Weather-Normalized System Load Shapes for NEMS

August 2001

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Introduction

The Electricity Market Module (EMM) of the National Energy Modeling System (NEMS) uses system loads shapes at the EMM/NERC regional level. These regional system load shapes are constructed in the Load and Demand Side Management (LDSM) module of NEMS and are subsequently used by other modules of EMM. These regional system load shapes are constructed from sets of sectoral end use or industry type load shapes which are adjusted to the annual loads of the sectoral demand models. These constructed regional system load shapes are then calibrated to actual regional system load shapes from a recent year.

Most recently, for AEO 2001, the system load shapes were calibrated to actual load shapes from the year 1998. A few years earlier, the system load shapes were calibrated to actual load shapes from the year 1990. Unfortunately, the actual system load shapes for any particular year will reflect any unusual weather patterns that occurred in that year and will not reflect a normal, long-term trend. As with many other weather-influenced variables, the best approach is to weather-normalize the regional system load shapes that are used for calibration purposes.

This weather-normalization process first involves determining the extent to which the load shapes are influenced by weather, and this involves performing an extensive regional regression analysis using detailed load data, weather data, and other predictors. To fully represent the relationship between loads and weather and to capture all the variability, it is necessary to do the regression analysis at a finer regional level than the EMM/NERC region level. A database of 30 years of hourly weather data at a regional level is then used along with the regression coefficient results to construct a database of regional hourly load estimates covering 30 years. This load database, spanning 30 years can then be used to build regional hourly weather normalized load shapes, in this case represented by weekdays, weekend days, and peak days for each month. These weather normalized load shapes are built with particular attention that in the case of peak load shapes, it is necessary not only to capture normal *average* weather patterns, but to capture the normal *variance* in the weather patterns. Finally, as the load shapes are built, it is necessary to aggregate the more detailed regional information to the EMM/NERC regional level in a way that properly represents coincidence or non-coincidence for the peak day load shapes.

Methodology

Data Availability and Preparation

For this analysis, it is necessary to use load and weather data that is hourly, has a high level of regional detail, and extends over more than one year.

The load data that is being used consists of a large database of hourly load data that has been collected from FERC Form 714 and has been validated and cleaned up over a number of years by OnLocation, Inc. This data is available at a very disaggregate regional level representing about 140 electricity reporting areas, typically Power Control Areas (PCAs). The number, accuracy, and coverage of the reporting varies from year, but the data is reviewed and processed by OnLocation, Inc. for consistency. A slightly more aggregate version of the data with a good deal of consistency and accuracy over time was chosen to be used in this analysis. These sub-regions can be directly aggregated to the EMM/NERC regions. This load data is currently available for the years 1993 through 1998.

The weather data that is used consists of two large databases available for purchase from the National Oceanic and Atmospheric Administration (NOAA) that contain hourly weather data over several years for up to about 240 weather stations each. The database used in the regression analysis is a joint product of NOAA and EPA named *Hourly United States Weather Observations 1990-1995* (HUSWO). This overlaps with the load data for the three years 1993 through 1995. The database used for constructing the normal weather is a joint product of NOAA and NREL named *Solar and Meteorological Surface Observation Network 1961-1990* (SAMSON).

Regression Analysis

The regression analysis was performed for the three years in which the load data and the weather data overlapped, 1993 through 1995. Hourly data were used over the three years for a potential total of 26,280 observations per region when no data were missing. Each month over the three years was estimated separately, so each individual regression contained potentially on average 2,190 observations. The analysis was done for each of the sub-regions for each of twelve months. The load regions and the weather stations were initially lined up by comparing the latitude and longitude of the load centers with the weather stations, and then individual judgement was made. Ultimately, a very few weather stations were changed because of missing data or because of estimation results.

The regression equation for each month and each region consisted of weather data and various *structural* elements. The weather data used consisted of the heating degree *hour*, the cooling degree *hour* (each of these was interacted with a dummy variable specifying whether it was a weekday or a weekend day), the previous day's heating degree *day*, the previous day's cooling degree *day*, the opaque sky cover (interacted with a dummy variable specifying whether it was a heating degree hour or a cooling degree hour), and a three-hour rolling average relative humidity. This is a total of nine weather variables. The structural part of the equation, designed to capture diurnal and other effects, consists of dummy variables for the years, dummy variables for the days of the week, and dummy variables for the hours of the day. The typical estimation equation contained a constant, 9 weather variables, and 31 structural variables, for a total of 41 variables. In a very few cases, the opaque sky or relative humidity variable was not used because of missing data problems. The estimation results were typically very good with very significant estimation coefficients, low regression standard errors, and most r-squares typically from 0.90 to 0.93.

Preparation and Aggregation of Weather-Normalized Load Shapes

The end result in this analysis is to produce a set of regional load shapes that provide the hourly loads for a representative weekday, a representative weekend day, and a representative peak day for each of the twelve months. This consists of 24 hourly loads for each of three representative days, for each of twelve months, making a total over a year of 864 representative hourly loads. These representative load shapes, as they are put into the direct access file and are used in LDSM, are normalized to represent fractions of yearly loads.

For each of the sub-regions, the 30-year SAMSON weather data (with matching weather stations) can be used along with the estimated regression coefficients over all 12 months to estimate loads for each hour over all 30 years. Every hourly load in each of those 30 years is either on a weekday or on a weekend. For each month, over all 30 years, all weekday *hours one* are averaged to get a normal representative weekday *hour one* load. The same is done for hour two and on through hour twenty-four. The same is also done for weekend hours. This captures the normal weekday and weekend loads for each hour, but the peak day hourly loads must be done differently in order to capture their true variance.

The peak day represents the day in each month that has the highest hourly load. Using 30 years of data one could average each of the hourly loads in a month together, find the highest load, and use that to determine the peak day. However, this would underestimate the true variance that should be represented by the peak day, because each year's highest loads are likely to occur on different days. The averaging process would eliminate those higher loads for all days. What would be much more representative of the highest load would be to find the highest load in that month, regardless of day, for each of the thirty years and average these highest loads together. This would be the normal highest load, or peak load. This idea is used in constructing the representative peak day. For each month, in each of the 30 years of estimated load data, the highest load is found. The day in which the highest load is found is the peak day for that month and that year. This is done for each of 30 years, and the loads for each of those hours are averaged together. This then represents the normal peak day for that month.

This has described the way that the representative load shapes were constructed at the sub-region level. Although the weekday and weekend day results at this level can be simply aggregated to construct the weekday and weekend day results for the EMM/NERC regions, that should not be done for the peak days because of load coincidence. The process that is used for all day types is to first aggregate the full detailed estimated hourly loads over all 30 years to the 13 EMM/NERC regions and then to construct the representative day types in the same way as described above, for each of the 13 regions.

Resulting Weather-Normalized System Load Shapes

Graphs of Previous, Current, and Weather-Normalized System Load Shapes

A graphical comparison of the weather-normalized system loads shapes with two specific historical years that have been used in prior versions of NEMS is provided in Appendix A. The "current" system load shapes are the ones that were used for the AEO2001. These are actual system load shapes for the thirteen EMM/NERC regions for the year 1998. A set of "previous" system load shapes were taken from the AEO 1998, and these represent the loads for the year 1990. Graphs for the three sets of load shapes, for each of the 24 hours, for each of the twelve months of the year, for each of the three day types, and for each of the 13 EMM/NERC regions are shown in the Appendix. These representative load shapes, as they are put into the direct access file and are used in LDSM, are normalized to represent fractions of yearly loads.

In general the graphs show that there is a fairly good consistency between the load shapes in the two historical years and the weather-normalized load shapes. However, it can be seen that in some cases, in some months, one of the historical years has a load shape that is quite different from the weather-normalized load shape. This apparently reflects an extreme weather condition in those cases, and occurs most frequently in the shoulder months of Spring and Fall.

A Comparison of Peak to Average Ratios

Table 1 shows the peak to average load ratios for the alternative weather-normalized system load shape versus the system load shape that is currently being used in the LDSM. The difference between the two is small, with the weather-normalized system load shapes being generally less peaky that the currently used system load shapes. The weather-normalized system load shapes are slightly less peaky in all the regions except for MAPP, STV, and SPP, where they are slightly more peaky.

Table 1. Peak to Average Load Ratios for System Load Shapes
New Weather-Normalized System Load Shape versus Currently Used System Load Shape

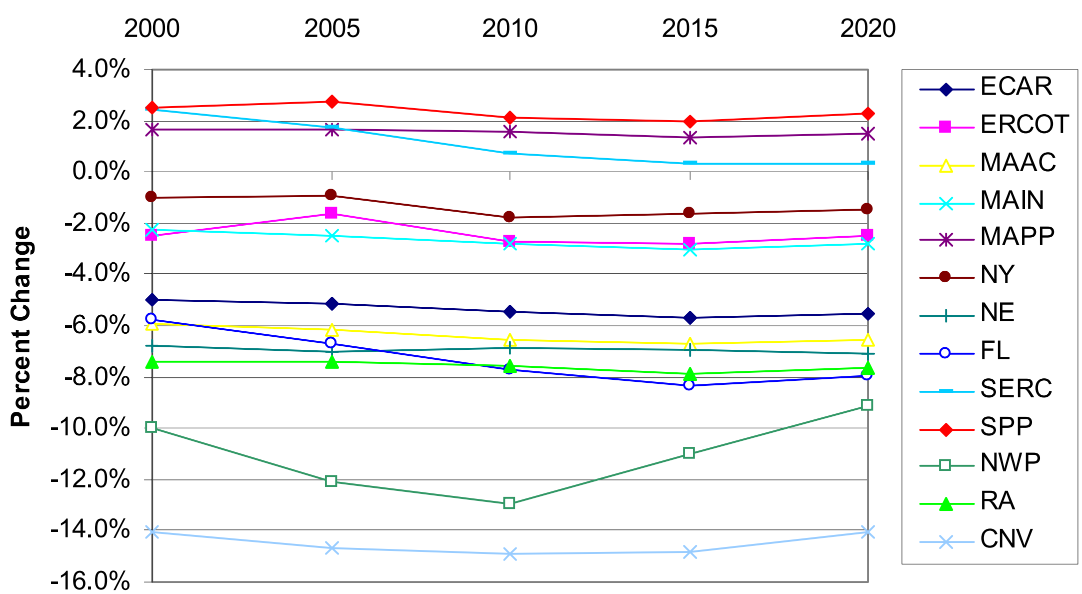
Region	Weather-Normalized System Load Shape	Currently Used System Load Shape
ECAR	1.49	1.56
ERCOT	1.71	1.75
MAAC	1.62	1.73
MAIN	1.66	1.70
MAPP	1.62	1.59
NY	1.56	1.57
NE	1.51	1.63
FL	1.63	1.73
STV	1.59	1.56
SPP	1.78	1.74
NWP	1.44	1.58
RA	1.61	1.74
CNV	1.59	1.85

Comparison Runs of NEMS

The weather-normalized system load shapes were substituted for the 1998 system load shapes in the current LDSM DAF to determine how the projections would be altered by using weather normalized load shapes. Two NEMS runs were made using the DAF before and after this substitution so that the effects of the weather-normalized load shapes could be determined.[1]

The historical system load shapes are used to calibrate overall system load shapes that are built up in LDSM from the sectoral end use and industry type load shapes. A change in the historical system load shapes from those currently used (for the historical year 1998) to a set of weather-normalized system load shapes can have an immediate, near-term effect on the peak loads. If changing the system load shapes is the only change, then that same, near-term effect should generally persist throughout the forecast. This can be seen for most of the EMM/NERC regions in Figure 1, which shows the percent change in the peak load for each of the regions. Some regions have a little bit of movement over time, but are generally flat. The exception is NWP which dips and then rises again.

Figure 1. Percent Change in Peak Load by NEMS Region as a Result of Weather-Normalized System Load Shapes



The lower projected peak demands that occur when the weather-normalized system load shapes are used in NEMS lead to 52 GW lower capacity requirements (less than 5 percent) by 2020, as shown in Table 2. The capacity of combustion turbines is projected to be about 15 GW lower, other fossil about 13 GW lower, and combined cycle about 7 GW lower. Coal and renewables have small decreases, while distributed generation suffers a significant decrease of 15 GW. These results are consistent with the weather-normalized load shapes having lower peaks than the currently used load shapes.

[1]The NEMS runs were made on the EIA computer on August 8, 2001, using the default model at the time. The default model apparently had very high loads and produced much higher capacities.

Table 2. Capacity by Technology (GW)
Weather-Normalized System Load Shapes versus Currently Used System Load Shapes

Plant Type	Weather-Normalized System Load Shapes					Difference from Currently Used System Load Shapes				
	2000	**2005**	**2010**	**2015**	**2020**	**2000**	**2005**	**2010**	**2015**	**2020**
Coal	305.1	305.2	361.8	372.6	413.3	0.0	-2.1	-7.5	-6.3	-1.8
Other Fossil	136.4	121.2	106.6	100.3	99.3	0.0	-3.8	-7.8	-13.1	-13.2
CC	30.6	39.4	78.0	146.9	190.7	0.0	-0.2	-0.1	-1.7	-7.4
CT	97.6	118.2	134.7	152.7	159.0	-4.3	-13.5	-16.6	-13.7	-14.6
Nuclear	97.5	97.5	93.7	80.5	73.3	0.0	0.0	-0.5	-0.4	0.0
Pumped	19.3	19.5	19.5	19.5	19.5	0.0	0.0	0.0	0.0	0.0
Fuel Cell	0.0	0.0	0.1	0.3	0.3	0.0	0.0	0.0	0.0	0.0
Renewable	89.1	95.7	98.1	99.2	99.8	0.0	0.0	-0.4	-0.3	-0.4
DG	0.0	6.5	19.7	40.5	56.5	0.0	-1.1	-6.4	-10.6	-15.1
Total	775.6	803.2	912.2	1012.0	1112.0	-4.3	-20.8	-39.3	-47.0	-52.0

Most of the regions also have lower capacity requirements as shown in Table 3. The exceptions are MAAC, STV, and SPP, which have very small increases in capacity and which were shown in Table 1 above to have slightly lower peak to average ratios. California has the greatest absolute change in capacity, while the NWP reduction in capacity is proportionally the largest.

Table 3. Capacity by Region (GW)
Weather-Normalized System Load Shapes versus Currently Used System Load Shapes

Region	Weather-Normalized System Load Shapes					Difference from Currently Used System Load Shapes				
	2000	**2005**	**2010**	**2015**	**2020**	**2000**	**2005**	**2010**	**2015**	**2020**
ECAR	115.6	117.0	125.9	137.4	149.6	-0.2	-1.9	-6.0	-7.6	-7.2
ERCOT	57.8	63.0	76.8	84.6	92.1	-1.1	-1.8	-2.7	-3.9	-4.4
MAAC	56.1	56.3	61.9	69.5	73.3	-0.1	-3.4	-6.5	-5.6	-6.5
MAIN	56.0	57.4	61.0	67.3	73.3	-0.0	-0.5	-3.2	-2.3	-2.7
MAPP	34.4	37.3	41.5	45.4	49.6	0.1	0.5	0.7	0.9	0.6
NY	32.7	29.0	33.1	34.3	36.1	0.0	-0.4	-0.7	-0.5	-0.4
NE	25.2	24.2	26.9	27.5	30.5	-0.3	-1.4	-2.1	-2.1	-2.6
FL	38.6	41.1	47.4	54.4	61.7	0.0	-2.1	-3.5	-4.7	-5.5
STV	173.9	178.6	204.1	229.6	252.9	0.1	3.7	1.2	1.6	0.4
SPP	45.8	46.6	51.7	58.0	63.4	0.0	0.5	0.7	0.4	0.7
NWP	52.6	55.6	60.3	66.8	74.6	0.0	-2.6	-5.6	-9.1	-9.7
RA	33.5	39.3	46.6	50.5	57.0	-2.0	-1.6	-1.4	-2.7	-3.5
CNV	53.5	58.0	74.9	87.0	97.5	-0.6	-9.7	-10.3	-10.6	-11.5
US Total	775.6	803.2	912.2	1012.4	1111.8	-4.3	-20.8	-39.3	-46.2	-52.3

The decrease in generation is very small, amounting to less than 0.2 percent in 2020, as shown in Table 4. The mix change is also very minor with slightly less coal, and results from both the change in dispatch to the new load shapes and from the changes in capacity.

Table 4. Generation by Fuel Type (BkWh)
Weather-Normalized System Load Shapes versus Currently Used System Load Shapes

Fuel	Weather-Normalized System Load Shapes					Difference from Currently Used System Load Shapes				
	2000	2005	2010	2015	2020	2000	2005	2010	2015	2020
Coal	1884	2150	2572	2700	3019	5	2	-34	-38	-15
Petroleum	57	66	33	33	45	-1	-1	2	0	0
Gas	460	558	697	1140	1357	-5	-1	28	25	5
Nuclear	754	740	720	646	587	0	0	-4	-4	0
Pumped	-1	-1	-1	-1	-1	0	0	0	0	0
Renewable	314	380	397	402	407	0	-2	-3	-2	2
Total	3469	3894	4417	4921	5414	0	-1	-12	-19	-9

The change in the load shapes with the use of weather-normalized system load shapes has implications for electricity pricing. An example of the impact on competitive prices for various years for all the regions is shown in Table 5. In general, the prices increase, but by small amounts. However, there is one very significant anomaly and that is the huge price increase in NWP. This increase is due almost entirely to a large increase in the reliability component of the price in that region. The change in capacity relative to change in the peak load appears to have created a consistent scarcity in the region. CNV prices also rise, but not nearly as dramatically. It may be that this volatile price behavior is an the result of the particular default code that was used for these tests, and may reflect some other difficulty which has been resolved.

Table 5. Competitive Electric Prices by Region (1999$/MWh)
Weather-Normalized System Load Shapes versus Currently Used System Load Shapes

Region	Weather-Normalized System Load Shapes					Difference from Currently Used System Load Shapes				
	2000	2005	2010	2015	2020	2000	2005	2010	2015	2020
ECAR	58.4	55.1	53.6	56.3	60.5	-0.4	-3.4	0.4	1.3	0.6
ERCOT	63.5	71.9	53.9	55.8	61.9	-1.0	-2.9	2.5	1.9	1.5
MAAC	74.1	71.5	69.2	69.5	77.9	-0.2	-1.0	3.5	1.1	2.7
MAIN	61.3	60.9	59.3	63.2	66.3	-0.4	-2.4	2.4	1.1	1.3
MAPP	68.1	62.2	57.3	63.0	65.0	-0.2	-0.6	0.5	0.3	0.8
NY	101.0	95.0	86.2	88.4	93.6	0.2	-0.2	0.8	-0.2	-1.4
NE	97.0	86.1	79.3	83.2	84.4	0.3	-0.1	-0.4	-1.1	0.0
FL	73.7	70.8	64.2	67.9	72.1	-1.2	0.3	2.1	4.0	4.8
STV	63.8	79.6	66.7	66.2	72.7	0.7	-7.0	2.8	1.6	4.3
SPP	67.3	65.2	60.3	61.4	64.6	1.1	0.8	1.6	2.0	0.9
NWP	91.1	98.4	156.0	175.6	180.5	-6.6	16.2	95.6	122.0	123.6
RA	97.4	84.9	67.8	71.3	72.0	2.7	0.9	5.5	3.4	3.9
CNV	99.5	105.7	78.9	77.9	82.3	-12.6	10.8	6.7	5.9	6.6

Conclusion

The impact of the weather-normalized system load shapes is to generally reduce projected capacity requirements. The weather normalizing methodology insures that typical weather patterns underlie the forecast, not specific weather patterns that occurred in an individual historical year. The impact on electricity prices is relatively minor, with the exception of prices in NWP. Clearly, further investigation of the NWP pricing is required.

