in the analysis period.

Monthly load factors ranged from a low of 50% in August and September to a high of 69% in February. The Residential (WA) class load is very coincident with the system peak displaying a system peak coincidence factor of over 80% for 11 of the 12 months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	308,337	Sun Jan 4, 2009 7:00PM	629	414	66%	Mon Jan 26, 2009 8:00AM	607	97%
Feb-09	249,433	Sun Feb 1, 2009 11:00AM	540	371	69%	Tue Feb 10, 2009 8:00AM	478	89%
Mar-09	251,920	Wed Mar 11, 2009 9:00AM	565	339	60%	Wed Mar 11, 2009 9:00AM	565	100%
Apr-09	184,101	Wed Apr 1, 2009 9:00PM	425	256	60%	Wed Apr 1, 2009 12:00PM	359	85%
May-09	166,560	Sat May 30, 2009 7:00PM	412	224	54%	Fri May 29, 2009 5:00PM	293	71%
Jun-09	161,445	Thu Jun 4, 2009 8:00PM	403	224	56%	Thu Jun 4, 2009 7:00PM	380	94%
Jul-09	195,859	Mon Jul 27, 2009 7:00PM	494	263	53%	Mon Jul 27, 2009 6:00PM	455	92%
Aug-09	187,439	Sat Aug 1, 2009 7:00PM	509	252	50%	Mon Aug 3, 2009 6:00PM	450	88%
Sep-09	156,475	Tue Sep 1, 2009 7:00PM	437	217	50%	Wed Sep 2, 2009 6:00PM	404	92%
Oct-09	199,612	Thu Oct 29, 2009 8:00PM	448	268	60%	Mon Oct 12, 2009 9:00AM	408	91%
Nov-09	238,520	Sun Nov 15, 2009 6:00PM	504	331	66%	Mon Nov 30, 2009 6:00PM	455	90%
Dec-09	332,019	Tue Dec 8, 2009 7:00PM	710	446	63%	Tue Dec 8, 2009 7:00PM	710	100%
Annual	2,631,721	Annual Class Peak	710	300	42%	Annual System Peak	710	100%

Table 14 – Residential (WA) Summary Statistics (Totals – MW)

Table 15 presents the same information as Table 14 but on a per-account basis. The average Residential (WA) customer uses 13,150 kWh with an average demand of 3.6 kW at the time of the class peak.

Month	Monthly Energy Use (kWh)	Timing of Class Peak	Class Peak Demand (kW)	Average Demand (kW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (kW)	Coincidence Factor (%)
Jan-09	1,541	Sun Jan 4, 2009 7:00PM	3.1	2.1	66%	Mon Jan 26, 2009 8:00AM	3.0	96%
Feb-09	1,246	Sun Feb 1, 2009 11:00AM	2.7	1.9	69%	Tue Feb 10, 2009 8:00AM	2.4	89%
Mar-09	1,259	Wed Mar 11, 2009 9:00AM	2.8	1.7	60%	Wed Mar 11, 2009 9:00AM	2.8	100%
Apr-09	920	Wed Apr 1, 2009 9:00PM	2.1	1.3	60%	Wed Apr 1, 2009 12:00PM	1.8	84%
May-09	832	Sat May 30, 2009 7:00PM	2.1	1.1	54%	Fri May 29, 2009 5:00PM	1.5	71%
Jun-09	807	Thu Jun 4, 2009 8:00PM	2.0	1.1	56%	Thu Jun 4, 2009 7:00PM	1.9	95%
Jul-09	979	Mon Jul 27, 2009 7:00PM	2.5	1.3	53%	Mon Jul 27, 2009 6:00PM	2.3	92%
Aug-09	937	Sat Aug 1, 2009 7:00PM	2.5	1.3	50%	Mon Aug 3, 2009 6:00PM	2.3	89%
Sep-09	782	Tue Sep 1, 2009 7:00PM	2.2	1.1	50%	Wed Sep 2, 2009 6:00PM	2.0	92%
Oct-09	997	Thu Oct 29, 2009 8:00PM	2.2	1.3	60%	Mon Oct 12, 2009 9:00AM	2.0	91%
Nov-09	1,192	Sun Nov 15, 2009 6:00PM	2.5	1.7	66%	Mon Nov 30, 2009 6:00PM	2.3	90%
Dec-09	1,659	Tue Dec 8, 2009 7:00PM	3.6	2.2	63%	Tue Dec 8, 2009 7:00PM	3.6	100%
Annual	13,150	Annual Class Peak	3.6	1.5	42%	Annual System Peak	3.6	100%

Table 15 – Residential (WA) Summary Statistics (Means – kW)

2.3.2 General Service

The sample data was expanded by post-stratifying the General Service (WA) rate class. Table 16 presents the post-stratification used in the sample expansion analysis. The table presents the jurisdiction, schedule, rate class, strata, maximum annual use in each stratum, the population total annual use in the stratum, the population count, the minimum available sample points in the historical sample and the case weight calculated as the population count divided by the minimum available sample.

Jurisdiction	Schedule	Rate Class	Strata	Maximum Value Annual kWh	Population Total (Annual kWh)	Population Count	Sample Size	Case Weight
WA	11	General Service	1	8,672	40,102,807	12,684	19	667.6
WA	11	General Service	2	16,870	50,147,476	4,068	15	271.2
WA	11	General Service	3	27,954	56,014,739	2,599	13	199.9
WA	11	General Service	4	46,121	61,937,548	1,738	14	124.1
WA	11	General Service	5	116,720	69,467,359	1,111	15	74.1
Schedule 11 Total					277,669,929	22,200	76	
WA	12	General Service	1	34,554	22,517,332	1,333	6	222.2
WA	12	General Service	2	49,535	26,121,794	616	4	154.0
WA	12	General Service	3	64,796	27,707,369	486	4	121.5
WA	12	General Service	4	79,466	29,067,085	404	7	57.7
WA	12	General Service	5	504,364	30,976,908	323	8	40.4
Schedule 12 Total					136,390,489	3,162	29	
Class Totals					414,060,418	25,362	105	

Table 16 – General Service (WA) Post-Stratification

In the second stage of the analysis, a loss factor of 1.079 (provided by Avista) was applied to the hourly expansions.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class's contribution to the system demand for that particular hour.

Figure 12 presents the results of the reconciled hourly expansion analysis for the General Service (WA) class in Washington State. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. Daytimes loads are consistent throughout the year with a higher load factor during the winter months. The General Service (WA) class peaks on Monday, August 3, 2009 at 4 PM. The class peak demand was 97 MW.

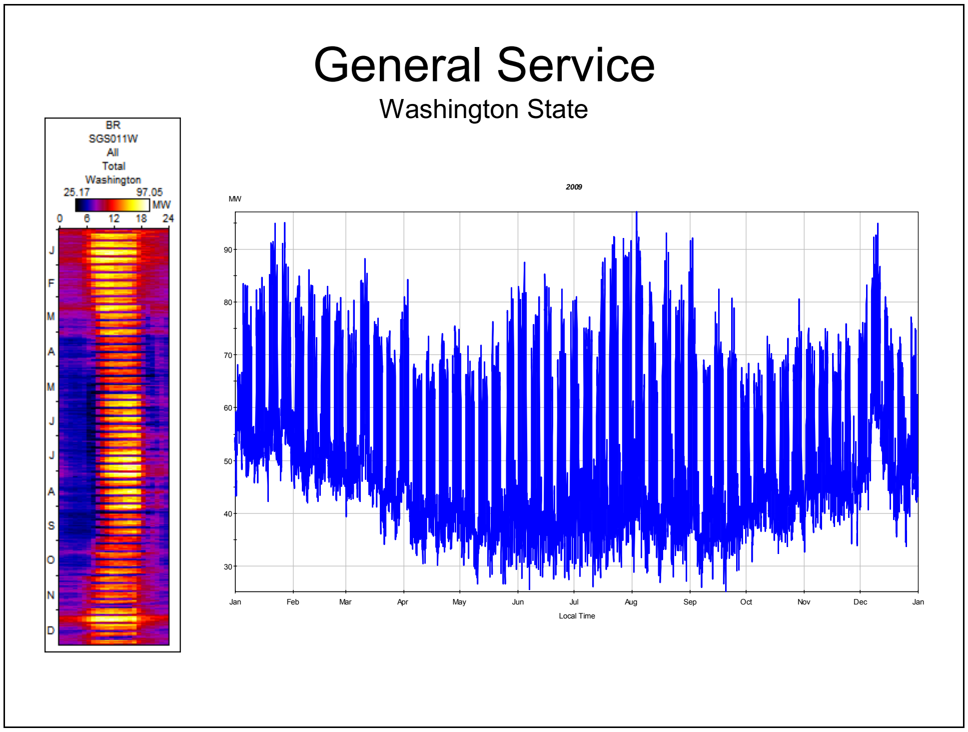

Figure 12 – General Service (WA) Class Load

Figure 13 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The winter and summer load shapes are similar with summer peaks occurring later in the day. The winter and summer weekend profiles display a lower and flatter load shape when compared to the weekday profiles with winter weekend loads lower than summer.

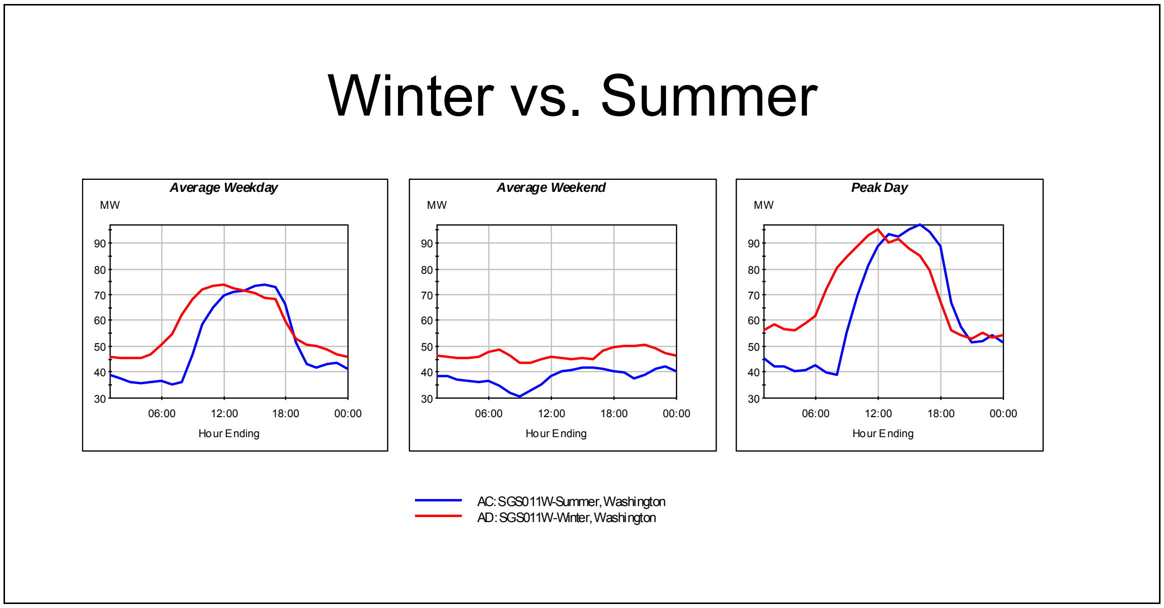

Figure 13 – General Service (WA) Winter vs. Summer

Figure 14 presents a summary of the achieved relative precision[7] associated with the General Service (WA) class analysis. The figure presents the percentage of time the achieved precision was at or below the specific level. For example, 75% of all hours are at or below a precision of ±12.8%. The majority of hours (i.e., 95% of all hours) were at or below ±15.6%.

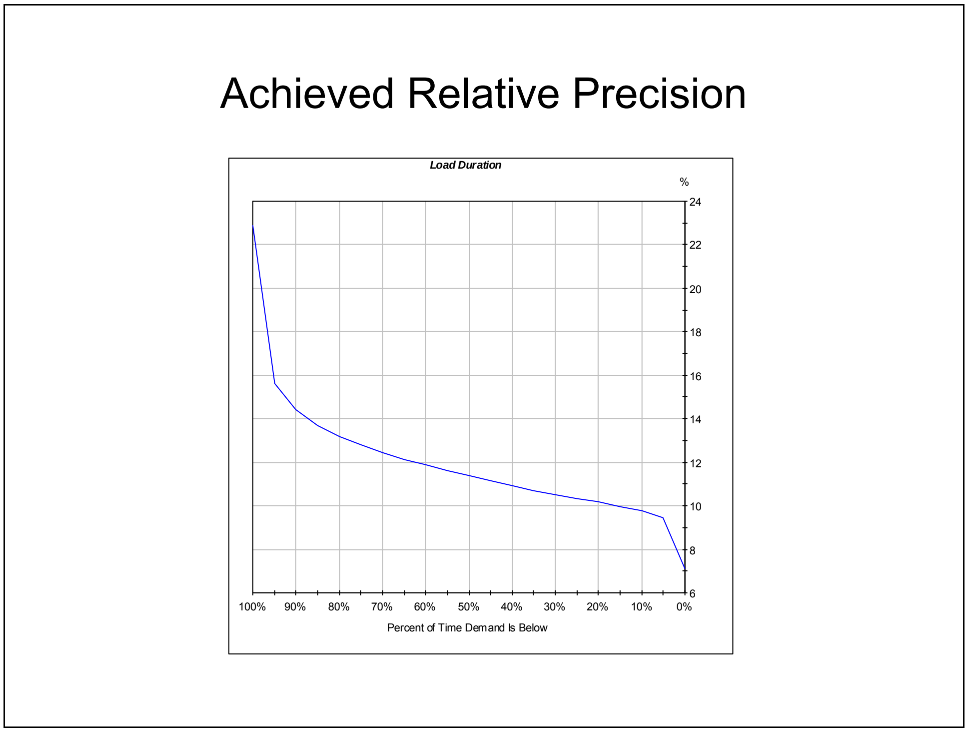

Figure 14 – General Service (WA) Achieved Relative Precision

Table 17 presents summary statistics for the General Service (WA) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

[7] Statistical precision is a measure of how much customer-to-customer variation there is in the data and is used to construct boundaries around our estimates. In load research applications we typically target precision levels of ±10% for the majority of hours in the analysis period.

Monthly load factors ranged from a low of 50% in September to a high of 67% in February and November. The General Service (WA) class load is very coincident with the system peak displaying a system peak coincidence factor of over 80% for ten of the 12 months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	45,636	Tue Jan 27, 2009 12:00PM	95	61	65%	Mon Jan 26, 2009 8:00AM	82	86%
Feb-09	38,419	Mon Feb 9, 2009 11:00AM	86	57	67%	Tue Feb 10, 2009 8:00AM	71	83%
Mar-09	39,665	Wed Mar 11, 2009 12:00PM	88	53	61%	Wed Mar 11, 2009 9:00AM	76	86%
Apr-09	33,868	Fri Apr 3, 2009 1:00PM	84	47	56%	Wed Apr 1, 2009 12:00PM	81	96%
May-09	33,057	Thu May 28, 2009 5:00PM	83	44	54%	Fri May 29, 2009 5:00PM	79	96%
Jun-09	33,965	Thu Jun 4, 2009 4:00PM	87	47	54%	Thu Jun 4, 2009 7:00PM	62	71%
Jul-09	37,298	Wed Jul 22, 2009 4:00PM	92	50	54%	Mon Jul 27, 2009 6:00PM	90	98%
Aug-09	36,640	Mon Aug 3, 2009 4:00PM	97	49	51%	Mon Aug 3, 2009 6:00PM	89	92%
Sep-09	32,817	Wed Sep 2, 2009 4:00PM	92	46	50%	Wed Sep 2, 2009 6:00PM	82	89%
Oct-09	35,801	Thu Oct 29, 2009 12:00PM	81	48	60%	Mon Oct 12, 2009 9:00AM	68	85%
Nov-09	36,545	Mon Nov 23, 2009 5:00PM	76	51	67%	Mon Nov 30, 2009 6:00PM	61	80%
Dec-09	42,502	Thu Dec 10, 2009 12:00PM	95	57	60%	Tue Dec 8, 2009 7:00PM	64	67%
Annual	446,214	Annual Class Peak	97	51	52%	Annual System Peak	64	66%

Table 17 – General Service (WA) Summary Statistics (Totals – MW)

Table 18 presents the same information as Table 17 but on a per-account basis. The average General Service (WA) customer uses 16,440 kWh with an average demand of 3.6 kW at the time of the class peak.

Month	Monthly Energy Use (kWh)	Timing of Class Peak	Class Peak Demand (kW)	Average Demand (kW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (kW)	Coincidence Factor (%)
Jan-09	1,681	Tue Jan 27, 2009 12:00PM	3.5	2.3	65%	Mon Jan 26, 2009 8:00AM	3.0	86%
Feb-09	1,416	Mon Feb 9, 2009 11:00AM	3.2	2.1	67%	Tue Feb 10, 2009 8:00AM	2.6	83%
Mar-09	1,461	Wed Mar 11, 2009 12:00PM	3.3	2.0	61%	Wed Mar 11, 2009 9:00AM	2.8	86%
Apr-09	1,248	Fri Apr 3, 2009 1:00PM	3.1	1.7	56%	Wed Apr 1, 2009 12:00PM	3.0	96%
May-09	1,218	Thu May 28, 2009 5:00PM	3.0	1.6	54%	Fri May 29, 2009 5:00PM	2.9	96%
Jun-09	1,251	Thu Jun 4, 2009 4:00PM	3.2	1.7	54%	Thu Jun 4, 2009 7:00PM	2.3	70%
Jul-09	1,374	Wed Jul 22, 2009 4:00PM	3.4	1.9	54%	Mon Jul 27, 2009 6:00PM	3.3	98%
Aug-09	1,350	Mon Aug 3, 2009 4:00PM	3.6	1.8	51%	Mon Aug 3, 2009 6:00PM	3.3	91%
Sep-09	1,209	Wed Sep 2, 2009 4:00PM	3.4	1.7	50%	Wed Sep 2, 2009 6:00PM	3.0	89%
Oct-09	1,319	Thu Oct 29, 2009 12:00PM	3.0	1.8	60%	Mon Oct 12, 2009 9:00AM	2.5	85%
Nov-09	1,346	Mon Nov 23, 2009 5:00PM	2.8	1.9	67%	Mon Nov 30, 2009 6:00PM	2.2	80%
Dec-09	1,566	Thu Dec 10, 2009 12:00PM	3.5	2.1	60%	Tue Dec 8, 2009 7:00PM	2.4	67%
Annual	16,440	Annual Class Peak	3.6	1.9	52%	Annual System Peak	2.4	66%

Table 18 – General Service (WA) Summary Statistics (Means – kW)

2.3.3 Large General Service

The sample data was expanded by post-stratifying the Large General Service (WA) rate class. Table 19 presents the post-stratification used in the sample expansion analysis. The table presents the jurisdiction, schedule, rate class, strata, maximum annual use in each stratum, the population total annual use in the stratum, the population count, the minimum available sample points in the historical sample and the case weight calculated as the population count divided by the minimum available sample.