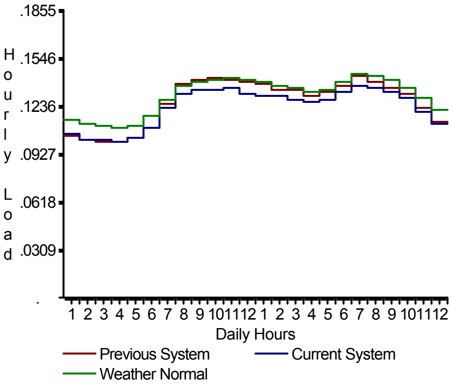
Appendix A. Graphs of Previous, Current, and Weather-Normalized System Load Shapes

DAF System vs Weather Normal, Weekday, ECAR

(Hourly loads as fractions)

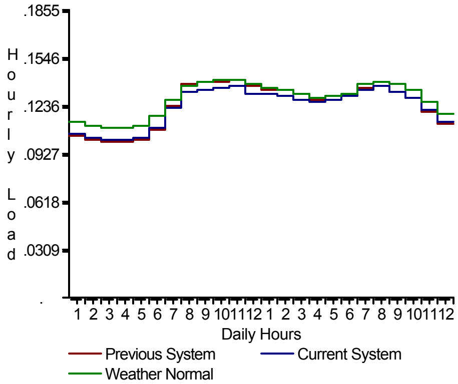
Load Shapes for January

(Hour loads as fraction of annual loads)



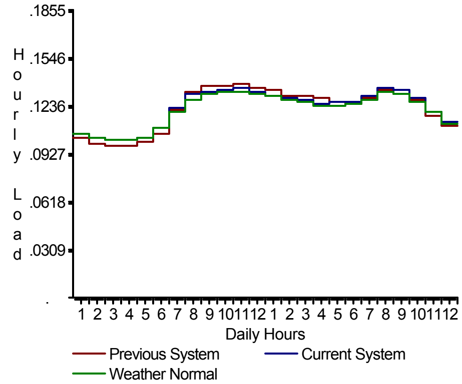
Load Shapes for February

(Hour loads as fraction of annual loads)



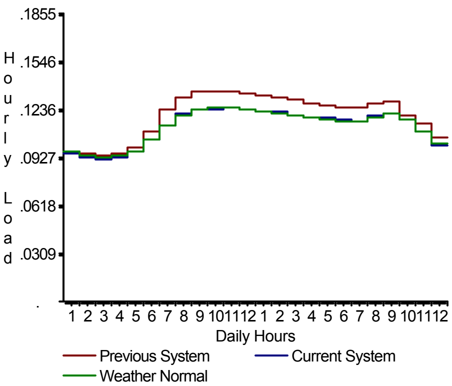
Load Shapes for March

(Hour loads as fraction of annual loads)



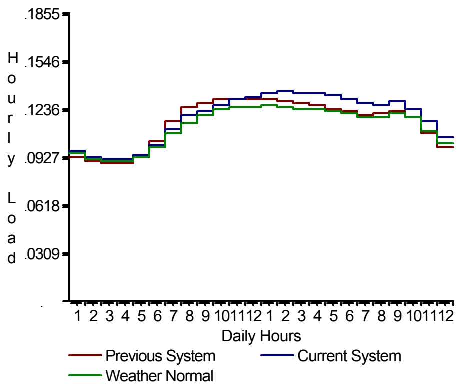
Load Shapes for April

(Hour loads as fraction of annual loads)



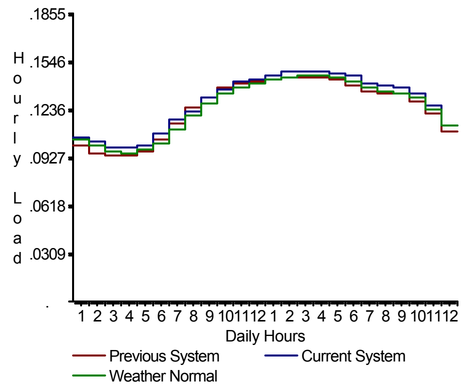
Load Shapes for May

(Hour loads as fraction of annual loads)



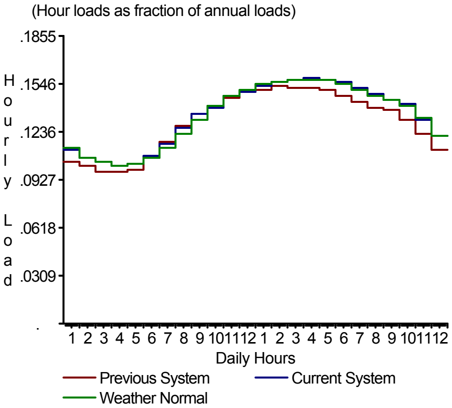
Load Shapes for June

(Hour loads as fraction of annual loads)



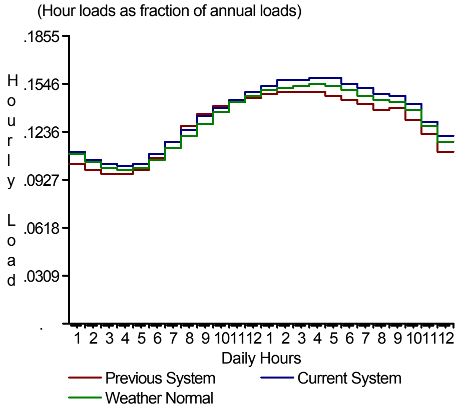
Load Shapes for July

(Hour loads as fraction of annual loads)



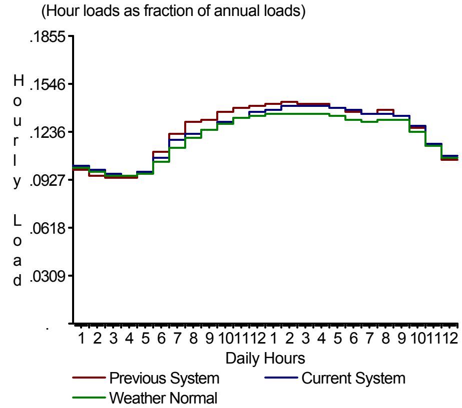
Load Shapes for August

(Hour loads as fraction of annual loads)



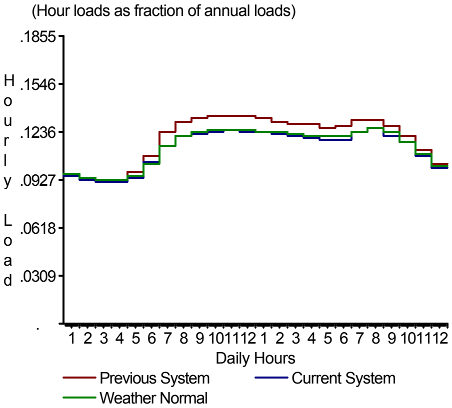
Load Shapes for September

(Hour loads as fraction of annual loads)



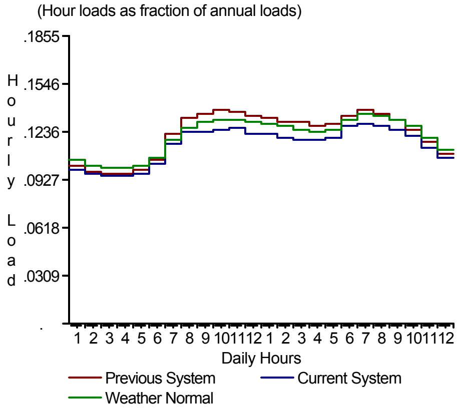
Load Shapes for October

(Hour loads as fraction of annual loads)



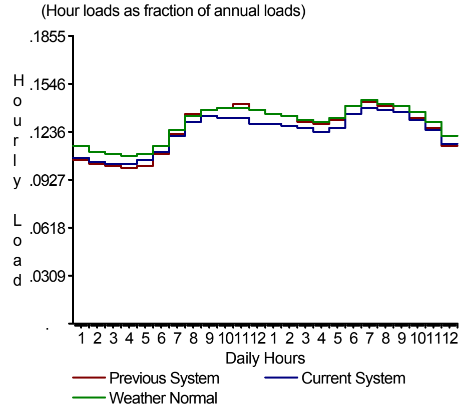
Load Shapes for November

(Hour loads as fraction of annual loads)



Load Shapes for December

(Hour loads as fraction of annual loads)

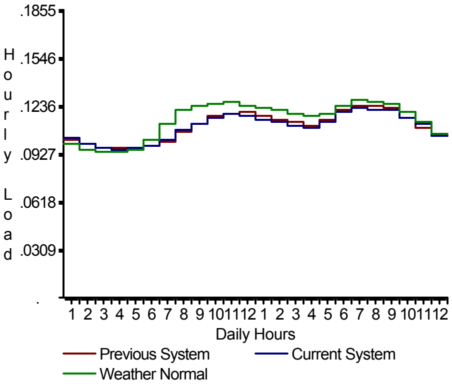


DAF System vs Weather Normal, Weekend, ECAR

(Hourly loads as fractions)

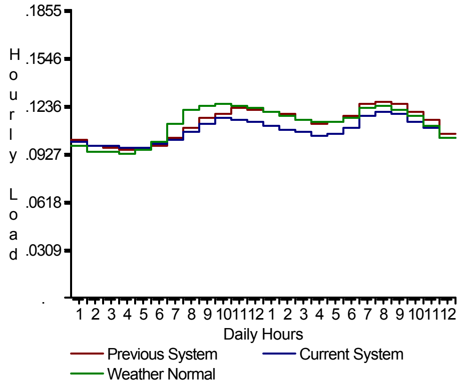
Load Shapes for January

(Hour loads as fraction of annual loads)



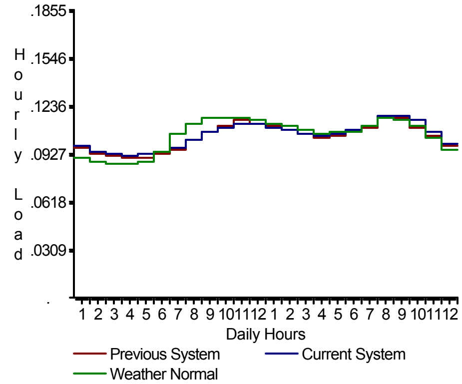
Load Shapes for February

(Hour loads as fraction of annual loads)



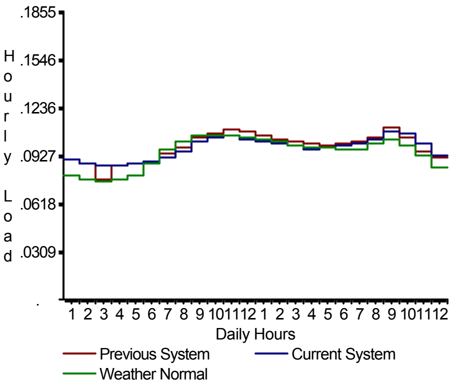
Load Shapes for March

(Hour loads as fraction of annual loads)



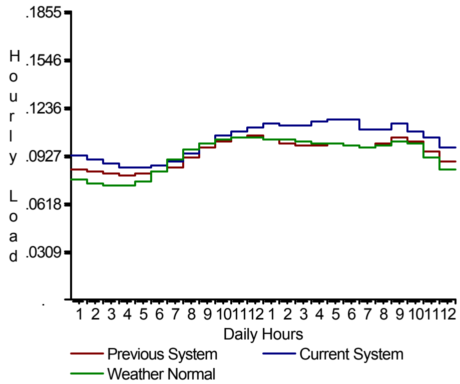
Load Shapes for April

(Hour loads as fraction of annual loads)



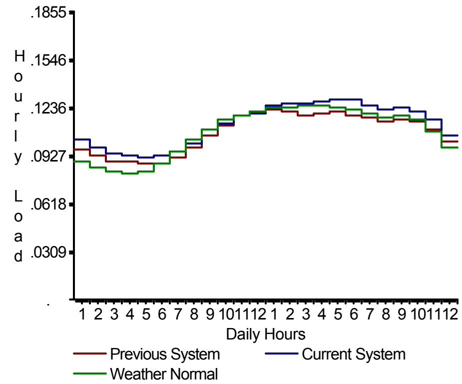
Load Shapes for May

(Hour loads as fraction of annual loads)



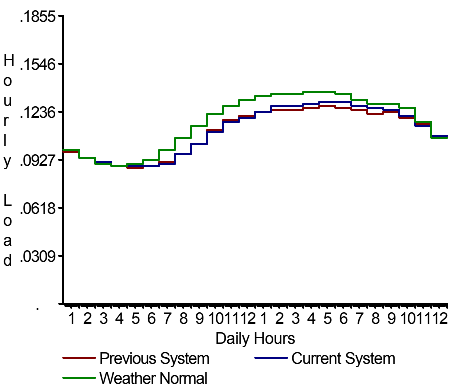
Load Shapes for June

(Hour loads as fraction of annual loads)



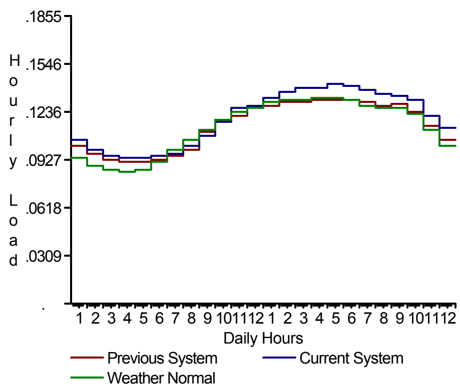
Load Shapes for July

(Hour loads as fraction of annual loads)



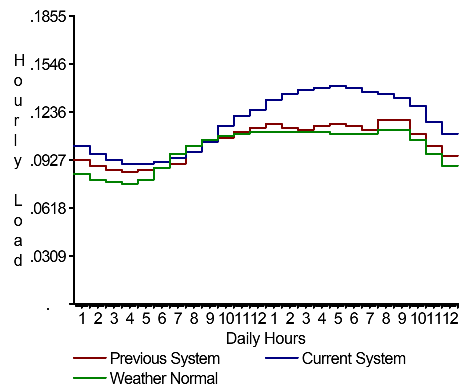
Load Shapes for August

(Hour loads as fraction of annual loads)



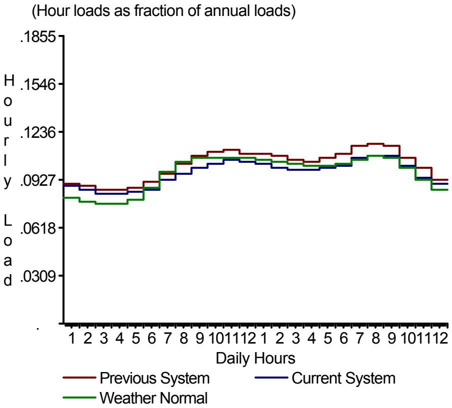
Load Shapes for September

(Hour loads as fraction of annual loads)



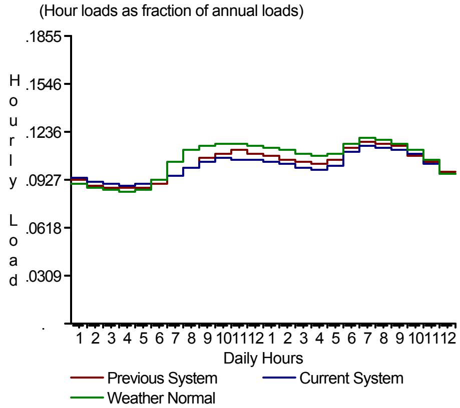
Load Shapes for October

(Hour loads as fraction of annual loads)



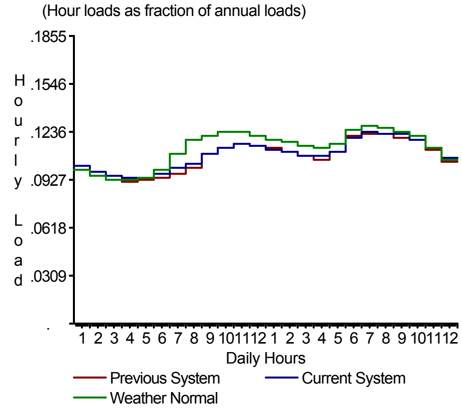
Load Shapes for November

(Hour loads as fraction of annual loads)



Load Shapes for December

(Hour loads as fraction of annual loads)

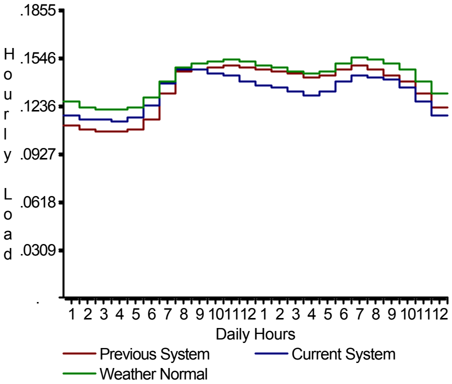


DAF System vs Weather Normal, Peakday, ECAR

(Hourly loads as fractions)

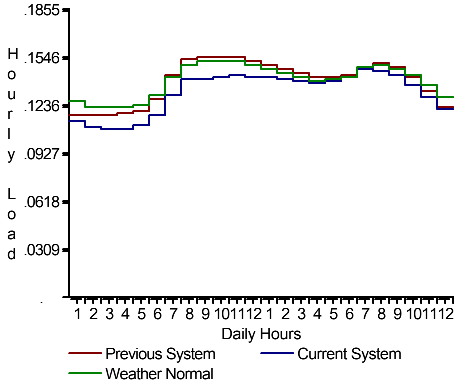
Load Shapes for January

(Hour loads as fraction of annual loads)



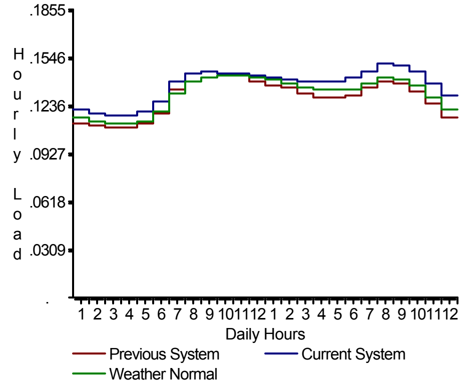
Load Shapes for February

(Hour loads as fraction of annual loads)



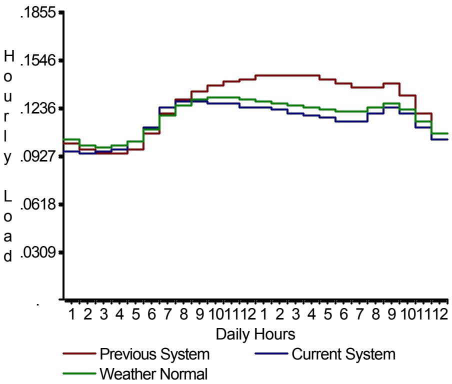
Load Shapes for March

(Hour loads as fraction of annual loads)



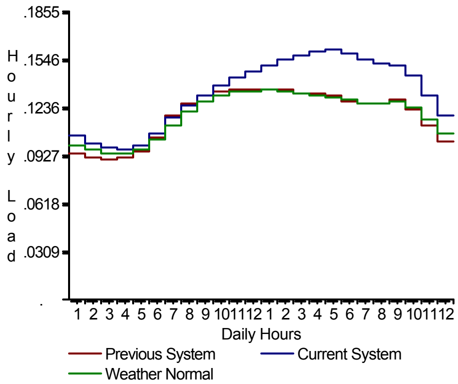
Load Shapes for April

(Hour loads as fraction of annual loads)



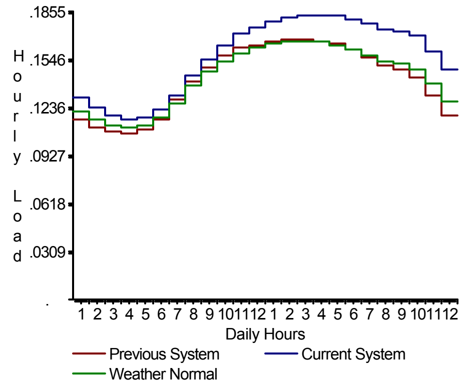
Load Shapes for May

(Hour loads as fraction of annual loads)



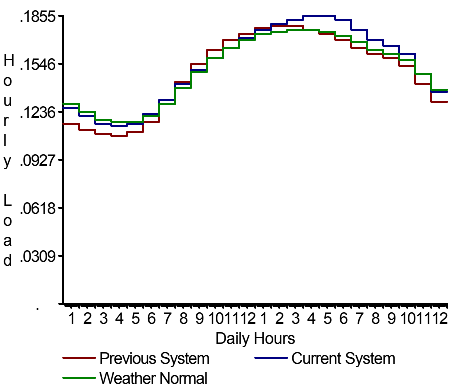
Load Shapes for June

(Hour loads as fraction of annual loads)



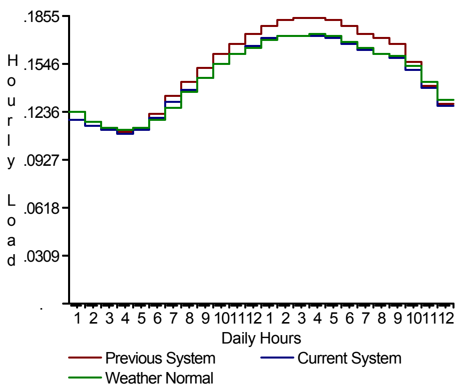
Load Shapes for July

(Hour loads as fraction of annual loads)



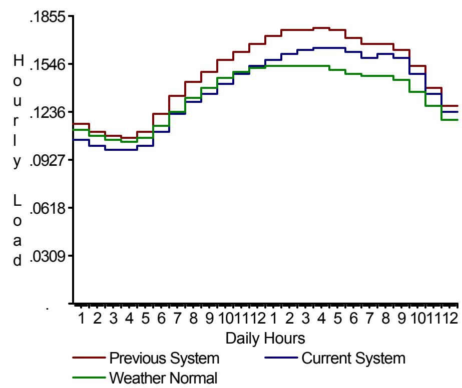
Load Shapes for August

(Hour loads as fraction of annual loads)



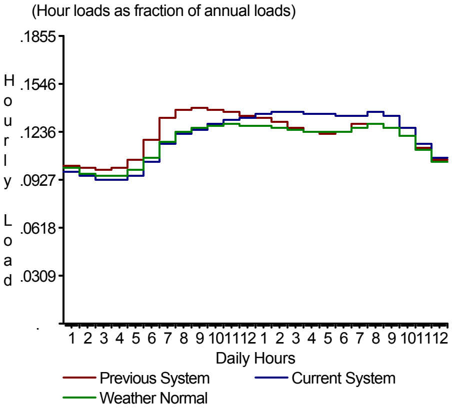
Load Shapes for September

(Hour loads as fraction of annual loads)



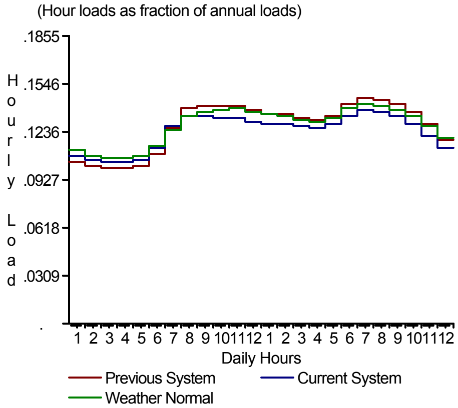
Load Shapes for October

(Hour loads as fraction of annual loads)



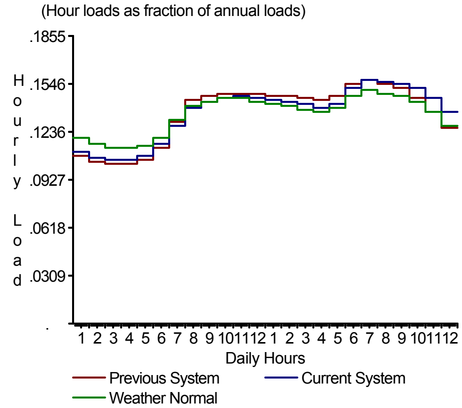
Load Shapes for November

(Hour loads as fraction of annual loads)