Jurisdiction	Schedule	Rate Class	Strata	Maximum Value Annual kWh	Population Total (Annual kWh)	Population Count	Sample Size	Case Weight
WA	21	Large General Service	1	198,304	204,120,976	1,591	9	176.8
WA	21	Large General Service	2	394,922	237,591,246	860	13	66.2
WA	21	Large General Service	3	864,930	273,920,504	488	9	54.2
WA	21	Large General Service	4	2,173,940	325,204,764	244	9	27.1
WA	21	Large General Service	5	8,062,088	396,804,097	117	11	10.6
WA	21	Large General Service-Primary	6	16,109,066	127,395,037	35	1	35.0
Class Totals					1,565,036,623	3,335	52	

Table 19 – Large General Service (WA) Post-Stratification

In the second stage of the analysis, loss factors of 1.079 and 1.054 (provided by Avista) were applied to the hourly Large General Service (WA) and Large General Service-Primary (WA) rate class expansions, respectively.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class's contribution to the system demand for that particular hour.

Figure 15 presents the results of the reconciled hourly expansion analysis for the Large General Service (WA) rate class. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum.

The summer load tends to be higher than the winter load. The Large General Service (WA) class peaks on Wednesday, September 16, 2009 at 4 PM. The peak demand was just under 324 MW.

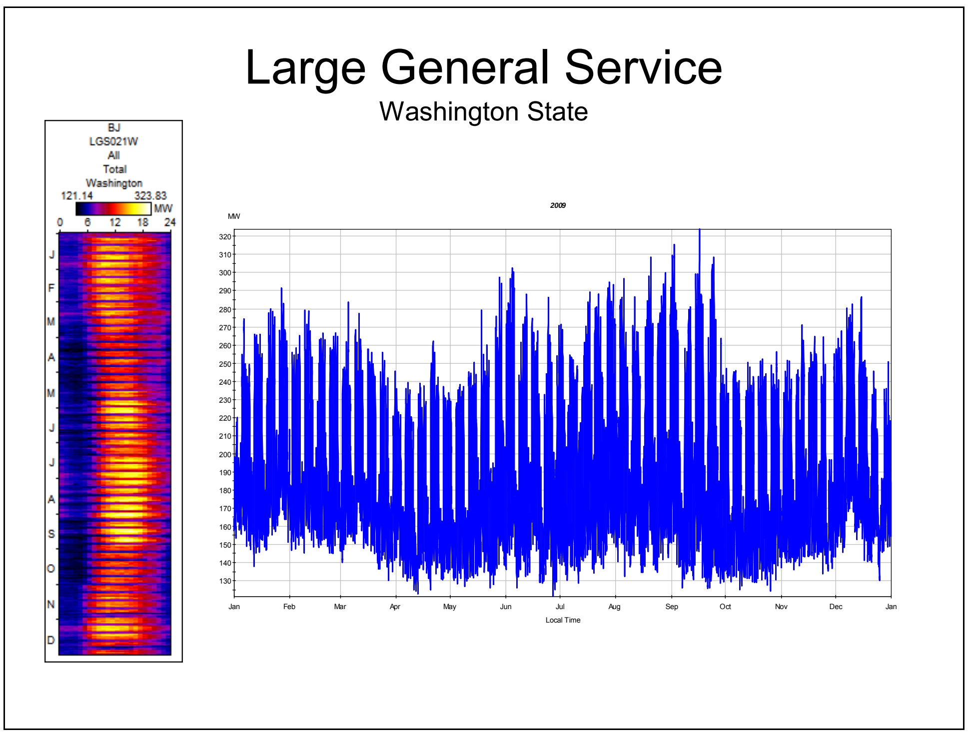

Figure 15 – Large General Service (WA) Class Load

Figure 16 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The winter and summer load shapes are very similar in both magnitude and shape. The weekend profiles are substantially lower than their weekday counterparts.

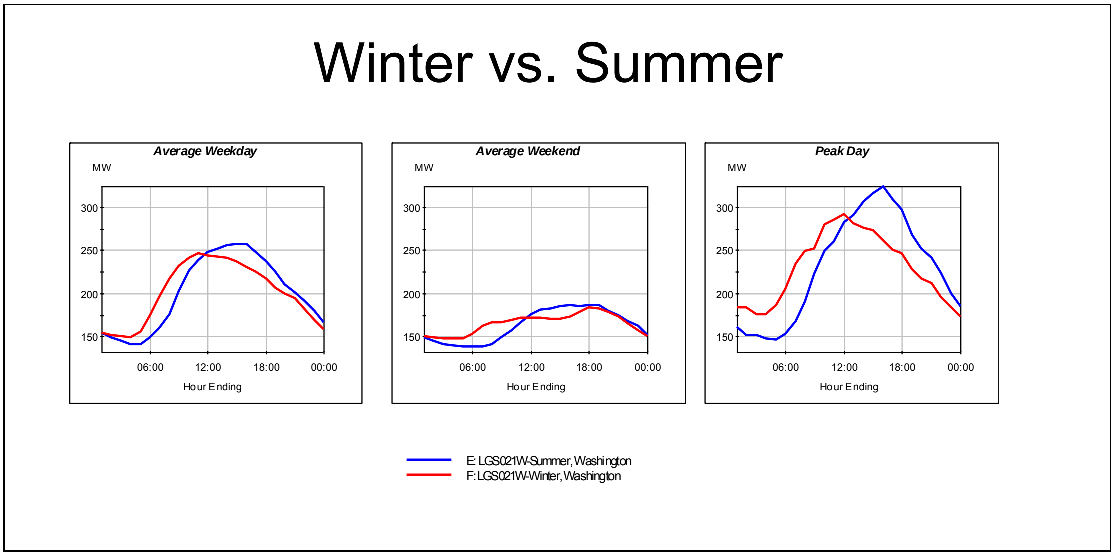

Figure 16 – Large General Service (WA) Winter vs. Summer

Figure 17 presents a summary of the achieved relative precision[8] associated with the Large General Service (WA) class analysis. The figure presents the percentage of time the achieved precision was at or below the specific level. For example, 60% of all hours are at or below a precision of ±10%. The majority of hours (i.e., 95% of all hours) were at or below ±12.4%.

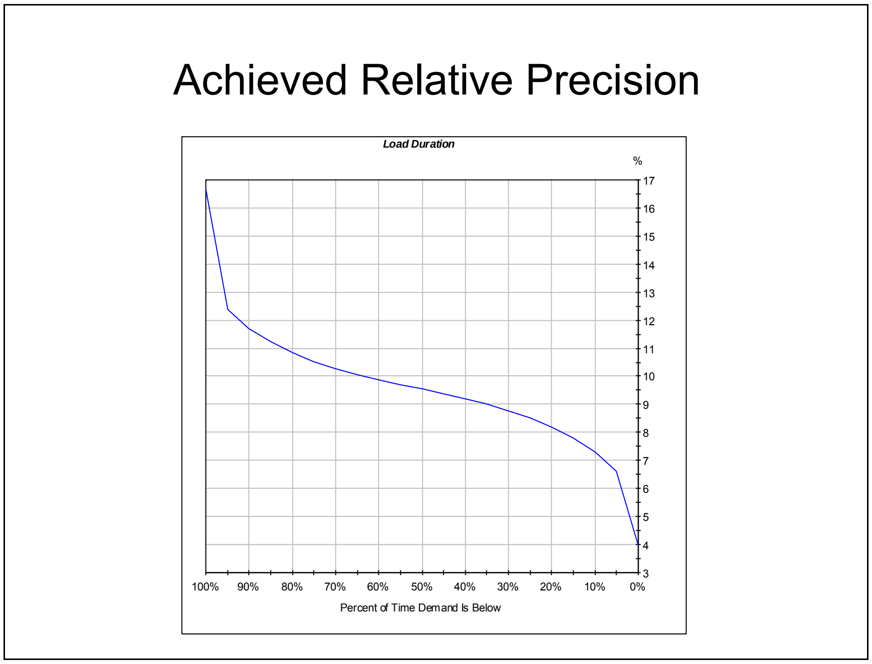

Figure 17 – Large General Service (WA) Achieved Relative Precision

Table 20 presents summary statistics for the Large General Service (WA) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

[8] Statistical precision is a measure of how much customer-to-customer variation there is in the data and is used to construct boundaries around our estimates. In load research applications we typically target precision levels of ±10% for the majority of hours in the analysis period.

Monthly load factors ranged from a low of 60% in September to a high of 71% in February. The Large General Service (WA) class load is very coincident with the system peak displaying a system peak coincidence factor of over 80% for all 12 months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	148,998	Tue Jan 27, 2009 12:00PM	291	200	69%	Mon Jan 26, 2009 8:00AM	249	85%
Feb-09	132,324	Mon Feb 9, 2009 10:00AM	279	197	71%	Tue Feb 10, 2009 8:00AM	242	87%
Mar-09	140,758	Thu Mar 5, 2009 11:00AM	284	189	67%	Wed Mar 11, 2009 9:00AM	247	87%
Apr-09	126,590	Tue Apr 21, 2009 3:00PM	262	176	67%	Wed Apr 1, 2009 12:00PM	232	89%
May-09	134,243	Thu May 28, 2009 2:00PM	297	180	61%	Fri May 29, 2009 5:00PM	288	97%
Jun-09	136,995	Thu Jun 4, 2009 4:00PM	302	190	63%	Thu Jun 4, 2009 7:00PM	241	80%
Jul-09	147,965	Tue Jul 28, 2009 5:00PM	295	199	68%	Mon Jul 27, 2009 6:00PM	288	98%
Aug-09	148,700	Thu Aug 20, 2009 2:00PM	308	200	65%	Mon Aug 3, 2009 6:00PM	276	89%
Sep-09	140,810	Wed Sep 16, 2009 4:00PM	324	196	60%	Wed Sep 2, 2009 6:00PM	301	93%
Oct-09	133,235	Thu Oct 29, 2009 12:00PM	256	179	70%	Mon Oct 12, 2009 9:00AM	213	83%
Nov-09	132,863	Thu Nov 12, 2009 11:00AM	271	184	68%	Mon Nov 30, 2009 6:00PM	221	82%
Dec-09	144,560	Tue Dec 15, 2009 12:00PM	286	194	68%	Tue Dec 8, 2009 7:00PM	232	81%
Annual	1,668,040	Annual Class Peak	324	190	59%	Annual System Peak	232	72%

Table 20 – Large General Service (WA) Summary Statistics (Totals – MW)

Table 21 presents the same information as Table 20 but on a per-account basis. The average Large General Service (WA) customer uses 497,700 kWh with an average demand of 96.6 kW at the time of the class peak.

Month	Monthly Energy Use (kWh)	Timing of Class Peak	Class Peak Demand (kW)	Average Demand (kW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (kW)	Coincidence Factor (%)
Jan-09	44,457	Tue Jan 27, 2009 12:00PM	86.9	59.8	69%	Mon Jan 26, 2009 8:00AM	74.2	85%
Feb-09	39,482	Mon Feb 9, 2009 10:00AM	83.3	58.8	71%	Tue Feb 10, 2009 8:00AM	72.1	87%
Mar-09	41,999	Thu Mar 5, 2009 11:00AM	84.6	56.5	67%	Wed Mar 11, 2009 9:00AM	73.6	87%
Apr-09	37,771	Tue Apr 21, 2009 3:00PM	78.2	52.5	67%	Wed Apr 1, 2009 12:00PM	69.3	89%
May-09	40,055	Thu May 28, 2009 2:00PM	88.7	53.8	61%	Fri May 29, 2009 5:00PM	86.1	97%
Jun-09	40,876	Thu Jun 4, 2009 4:00PM	90.2	56.8	63%	Thu Jun 4, 2009 7:00PM	72.0	80%
Jul-09	44,149	Tue Jul 28, 2009 5:00PM	87.9	59.3	68%	Mon Jul 27, 2009 6:00PM	86.0	98%
Aug-09	44,368	Thu Aug 20, 2009 2:00PM	92.0	59.6	65%	Mon Aug 3, 2009 6:00PM	82.2	89%
Sep-09	42,014	Wed Sep 16, 2009 4:00PM	96.6	58.4	60%	Wed Sep 2, 2009 6:00PM	89.9	93%
Oct-09	39,754	Thu Oct 29, 2009 12:00PM	76.5	53.4	70%	Mon Oct 12, 2009 9:00AM	63.7	83%
Nov-09	39,643	Thu Nov 12, 2009 11:00AM	80.9	55.0	68%	Mon Nov 30, 2009 6:00PM	66.0	82%
Dec-09	43,133	Tue Dec 15, 2009 12:00PM	85.4	58.0	68%	Tue Dec 8, 2009 7:00PM	69.3	81%
Annual	497,700	Annual Class Peak	96.6	56.8	59%	Annual System Peak	69.3	72%

Table 21 – Large General Service (WA) Summary Statistics (Means – kW)

2.3.4 Extra Large General Service

Data for all customers in the Extra Large General Service (WA) were available, so the population count and sample size are the same, and each site's case weight is one.

In the second stage of the analysis, loss factors of 1.05675 and 1.038 (provided by Avista) were applied to the hourly Extra Large General Service and Extra Large General Service (IEP) loads, respectively.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class's contribution to the system demand for that particular hour.

Figure 18 presents the results of the reconciled hourly expansion analysis for the Extra Large General Service (WA) rate class. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. The Extra Large General Service (WA) class peaks on Tuesday, December 8, 2009 at noon. The peak demand was 146 MW.

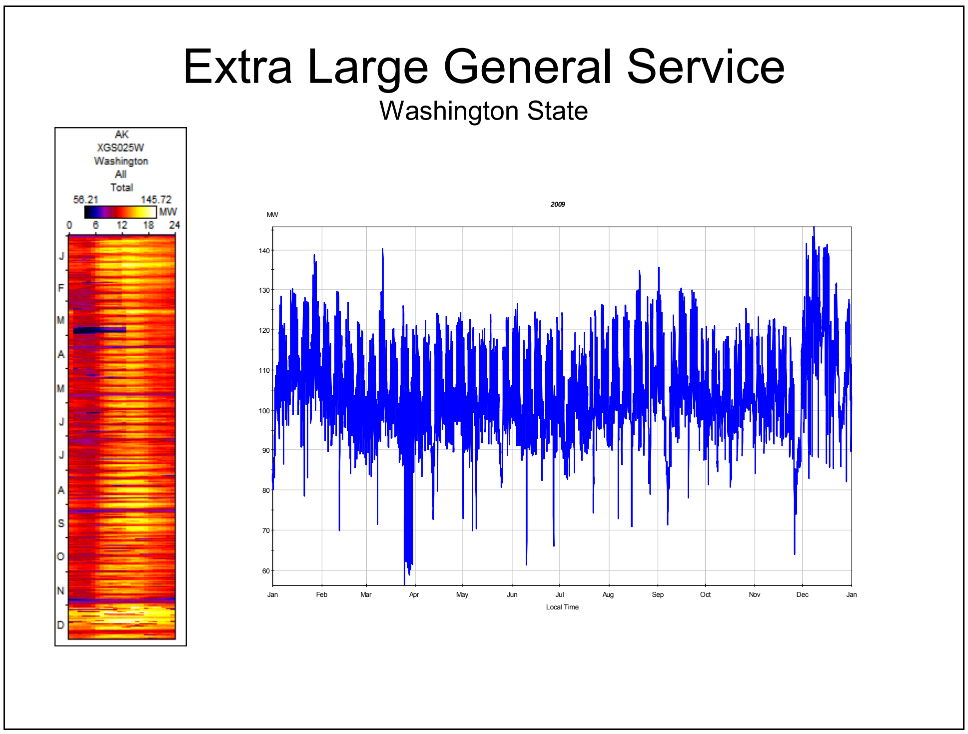

Figure 18 – Extra Large General Service (WA) Class Load

Figure 19 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The Extra Large General Service (WA) class displays similar average weekday and weekend profiles by season with the winter load slightly higher than the summer load. The peak day is quite distinct when compared to the average weekday or weekend day.

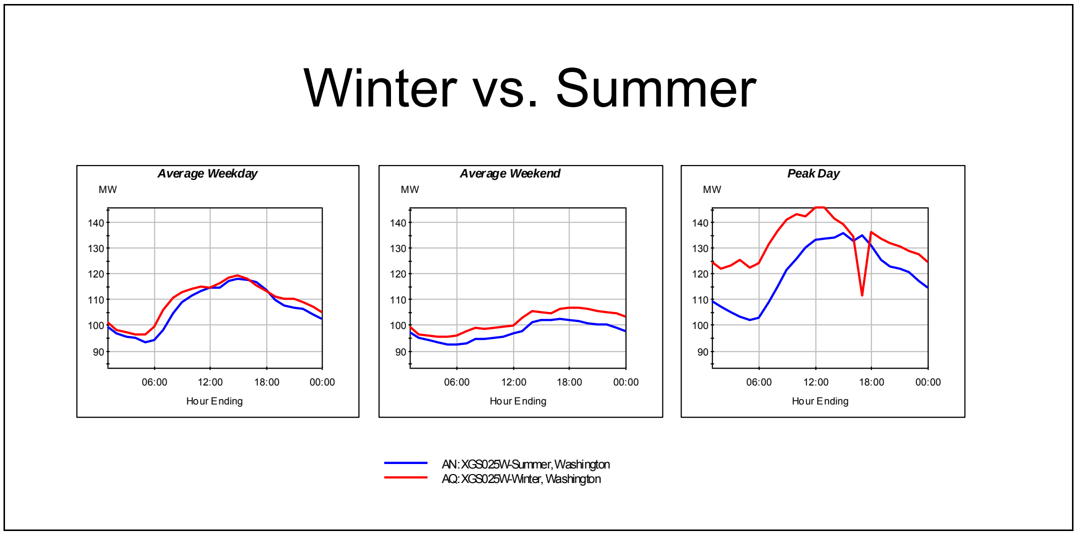

Figure 19 – Extra Large General Service (WA) Winter vs. Summer

The relative precision was perfect since the data for all of the customers in the class were available for the full 12 month period examined.

Table 22 presents summary statistics for the Extra Large General Service (WA) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

Monthly load factors ranged from a low of 72% in March to a high of 83% in April, May and October. The Extra Large General Service (WA) load is very coincident with the system peak displaying a system peak coincidence factor of over 80% for all 12 months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	82,427	Tue Jan 27, 2009 1:00PM	139	111	80%	Mon Jan 26, 2009 8:00AM	122	88%
Feb-09	71,581	Tue Feb 10, 2009 3:00PM	130	107	82%	Tue Feb 10, 2009 8:00AM	116	90%
Mar-09	75,413	Wed Mar 11, 2009 2:00PM	140	102	72%	Wed Mar 11, 2009 9:00AM	118	84%
Apr-09	74,683	Wed Apr 29, 2009 3:00PM	124	104	83%	Wed Apr 1, 2009 12:00PM	111	90%
May-09	76,252	Mon May 18, 2009 2:00PM	124	102	83%	Fri May 29, 2009 5:00PM	118	96%
Jun-09	74,555	Thu Jun 4, 2009 3:00PM	126	104	82%	Thu Jun 4, 2009 7:00PM	114	90%
Jul-09	76,263	Mon Jul 27, 2009 2:00PM	126	103	81%	Mon Jul 27, 2009 6:00PM	123	97%
Aug-09	78,825	Thu Aug 20, 2009 2:00PM	135	106	79%	Mon Aug 3, 2009 6:00PM	121	90%
Sep-09	76,521	Tue Sep 1, 2009 3:00PM	136	106	78%	Wed Sep 2, 2009 6:00PM	123	91%
Oct-09	77,438	Mon Oct 26, 2009 2:00PM	125	104	83%	Mon Oct 12, 2009 9:00AM	113	90%
Nov-09	73,229	Tue Nov 3, 2009 10:00AM	123	102	82%	Mon Nov 30, 2009 6:00PM	114	92%
Dec-09	86,032	Tue Dec 8, 2009 12:00PM	146	116	79%	Tue Dec 8, 2009 7:00PM	134	92%
Annual	923,220	Annual Class Peak	146	105	72%	Annual System Peak	134	92%

Table 22 – Extra Large General Service (WA) Summary Statistics (Totals – MW)

Table 23 presents the same information as Table 22 but on a per-account basis. The average Extra Large General Service (WA) customer uses 41,964,560 kWh with an average demand of 6,624 kW at the time of the class peak.

Month	Monthly Energy Use (kWh)	Timing of Class Peak	Class Peak Demand (kW)	Average Demand (kW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (kW)	Coincidence Factor (%)
Jan-09	3,746,700	Tue Jan 27, 2009 1:00PM	6,305	5,036	80%	Mon Jan 26, 2009 8:00AM	5,555	88%
Feb-09	3,253,698	Tue Feb 10, 2009 3:00PM	5,893	4,842	82%	Tue Feb 10, 2009 8:00AM	5,279	90%
Mar-09	3,427,883	Wed Mar 11, 2009 2:00PM	6,374	4,614	72%	Wed Mar 11, 2009 9:00AM	5,382	84%
Apr-09	3,394,683	Wed Apr 29, 2009 3:00PM	5,647	4,715	83%	Wed Apr 1, 2009 12:00PM	5,067	90%
May-09	3,465,994	Mon May 18, 2009 2:00PM	5,625	4,659	83%	Fri May 29, 2009 5:00PM	5,381	96%
Jun-09	3,388,871	Thu Jun 4, 2009 3:00PM	5,747	4,707	82%	Thu Jun 4, 2009 7:00PM	5,175	90%
Jul-09	3,466,487	Mon Jul 27, 2009 2:00PM	5,740	4,659	81%	Mon Jul 27, 2009 6:00PM	5,571	97%
Aug-09	3,582,954	Thu Aug 20, 2009 2:00PM	6,123	4,816	79%	Mon Aug 3, 2009 6:00PM	5,499	90%
Sep-09	3,478,222	Tue Sep 1, 2009 3:00PM	6,164	4,831	78%	Wed Sep 2, 2009 6:00PM	5,604	91%
Oct-09	3,519,924	Mon Oct 26, 2009 2:00PM	5,695	4,731	83%	Mon Oct 12, 2009 9:00AM	5,150	90%
Nov-09	3,328,608	Tue Nov 3, 2009 10:00AM	5,597	4,617	82%	Mon Nov 30, 2009 6:00PM	5,166	92%
Dec-09	3,910,535	Tue Dec 8, 2009 12:00PM	6,624	5,256	79%	Tue Dec 8, 2009 7:00PM	6,077	92%
Annual	41,964,560	Annual Class Peak	6,624	4,790	72%	Annual System Peak	6,077	92%

Table 23 – Extra Large General Service (WA) Summary Statistics (Means – kW)

2.3.5 Pumping

The sample data was expanded by post-stratifying the Pumping (WA) rate class. Table 24 presents the post-stratification used in the sample expansion analysis. The table presents the jurisdiction, schedule, rate class, strata, maximum annual use in each stratum, the population total annual use in the stratum, the population count, the minimum available sample points in the historical sample and the case weight calculated as the population count divided by the minimum available sample.

Jurisdiction	Schedule	Rate Class	Strata	Maximum Value Annual kWh	Population Total (Annual kWh)	Population Count	Sample Size	Case Weight
WA	31	Pumping Service	1	47,687	15,415,874	1,631	8	203.9
WA	31	Pumping Service	2	123,131	21,060,758	280	10	28.0
WA	31	Pumping Service	3	381,547	25,966,498	121	9	13.4
WA	31	Pumping Service	4	1,183,935	31,624,846	49	7	7.0
WA	31	Pumping Service	5	5,110,715	42,589,679	21	8	2.6
Class Totals					136,657,655	2,102	42	

Table 24 – Pumping (WA) Post-Stratification

In the second stage of the analysis, a loss factor of 1.079 (provided by Avista) was applied to the hourly expansions.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class's contribution to the system demand for that particular hour.

Figure 20 presents the results of the reconciled hourly expansion analysis for the Pumping (WA) rate class in Washington State. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. The dominance of the summer load is clearly evident with only minimal load in the winter months. The Pumping (WA) class peaks on Friday, June 5, 2009 at 6 PM. The peak demand was about 49 MW.

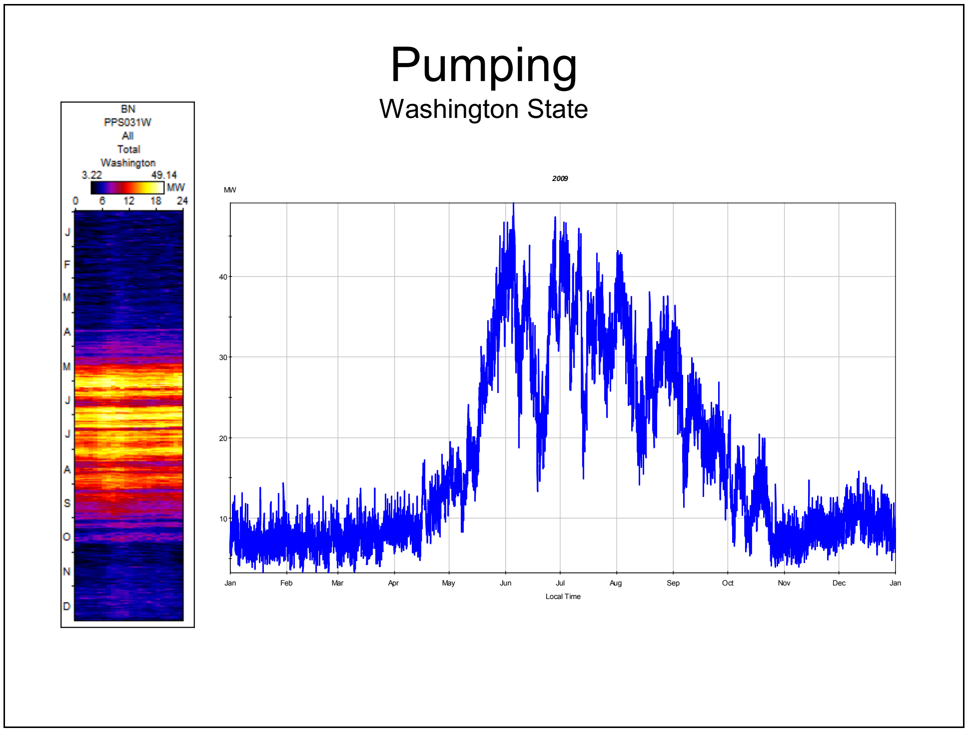

Figure 20 – Pumping (WA) Class Load

Figure 21 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The pumping load is highest during the summer period. The average weekday and weekend load shapes are very similar by season and differ dramatically from the class peak load.

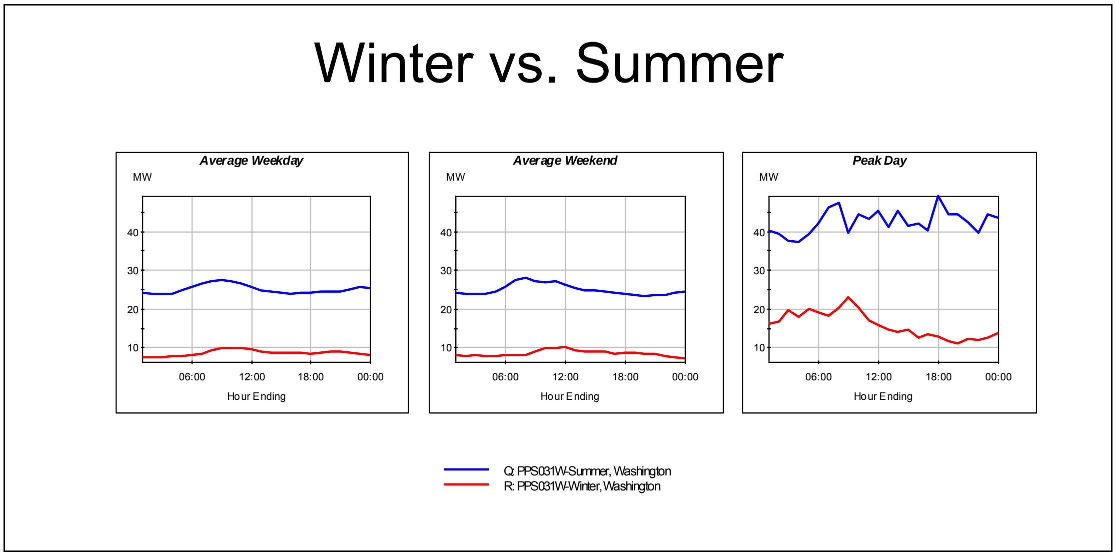

Figure 21 – Pumping (WA) Winter vs. Summer

Figure 22 presents a summary of the achieved relative precision[9] associated with the Pumping (WA) class analysis. The figure presents the percentage of time the achieved precision was at or below the specific level. The precision for this class reflects the high volatility of the load.

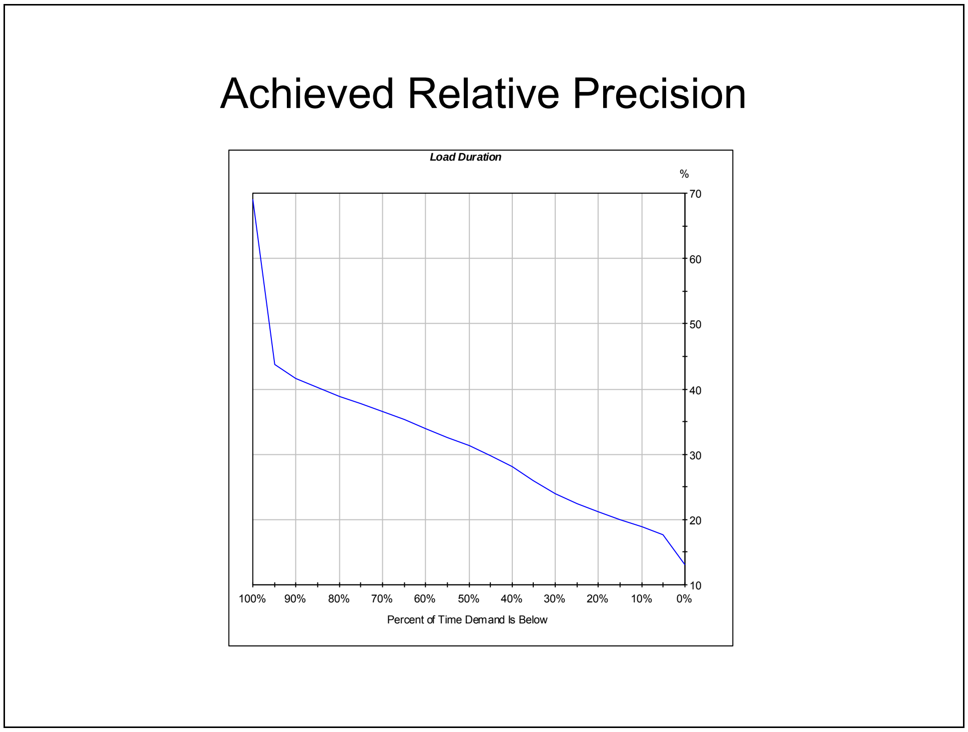

Figure 22 – Pumping (WA) Achieved Relative Precision

Table 25 presents summary statistics for the Pumping (WA) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

[9] Statistical precision is a measure of how much customer-to-customer variation there is in the data and is used to construct boundaries around our estimates. In load research applications we typically target precision levels of ±10% for the majority of hours in the analysis period.

Monthly load factors ranged from a low of 49% in May to a high of 73% in July. The Pumping (WA) load is not coincident with the system peak displaying a system peak coincidence factor of over 80% for only two of the 12 months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	5,382	Fri Jan 30, 2009 8:00AM	14.4	7.2	50%	Mon Jan 26, 2009 8:00AM	10.0	69%
Feb-09	4,848	Sat Feb 21, 2009 12:00AM	12.7	7.2	57%	Tue Feb 10, 2009 8:00AM	5.1	40%
Mar-09	5,654	Sat Mar 21, 2009 12:00PM	13.7	7.6	56%	Wed Mar 11, 2009 9:00AM	7.6	55%
Apr-09	7,385	Mon Apr 27, 2009 8:00AM	17.9	10.3	57%	Wed Apr 1, 2009 12:00PM	11.8	66%
May-09	17,104	Sun May 31, 2009 7:00AM	46.7	23.0	49%	Fri May 29, 2009 5:00PM	39.1	84%
Jun-09	23,390	Fri Jun 5, 2009 6:00PM	49.1	32.5	66%	Thu Jun 4, 2009 7:00PM	31.7	64%
Jul-09	25,329	Fri Jul 3, 2009 7:00AM	46.7	34.0	73%	Mon Jul 27, 2009 6:00PM	26.7	57%
Aug-09	21,490	Sat Aug 1, 2009 11:00PM	43.2	28.9	67%	Mon Aug 3, 2009 6:00PM	37.8	88%
Sep-09	15,049	Wed Sep 2, 2009 10:00AM	36.4	20.9	57%	Wed Sep 2, 2009 6:00PM	27.0	74%
Oct-09	8,431	Fri Oct 2, 2009 9:00AM	22.8	11.3	50%	Mon Oct 12, 2009 9:00AM	9.9	43%
Nov-09	5,811	Sat Nov 14, 2009 2:00PM	14.7	8.1	55%	Mon Nov 30, 2009 6:00PM	10.2	69%
Dec-09	7,170	Sat Dec 12, 2009 3:00AM	15.8	9.6	61%	Tue Dec 8, 2009 7:00PM	9.9	63%
Annual	147,045	Annual Class Peak	49.1	16.8	34%	Annual System Peak	9.9	20%

Table 25 – Pumping (WA) Summary Statistics (Totals – MW)

Table 26 presents the same information as Table 25 but on a per-account basis. The average Pumping (WA) customer uses 62,287 kWh with an average demand of 20.8 kW at the time of the class peak.