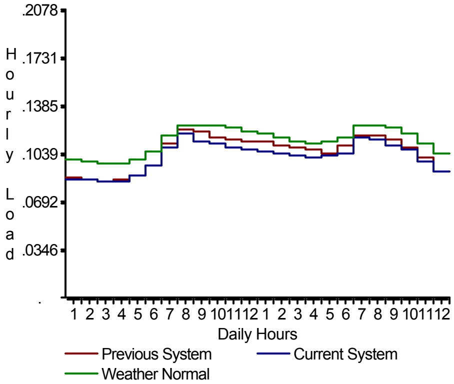
Load Shapes for December

(Hour loads as fraction of annual loads)

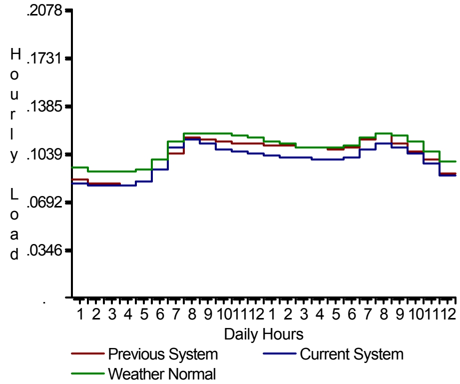


DAF System vs Weather Normal, Weekday, ERCT
(Hourly loads as fractions)

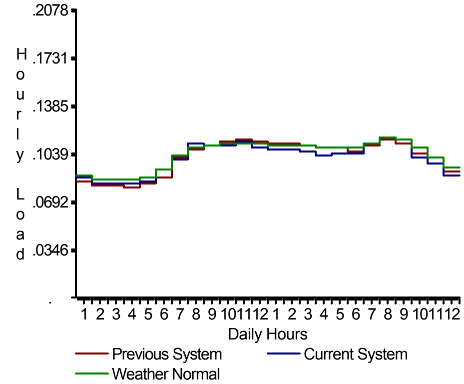
Load Shapes for January
(Hour loads as fraction of annual loads)



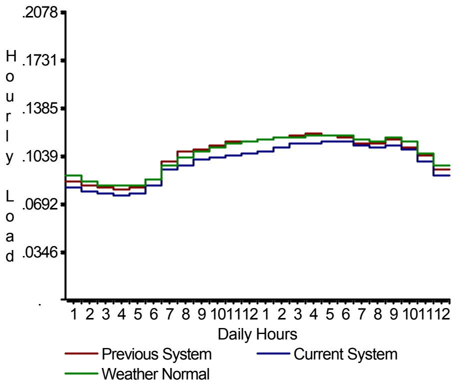
Load Shapes for February
(Hour loads as fraction of annual loads)



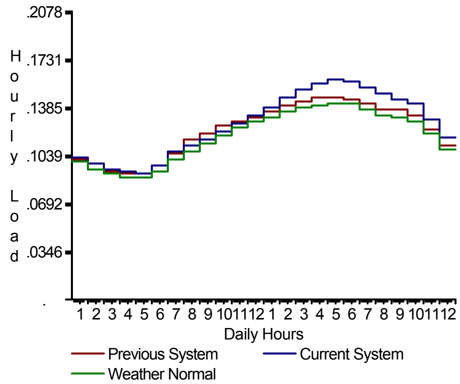
Load Shapes for March
(Hour loads as fraction of annual loads)



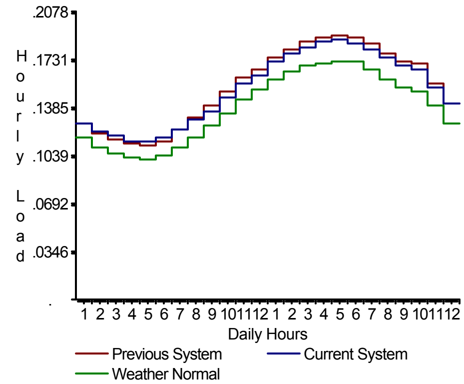
Load Shapes for April
(Hour loads as fraction of annual loads)



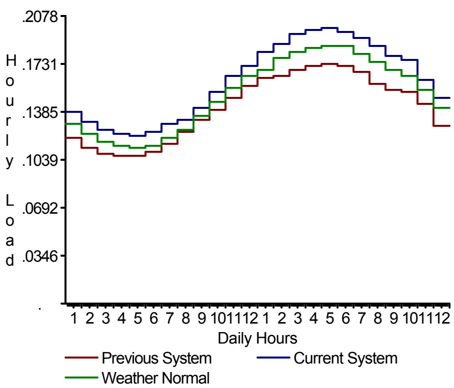
Load Shapes for May
(Hour loads as fraction of annual loads)



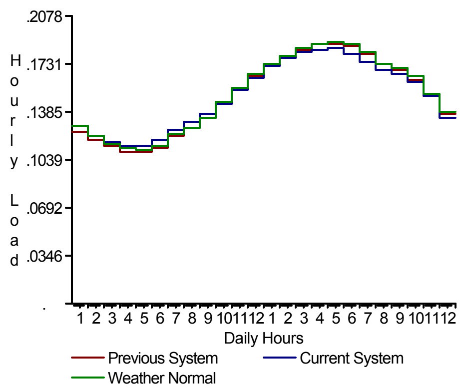
Load Shapes for June
(Hour loads as fraction of annual loads)



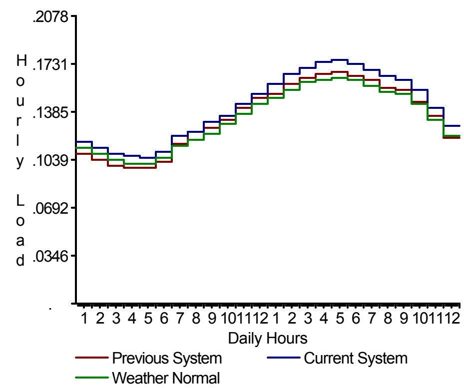
Load Shapes for July
(Hour loads as fraction of annual loads)



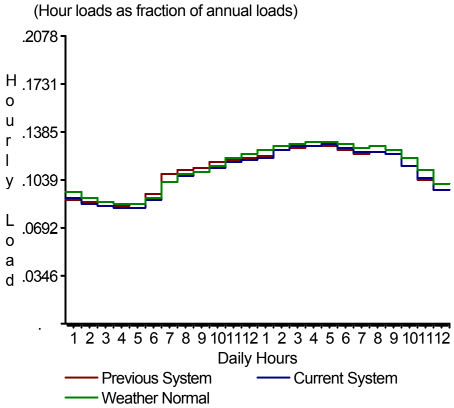
Load Shapes for August
(Hour loads as fraction of annual loads)



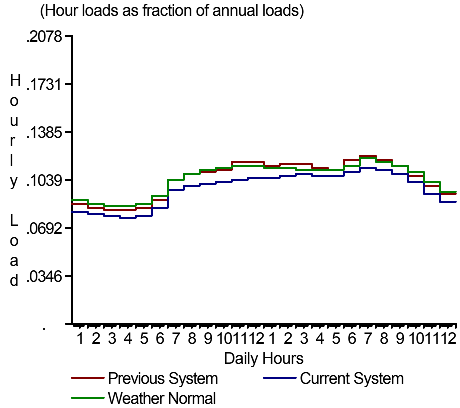
Load Shapes for September
(Hour loads as fraction of annual loads)



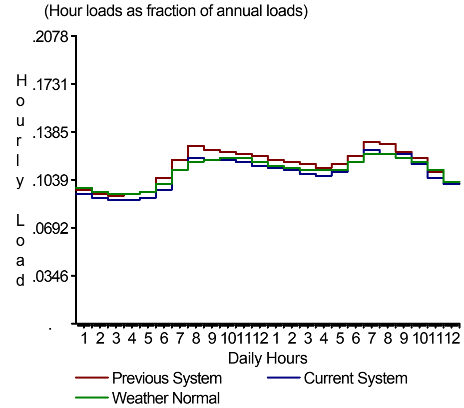
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



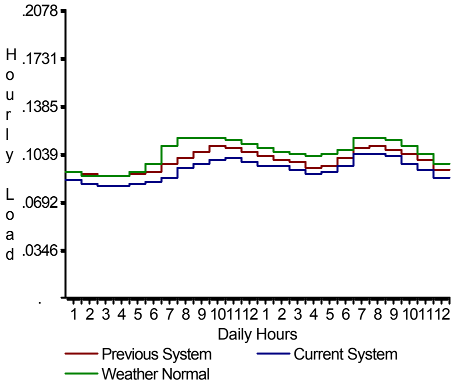
Load Shapes for December
(Hour loads as fraction of annual loads)



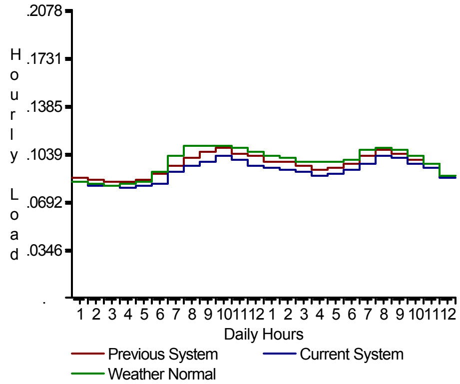
DAF System vs Weather Normal, Weekend, ERCT

(Hourly loads as fractions)

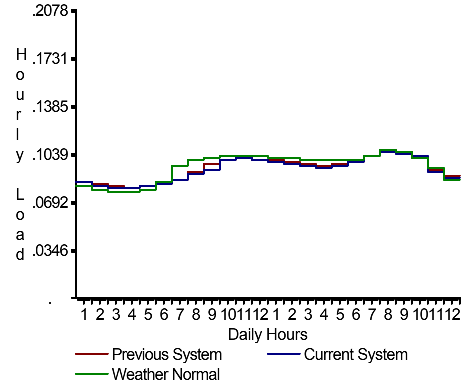
Load Shapes for January
(Hour loads as fraction of annual loads)



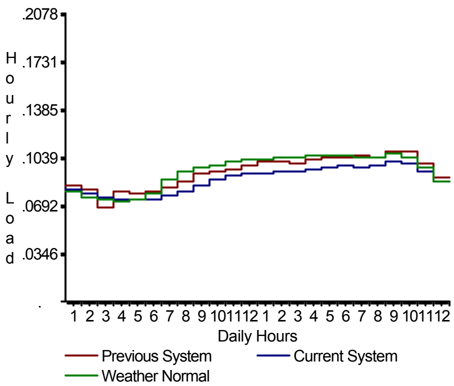
Load Shapes for February
(Hour loads as fraction of annual loads)



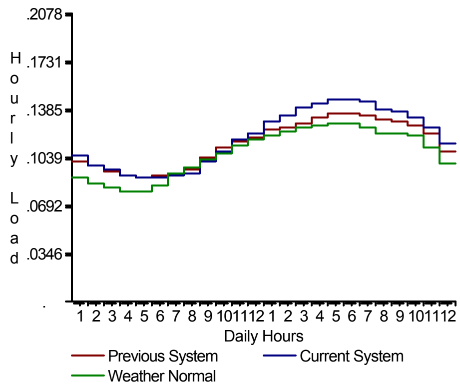
Load Shapes for March
(Hour loads as fraction of annual loads)



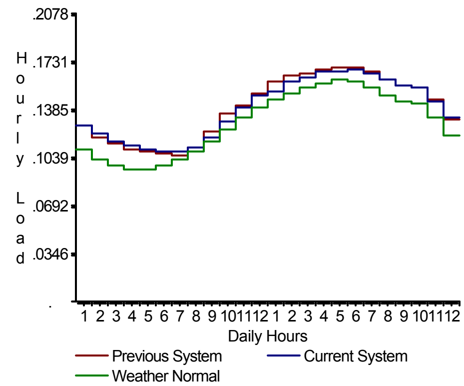
Load Shapes for April
(Hour loads as fraction of annual loads)



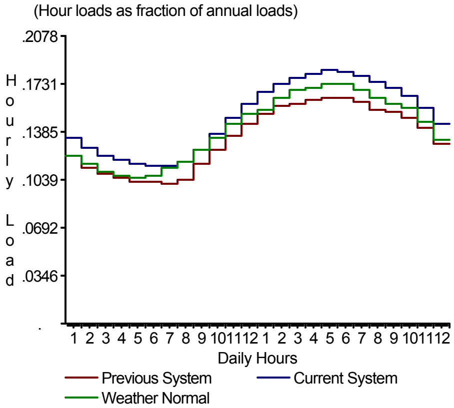
Load Shapes for May
(Hour loads as fraction of annual loads)



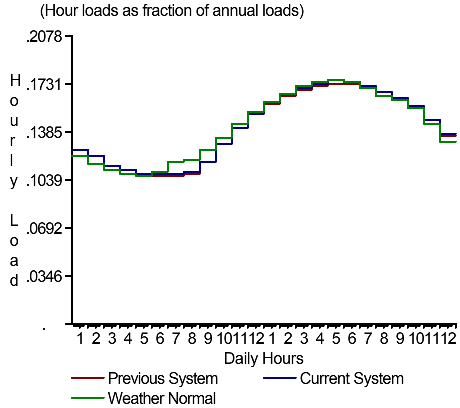
Load Shapes for June
(Hour loads as fraction of annual loads)



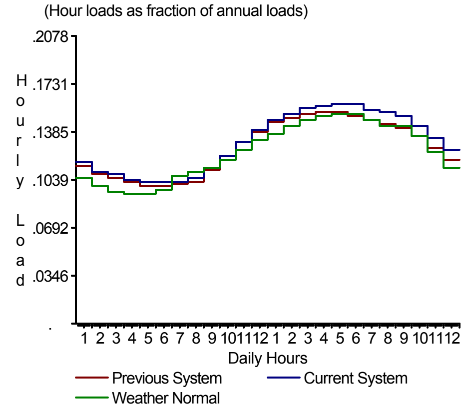
Load Shapes for July
(Hour loads as fraction of annual loads)



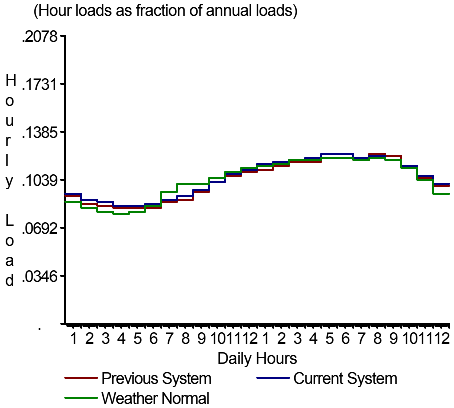
Load Shapes for August
(Hour loads as fraction of annual loads)



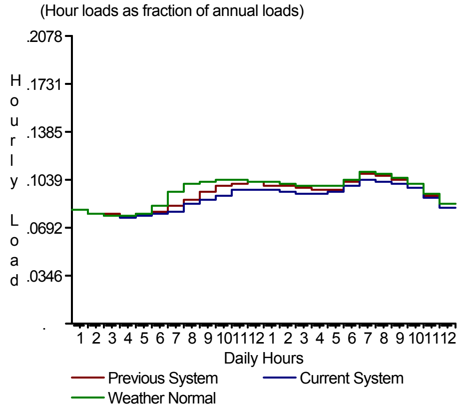
Load Shapes for September
(Hour loads as fraction of annual loads)



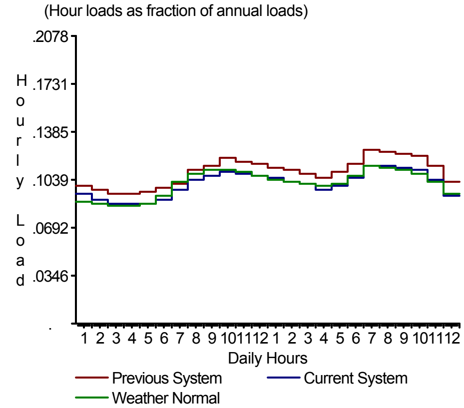
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)

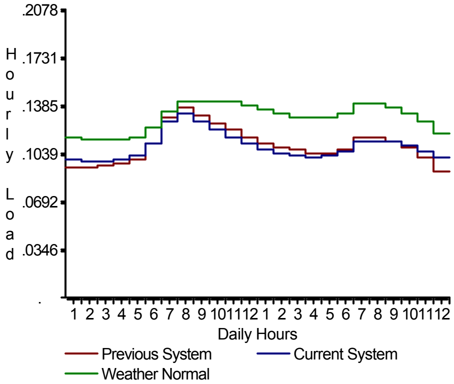


DAF System vs Weather Normal, Peakday, ERCT

(Hourly loads as fractions)

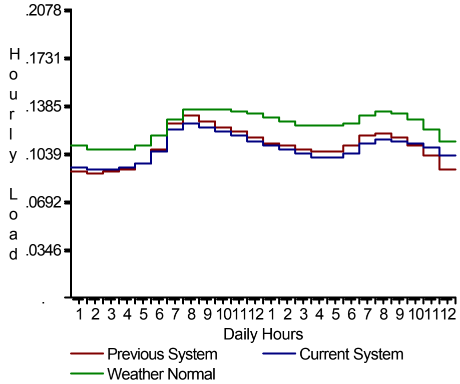
Load Shapes for January

(Hour loads as fraction of annual loads)



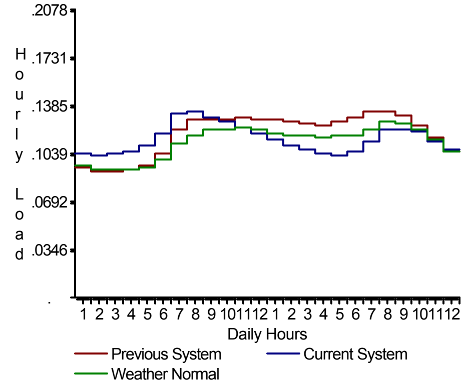
Load Shapes for February

(Hour loads as fraction of annual loads)



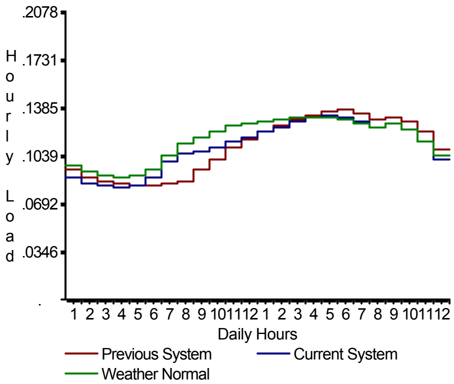
Load Shapes for March

(Hour loads as fraction of annual loads)



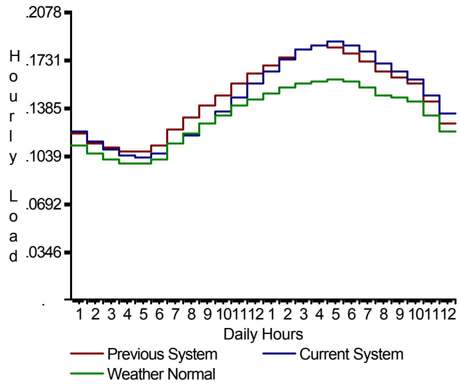
Load Shapes for April

(Hour loads as fraction of annual loads)



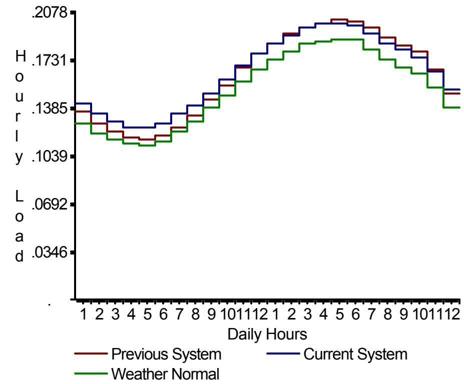
Load Shapes for May

(Hour loads as fraction of annual loads)



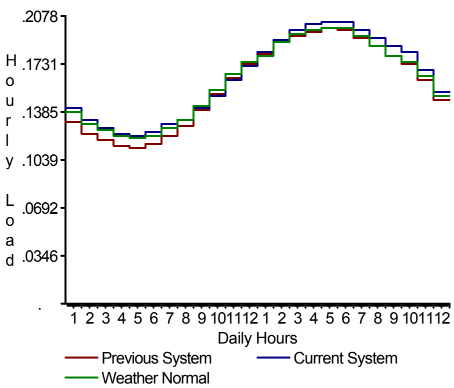
Load Shapes for June

(Hour loads as fraction of annual loads)



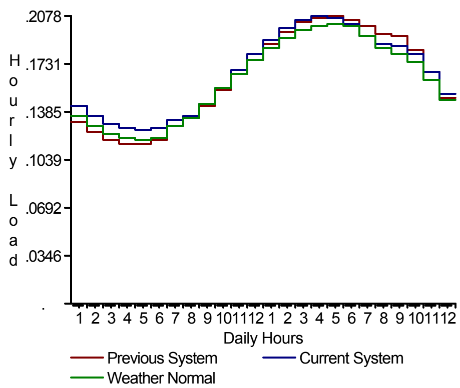
Load Shapes for July

(Hour loads as fraction of annual loads)



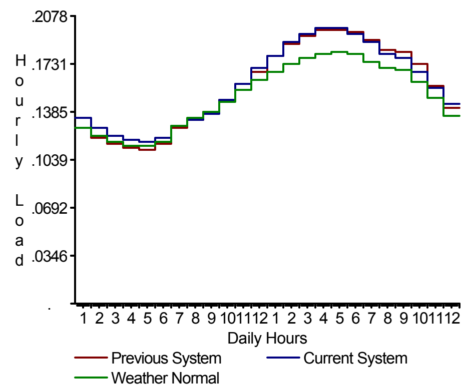
Load Shapes for August

(Hour loads as fraction of annual loads)