Month	Monthly Energy Use (kWh)	Timing of Class Peak	Class Peak Demand (kW)	Average Demand (kW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (kW)	Coincidence Factor (%)
Jan-09	2,280	Fri Jan 30, 2009 8:00AM	6.1	3.1	50%	Mon Jan 26, 2009 8:00AM	4.2	69%
Feb-09	2,054	Sat Feb 21, 2009 12:00AM	5.4	3.1	57%	Tue Feb 10, 2009 8:00AM	2.2	40%
Mar-09	2,395	Sat Mar 21, 2009 12:00PM	5.8	3.2	56%	Wed Mar 11, 2009 9:00AM	3.2	56%
Apr-09	3,128	Mon Apr 27, 2009 8:00AM	7.6	4.3	57%	Wed Apr 1, 2009 12:00PM	5.0	66%
May-09	7,245	Sun May 31, 2009 7:00AM	19.8	9.7	49%	Fri May 29, 2009 5:00PM	16.5	84%
Jun-09	9,908	Fri Jun 5, 2009 6:00PM	20.8	13.8	66%	Thu Jun 4, 2009 7:00PM	13.4	64%
Jul-09	10,729	Fri Jul 3, 2009 7:00AM	19.8	14.4	73%	Mon Jul 27, 2009 6:00PM	11.3	57%
Aug-09	9,103	Sat Aug 1, 2009 11:00PM	18.3	12.2	67%	Mon Aug 3, 2009 6:00PM	16.0	88%
Sep-09	6,375	Wed Sep 2, 2009 10:00AM	15.4	8.9	57%	Wed Sep 2, 2009 6:00PM	11.4	74%
Oct-09	3,571	Fri Oct 2, 2009 9:00AM	9.7	4.8	50%	Mon Oct 12, 2009 9:00AM	4.2	43%
Nov-09	2,461	Sat Nov 14, 2009 2:00PM	6.2	3.4	55%	Mon Nov 30, 2009 6:00PM	4.3	69%
Dec-09	3,037	Sat Dec 12, 2009 3:00AM	6.7	4.1	61%	Tue Dec 8, 2009 7:00PM	4.2	63%
Annual	62,287	Annual Class Peak	20.8	7.1	34%	Annual System Peak	4.2	20%

Table 26 – Pumping (WA) Summary Statistics (Means – kW)

2.3.6 Street and Area Lights

In the first stage analysis, the lighting classes were represented by “deemed profiles.” The deemed profile provides an estimate of the load based on billing data and daylight hours.

In the second stage of the analysis, a loss factor of 1.079 (provided by Avista) was applied to the hourly expansions.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class’s contribution to the system demand for that particular hour.

Figure 23 presents the results of the reconciled hourly expansion analysis for the Street and Area Lights (WA) rate class. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. The lighting loads track the nighttime hours. The Street and Area Lights (WA) class peaks on Wednesday, January 7, 2009 at 9 PM. The peak demand was 7.5 MW.

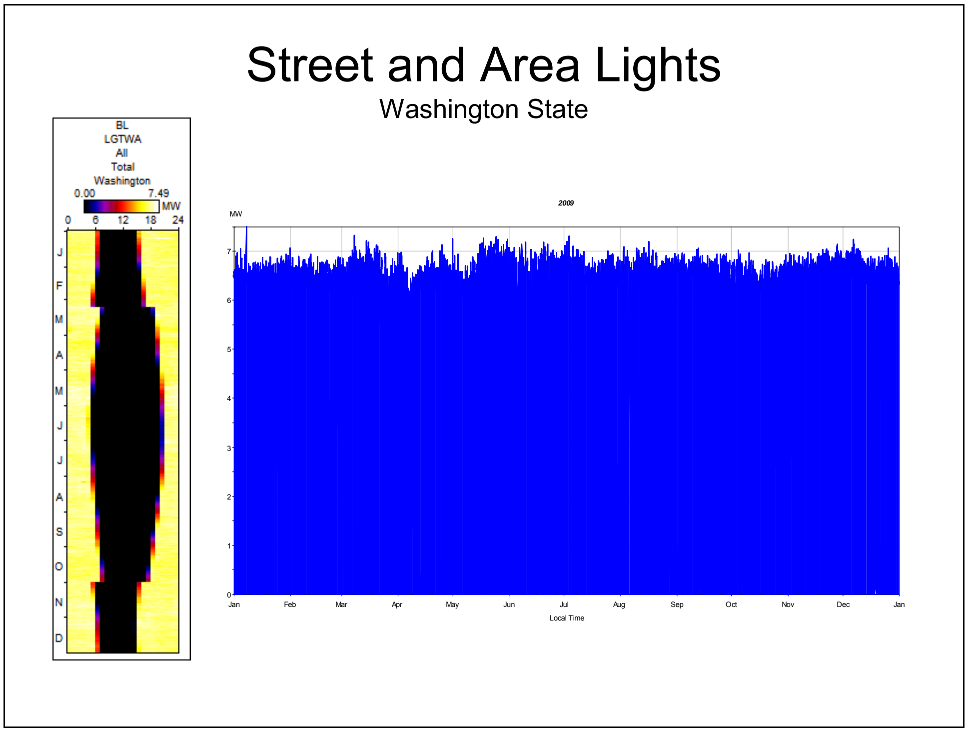

Figure 23 – Street and Area Lights (WA) Class Load

Figure 24 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The lighting class displays similar average weekday and weekend profiles by season. The longer winter hours are evident.

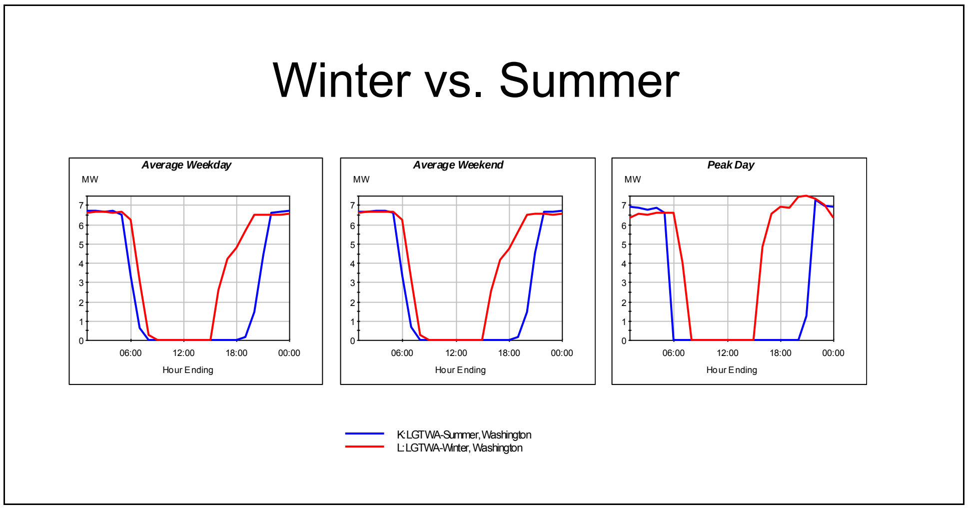

Figure 24 – Street and Area Lights (WA) Winter vs. Summer

The relative precision was not calculated for the Street and Area Lights (WA) rate class since the total class load is a deemed profile.

Table 27 presents summary statistics for the Street and Area Lights (WA) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

Monthly load factors ranged from a low of 32% in June and July to a high of 60% in December. The Street and Area Lights (WA) class load is only coincident with the system peak during the winter months of November and December with coincident factors of 96% and 94%, respectively. The class peak load is not at all coincident with the system peak during all other months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	3,060	Wed Jan 7, 2009 9:00PM	7.5	4.1	55%	Mon Jan 26, 2009 8:00AM	-	0%
Feb-09	2,516	Thu Feb 12, 2009 6:00AM	6.9	3.7	54%	Tue Feb 10, 2009 8:00AM	-	0%
Mar-09	2,478	Sun Mar 8, 2009 4:00AM	7.3	3.3	46%	Wed Mar 11, 2009 9:00AM	-	0%
Apr-09	2,020	Sat Apr 25, 2009 3:00AM	7.1	2.8	39%	Wed Apr 1, 2009 12:00PM	-	0%
May-09	1,845	Mon May 25, 2009 2:00AM	7.3	2.5	34%	Fri May 29, 2009 5:00PM	-	0%
Jun-09	1,638	Wed Jun 10, 2009 4:00AM	7.2	2.3	32%	Thu Jun 4, 2009 7:00PM	-	0%
Jul-09	1,760	Fri Jul 3, 2009 10:00PM	7.3	2.4	32%	Mon Jul 27, 2009 6:00PM	-	0%
Aug-09	2,041	Sun Aug 16, 2009 9:00PM	7.2	2.7	38%	Mon Aug 3, 2009 6:00PM	-	0%
Sep-09	2,289	Sat Sep 12, 2009 11:00PM	7.1	3.2	45%	Wed Sep 2, 2009 6:00PM	-	0%
Oct-09	2,657	Mon Oct 5, 2009 12:00AM	7.0	3.6	51%	Mon Oct 12, 2009 9:00AM	-	0%
Nov-09	2,951	Sat Nov 28, 2009 1:00AM	7.1	4.1	57%	Mon Nov 30, 2009 6:00PM	6.8	96%
Dec-09	3,204	Mon Dec 7, 2009 3:00AM	7.2	4.3	60%	Tue Dec 8, 2009 7:00PM	6.8	94%
Annual	28,458	Annual Class Peak	7.5	3.2	43%	Annual System Peak	6.8	91%

Table 27 – Street and Area Lights (WA) Summary Statistics (Totals – MW)

2.4 Class Load Profiles – Idaho

The following sections present the results of the reconciled class load for each of the rate classes in Idaho.

2.4.1 Residential

The sample data was expanded by post-stratifying the Residential (ID) rate class. Table 28 presents the post-stratification used in the sample expansion analysis. The table presents the jurisdiction, schedule, rate class, strata, maximum annual use in each stratum, the population total annual use in the stratum, the population count, the minimum available sample points in the historical sample and the case weight calculated as the population count divided by the minimum available sample.

Jurisdiction	Schedule	Rate Class	Strata	Maximum Value Annual kWh	Population Total (Annual kWh)	Population Count	Sample Size	Case Weight
ID	1	Residential	1	8,492	200,118,441	37,107	25	1,484.3
ID	1	Residential	2	12,055	223,835,430	21,946	6	3,657.7
ID	1	Residential	3	16,042	238,110,237	17,132	11	1,557.5
ID	1	Residential	4	21,708	252,250,256	13,608	16	850.5
ID	1	Residential	5	320,797	277,136,024	9,635	19	507.1
Class Totals					1,191,450,388	99,428	77	

Table 28 – Residential (ID) Post-Stratification

In the second stage of the analysis, a loss factor of 1.079 (provided by Avista) was applied to the hourly expansions.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class's contribution to the system demand for that particular hour.

Figure 25 presents the results of the reconciled hourly expansion analysis for the Residential (ID) rate class. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. The dominance of the winter load is clearly evident with bi-modal peaks occurring in the morning and early evening periods. The Residential (ID) class peaks on Sunday, December 6, 2009 at 8 PM. The class peak demand was 319 MW.

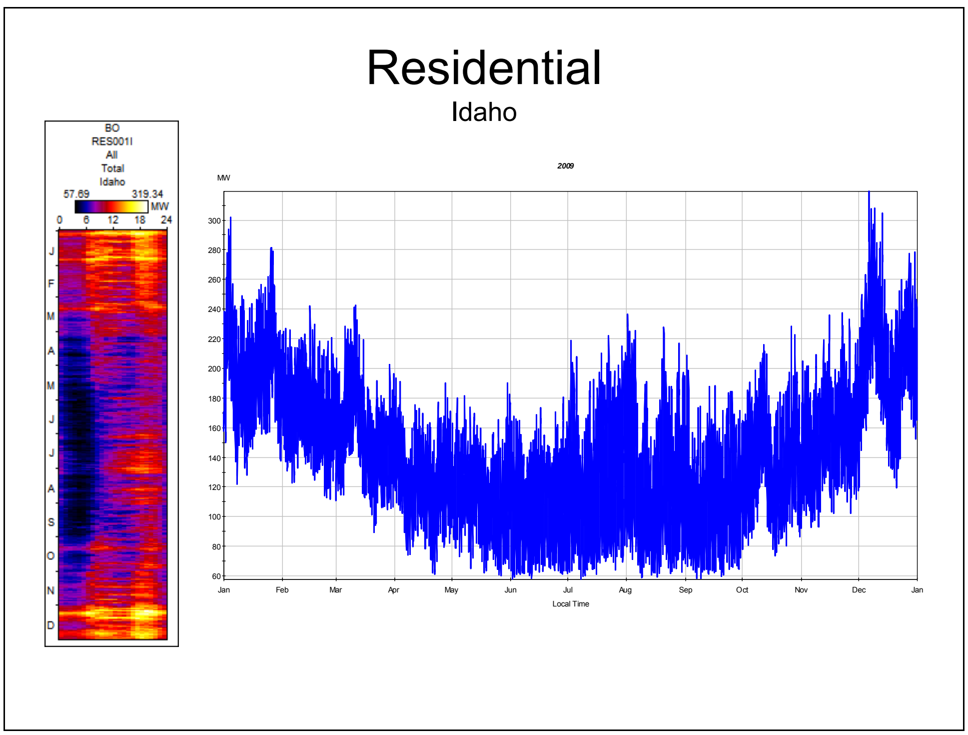

Figure 25 – Residential (ID) Class Load

Figure 26 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The winter bi-modal peak is clearly evident in the weekday and peak day profiles. The weekend profiles display a similar level of magnitude with a higher load factor (i.e., flatter load shape) when compared to the weekday profiles.

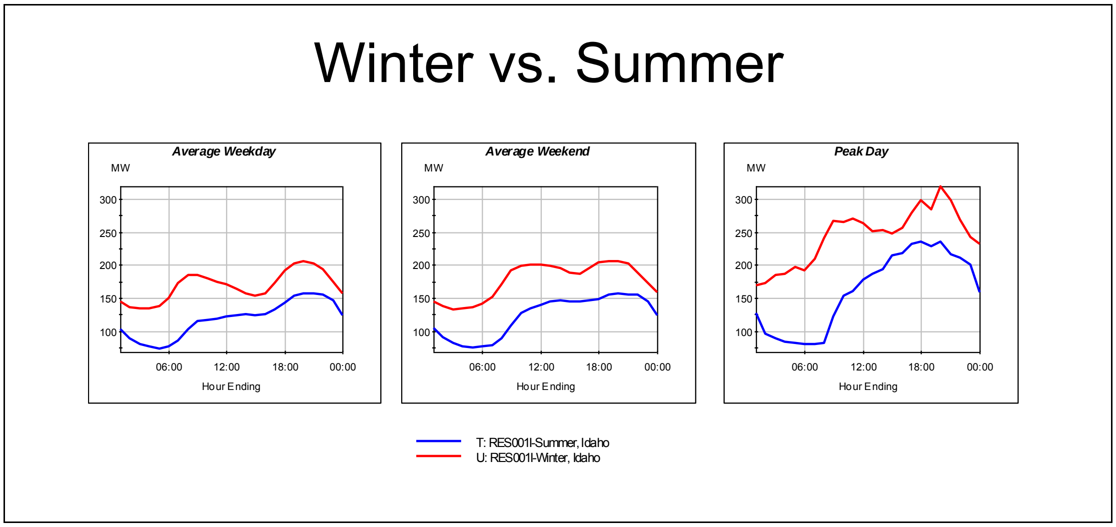

Figure 26 – Residential (ID) Winter vs. Summer

Figure 27 presents a summary of the achieved relative precision[10] associated with the Residential (ID) class analysis. The figure presents the percentage of time the achieved precision was at or below the specific level. For example, 60% of all hours are at or below a precision of ±15.9%. The majority of hours (i.e., 90% of all hours) were at or below ±20.1%.

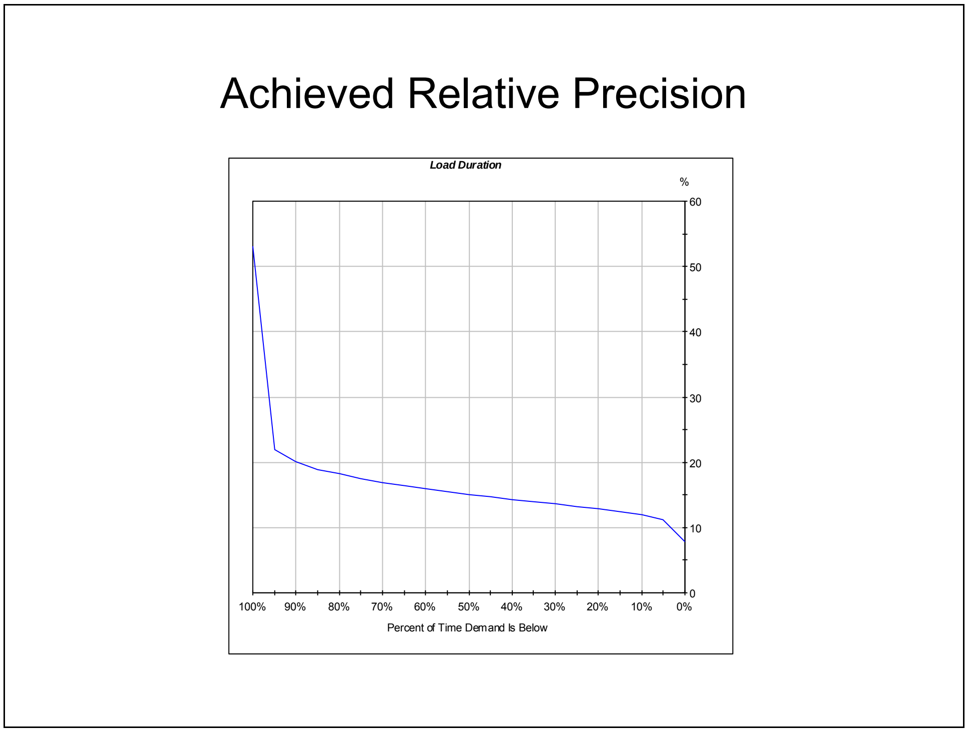

Figure 27 – Residential (ID) Achieved Relative Precision

Table 29 presents summary statistics for the Residential (ID) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

[10] Statistical precision is a measure of how much customer-to-customer variation there is in the data and is used to construct boundaries around our estimates. In load research applications we typically target precision levels of ±10% for the majority of hours in the analysis period.

Monthly load factors ranged from a low of 53% in August to a high of 70% in February. The Residential (ID) load is very coincident with the system peak displaying a system peak coincidence factor of over 80% for 11 of the 12 months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	148,873	Sun Jan 4, 2009 6:00PM	302	200	66%	Mon Jan 26, 2009 8:00AM	281	93%
Feb-09	113,927	Sun Feb 15, 2009 12:00PM	242	170	70%	Tue Feb 10, 2009 8:00AM	212	88%
Mar-09	116,336	Wed Mar 11, 2009 9:00AM	243	157	65%	Wed Mar 11, 2009 9:00AM	243	100%
Apr-09	89,131	Wed Apr 1, 2009 9:00PM	193	124	64%	Wed Apr 1, 2009 12:00PM	172	89%
May-09	85,794	Sat May 30, 2009 2:00PM	190	115	61%	Fri May 29, 2009 5:00PM	122	64%
Jun-09	79,102	Sun Jun 28, 2009 9:00PM	180	110	61%	Thu Jun 4, 2009 7:00PM	153	85%
Jul-09	94,974	Wed Jul 22, 2009 7:00PM	222	128	57%	Mon Jul 27, 2009 6:00PM	190	86%
Aug-09	93,485	Sat Aug 1, 2009 8:00PM	236	126	53%	Mon Aug 3, 2009 6:00PM	217	92%
Sep-09	80,483	Tue Sep 1, 2009 8:00PM	209	112	54%	Wed Sep 2, 2009 6:00PM	189	90%
Oct-09	101,375	Mon Oct 26, 2009 9:00PM	228	136	60%	Mon Oct 12, 2009 9:00AM	215	95%
Nov-09	110,692	Sun Nov 22, 2009 5:00PM	237	154	65%	Mon Nov 30, 2009 6:00PM	214	90%
Dec-09	154,517	Sun Dec 6, 2009 8:00PM	319	208	65%	Tue Dec 8, 2009 7:00PM	283	89%
Annual	1,268,688	Annual Class Peak	319	145	45%	Annual System Peak	283	89%

Table 29 – Residential (ID) Summary Statistics (Totals – MW)

Table 30 presents the same information as Table 29 but on a per-account basis. The average Residential (ID) customer uses 12,740 kWh with an average demand of 3.2 kW at the time of the class peak.

Month	Monthly Energy Use (kWh)	Timing of Class Peak	Class Peak Demand (kW)	Average Demand (kW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (kW)	Coincidence Factor (%)
Jan-09	1,495	Sun Jan 4, 2009 6:00PM	3.0	2.0	66%	Mon Jan 26, 2009 8:00AM	2.8	93%
Feb-09	1,144	Sun Feb 15, 2009 12:00PM	2.4	1.7	70%	Tue Feb 10, 2009 8:00AM	2.1	88%
Mar-09	1,168	Wed Mar 11, 2009 9:00AM	2.4	1.6	65%	Wed Mar 11, 2009 9:00AM	2.4	100%
Apr-09	895	Wed Apr 1, 2009 9:00PM	1.9	1.2	64%	Wed Apr 1, 2009 12:00PM	1.7	89%
May-09	862	Sat May 30, 2009 2:00PM	1.9	1.2	61%	Fri May 29, 2009 5:00PM	1.2	64%
Jun-09	794	Sun Jun 28, 2009 9:00PM	1.8	1.1	61%	Thu Jun 4, 2009 7:00PM	1.5	85%
Jul-09	954	Wed Jul 22, 2009 7:00PM	2.2	1.3	57%	Mon Jul 27, 2009 6:00PM	1.9	86%
Aug-09	939	Sat Aug 1, 2009 8:00PM	2.4	1.3	53%	Mon Aug 3, 2009 6:00PM	2.2	92%
Sep-09	808	Tue Sep 1, 2009 8:00PM	2.1	1.1	54%	Wed Sep 2, 2009 6:00PM	1.9	90%
Oct-09	1,018	Mon Oct 26, 2009 9:00PM	2.3	1.4	60%	Mon Oct 12, 2009 9:00AM	2.2	94%
Nov-09	1,112	Sun Nov 22, 2009 5:00PM	2.4	1.5	65%	Mon Nov 30, 2009 6:00PM	2.2	90%
Dec-09	1,552	Sun Dec 6, 2009 8:00PM	3.2	2.1	65%	Tue Dec 8, 2009 7:00PM	2.8	88%
Annual	12,740	Annual Class Peak	3.2	1.5	45%	Annual System Peak	2.8	88%

Table 30 – Residential (ID) Summary Statistics (Means – kW)

2.4.2 General Service

The sample data was expanded by post-stratifying the General Service (ID) rate class. Table 31 presents the post-stratification used in the sample expansion analysis. The table presents the jurisdiction, schedule, rate class, strata, maximum annual use in each stratum, the population total annual use in the stratum, the population count, the minimum available sample points in the historical sample and the case weight calculated as the population count divided by the minimum available sample.

Jurisdiction	Schedule	Rate Class	Strata	Maximum Value Annual kWh	Population Total (Annual kWh)	Population Count	Sample Size	Case Weight
ID	11	General Service	1	8,255	26,324,338	8,576	13	659.7
ID	11	General Service	2	16,031	32,792,612	2,791	12	232.6
ID	11	General Service	3	25,887	36,493,385	1,808	9	200.9
ID	11	General Service	4	42,803	40,252,946	1,225	10	122.5
ID	11	General Service	5	146,888	45,649,982	756	10	75.6
Schedule 11 Total					181,513,264	15,156	54	
ID	12	General Service	1	39,311	23,724,490	1,307	8	163.4
ID	12	General Service	2	60,733	27,967,721	565	5	113.0
ID	12	General Service	3	81,247	29,954,524	424	5	84.8
ID	12	General Service	4	104,838	31,605,663	342	9	38.0
ID	12	General Service	5	354,050	33,617,643	272	3	90.7
Schedule 12 Total					146,870,041	2,910	30	
Rate Class Totals					328,383,305	18,066	84	

Table 31 – General Service (ID) Post-Stratification

In the second stage of the analysis, a loss factor of 1.079 (provided by Avista) was applied to the hourly expansions.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class's contribution to the system demand for that particular hour.

Figure 28 presents the results of the reconciled hourly expansion analysis for the General Service (ID) rate class. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. Daytimes loads are dominant throughout the year with higher load and load factor during the winter months. The General Service (ID) class peaks on Wednesday, December 9, 2009 at 5 PM. The class peak demand was 77 MW.

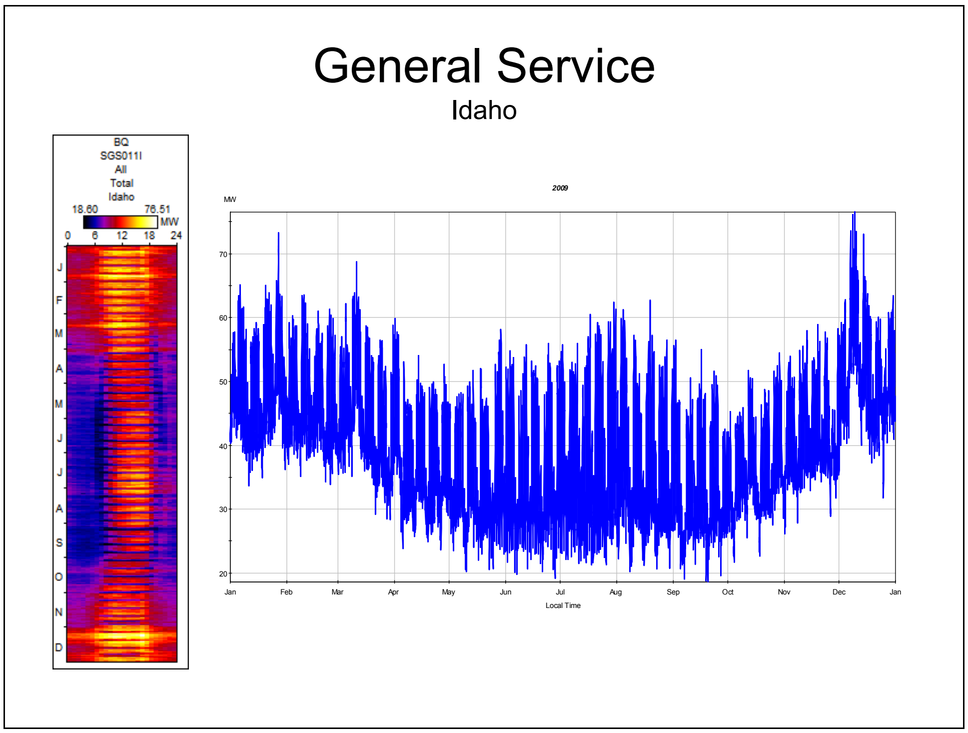

Figure 28 – General Service (ID) Class Load

Figure 29 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. Winter loads are clearly higher than summer loads with a flatter load shape on both weekdays and weekends. The summer weekday load almost reaches the magnitude of the winter weekday load, but for fewer hours during the day.

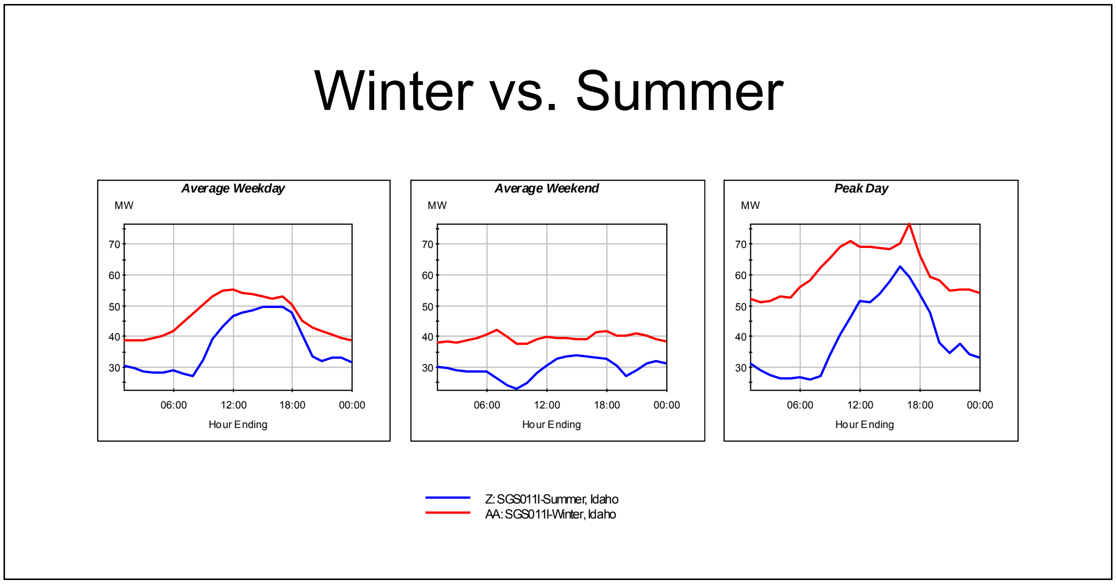

Figure 29 – General Service (ID) Winter vs. Summer

Figure 30 presents a summary of the achieved relative precision[11] associated with the General Service (ID) rate class analysis. The figure presents the percentage of time the achieved precision was at or below the specific level. For example, 60% of all hours are at or below a precision of ±13%. The majority of hours (i.e., 90% of all hours) were at or below ±15.07%.

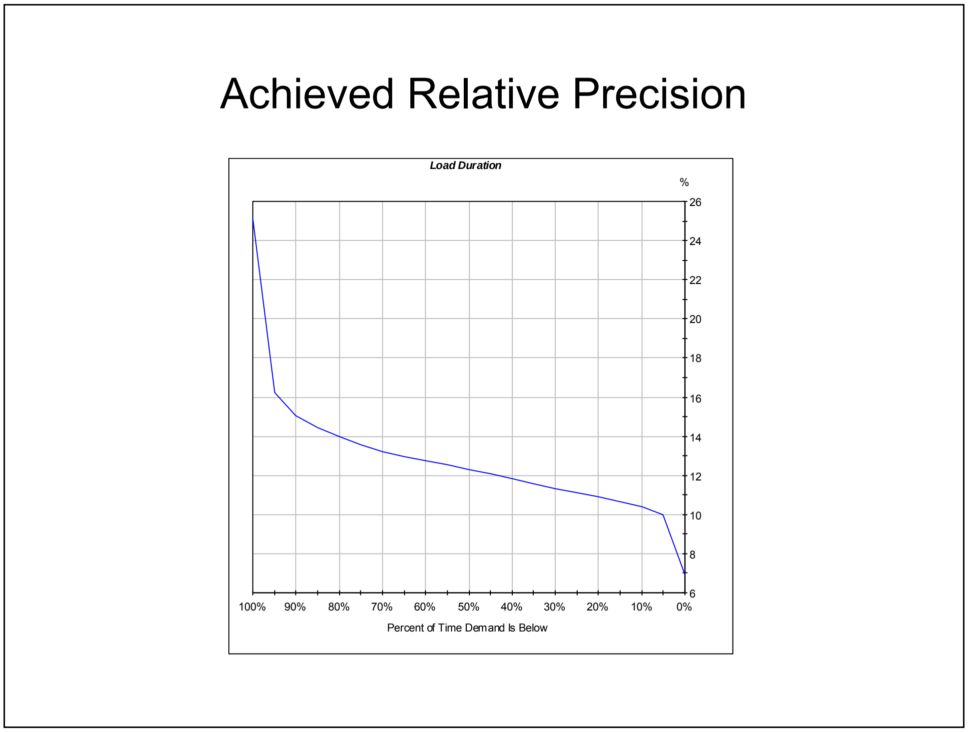

Figure 30 – General Service (ID) Achieved Relative Precision

Table 32 presents summary statistics for the General Service (ID) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

[11] Statistical precision is a measure of how much customer-to-customer variation there is in the data and is used to construct boundaries around our estimates. In load research applications we typically target precision levels of ±10% for the majority of hours in the analysis period.

Monthly load factors ranged from a low of 57% in August and September to a high of 73% in February. The General Service (ID) load is very coincident with the system peak displaying a system peak coincidence factor of over 80% for ten of the 12 months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	35,788	Tue Jan 27, 2009 5:00PM	73	48	66%	Mon Jan 26, 2009 8:00AM	64	87%
Feb-09	31,008	Tue Feb 10, 2009 11:00AM	64	46	73%	Tue Feb 10, 2009 8:00AM	52	82%
Mar-09	32,467	Wed Mar 11, 2009 12:00PM	69	44	64%	Wed Mar 11, 2009 9:00AM	60	88%
Apr-09	26,480	Wed Apr 1, 2009 1:00PM	60	37	61%	Wed Apr 1, 2009 12:00PM	59	98%
May-09	25,129	Fri May 29, 2009 5:00PM	58	34	58%	Fri May 29, 2009 5:00PM	58	100%
Jun-09	24,553	Wed Jun 24, 2009 5:00PM	56	34	61%	Thu Jun 4, 2009 7:00PM	43	78%
Jul-09	27,126	Thu Jul 30, 2009 5:00PM	62	36	59%	Mon Jul 27, 2009 6:00PM	56	91%
Aug-09	26,570	Wed Aug 19, 2009 4:00PM	63	36	57%	Mon Aug 3, 2009 6:00PM	57	90%
Sep-09	23,288	Wed Sep 2, 2009 3:00PM	56	32	57%	Wed Sep 2, 2009 6:00PM	50	89%
Oct-09	26,564	Thu Oct 29, 2009 12:00PM	54	36	66%	Mon Oct 12, 2009 9:00AM	42	78%
Nov-09	29,484	Thu Nov 19, 2009 12:00PM	59	41	69%	Mon Nov 30, 2009 6:00PM	54	92%
Dec-09	37,732	Wed Dec 9, 2009 5:00PM	77	51	66%	Tue Dec 8, 2009 7:00PM	61	80%
Annual	346,191	Annual Class Peak	77	40	52%	Annual System Peak	61	80%

Table 32 – General Service (ID) Summary Statistics (Totals – MW)

Table 33 presents the same information as Table 32 but on a per-account basis. The average General Service (ID) customer uses 17,989 kWh with an average demand of 4.0 kW at the time of the class peak.

Month	Monthly Energy Use (kWh)	Timing of Class Peak	Class Peak Demand (kW)	Average Demand (kW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (kW)	Coincidence Factor (%)
Jan-09	1,860	Tue Jan 27, 2009 5:00PM	3.8	2.5	66%	Mon Jan 26, 2009 8:00AM	3.3	87%
Feb-09	1,611	Tue Feb 10, 2009 11:00AM	3.3	2.4	73%	Tue Feb 10, 2009 8:00AM	2.7	82%
Mar-09	1,687	Wed Mar 11, 2009 12:00PM	3.6	2.3	64%	Wed Mar 11, 2009 9:00AM	3.1	88%
Apr-09	1,376	Wed Apr 1, 2009 1:00PM	3.1	1.9	61%	Wed Apr 1, 2009 12:00PM	3.1	98%
May-09	1,306	Fri May 29, 2009 5:00PM	3.0	1.8	58%	Fri May 29, 2009 5:00PM	3.0	100%
Jun-09	1,276	Wed Jun 24, 2009 5:00PM	2.9	1.8	61%	Thu Jun 4, 2009 7:00PM	2.3	77%
Jul-09	1,410	Thu Jul 30, 2009 5:00PM	3.2	1.9	59%	Mon Jul 27, 2009 6:00PM	2.9	90%
Aug-09	1,381	Wed Aug 19, 2009 4:00PM	3.3	1.9	57%	Mon Aug 3, 2009 6:00PM	2.9	90%
Sep-09	1,210	Wed Sep 2, 2009 3:00PM	2.9	1.7	57%	Wed Sep 2, 2009 6:00PM	2.6	89%
Oct-09	1,380	Thu Oct 29, 2009 12:00PM	2.8	1.9	66%	Mon Oct 12, 2009 9:00AM	2.2	77%
Nov-09	1,532	Thu Nov 19, 2009 12:00PM	3.1	2.1	69%	Mon Nov 30, 2009 6:00PM	2.8	92%
Dec-09	1,961	Wed Dec 9, 2009 5:00PM	4.0	2.6	66%	Tue Dec 8, 2009 7:00PM	3.2	80%
Annual	17,989	Annual Class Peak	4.0	2.1	52%	Annual System Peak	3.2	80%

Table 33 – General Service (ID) Summary Statistics (Means – kW)

2.4.3 Large General Service

The sample data was expanded by post-stratifying the Large General Service (ID) rate class. Table 34 presents the post-stratification used in the sample expansion analysis. The table presents the jurisdiction, schedule, rate class, strata, maximum annual use in each stratum, the population total annual use in the stratum, the population count, the minimum available sample points in the historical sample and the case weight calculated as the population count divided by the minimum available sample.