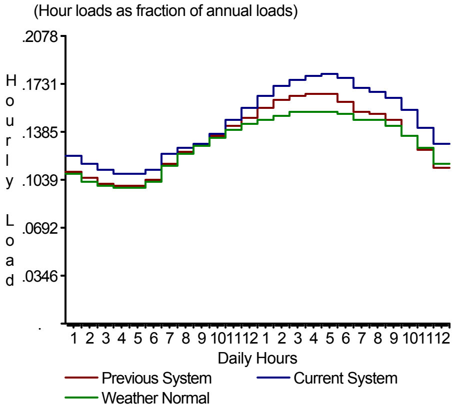
Load Shapes for September

(Hour loads as fraction of annual loads)



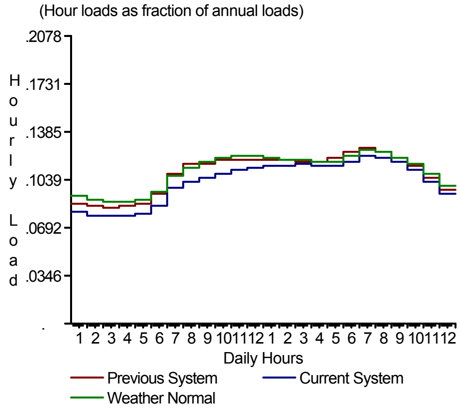
Load Shapes for October

(Hour loads as fraction of annual loads)



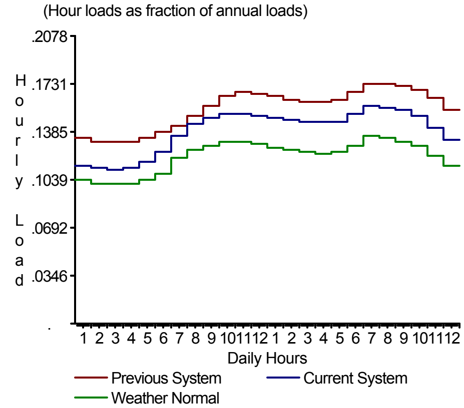
Load Shapes for November

(Hour loads as fraction of annual loads)



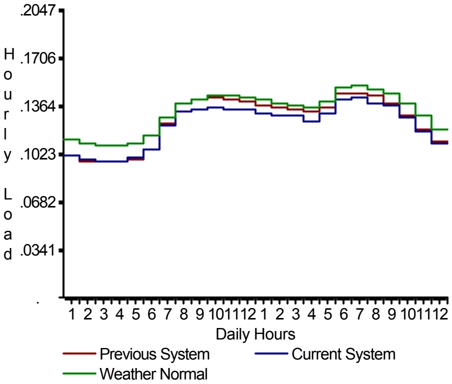
Load Shapes for December

(Hour loads as fraction of annual loads)

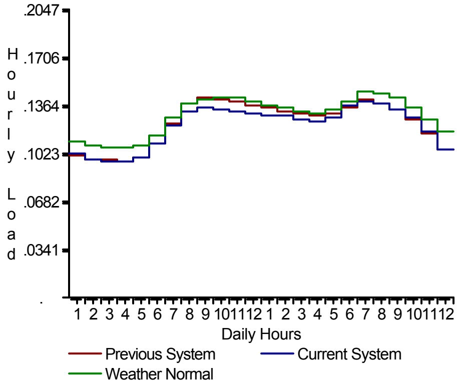


DAF System vs Weather Normal, Weekday, MAAC
(Hourly loads as fractions)

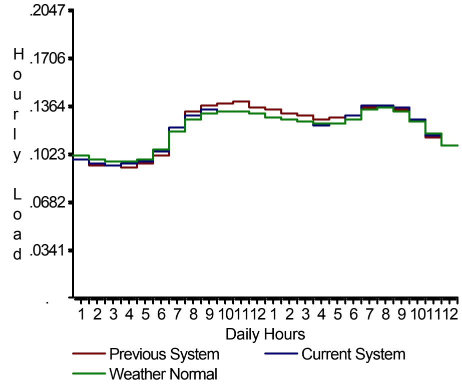
Load Shapes for January
(Hour loads as fraction of annual loads)



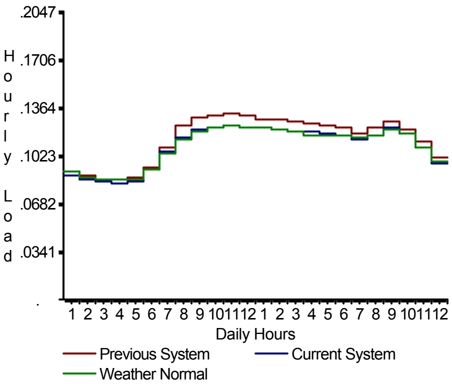
Load Shapes for February
(Hour loads as fraction of annual loads)



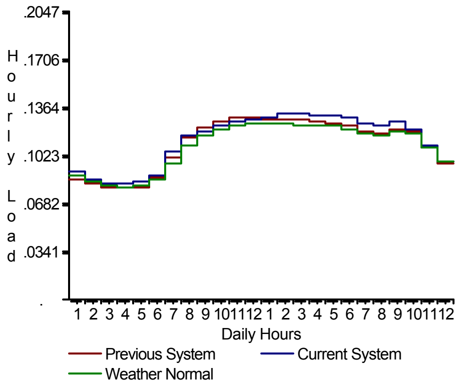
Load Shapes for March
(Hour loads as fraction of annual loads)



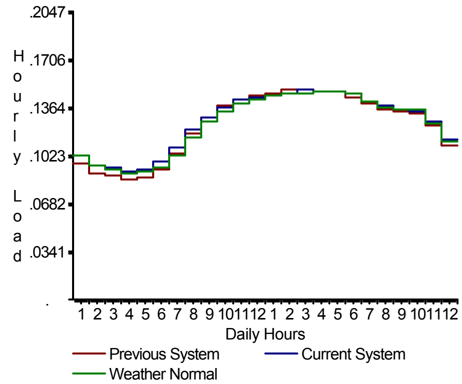
Load Shapes for April
(Hour loads as fraction of annual loads)



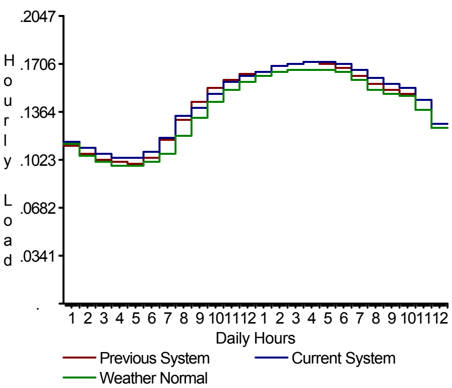
Load Shapes for May
(Hour loads as fraction of annual loads)



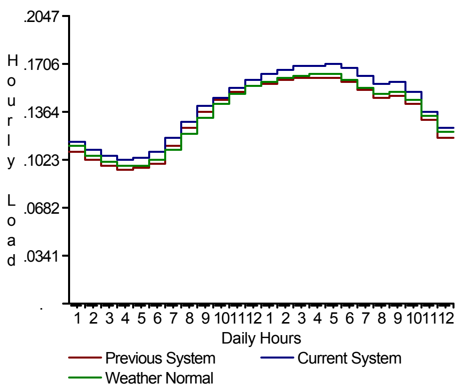
Load Shapes for June
(Hour loads as fraction of annual loads)



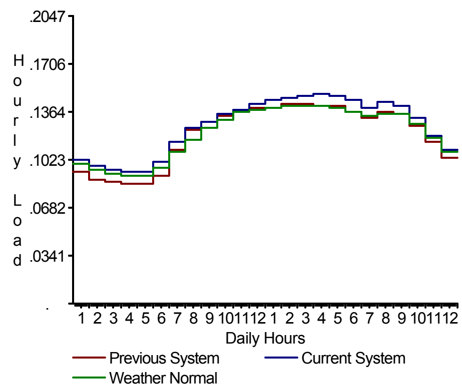
Load Shapes for July
(Hour loads as fraction of annual loads)



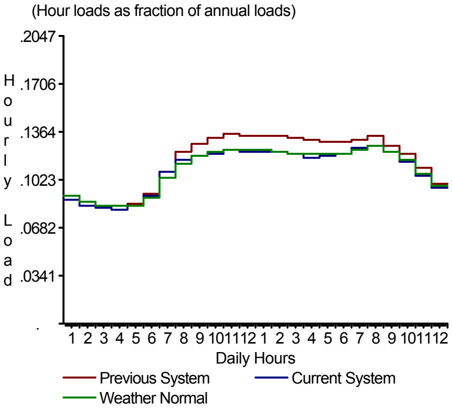
Load Shapes for August
(Hour loads as fraction of annual loads)



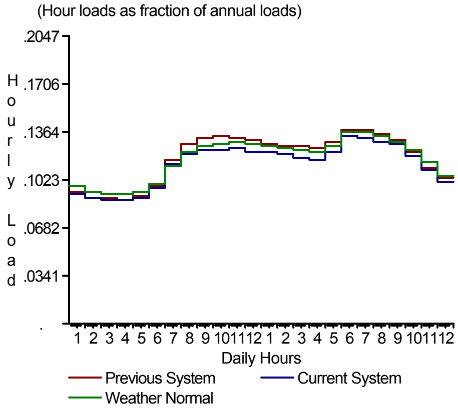
Load Shapes for September
(Hour loads as fraction of annual loads)



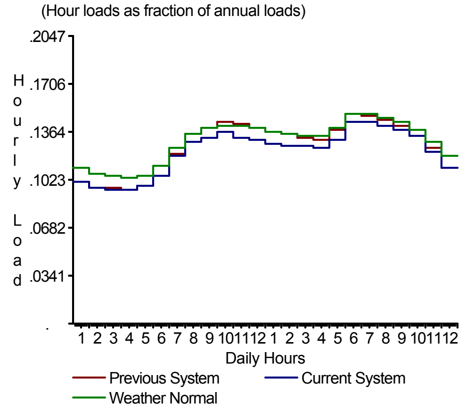
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



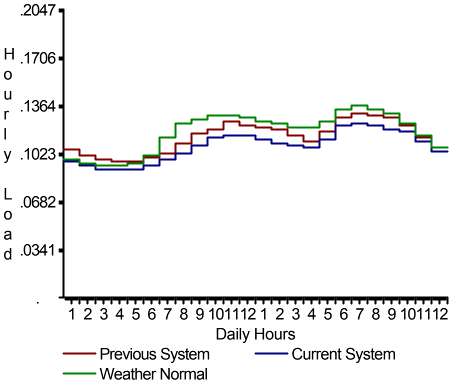
Load Shapes for December
(Hour loads as fraction of annual loads)



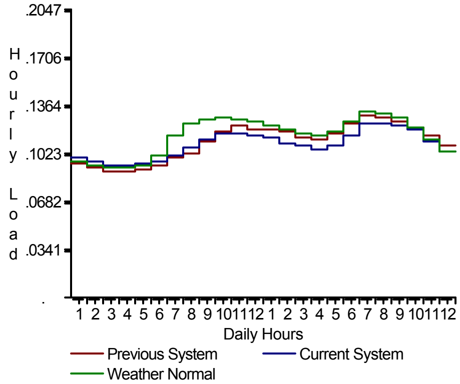
DAF System vs Weather Normal, Weekend, MAAC

(Hourly loads as fractions)

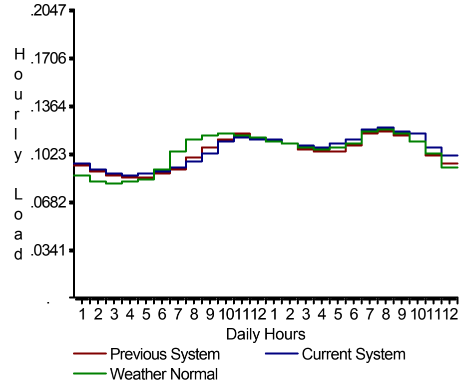
Load Shapes for January
(Hour loads as fraction of annual loads)



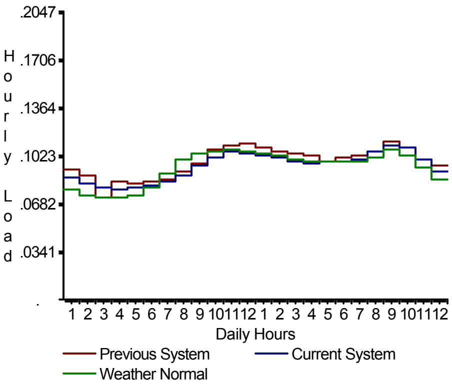
Load Shapes for February
(Hour loads as fraction of annual loads)



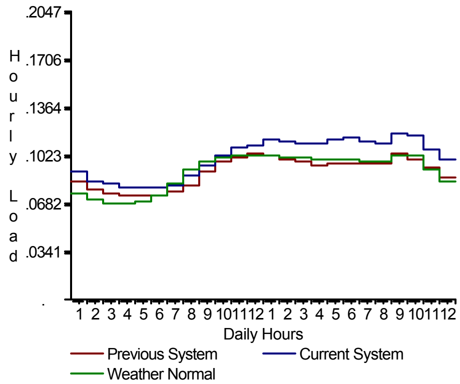
Load Shapes for March
(Hour loads as fraction of annual loads)



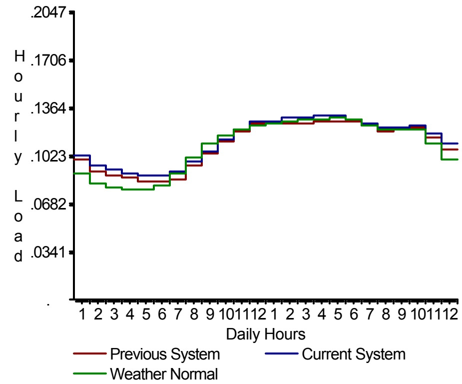
Load Shapes for April
(Hour loads as fraction of annual loads)



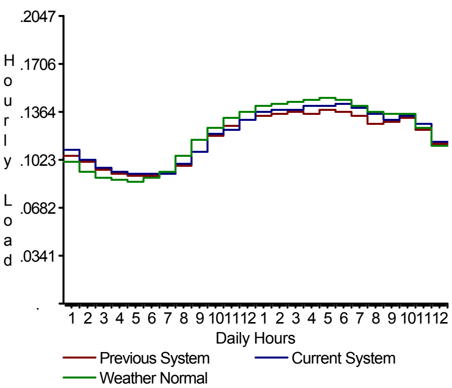
Load Shapes for May
(Hour loads as fraction of annual loads)



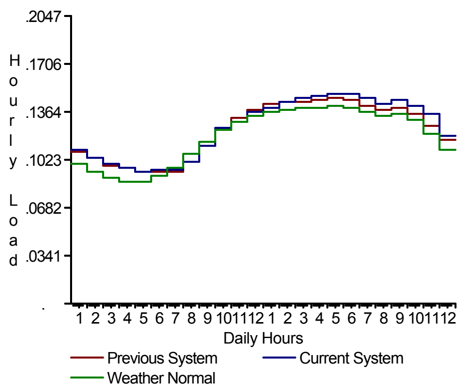
Load Shapes for June
(Hour loads as fraction of annual loads)



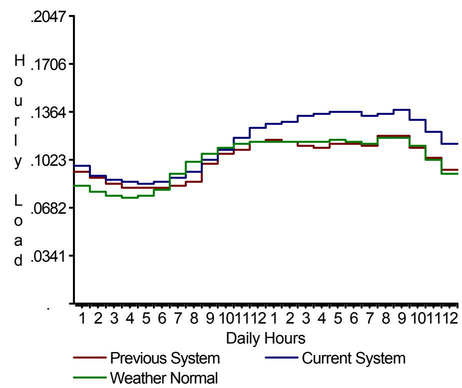
Load Shapes for July
(Hour loads as fraction of annual loads)



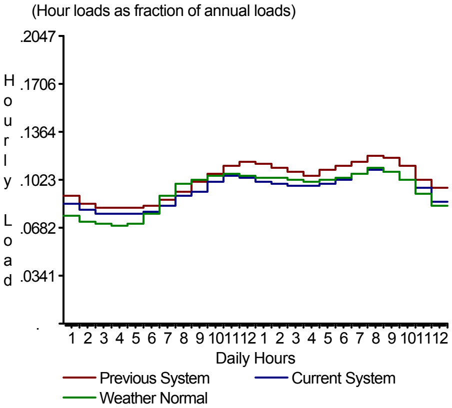
Load Shapes for August
(Hour loads as fraction of annual loads)



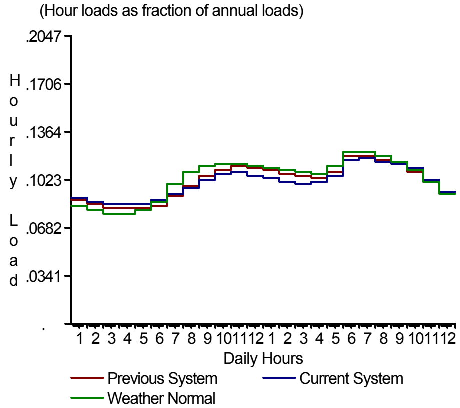
Load Shapes for September
(Hour loads as fraction of annual loads)



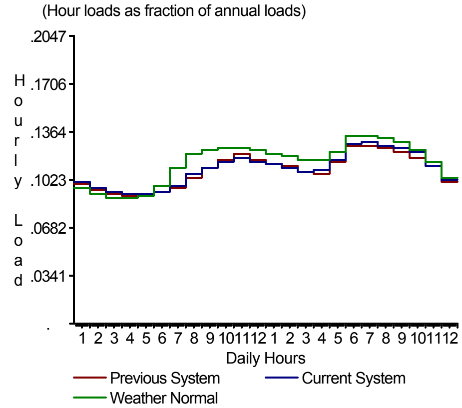
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)

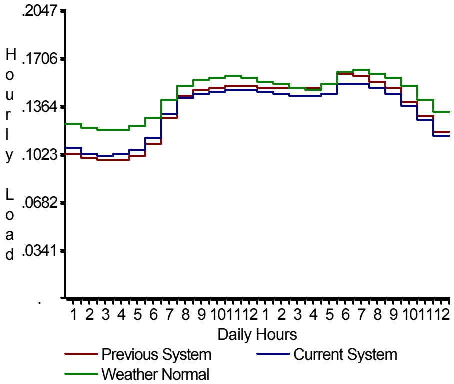


DAF System vs Weather Normal, Peakday, MAAC

(Hourly loads as fractions)

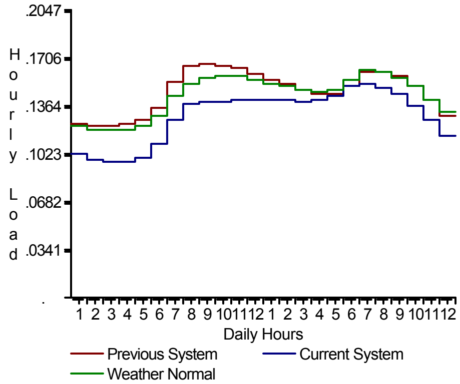
Load Shapes for January

(Hour loads as fraction of annual loads)



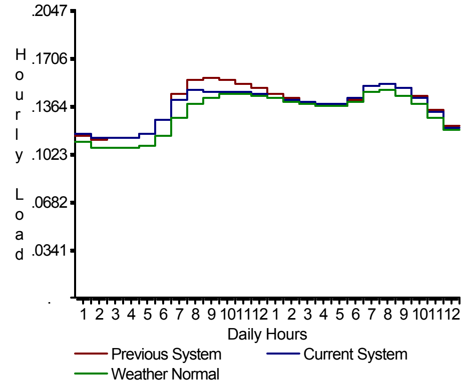
Load Shapes for February

(Hour loads as fraction of annual loads)



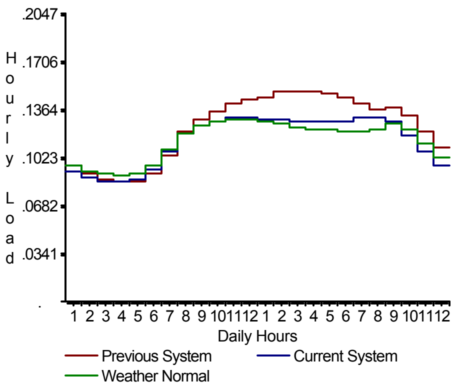
Load Shapes for March

(Hour loads as fraction of annual loads)



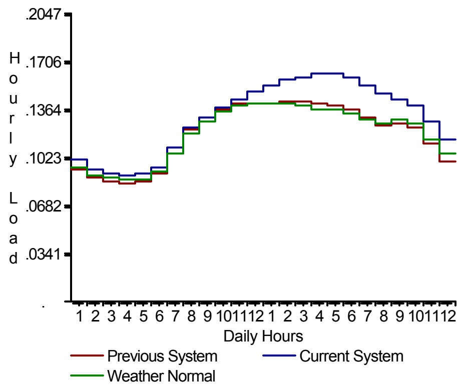
Load Shapes for April

(Hour loads as fraction of annual loads)



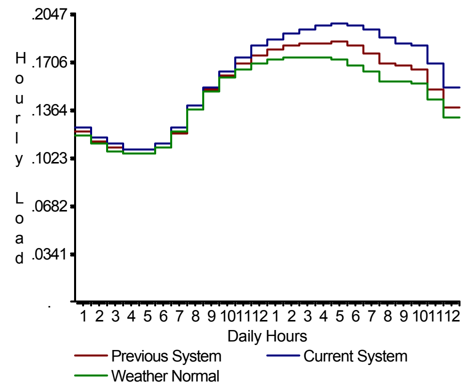
Load Shapes for May

(Hour loads as fraction of annual loads)



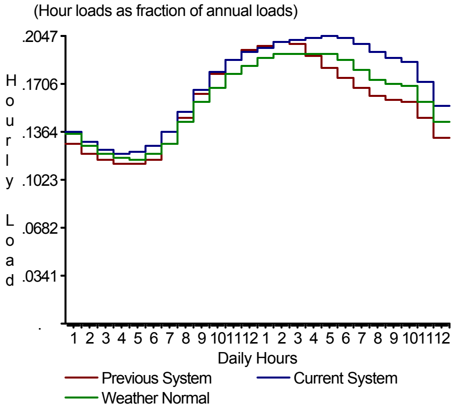
Load Shapes for June

(Hour loads as fraction of annual loads)



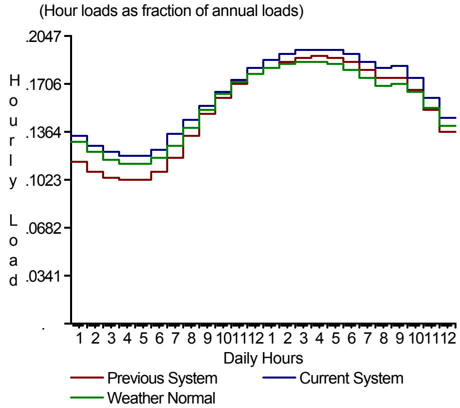
Load Shapes for July

(Hour loads as fraction of annual loads)



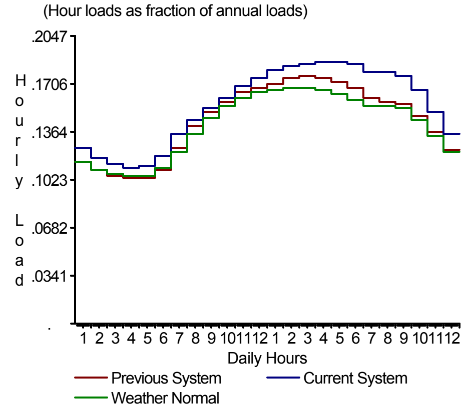
Load Shapes for August

(Hour loads as fraction of annual loads)



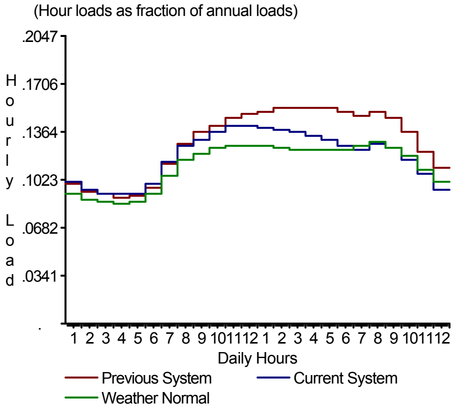
Load Shapes for September

(Hour loads as fraction of annual loads)



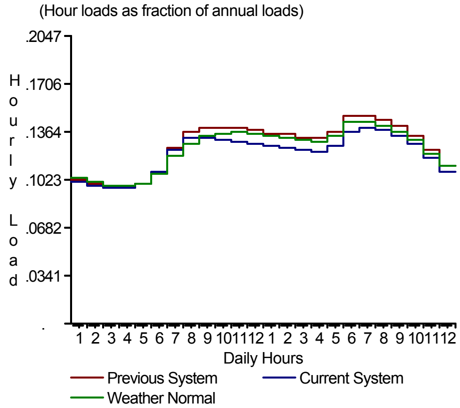
Load Shapes for October

(Hour loads as fraction of annual loads)



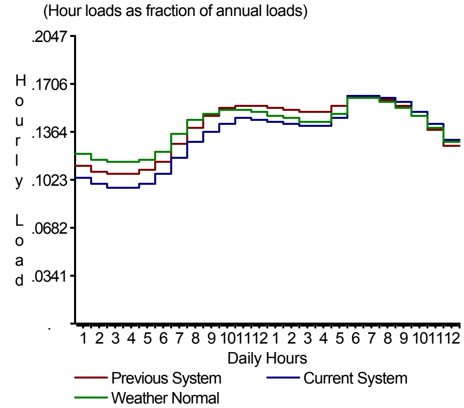
Load Shapes for November

(Hour loads as fraction of annual loads)



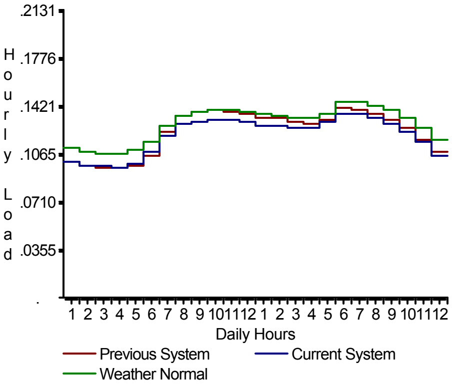
Load Shapes for December

(Hour loads as fraction of annual loads)

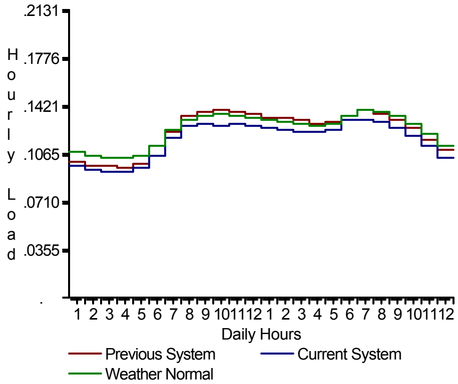


DAF System vs Weather Normal, Weekday, MAIN
(Hourly loads as fractions)

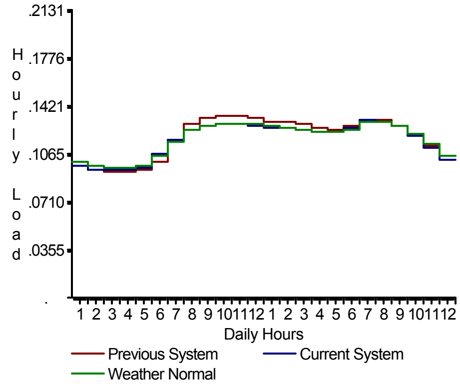
Load Shapes for January
(Hour loads as fraction of annual loads)



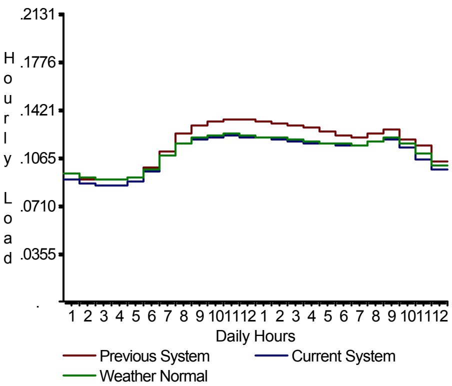
Load Shapes for February
(Hour loads as fraction of annual loads)



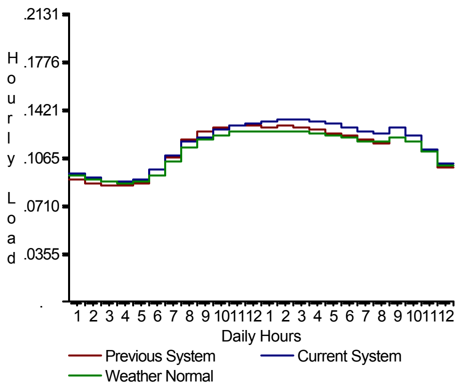
Load Shapes for March
(Hour loads as fraction of annual loads)



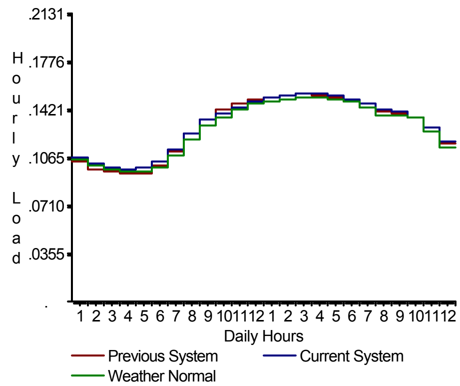
Load Shapes for April
(Hour loads as fraction of annual loads)



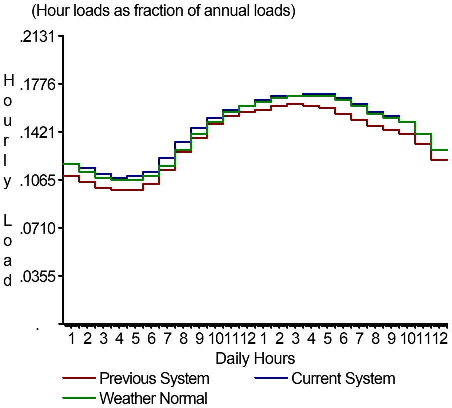
Load Shapes for May
(Hour loads as fraction of annual loads)



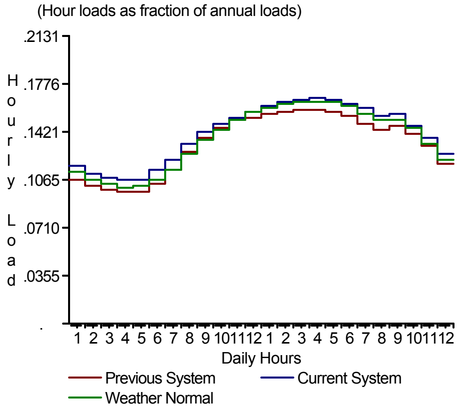
Load Shapes for June
(Hour loads as fraction of annual loads)



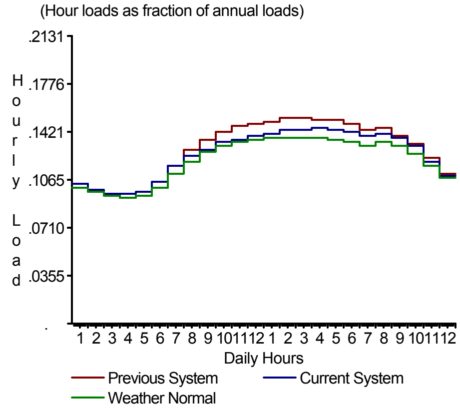
Load Shapes for July
(Hour loads as fraction of annual loads)



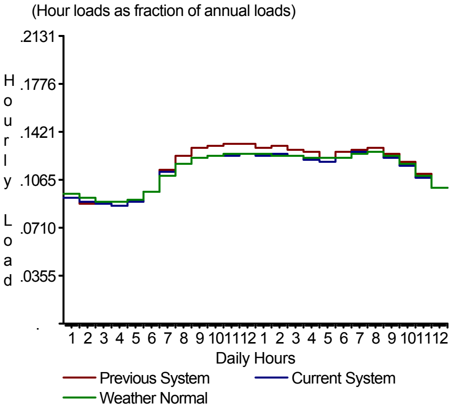
Load Shapes for August
(Hour loads as fraction of annual loads)



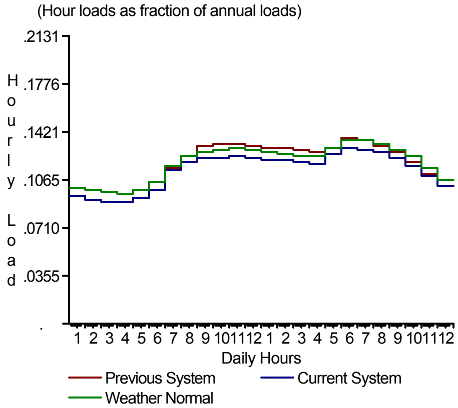
Load Shapes for September
(Hour loads as fraction of annual loads)



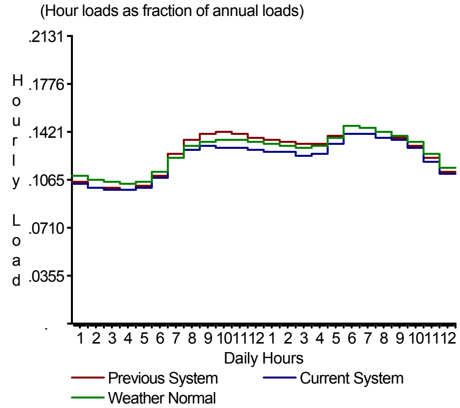
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)

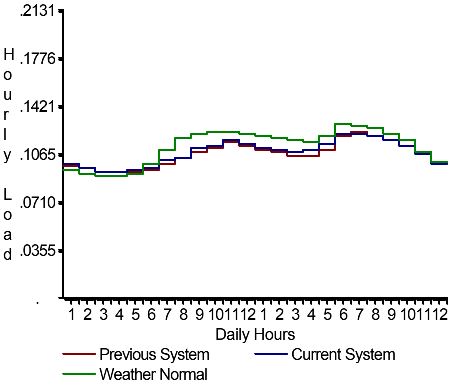


Load Shapes for December
(Hour loads as fraction of annual loads)

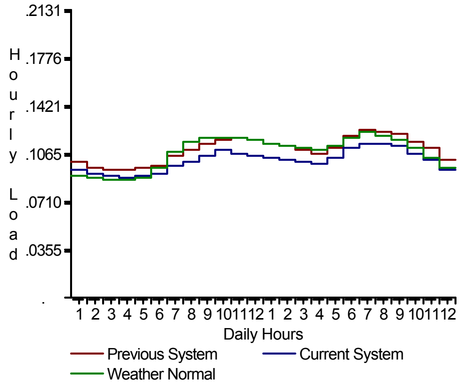


DAF System vs Weather Normal, Weekend, MAIN
(Hourly loads as fractions)

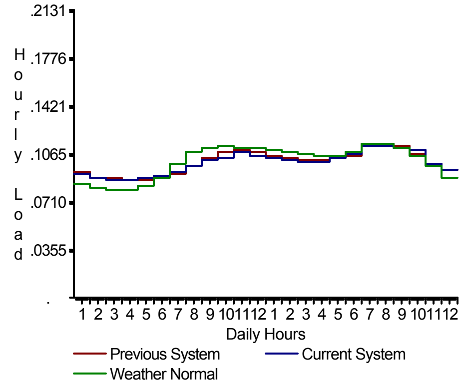
Load Shapes for January
(Hour loads as fraction of annual loads)



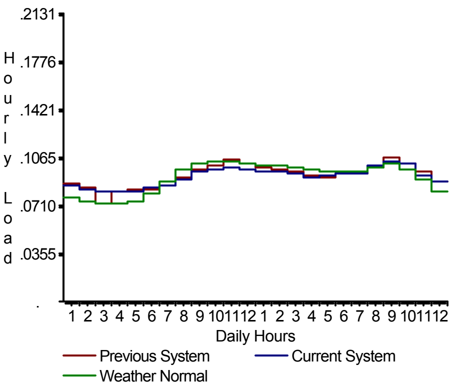
Load Shapes for February
(Hour loads as fraction of annual loads)



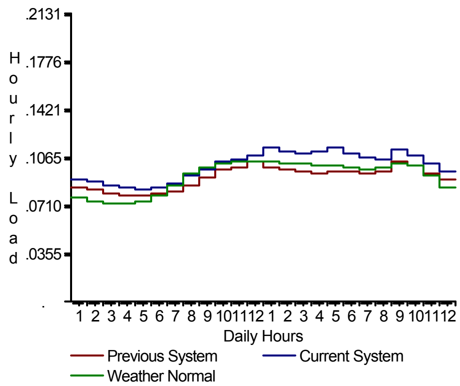
Load Shapes for March
(Hour loads as fraction of annual loads)



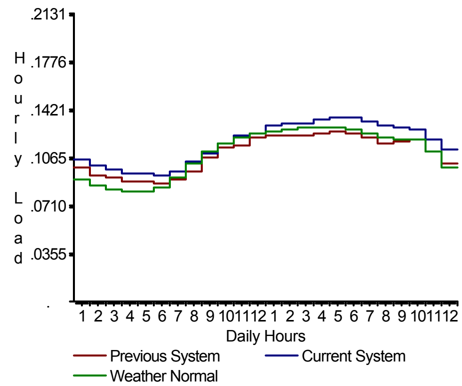
Load Shapes for April
(Hour loads as fraction of annual loads)



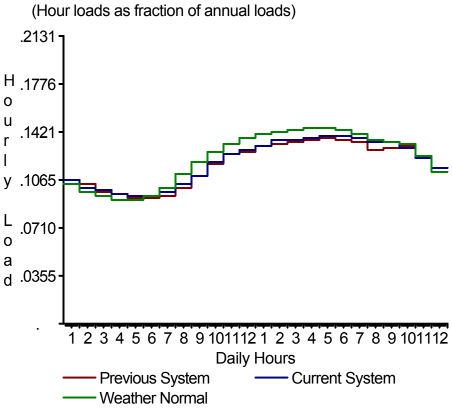
Load Shapes for May
(Hour loads as fraction of annual loads)



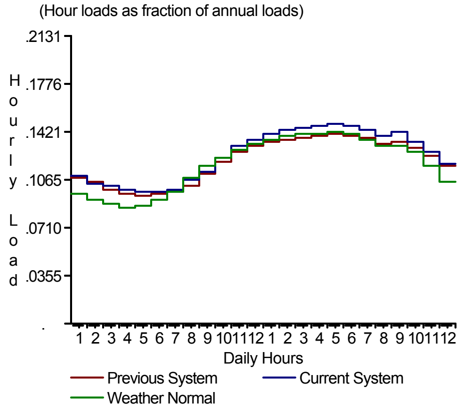
Load Shapes for June
(Hour loads as fraction of annual loads)



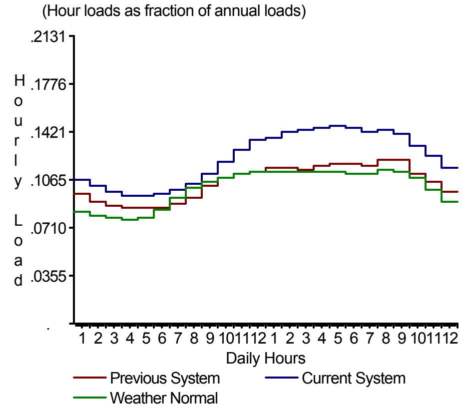
Load Shapes for July
(Hour loads as fraction of annual loads)



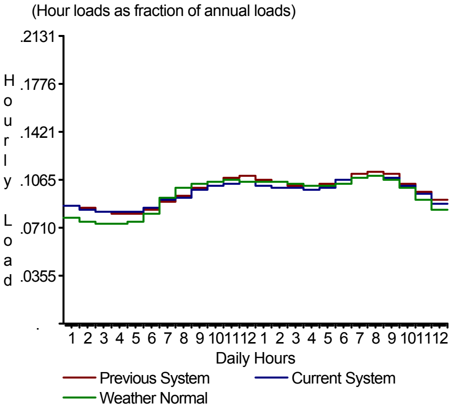
Load Shapes for August
(Hour loads as fraction of annual loads)



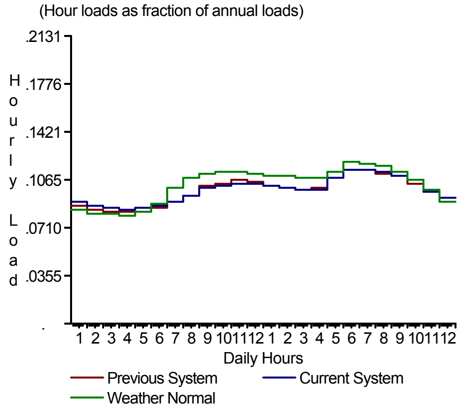
Load Shapes for September
(Hour loads as fraction of annual loads)



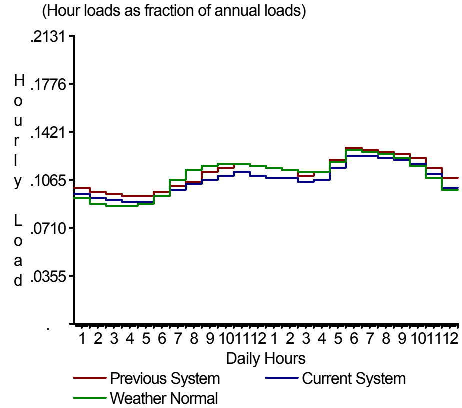
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)

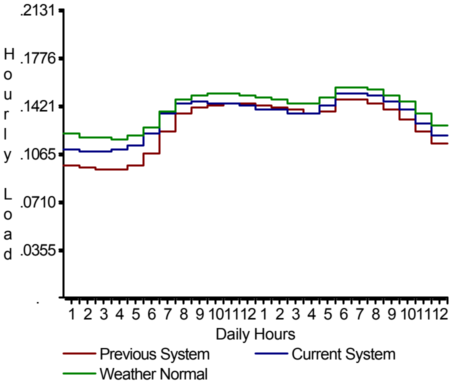


DAF System vs Weather Normal, Peakday, MAIN

(Hourly loads as fractions)

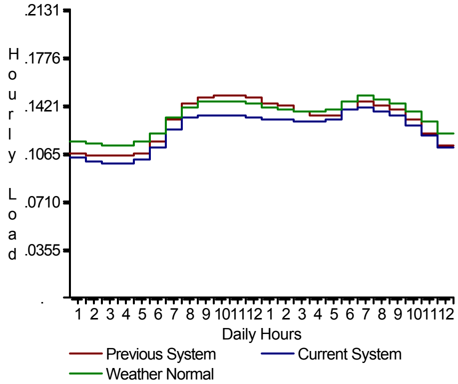
Load Shapes for January

(Hour loads as fraction of annual loads)