Jurisdiction	Schedule	Rate Class	Strata	Maximum Value Annual kWh	Population Total (Annual kWh)	Population Count	Sample Size	Case Weight
ID	21	Large General Service	1	222,049	94,591,059	587	5	117.4
ID	21	Large General Service	2	375,015	105,970,230	369	4	92.3
ID	21	Large General Service	3	672,002	117,998,904	241	4	60.3
ID	21	Large General Service	4	1,629,465	138,112,151	132	4	33.0
ID	21	Large General Service	5	9,041,873	172,972,060	57	10	5.7
ID	21	Large General Service-Primary	6	14,519,981	77,163,956	32	4	8.0
Class Totals					706,808,361	1,418	31	

Table 34 – Large General Service (ID) Post-Stratification

In the second stage of the analysis, loss factors of 1.079 and 1.054 (provided by Avista) were applied to the hourly Large General Service (ID) and Large General Service-Primary (ID) rate class expansions, respectively.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class's contribution to the system demand for that particular hour.

Figure 31 presents the results of the reconciled hourly expansion analysis for the Large General Service (ID) rate class. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. The summer load tends to be slightly higher than the winter load. The Large General Service (ID) class peaks on Tuesday, August 4, 2009 at 3 PM. The peak demand was just under 163 MW.

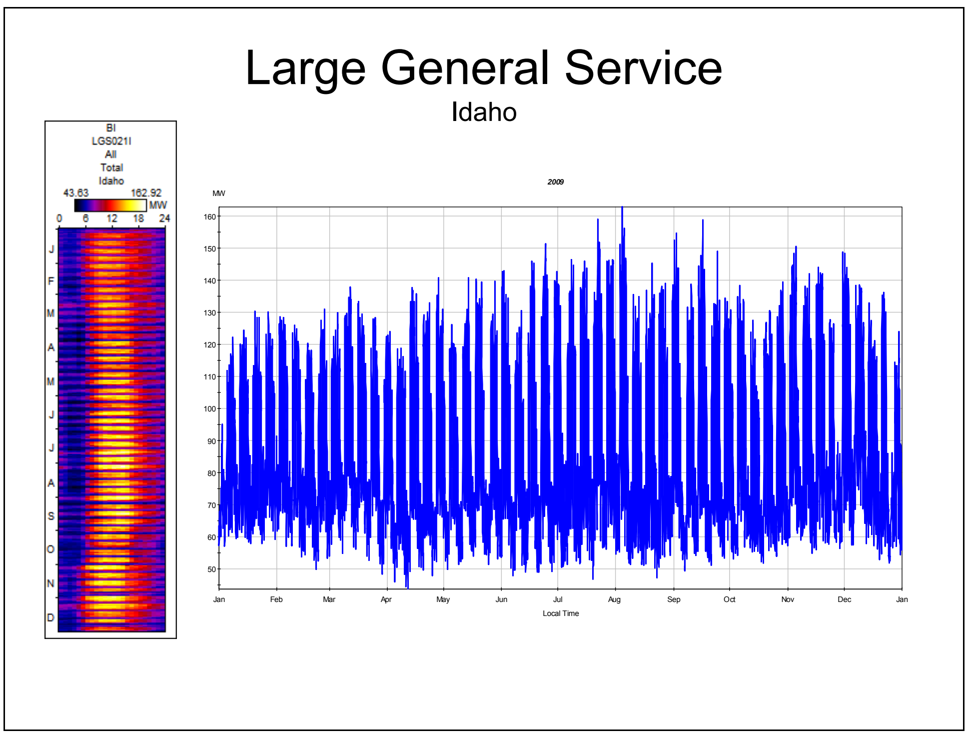

Figure 31 – Large General Service (ID) Class Load

Figure 32 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The winter and summer load shapes are very similar in both magnitude and shape. The weekend profiles are substantially lower than their weekday counterparts.

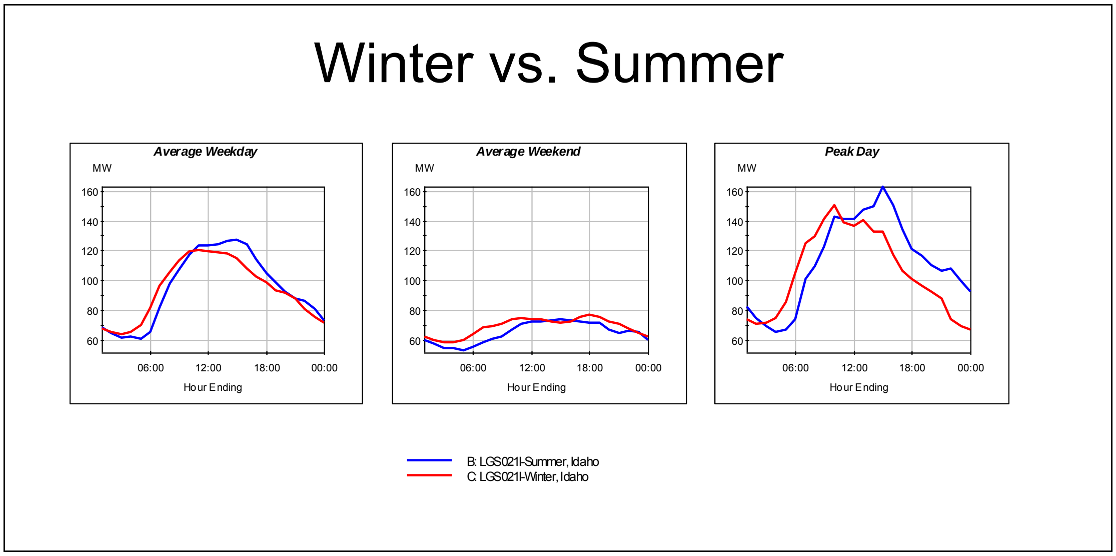

Figure 32 – Large General Service (ID) Winter vs. Summer

Figure 33 presents a summary of the achieved relative precision[12] associated with the Large General Service (ID) class analysis. The figure presents the percentage of time the achieved precision was at or below the specific level. For example, 60% of all hours are at or below a precision of ±15.5%. The majority of hours (i.e., 90% of all hours) were at or below ±19.3%.

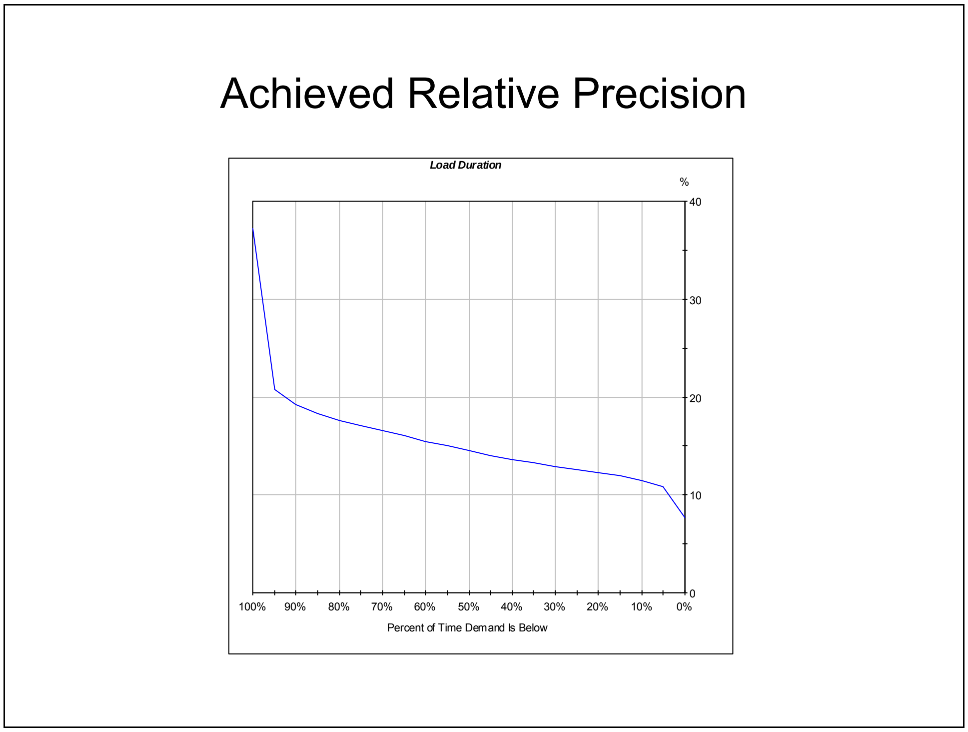

Figure 33 – Large General Service (ID) Achieved Relative Precision

Table 35 presents summary statistics for the Large General Service (ID) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

[12] Statistical precision is a measure of how much customer-to-customer variation there is in the data and is used to construct boundaries around our estimates. In load research applications we typically target precision levels of ±10% for the majority of hours in the analysis period.

Monthly load factors ranged from a low of 53% in August to a high of 65% in January and February. The Large General Service (ID) class load is somewhat coincident with the system peak displaying a system peak coincidence factor of over 80% for five of the 12 months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	63,217	Tue Jan 20, 2009 10:00AM	130	85	65%	Mon Jan 26, 2009 8:00AM	113	87%
Feb-09	57,532	Thu Feb 26, 2009 10:00AM	131	86	65%	Tue Feb 10, 2009 8:00AM	106	81%
Mar-09	64,060	Thu Mar 12, 2009 11:00AM	138	86	63%	Wed Mar 11, 2009 9:00AM	121	88%
Apr-09	59,662	Tue Apr 28, 2009 11:00AM	141	83	59%	Wed Apr 1, 2009 12:00PM	118	84%
May-09	61,320	Thu May 14, 2009 1:00PM	141	82	59%	Fri May 29, 2009 5:00PM	114	81%
Jun-09	62,320	Wed Jun 24, 2009 2:00PM	151	87	57%	Thu Jun 4, 2009 7:00PM	104	68%
Jul-09	67,317	Wed Jul 22, 2009 3:00PM	159	90	57%	Mon Jul 27, 2009 6:00PM	117	74%
Aug-09	64,717	Tue Aug 4, 2009 3:00PM	163	87	53%	Mon Aug 3, 2009 6:00PM	119	73%
Sep-09	63,378	Wed Sep 16, 2009 3:00PM	159	88	55%	Wed Sep 2, 2009 6:00PM	120	76%
Oct-09	61,889	Thu Oct 29, 2009 2:00PM	140	83	60%	Mon Oct 12, 2009 9:00AM	107	77%
Nov-09	64,095	Thu Nov 5, 2009 10:00AM	151	89	59%	Mon Nov 30, 2009 6:00PM	110	73%
Dec-09	66,308	Tue Dec 1, 2009 1:00PM	148	89	60%	Tue Dec 8, 2009 7:00PM	115	77%
Annual	755,816	Annual Class Peak	163	86	53%	Annual System Peak	115	71%

Table 35 – Large General Service (ID) Summary Statistics (Totals – MW)

Table 36 presents the same information as Table 35 but on a per-account basis. The average Large General Service (ID) customer uses 518,570 kWh with an average demand of 118.8 kW at the time of the class peak.

Month	Monthly Energy Use (kWh)	Timing of Class Peak	Class Peak Demand (kW)	Average Demand (kW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (kW)	Coincidence Factor (%)
Jan-09	43,374	Tue Jan 20, 2009 10:00AM	89.4	58.3	65%	Mon Jan 26, 2009 8:00AM	77.4	87%
Feb-09	39,473	Thu Feb 26, 2009 10:00AM	89.8	58.7	65%	Tue Feb 10, 2009 8:00AM	72.9	81%
Mar-09	43,952	Thu Mar 12, 2009 11:00AM	94.6	59.2	63%	Wed Mar 11, 2009 9:00AM	83.1	88%
Apr-09	40,934	Tue Apr 28, 2009 11:00AM	96.6	56.9	59%	Wed Apr 1, 2009 12:00PM	81.2	84%
May-09	42,072	Thu May 14, 2009 1:00PM	96.5	56.6	59%	Fri May 29, 2009 5:00PM	78.1	81%
Jun-09	42,758	Wed Jun 24, 2009 2:00PM	103.9	59.4	57%	Thu Jun 4, 2009 7:00PM	71.0	68%
Jul-09	46,187	Wed Jul 22, 2009 3:00PM	109.1	62.1	57%	Mon Jul 27, 2009 6:00PM	80.2	74%
Aug-09	44,403	Tue Aug 4, 2009 3:00PM	111.8	59.7	53%	Mon Aug 3, 2009 6:00PM	81.7	73%
Sep-09	43,484	Wed Sep 16, 2009 3:00PM	109.0	60.4	55%	Wed Sep 2, 2009 6:00PM	82.5	76%
Oct-09	42,463	Thu Oct 29, 2009 2:00PM	95.7	57.1	60%	Mon Oct 12, 2009 9:00AM	73.4	77%
Nov-09	43,976	Thu Nov 5, 2009 10:00AM	103.3	61.0	59%	Mon Nov 30, 2009 6:00PM	75.5	73%
Dec-09	45,494	Tue Dec 1, 2009 1:00PM	101.7	61.2	60%	Tue Dec 8, 2009 7:00PM	78.8	77%
Annual	518,570	Annual Class Peak	111.8	59.2	53%	Annual System Peak	78.8	71%

Table 36 – Large General Service (ID) Summary Statistics (Means – kW)

2.4.4 Extra Large General Service

Data for all customers in the Extra Large General Service (ID) were available, so the population count and sample size are the same, and each site's case weight is one.

In the second stage of the analysis, a loss factor of 1.054 (provided by Avista) was applied to the hourly expansions.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class's contribution to the system demand for that particular hour.

Figure 34 presents the results of the reconciled hourly expansion analysis for the Extra Large General Service (ID) rate class. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. The Extra Large General Service (ID) class peaks on Wednesday, September 2, 2009 at 1 PM. The peak demand was just under 42 MW.

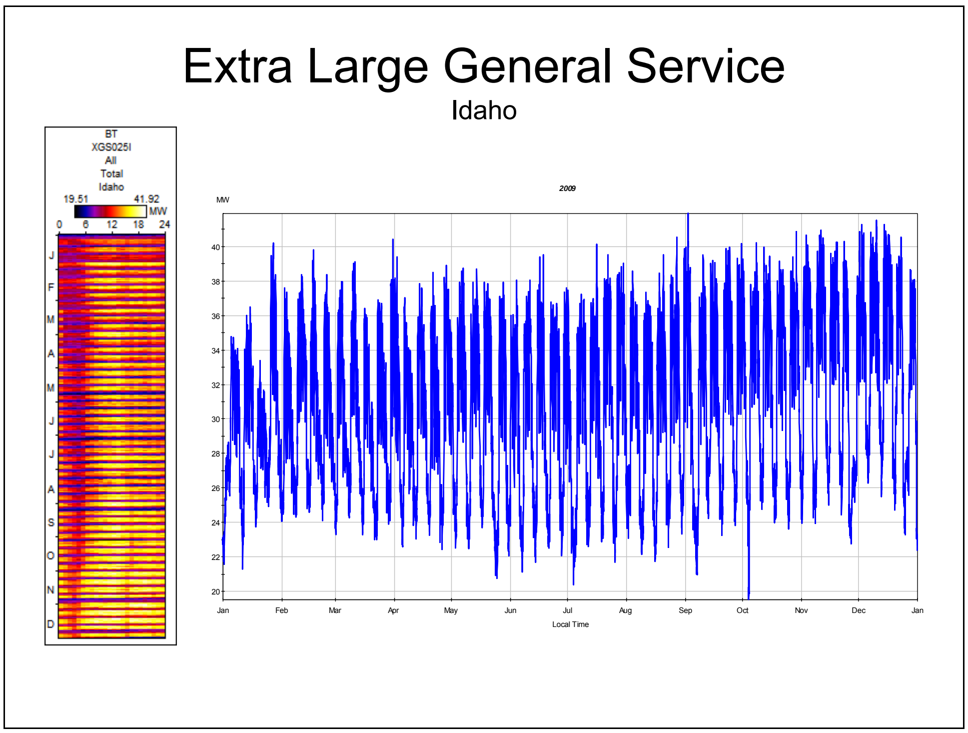

Figure 34 – Extra Large General Service (ID) Class Load

Figure 35 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The summer and winter load shapes are similar in magnitude displaying a lower and flatter load shape on weekends when compared to weekends.

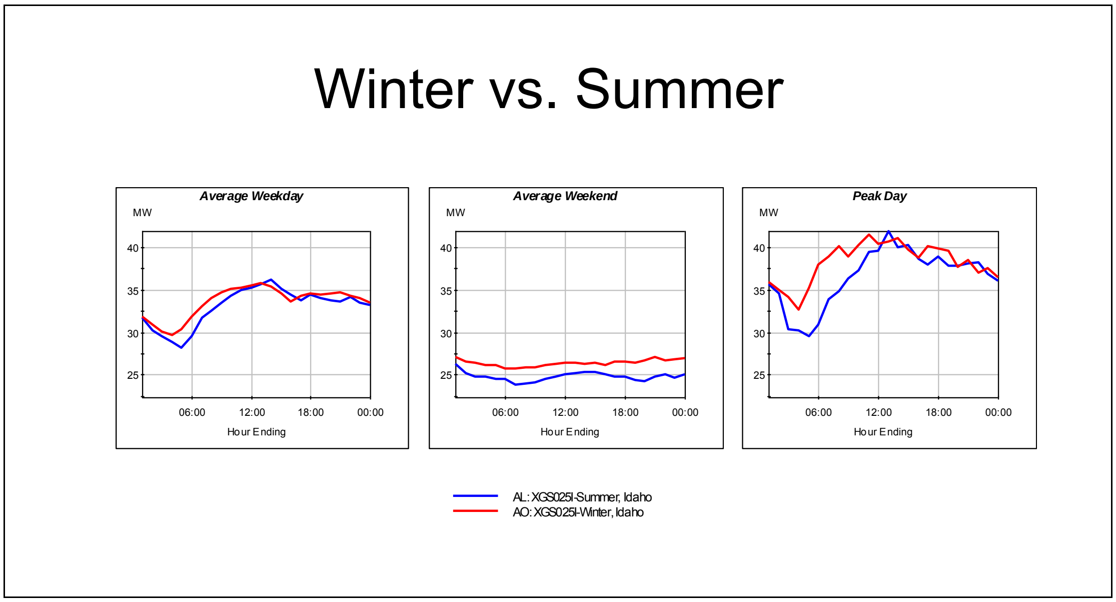

Figure 35 – Extra Large General Service (ID) Winter vs. Summer

The relative precision was perfect since the data for all of the customers in the class were available for the full 12 month period examined.