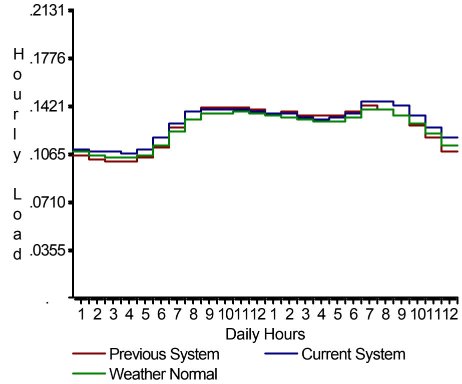
Load Shapes for February

(Hour loads as fraction of annual loads)



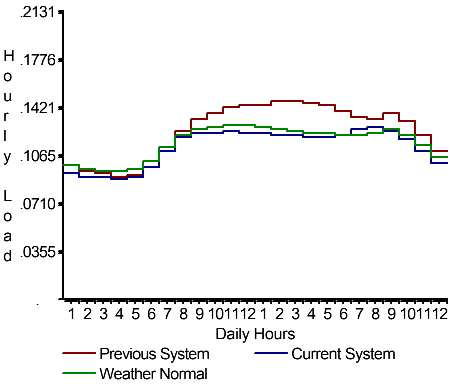
Load Shapes for March

(Hour loads as fraction of annual loads)



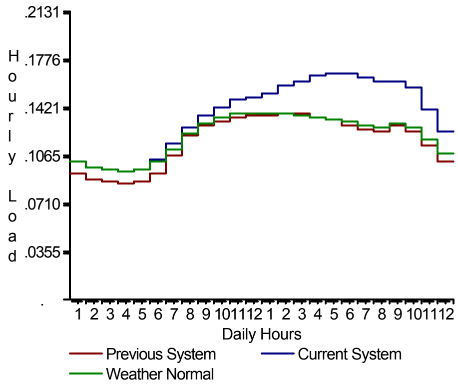
Load Shapes for April

(Hour loads as fraction of annual loads)



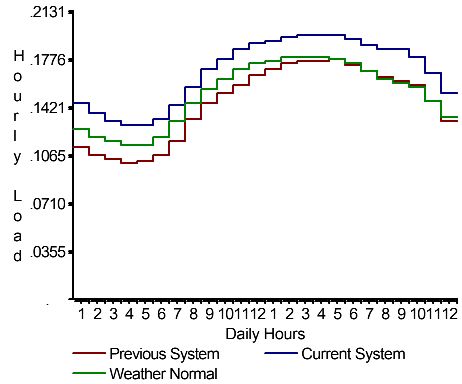
Load Shapes for May

(Hour loads as fraction of annual loads)



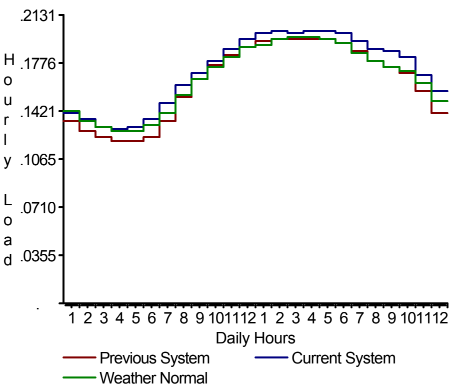
Load Shapes for June

(Hour loads as fraction of annual loads)



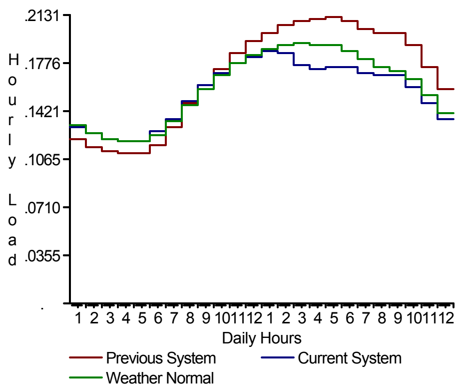
Load Shapes for July

(Hour loads as fraction of annual loads)



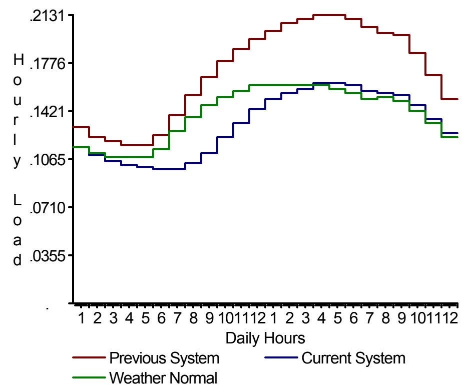
Load Shapes for August

(Hour loads as fraction of annual loads)



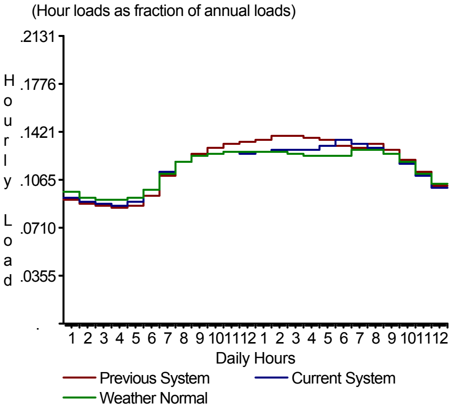
Load Shapes for September

(Hour loads as fraction of annual loads)



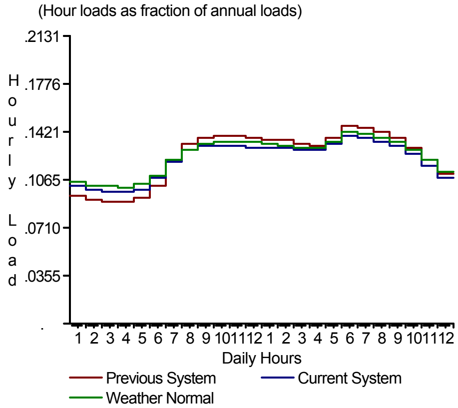
Load Shapes for October

(Hour loads as fraction of annual loads)



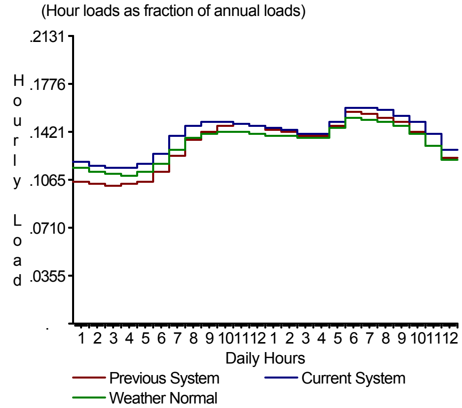
Load Shapes for November

(Hour loads as fraction of annual loads)



Load Shapes for December

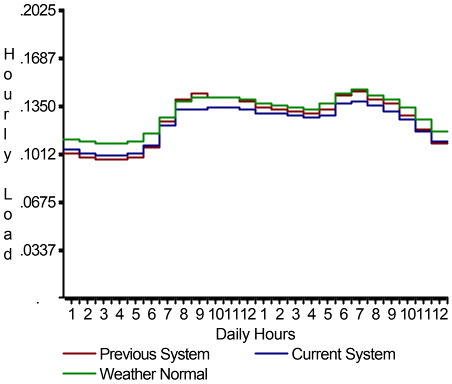
(Hour loads as fraction of annual loads)



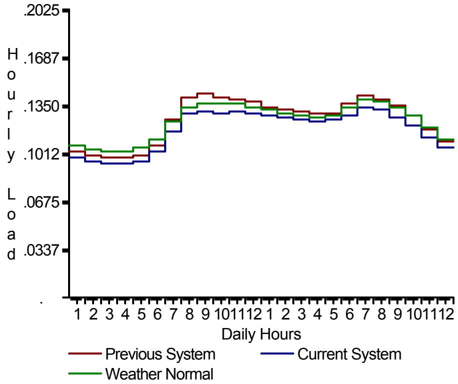
DAF System vs Weather Normal, Weekday, MAPP

(Hourly loads as fractions)

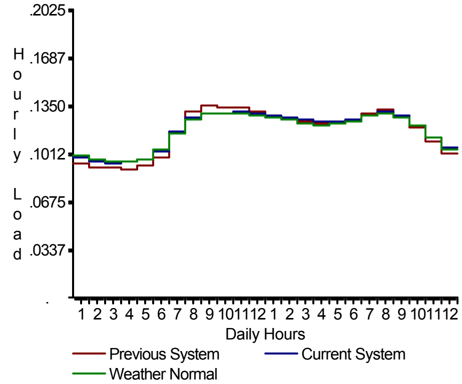
Load Shapes for January
(Hour loads as fraction of annual loads)



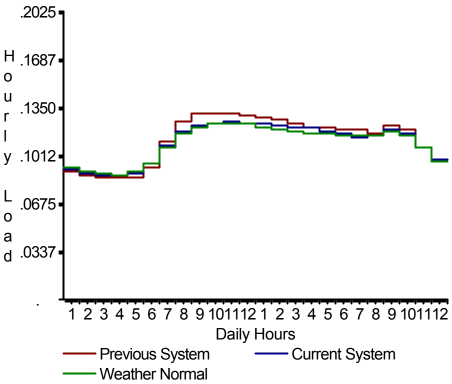
Load Shapes for February
(Hour loads as fraction of annual loads)



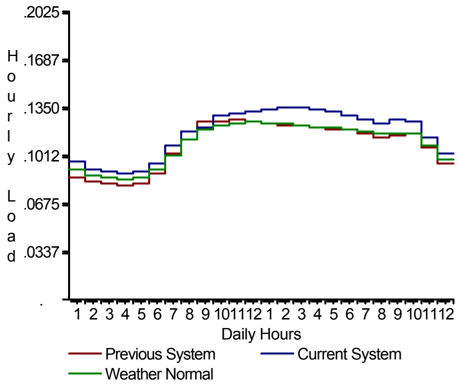
Load Shapes for March
(Hour loads as fraction of annual loads)



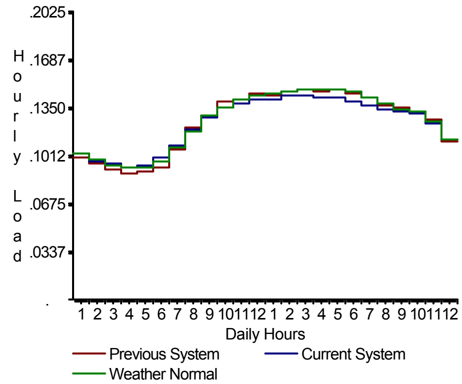
Load Shapes for April
(Hour loads as fraction of annual loads)



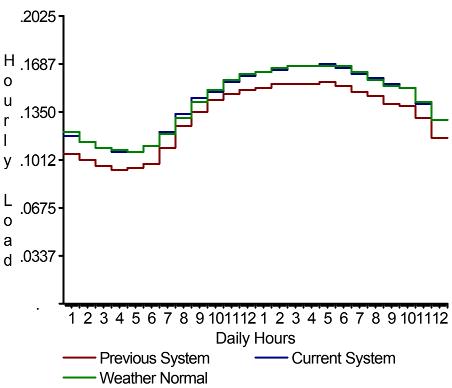
Load Shapes for May
(Hour loads as fraction of annual loads)



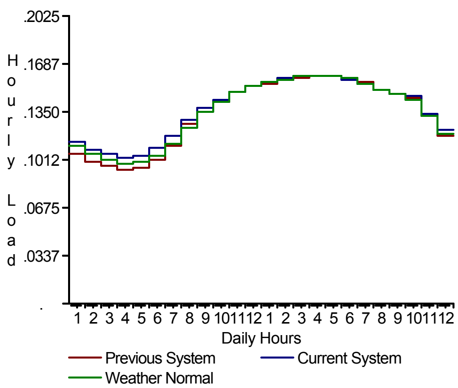
Load Shapes for June
(Hour loads as fraction of annual loads)



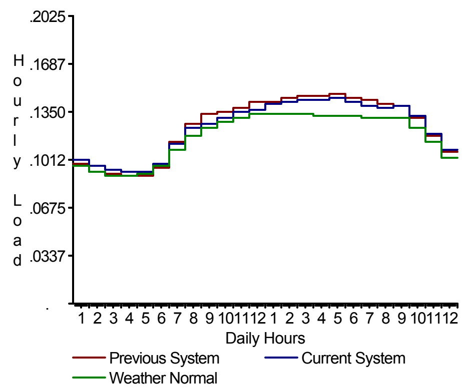
Load Shapes for July
(Hour loads as fraction of annual loads)



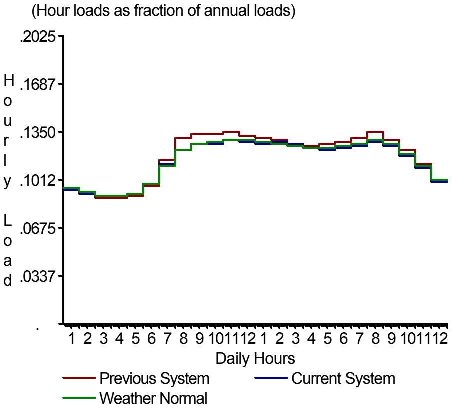
Load Shapes for August
(Hour loads as fraction of annual loads)



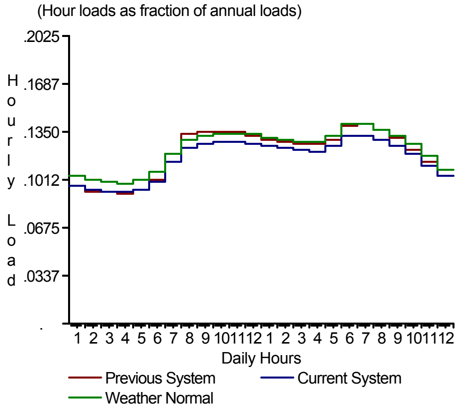
Load Shapes for September
(Hour loads as fraction of annual loads)



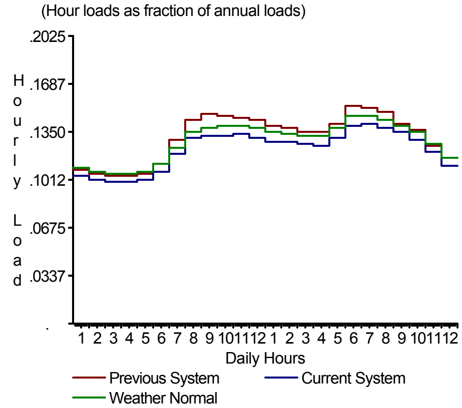
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)

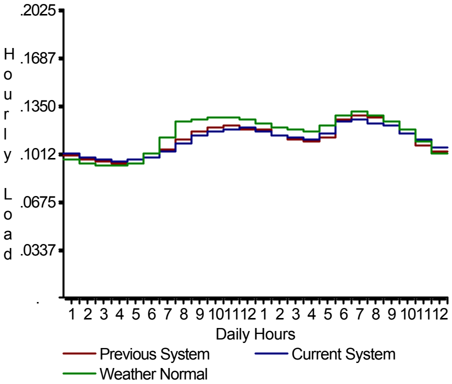


Load Shapes for December
(Hour loads as fraction of annual loads)

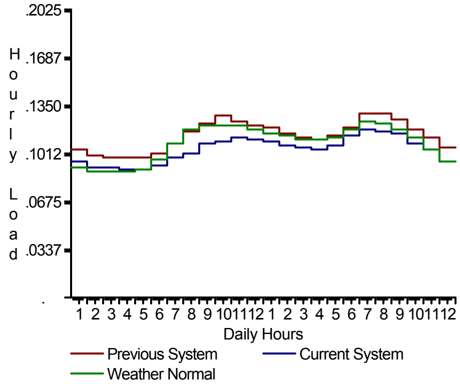


DAF System vs Weather Normal, Weekend, MAPP
(Hourly loads as fractions)

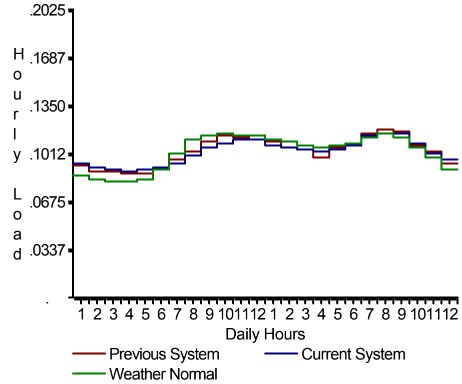
Load Shapes for January
(Hour loads as fraction of annual loads)



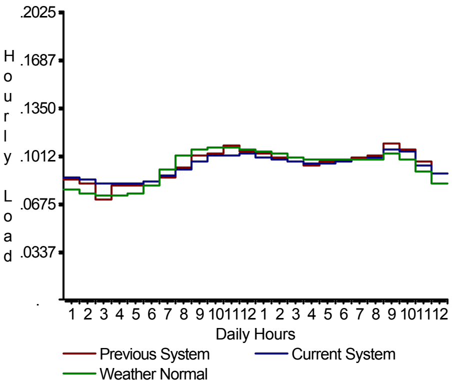
Load Shapes for February
(Hour loads as fraction of annual loads)



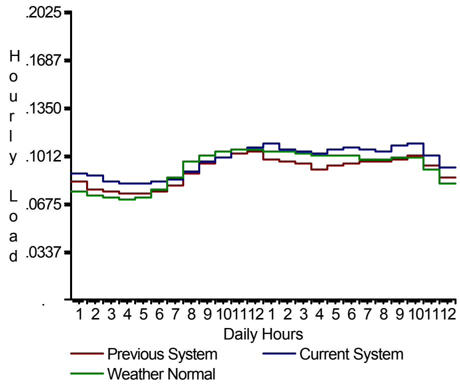
Load Shapes for March
(Hour loads as fraction of annual loads)



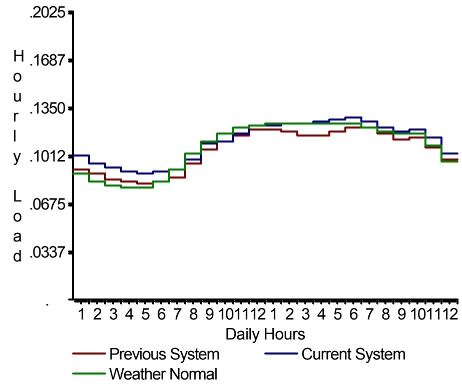
Load Shapes for April
(Hour loads as fraction of annual loads)



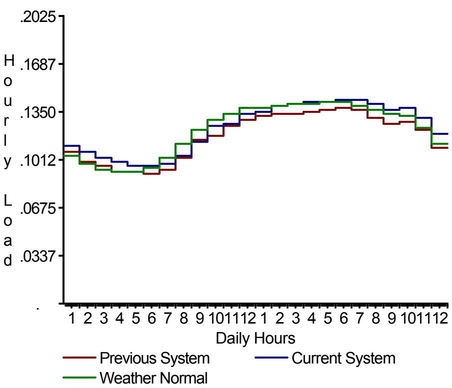
Load Shapes for May
(Hour loads as fraction of annual loads)



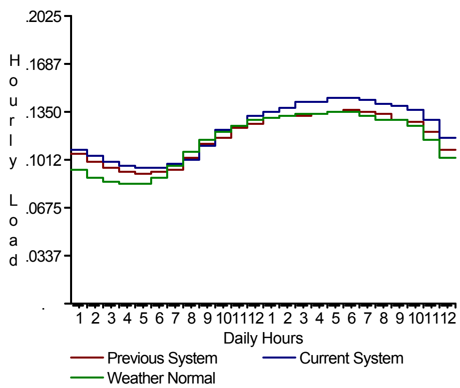
Load Shapes for June
(Hour loads as fraction of annual loads)



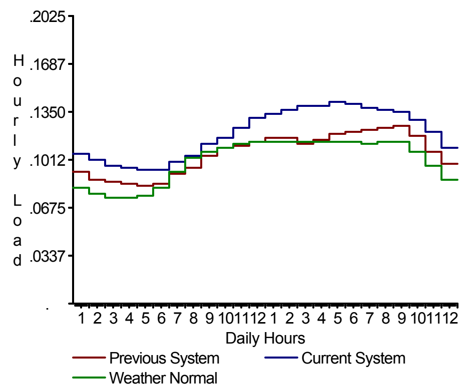
Load Shapes for July
(Hour loads as fraction of annual loads)



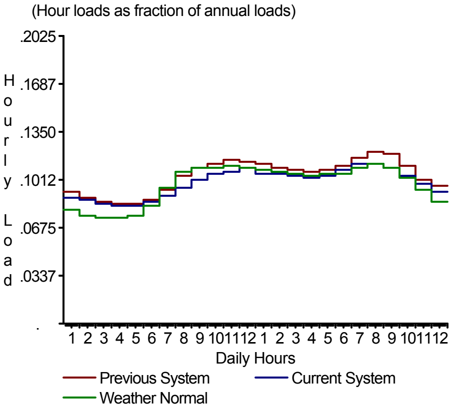
Load Shapes for August
(Hour loads as fraction of annual loads)



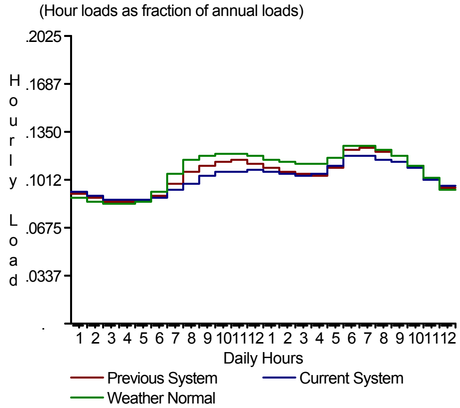
Load Shapes for September
(Hour loads as fraction of annual loads)



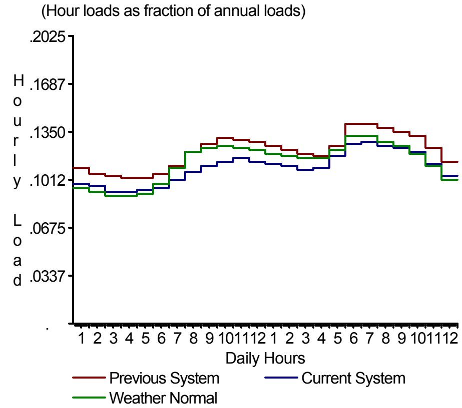
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)

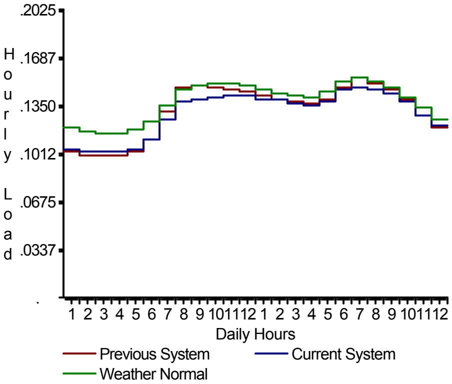


DAF System vs Weather Normal, Peakday, MAPP

(Hourly loads as fractions)

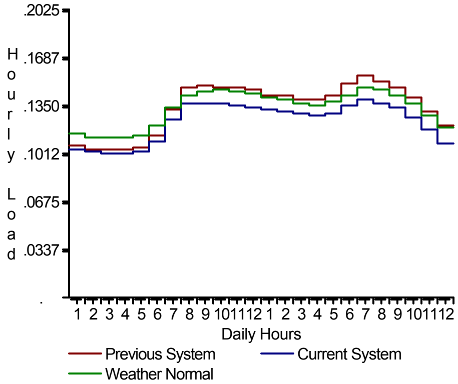
Load Shapes for January

(Hour loads as fraction of annual loads)



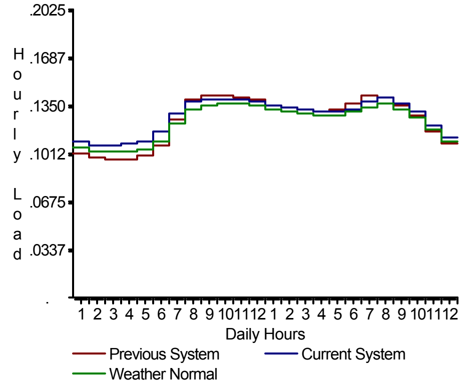
Load Shapes for February

(Hour loads as fraction of annual loads)



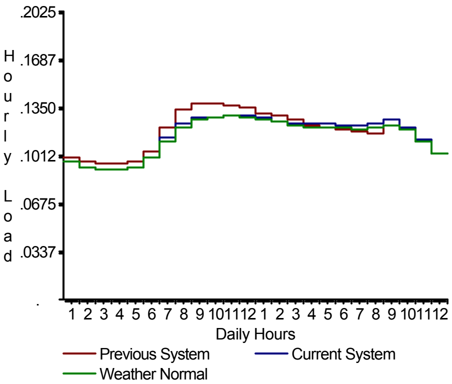
Load Shapes for March

(Hour loads as fraction of annual loads)



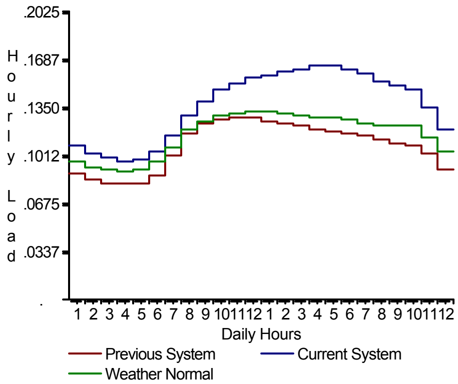
Load Shapes for April

(Hour loads as fraction of annual loads)



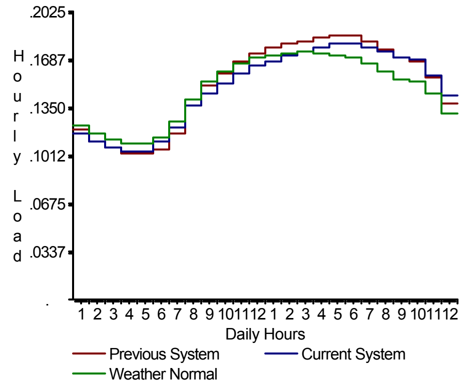
Load Shapes for May

(Hour loads as fraction of annual loads)



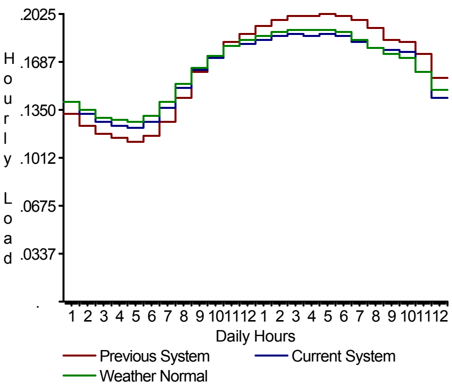
Load Shapes for June

(Hour loads as fraction of annual loads)



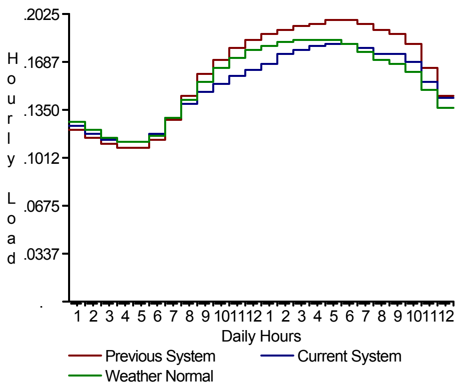
Load Shapes for July

(Hour loads as fraction of annual loads)



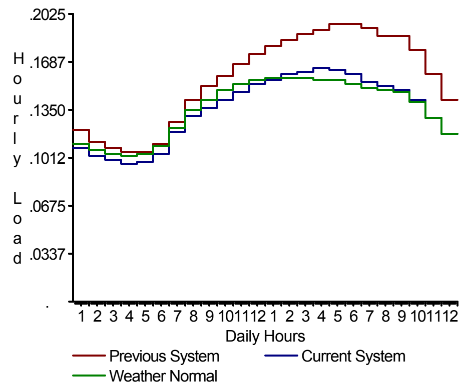
Load Shapes for August

(Hour loads as fraction of annual loads)



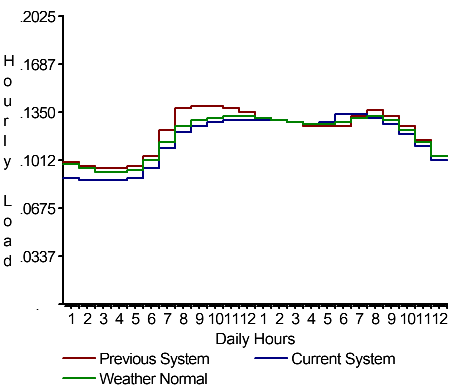
Load Shapes for September

(Hour loads as fraction of annual loads)



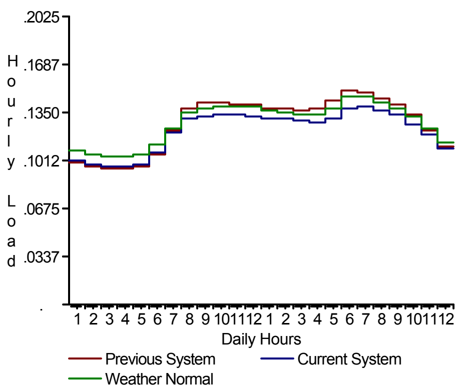
Load Shapes for October

(Hour loads as fraction of annual loads)



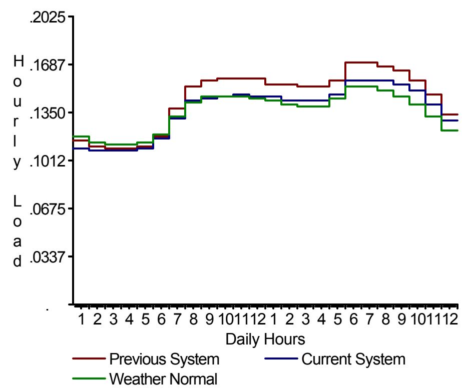
Load Shapes for November

(Hour loads as fraction of annual loads)



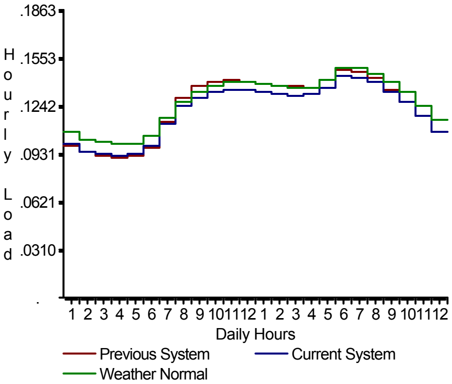
Load Shapes for December

(Hour loads as fraction of annual loads)

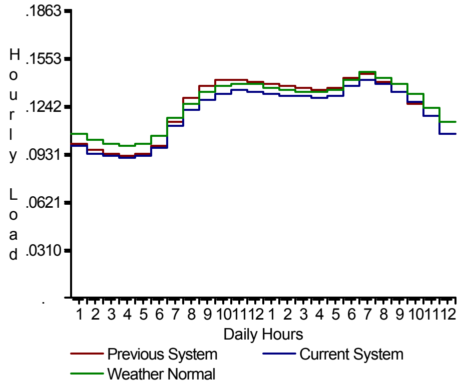


DAF System vs Weather Normal, Weekday, NY
(Hourly loads as fractions)

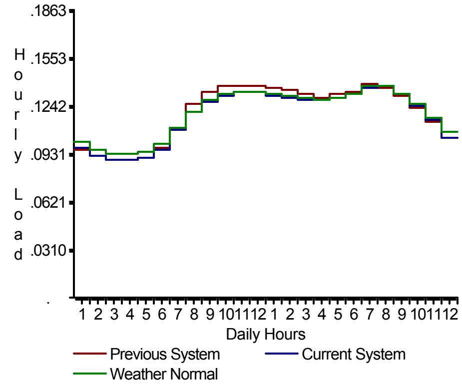
Load Shapes for January
(Hour loads as fraction of annual loads)



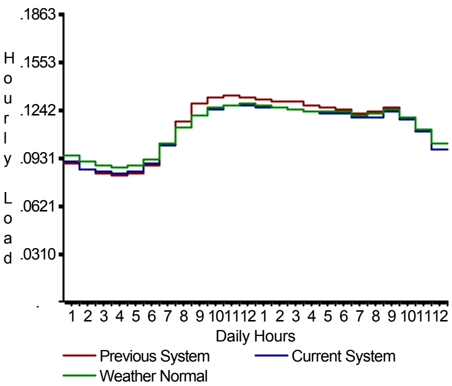
Load Shapes for February
(Hour loads as fraction of annual loads)



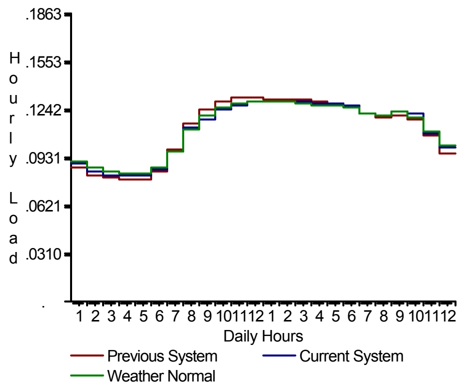
Load Shapes for March
(Hour loads as fraction of annual loads)



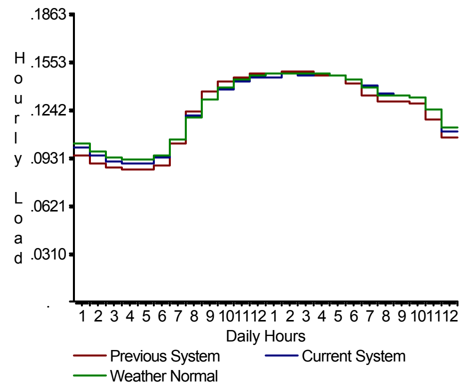
Load Shapes for April
(Hour loads as fraction of annual loads)



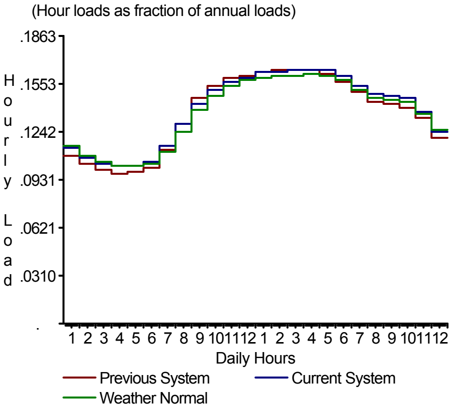
Load Shapes for May
(Hour loads as fraction of annual loads)



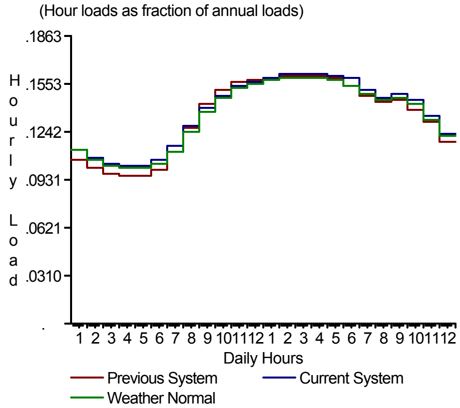
Load Shapes for June
(Hour loads as fraction of annual loads)



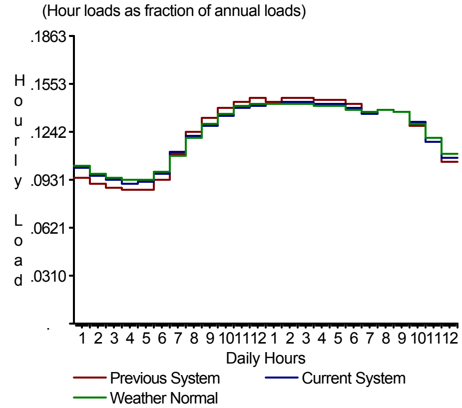
Load Shapes for July
(Hour loads as fraction of annual loads)



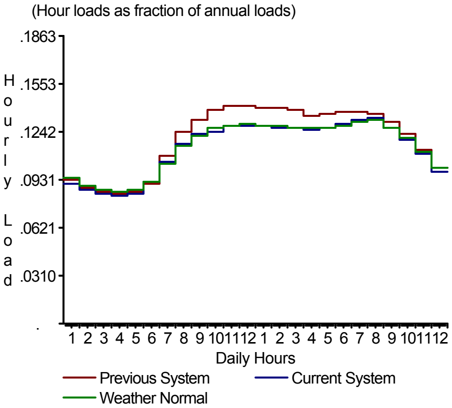
Load Shapes for August
(Hour loads as fraction of annual loads)



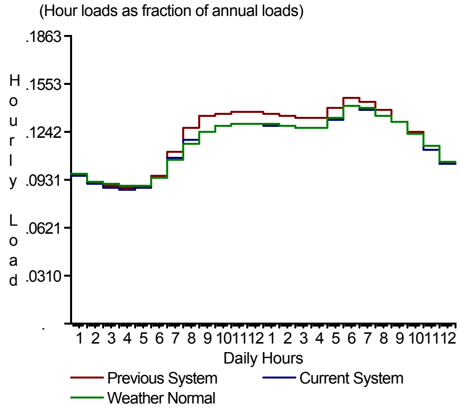
Load Shapes for September
(Hour loads as fraction of annual loads)



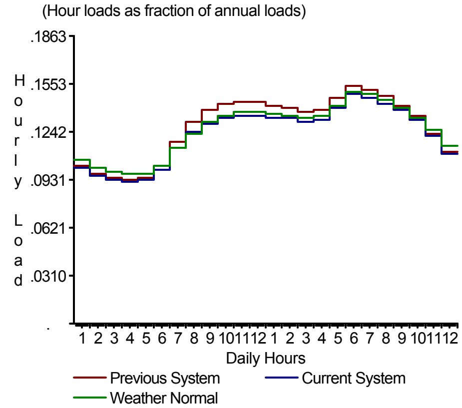
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)

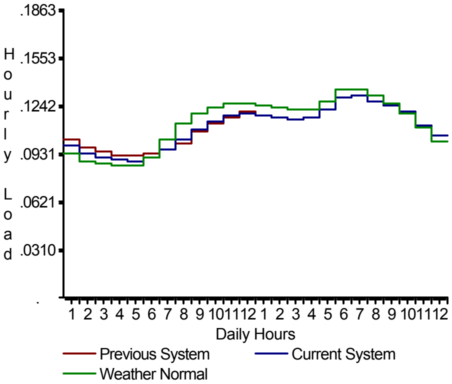


DAF System vs Weather Normal, Weekend, NY

(Hourly loads as fractions)

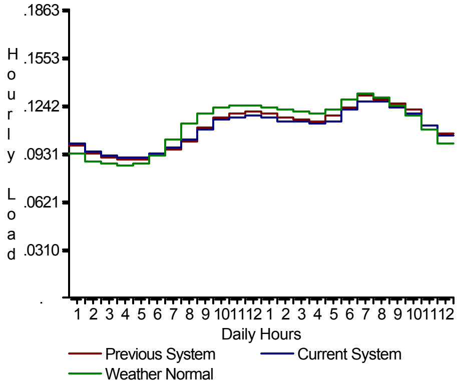
Load Shapes for January

(Hour loads as fraction of annual loads)



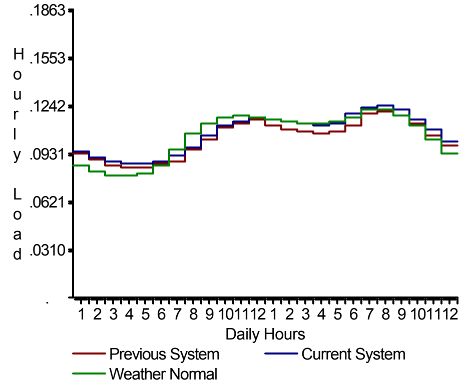
Load Shapes for February

(Hour loads as fraction of annual loads)



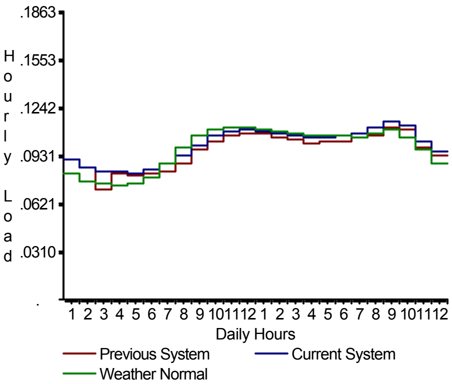
Load Shapes for March

(Hour loads as fraction of annual loads)



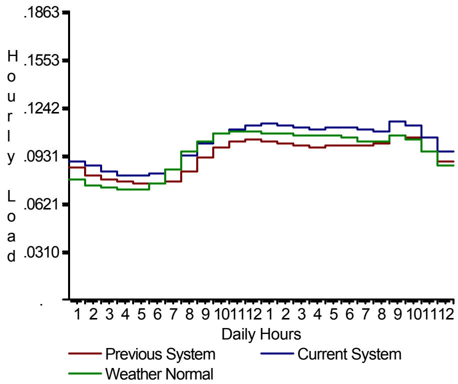
Load Shapes for April

(Hour loads as fraction of annual loads)



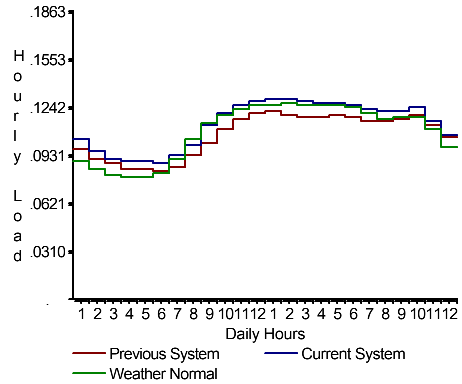
Load Shapes for May

(Hour loads as fraction of annual loads)



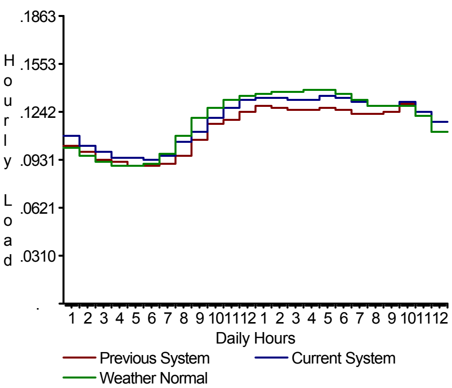
Load Shapes for June

(Hour loads as fraction of annual loads)



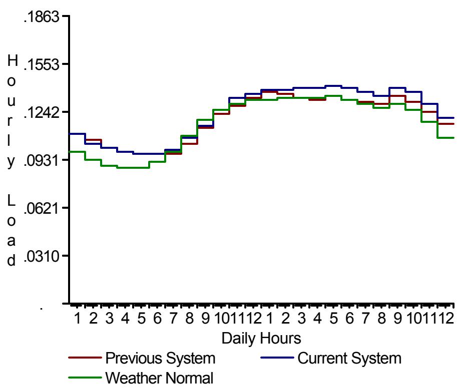
Load Shapes for July

(Hour loads as fraction of annual loads)