Table 37 presents summary statistics for the Extra Large General Service (ID) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

Monthly load factors ranged from a low of 74% in January to a high of 81% in December. The Extra Large General Service (ID) class load is very coincident with the system peak displaying a system peak coincidence factor of over 80% for all 12 months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	22,054	Tue Jan 27, 2009 10:00AM	40.2	29.6	74%	Mon Jan 26, 2009 8:00AM	37.7	94%
Feb-09	20,590	Tue Feb 17, 2009 1:00PM	39.8	30.6	77%	Tue Feb 10, 2009 8:00AM	35.9	90%
Mar-09	22,501	Tue Mar 31, 2009 2:00PM	40.4	30.3	75%	Wed Mar 11, 2009 9:00AM	37.0	92%
Apr-09	21,988	Thu Apr 2, 2009 2:00PM	39.4	30.5	78%	Wed Apr 1, 2009 12:00PM	37.5	95%
May-09	22,401	Thu May 7, 2009 12:00PM	38.8	30.1	78%	Fri May 29, 2009 5:00PM	34.1	88%
Jun-09	21,976	Thu Jun 18, 2009 2:00PM	39.5	30.5	77%	Thu Jun 4, 2009 7:00PM	36.6	93%
Jul-09	22,858	Thu Jul 16, 2009 2:00PM	40.1	30.7	77%	Mon Jul 27, 2009 6:00PM	37.1	92%
Aug-09	22,771	Thu Aug 27, 2009 2:00PM	40.5	30.6	76%	Mon Aug 3, 2009 6:00PM	34.8	86%
Sep-09	22,923	Wed Sep 2, 2009 1:00PM	41.9	31.8	76%	Wed Sep 2, 2009 6:00PM	39.0	93%
Oct-09	24,068	Thu Oct 29, 2009 1:00PM	40.8	32.4	79%	Mon Oct 12, 2009 9:00AM	36.8	90%
Nov-09	23,498	Wed Nov 11, 2009 11:00AM	41.0	32.6	80%	Mon Nov 30, 2009 6:00PM	37.0	90%
Dec-09	25,058	Thu Dec 10, 2009 11:00AM	41.5	33.7	81%	Tue Dec 8, 2009 7:00PM	39.6	95%
Annual	272,686	Annual Class Peak	41.9	31.1	74%	Annual System Peak	39.6	94%

Table 37 – Extra Large General Service (ID) Summary Statistics (Totals – MW)

Table 38 presents the same information as Table 37 but on a per-account basis. The average Extra Large General Service (ID) customer uses 34,085,693 kWh with an average demand of 5,240 kW at the time of the class peak.

Month	Monthly Energy Use (kWh)	Timing of Class Peak	Class Peak Demand (kW)	Average Demand (kW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (kW)	Coincidence Factor (%)
Jan-09	2,756,775	Tue Jan 27, 2009 10:00AM	5,024	3,705	74%	Mon Jan 26, 2009 8:00AM	4,711	94%
Feb-09	2,573,810	Tue Feb 17, 2009 1:00PM	4,974	3,830	77%	Tue Feb 10, 2009 8:00AM	4,492	90%
Mar-09	2,812,651	Tue Mar 31, 2009 2:00PM	5,053	3,786	75%	Wed Mar 11, 2009 9:00AM	4,623	91%
Apr-09	2,748,449	Thu Apr 2, 2009 2:00PM	4,925	3,817	78%	Wed Apr 1, 2009 12:00PM	4,686	95%
May-09	2,800,131	Thu May 7, 2009 12:00PM	4,844	3,764	78%	Fri May 29, 2009 5:00PM	4,258	88%
Jun-09	2,747,024	Thu Jun 18, 2009 2:00PM	4,938	3,815	77%	Thu Jun 4, 2009 7:00PM	4,569	93%
Jul-09	2,857,296	Thu Jul 16, 2009 2:00PM	5,014	3,840	77%	Mon Jul 27, 2009 6:00PM	4,637	92%
Aug-09	2,846,395	Thu Aug 27, 2009 2:00PM	5,065	3,826	76%	Mon Aug 3, 2009 6:00PM	4,349	86%
Sep-09	2,865,322	Wed Sep 2, 2009 1:00PM	5,240	3,980	76%	Wed Sep 2, 2009 6:00PM	4,874	93%
Oct-09	3,008,468	Thu Oct 29, 2009 1:00PM	5,106	4,044	79%	Mon Oct 12, 2009 9:00AM	4,604	90%
Nov-09	2,937,153	Wed Nov 11, 2009 11:00AM	5,118	4,074	80%	Mon Nov 30, 2009 6:00PM	4,625	90%
Dec-09	3,132,219	Thu Dec 10, 2009 11:00AM	5,190	4,210	81%	Tue Dec 8, 2009 7:00PM	4,951	95%
Annual	34,085,693	Annual Class Peak	5,240	3,891	74%	Annual System Peak	4,951	94%

Table 38 – Extra Large General Service (ID) Summary Statistics (Means – kW)

2.4.5 Extra Large General Service – CP

One customer is included in the Extra Large General Service – CP (ID) rate class. Since the class is comprised of one customer, the population count and the sample size are the same (that is, one), and the sample case weight is one.

In the second stage of the analysis, a loss factor of 1.054 (provided by Avista) was applied to the non-generation portion of the Extra Large General Service – CP (ID) load served by Avista.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class's contribution to the system demand for that particular hour.

Figure 36 presents the results of the reconciled hourly expansion analysis for the Extra Large General Service – CP (ID) rate class. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. The Extra Large General Service – CP (ID) rate class displays a constant load throughout the year. The class peaks on Wednesday, December 16, 2009 at 1 AM. The peak demand was 112.7 MW.

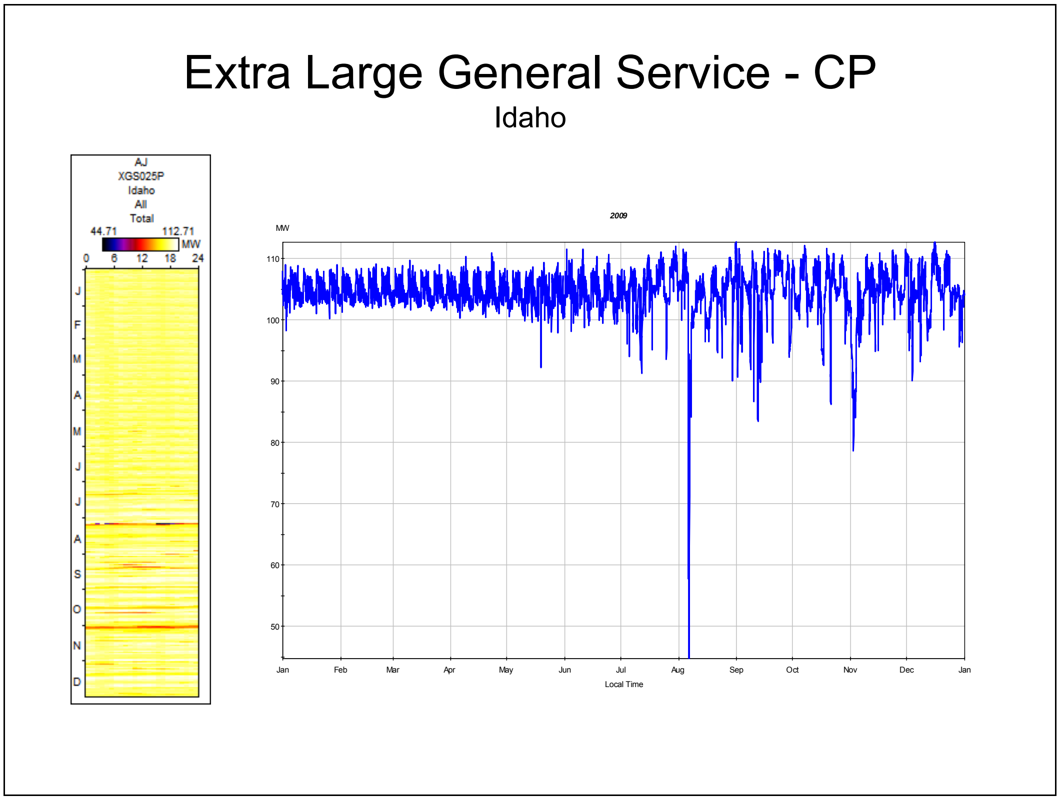

Figure 36 – Extra Large General Service - CP (ID) Class Load

Figure 37 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The summer and winter load shapes are very similar in magnitude with a flatter load shape on the weekends when compared to weekdays.

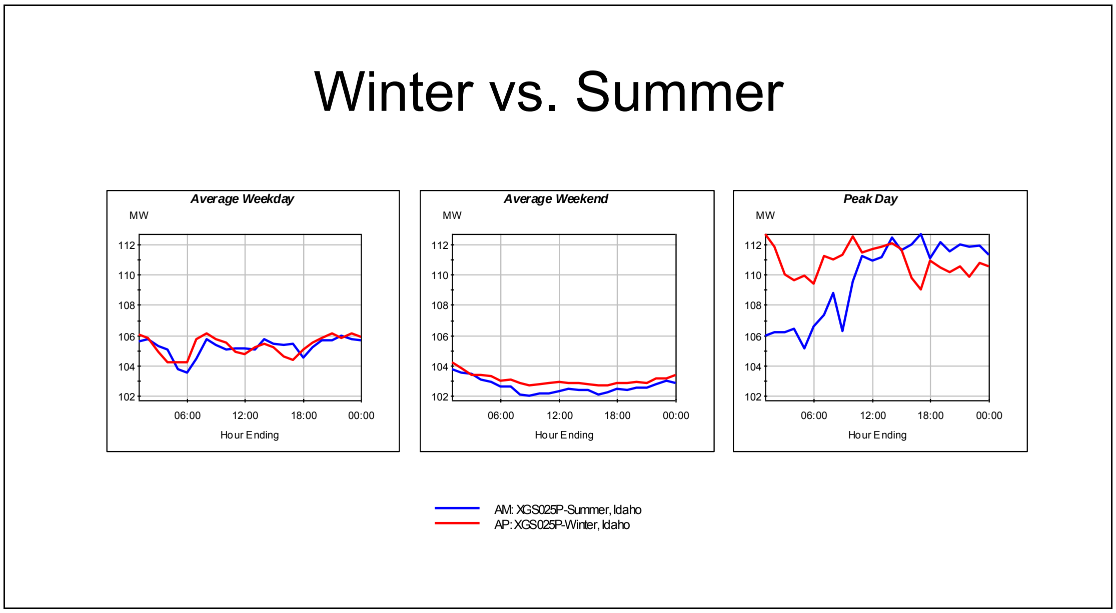

Figure 37 – Extra Large General Service – CP (ID) Winter vs. Summer

The relative precision was perfect since the data for the one customer in the class were available for the full 12 month period examined.

Table 39 presents summary statistics for the Extra Large General Service - CP (ID) rate class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

Monthly load factors ranged from a low of 92% in August to a high of 96% in January, February, and March. The Extra Large General Service – CP (ID) class load is very coincident with the system peak displaying a system peak coincidence factor of over 80% for all 12 months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	78,020	Fri Jan 2, 2009 2:00PM	109.0	104.9	96%	Mon Jan 26, 2009 8:00AM	107.0	98%
Feb-09	70,448	Fri Feb 20, 2009 2:00AM	109.1	104.8	96%	Tue Feb 10, 2009 8:00AM	105.9	97%
Mar-09	77,837	Tue Mar 10, 2009 9:00AM	109.7	104.8	96%	Wed Mar 11, 2009 9:00AM	105.7	96%
Apr-09	75,344	Thu Apr 23, 2009 3:00AM	110.9	104.7	94%	Wed Apr 1, 2009 12:00PM	107.8	97%
May-09	77,501	Wed May 20, 2009 9:00PM	109.4	104.2	95%	Fri May 29, 2009 5:00PM	102.6	94%
Jun-09	75,281	Tue Jun 2, 2009 1:00AM	111.5	104.6	94%	Thu Jun 4, 2009 7:00PM	106.6	96%
Jul-09	78,267	Thu Jul 30, 2009 3:00PM	111.9	105.2	94%	Mon Jul 27, 2009 6:00PM	107.2	96%
Aug-09	76,978	Mon Aug 31, 2009 5:00PM	112.7	103.5	92%	Mon Aug 3, 2009 6:00PM	110.3	98%
Sep-09	75,532	Thu Sep 17, 2009 7:00PM	111.6	104.9	94%	Wed Sep 2, 2009 6:00PM	108.7	97%
Oct-09	78,055	Wed Oct 7, 2009 2:00PM	112.1	104.9	94%	Mon Oct 12, 2009 9:00AM	108.6	97%
Nov-09	74,720	Mon Nov 30, 2009 10:00AM	111.5	103.6	93%	Mon Nov 30, 2009 6:00PM	108.4	97%
Dec-09	78,065	Wed Dec 16, 2009 1:00AM	112.7	104.9	93%	Tue Dec 8, 2009 7:00PM	100.7	89%
Annual	916,050	Annual Class Peak	112.7	104.6	93%	Annual System Peak	100.7	89%

Table 39 – Extra Large General Service – CP (ID) Summary Statistics (Totals – MW)

2.4.6 Pumping

The sample data was expanded by post-stratifying the Pumping (ID) rate class. Table 40 presents the post-stratification used in the sample expansion analysis. The table presents the jurisdiction, schedule, rate class, strata, maximum annual use in each stratum, the population total annual use in the stratum, the population count, the minimum available sample points in the historical sample and the case weight calculated as the population count divided by the minimum available sample.

Jurisdiction	Schedule	Rate Class	Strata	Maximum Value Annual kWh	Population Total (Annual kWh)	Population Count	Sample Size	Case Weight
ID	31	Pumping Service	1	36,632	6,523,274	970	3	323.3
ID	31	Pumping Service	2	128,384	9,479,973	142	6	23.7
ID	31	Pumping Service	3	348,496	11,805,724	58	3	19.3
ID	31	Pumping Service	4	766,131	13,772,882	26	4	6.5
ID	31	Pumping Service	5	2,067,882	17,603,626	14	7	2.0
Class Totals					59,185,479	1,210	23	

Table 40 – Pumping (ID) Post-Stratification

In the second stage of the analysis, a loss factor of 1.079 (provided by Avista) was applied to the hourly expansions.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class's contribution to the system demand for that particular hour.

Figure 38 presents the results of the reconciled hourly expansion analysis for the Pumping (ID) rate class. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. The dominance of the summer load is clearly evident with only minimal load in the winter months. The Pumping (ID) class peaks on Friday, July 24, 2009 at 8 AM. The peak demand was about 48 MW.

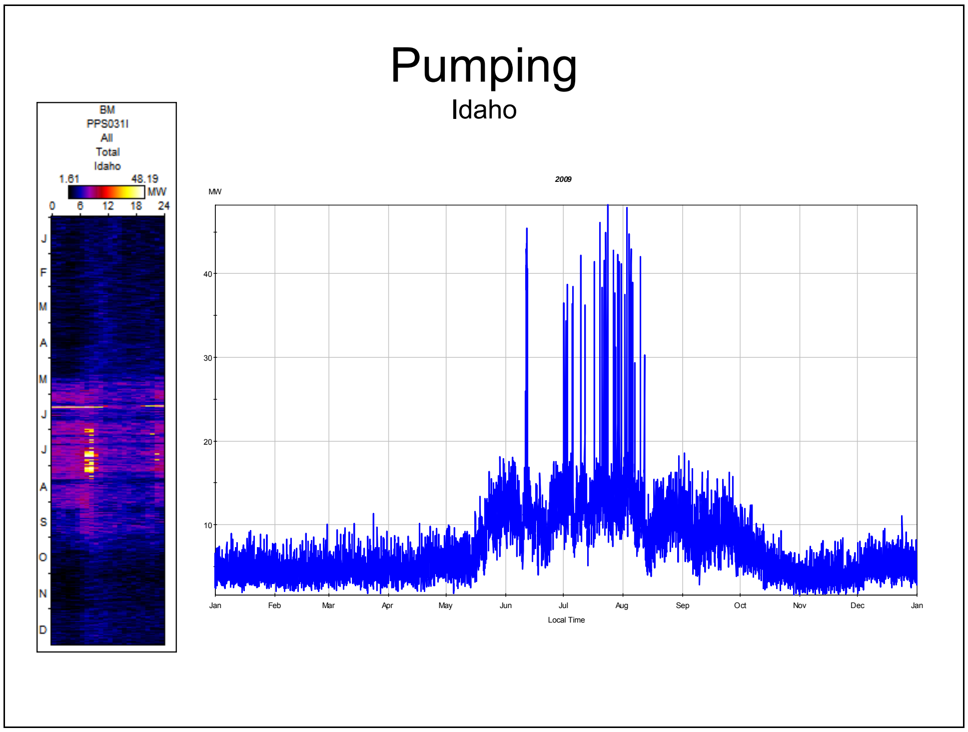

Figure 38 – Pumping (ID) Class Load

Figure 39 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The seasonal pumping load is highest during the summer period. The average weekday and weekend load shapes are very similar by season and differ dramatically from the class peak load.

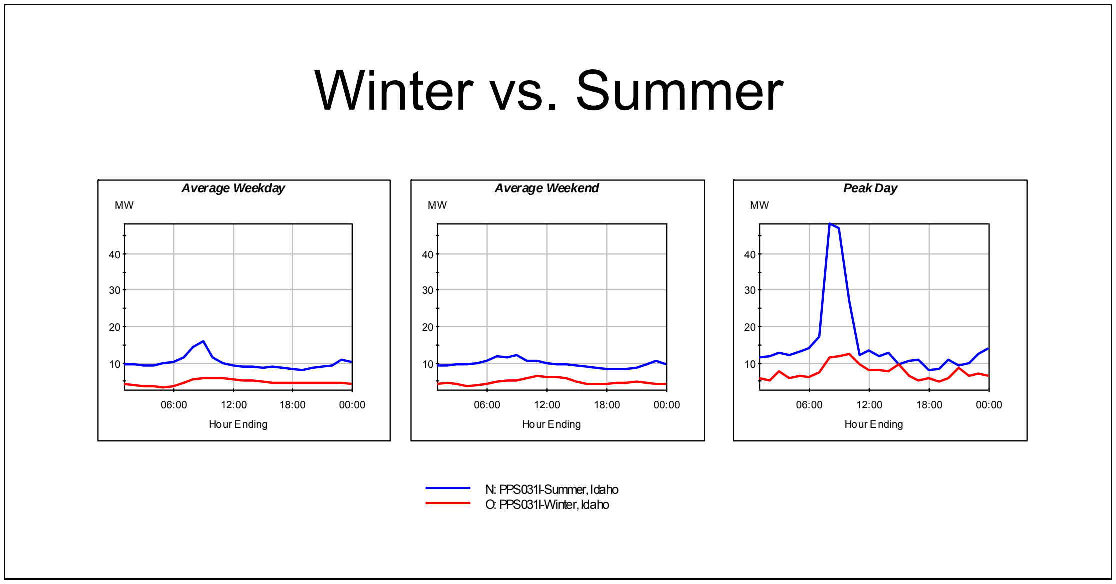

Figure 39 – Pumping (ID) Winter vs. Summer

Figure 40 presents a summary of the achieved relative precision[13] associated with the Pumping (ID) class analysis. The figure presents the percentage of time the achieved precision was at or below the specific level. The precision for this class reflects the high volatility of the load.

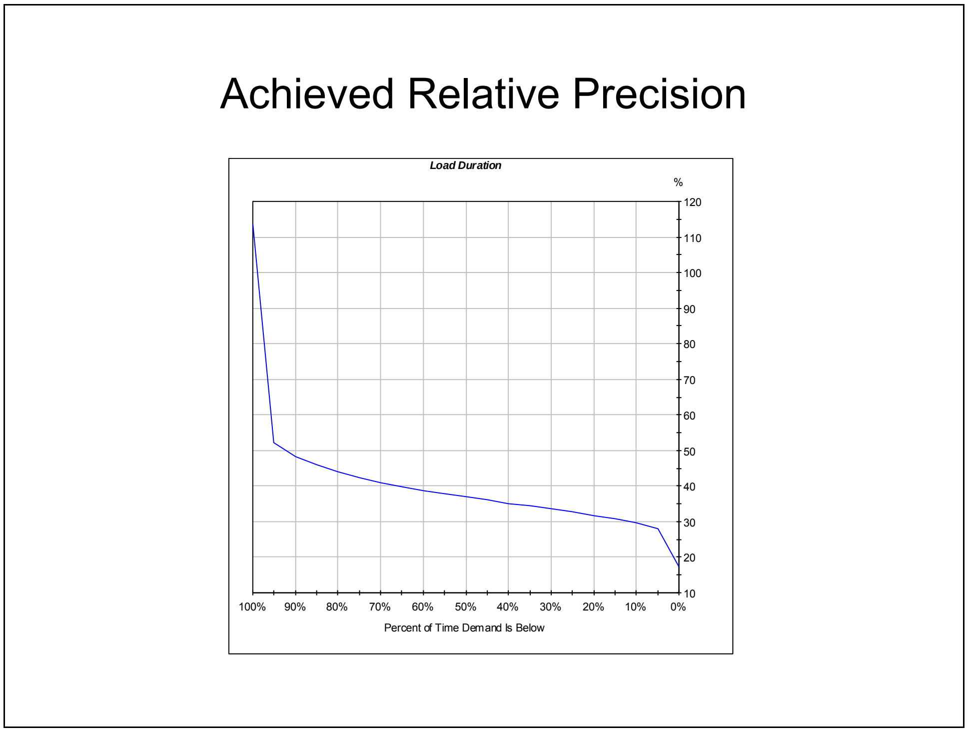

Figure 40 – Pumping (ID) Achieved Relative Precision

Table 41 presents summary statistics for the Pumping (ID) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

[13] Statistical precision is a measure of how much customer-to-customer variation there is in the data and is used to construct boundaries around our estimates. In load research applications we typically target precision levels of ±10% for the majority of hours in the analysis period.

Monthly load factors ranged from a low of 24% in August to a high of 50% in September. The Pumping (ID) class load is not coincident with the system peak displaying a system peak coincidence factor of 80% or greater for none of the 12 months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	3,315	Mon Jan 19, 2009 1:00PM	9.2	4.5	48%	Mon Jan 26, 2009 8:00AM	5.6	60%
Feb-09	2,985	Sat Feb 28, 2009 11:00AM	10.0	4.4	44%	Tue Feb 10, 2009 8:00AM	5.2	51%
Mar-09	3,467	Tue Mar 24, 2009 11:00AM	11.3	4.7	41%	Wed Mar 11, 2009 9:00AM	4.6	41%
Apr-09	3,553	Fri Apr 17, 2009 12:00PM	10.1	4.9	49%	Wed Apr 1, 2009 12:00PM	5.4	54%
May-09	5,787	Fri May 29, 2009 8:00AM	18.1	7.8	43%	Fri May 29, 2009 5:00PM	9.5	52%
Jun-09	8,440	Fri Jun 12, 2009 8:00AM	45.4	11.7	26%	Thu Jun 4, 2009 7:00PM	14.4	32%
Jul-09	10,153	Fri Jul 24, 2009 8:00AM	48.2	13.7	28%	Mon Jul 27, 2009 6:00PM	11.2	23%
Aug-09	8,591	Mon Aug 3, 2009 9:00AM	47.9	11.6	24%	Mon Aug 3, 2009 6:00PM	11.7	24%
Sep-09	6,667	Wed Sep 2, 2009 7:00AM	18.5	9.3	50%	Wed Sep 2, 2009 6:00PM	7.3	40%
Oct-09	3,968	Thu Oct 1, 2009 10:00AM	12.4	5.3	43%	Mon Oct 12, 2009 9:00AM	9.2	74%
Nov-09	2,774	Mon Nov 23, 2009 10:00AM	8.4	3.9	46%	Mon Nov 30, 2009 6:00PM	4.7	56%
Dec-09	3,727	Thu Dec 24, 2009 10:00AM	11.0	5.0	45%	Tue Dec 8, 2009 7:00PM	3.9	35%
Annual	63,428	Annual Class Peak	48.2	7.2	15%	Annual System Peak	3.9	8%

Table 41 – Pumping (ID) Summary Statistics (Totals – MW)

Table 42 presents the same information as Table 41 but on a per-account basis. The average Pumping (WA) customer uses 48,339 kWh with an average demand of 36.7 kW at the time of the class peak.

Month	Monthly Energy Use (kWh)	Timing of Class Peak	Class Peak Demand (kW)	Average Demand (kW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (kW)	Coincidence Factor (%)
Jan-09	2,526	Mon Jan 19, 2009 1:00PM	7.0	3.4	48%	Mon Jan 26, 2009 8:00AM	4.3	60%
Feb-09	2,275	Sat Feb 28, 2009 11:00AM	7.7	3.4	44%	Tue Feb 10, 2009 8:00AM	3.9	51%
Mar-09	2,642	Tue Mar 24, 2009 11:00AM	8.6	3.6	41%	Wed Mar 11, 2009 9:00AM	3.5	41%
Apr-09	2,708	Fri Apr 17, 2009 12:00PM	7.7	3.8	49%	Wed Apr 1, 2009 12:00PM	4.1	54%
May-09	4,411	Fri May 29, 2009 8:00AM	13.8	5.9	43%	Fri May 29, 2009 5:00PM	7.2	52%
Jun-09	6,432	Fri Jun 12, 2009 8:00AM	34.6	8.9	26%	Thu Jun 4, 2009 7:00PM	11.0	32%
Jul-09	7,737	Fri Jul 24, 2009 8:00AM	36.7	10.4	28%	Mon Jul 27, 2009 6:00PM	8.5	23%
Aug-09	6,547	Mon Aug 3, 2009 9:00AM	36.5	8.8	24%	Mon Aug 3, 2009 6:00PM	8.9	25%
Sep-09	5,081	Wed Sep 2, 2009 7:00AM	14.1	7.1	50%	Wed Sep 2, 2009 6:00PM	5.6	40%
Oct-09	3,024	Thu Oct 1, 2009 10:00AM	9.5	4.1	43%	Mon Oct 12, 2009 9:00AM	7.0	74%
Nov-09	2,115	Mon Nov 23, 2009 10:00AM	6.4	2.9	46%	Mon Nov 30, 2009 6:00PM	3.6	56%
Dec-09	2,840	Thu Dec 24, 2009 10:00AM	8.4	3.8	45%	Tue Dec 8, 2009 7:00PM	2.9	35%
Annual	48,339	Annual Class Peak	36.7	5.5	15%	Annual System Peak	2.9	8%

Table 42 – Pumping (ID) Summary Statistics (Means – kW)

2.4.7 Street and Area Lights

In the first stage analysis, the lighting classes were represented by “deemed profiles.” The deemed profile provides an estimate of the load based on billing data and daylight hours.

In the second stage of the analysis, a loss factor of 1.079 (provided by Avista) was applied to the hourly loads.

Finally, in the third stage of the analysis, the unaccounted for energy was allocated to each class based on the class’s contribution to the system demand for that particular hour.

Figure 41 presents the results of the reconciled hourly expansion analysis for the Street and Area Lights (ID) rate class. The figure displays the EnergyPrint to the left of the more standard two-dimensional x-y plot. As a reminder, the vertical form of the EnergyPrint displays time on the x-axis, day of the year on the y-axis and the magnitude of load on the z-axis. The magnitude of load is displayed as a color gradient with low levels of load in the black-blue spectrum and high levels of load in the yellow-white spectrum. The lighting loads track the nighttime hours. The Street and Area Lights (ID) class peaks on Wednesday, January 7, 2009 at 9 PM. The peak demand was 3.9 MW.

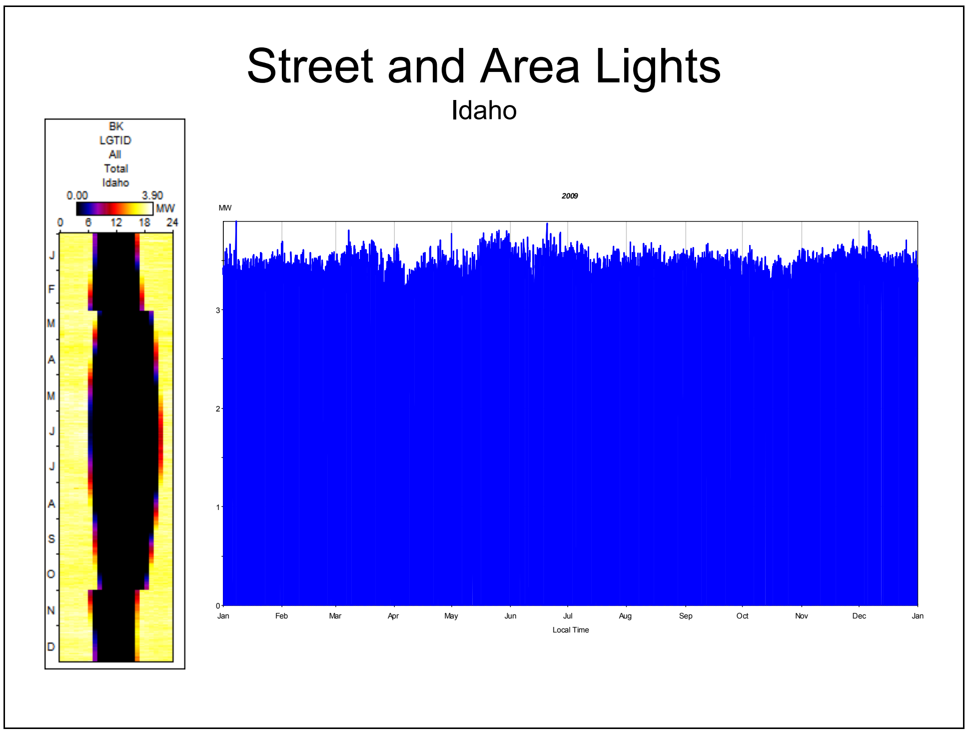

Figure 41 – Street and Area Lights (ID) Class Load

Figure 42 highlights the differences between the winter and summer by displaying the average weekday, average weekend day, and peak days. Winter is defined as the October through March period and summer is defined as April through September. The lighting class displays similar average weekday and weekend profiles by season. The longer winter hours are evident.

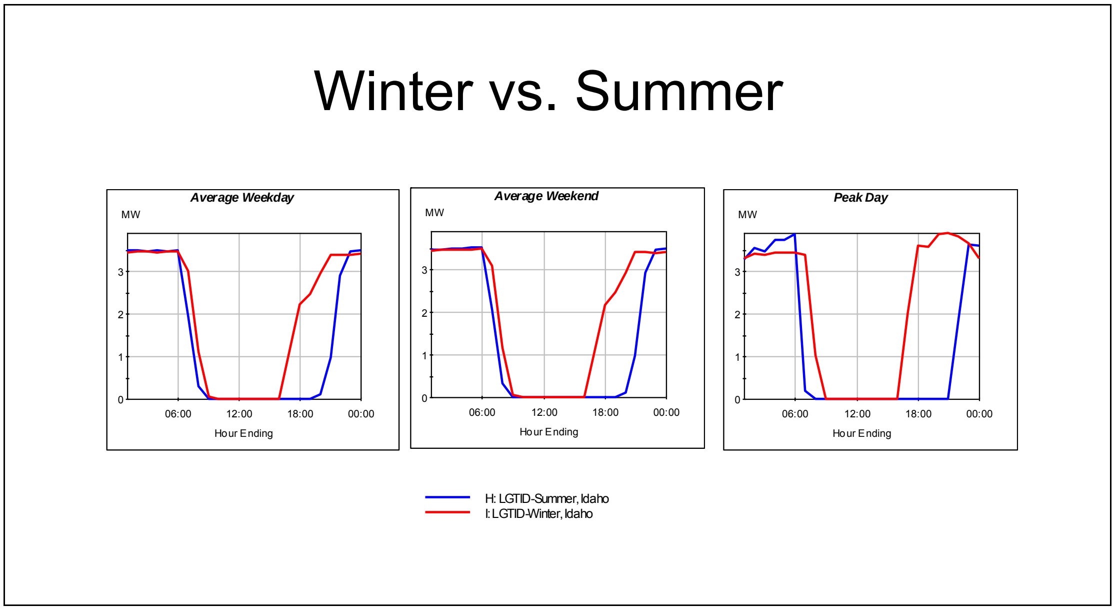

Figure 42 – Street and Area Lights (ID) Winter vs. Summer

The relative precision was not calculated for the Street and Area Lights (ID) rate class since the total class load is a deemed profile.

Table 43 presents summary statistics for the Street and Area Lights (ID) class load after applying losses and reconciliation to the system load. The table displays class totals and includes the monthly energy use, the timing of the class peak demand, the magnitude of the class peak demand, the average demand, the load factor based on the class peak demand, the timing of the system peak demand, the class demand at the time of system peak (i.e., coincident), and the coincidence factor calculated as the coincident peak divided by the class peak.

Monthly load factors ranged from a low of 33% in June to a high of 57% in December. The Street and Area Lights (ID) class load is only coincident with the system peak during the winter months of November and December with coincident factors of 96% and 93%, respectively. The class peak load is not at all coincident with the system peak during most other months.

Month	Monthly Energy Use (MWh)	Timing of Class Peak	Class Peak Demand (MW)	Average Demand (MW)	Load Factor (%)	Timing of System Peak	Class Demand @ System Peak (MW)	Coincidence Factor (%)
Jan-09	1,545	Wed Jan 7, 2009 9:00PM	3.9	2.1	53%	Mon Jan 26, 2009 8:00AM	0.4	11%
Feb-09	1,286	Sun Feb 1, 2009 7:00AM	3.7	1.9	52%	Tue Feb 10, 2009 8:00AM	-	0%
Mar-09	1,288	Sun Mar 8, 2009 4:00AM	3.8	1.7	46%	Wed Mar 11, 2009 9:00AM	0.2	6%
Apr-09	1,074	Sat Apr 25, 2009 3:00AM	3.7	1.5	40%	Wed Apr 1, 2009 12:00PM	-	0%
May-09	1,010	Tue May 26, 2009 6:00AM	3.8	1.4	36%	Fri May 29, 2009 5:00PM	-	0%
Jun-09	913	Sat Jun 20, 2009 6:00AM	3.9	1.3	33%	Thu Jun 4, 2009 7:00PM	-	0%
Jul-09	965	Mon Jul 6, 2009 4:00AM	3.7	1.3	35%	Mon Jul 27, 2009 6:00PM	-	0%
Aug-09	1,089	Mon Aug 3, 2009 1:00AM	3.7	1.5	40%	Mon Aug 3, 2009 6:00PM	-	0%
Sep-09	1,193	Sat Sep 12, 2009 11:00PM	3.7	1.7	45%	Wed Sep 2, 2009 6:00PM	-	0%
Oct-09	1,362	Mon Oct 5, 2009 12:00AM	3.7	1.8	50%	Mon Oct 12, 2009 9:00AM	-	0%
Nov-09	1,496	Sat Nov 28, 2009 1:00AM	3.7	2.1	56%	Mon Nov 30, 2009 6:00PM	3.6	96%
Dec-09	1,612	Sun Dec 6, 2009 7:00AM	3.8	2.2	57%	Tue Dec 8, 2009 7:00PM	3.6	93%
Annual	14,833	Annual Class Peak	3.9	1.7	43%	Annual System Peak	3.6	91%

Table 43 – Street and Area Lights (ID) Summary Statistics (Totals – MW)