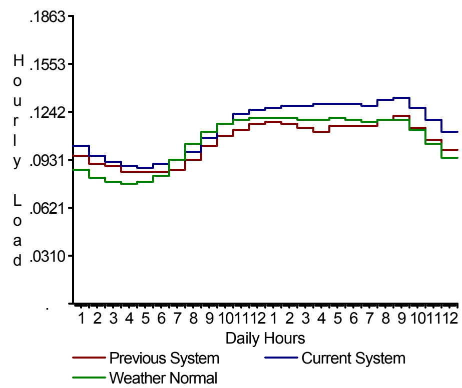
Load Shapes for August

(Hour loads as fraction of annual loads)



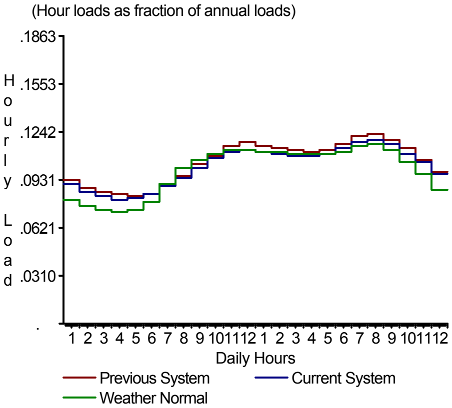
Load Shapes for September

(Hour loads as fraction of annual loads)



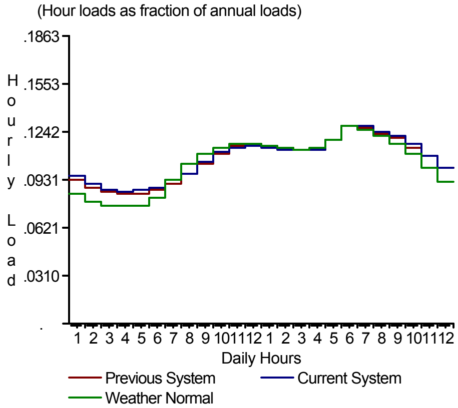
Load Shapes for October

(Hour loads as fraction of annual loads)



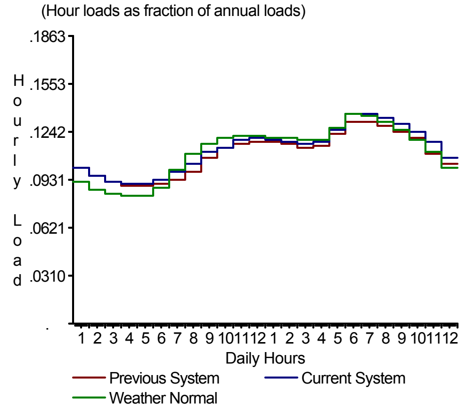
Load Shapes for November

(Hour loads as fraction of annual loads)



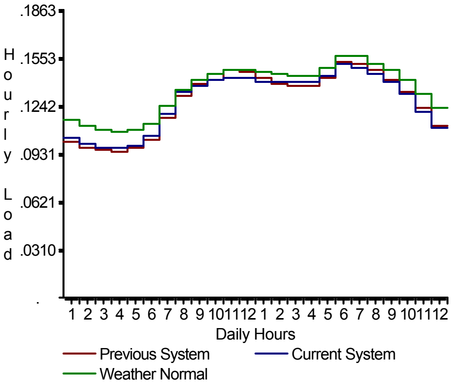
Load Shapes for December

(Hour loads as fraction of annual loads)

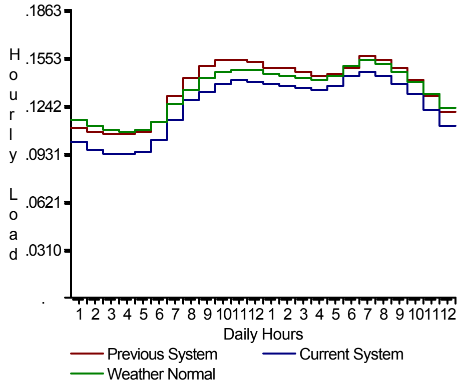


DAF System vs Weather Normal, Peakday, NY
(Hourly loads as fractions)

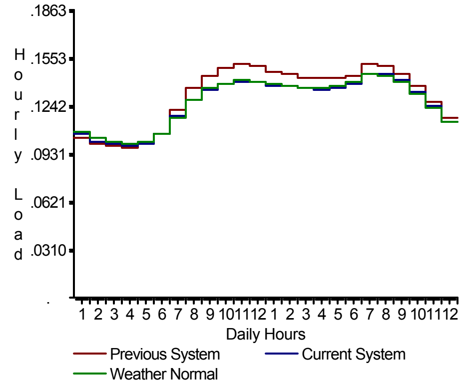
Load Shapes for January
(Hour loads as fraction of annual loads)



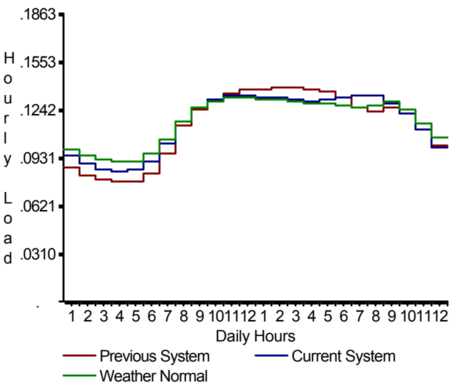
Load Shapes for February
(Hour loads as fraction of annual loads)



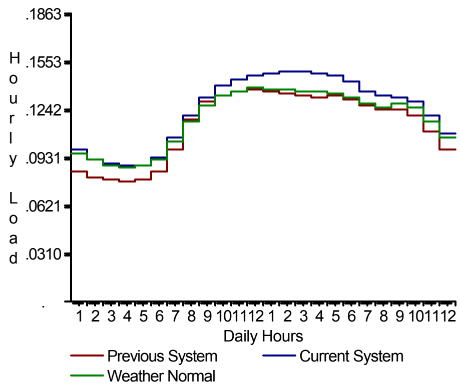
Load Shapes for March
(Hour loads as fraction of annual loads)



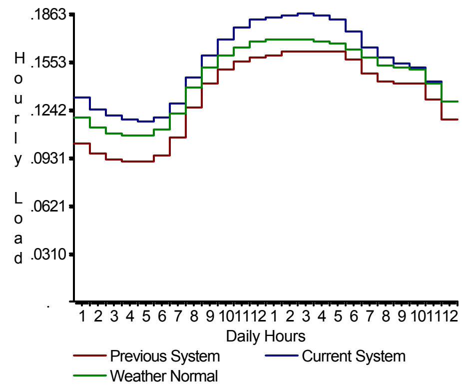
Load Shapes for April
(Hour loads as fraction of annual loads)



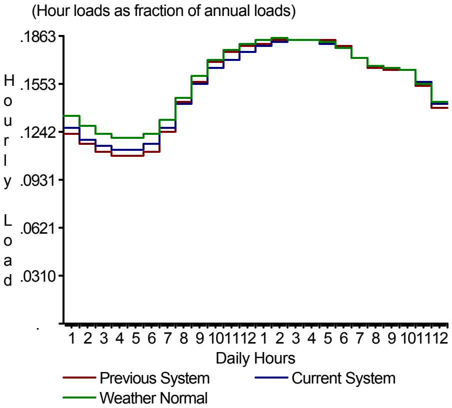
Load Shapes for May
(Hour loads as fraction of annual loads)



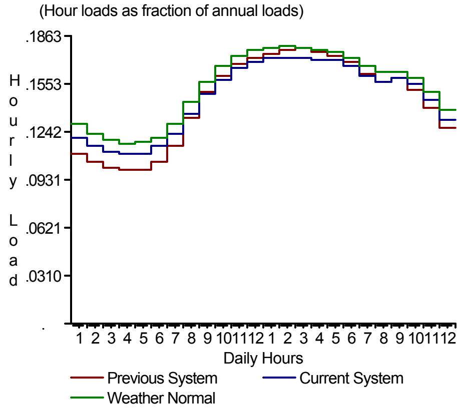
Load Shapes for June
(Hour loads as fraction of annual loads)



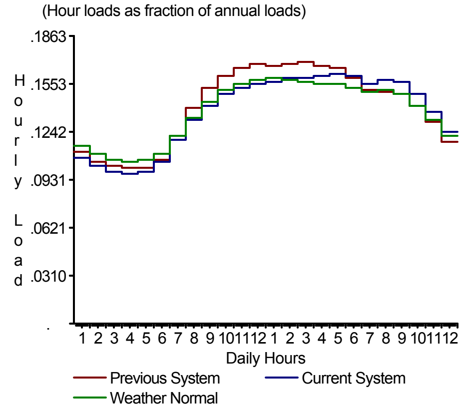
Load Shapes for July
(Hour loads as fraction of annual loads)



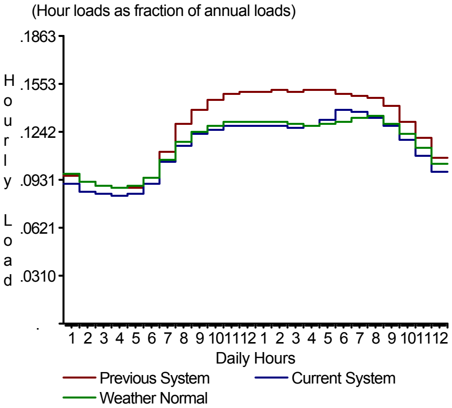
Load Shapes for August
(Hour loads as fraction of annual loads)



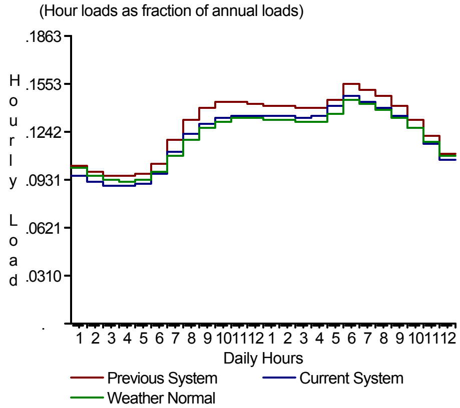
Load Shapes for September
(Hour loads as fraction of annual loads)



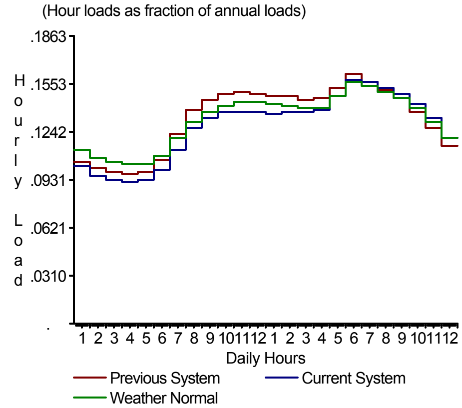
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)

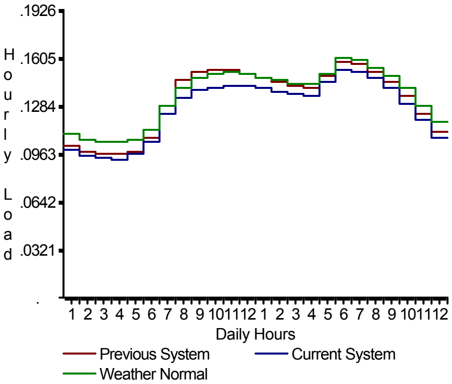


DAF System vs Weather Normal, Weekday, NE

(Hourly loads as fractions)

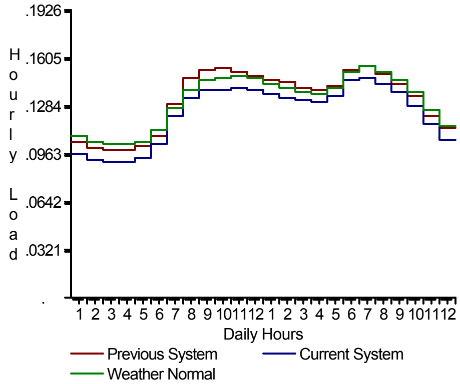
Load Shapes for January

(Hour loads as fraction of annual loads)



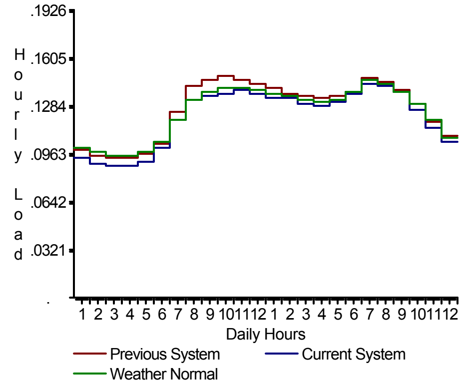
Load Shapes for February

(Hour loads as fraction of annual loads)



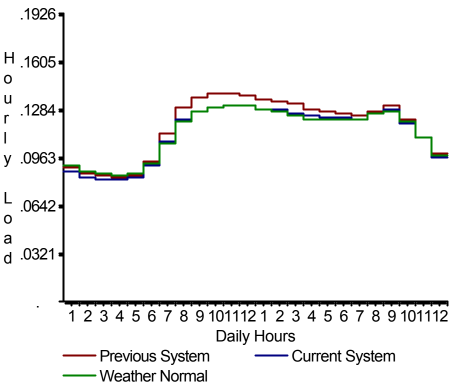
Load Shapes for March

(Hour loads as fraction of annual loads)



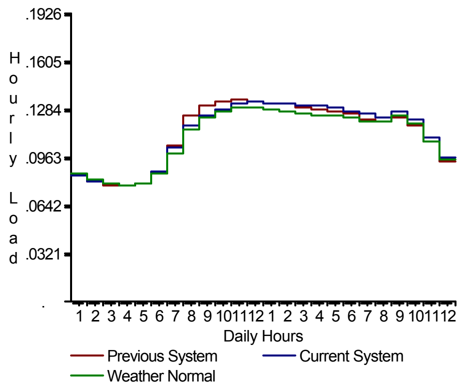
Load Shapes for April

(Hour loads as fraction of annual loads)



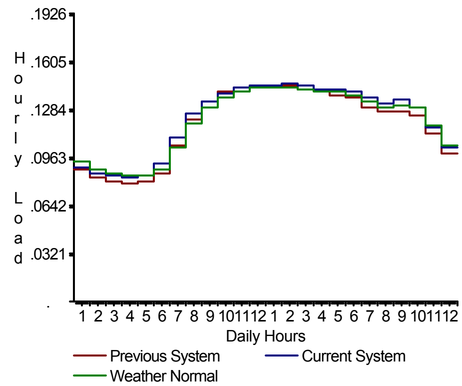
Load Shapes for May

(Hour loads as fraction of annual loads)



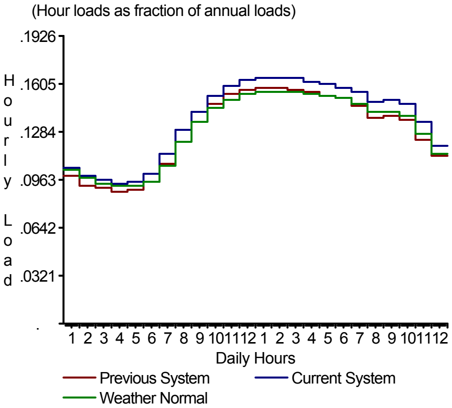
Load Shapes for June

(Hour loads as fraction of annual loads)



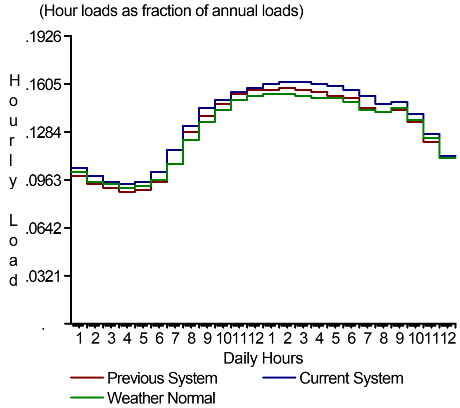
Load Shapes for July

(Hour loads as fraction of annual loads)



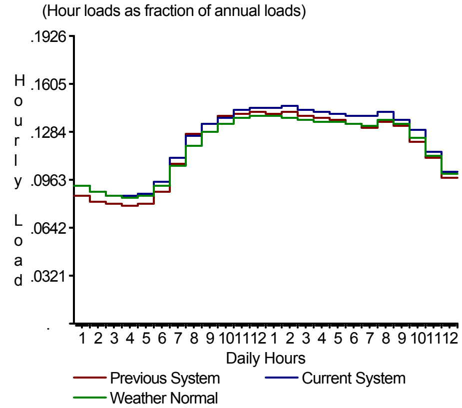
Load Shapes for August

(Hour loads as fraction of annual loads)



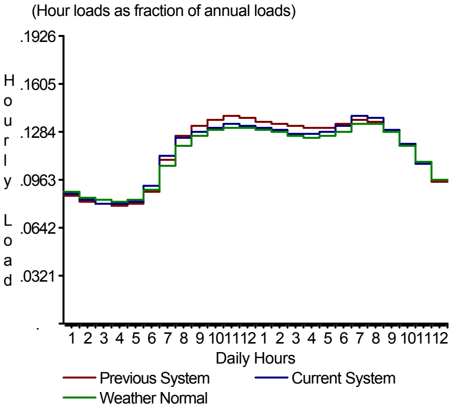
Load Shapes for September

(Hour loads as fraction of annual loads)



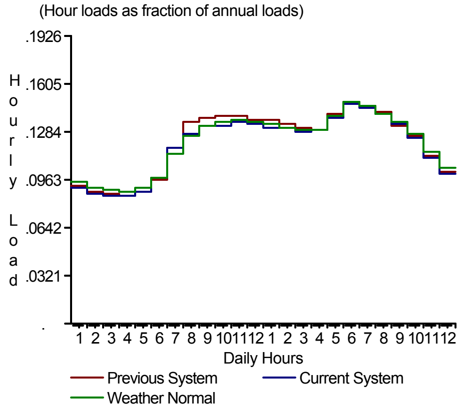
Load Shapes for October

(Hour loads as fraction of annual loads)



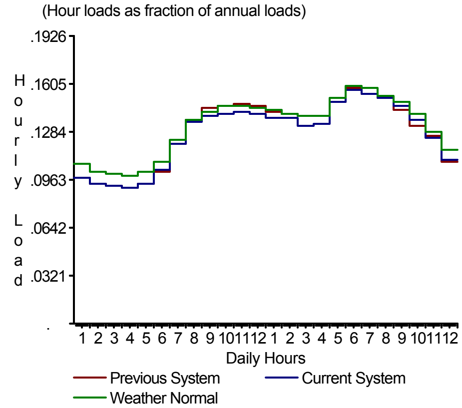
Load Shapes for November

(Hour loads as fraction of annual loads)



Load Shapes for December

(Hour loads as fraction of annual loads)

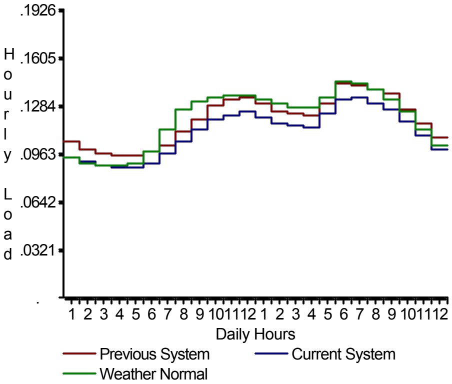


DAF System vs Weather Normal, Weekend, NE

(Hourly loads as fractions)

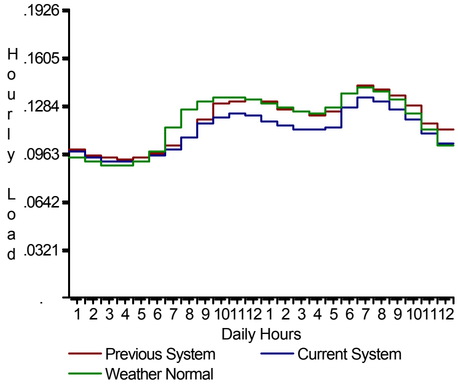
Load Shapes for January

(Hour loads as fraction of annual loads)



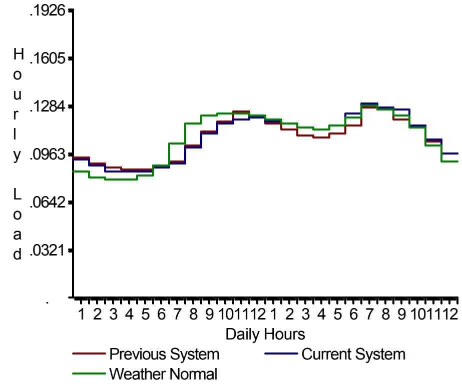
Load Shapes for February

(Hour loads as fraction of annual loads)



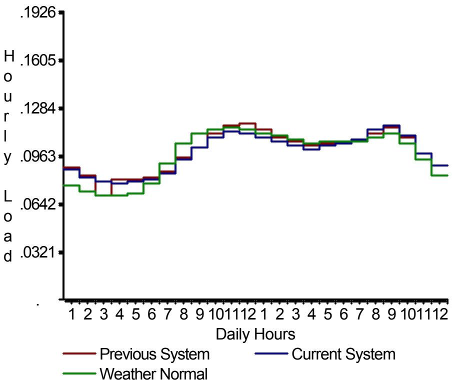
Load Shapes for March

(Hour loads as fraction of annual loads)



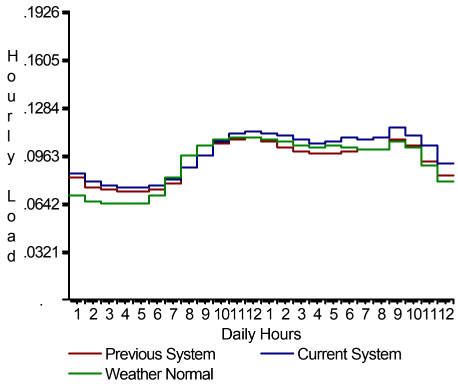
Load Shapes for April

(Hour loads as fraction of annual loads)



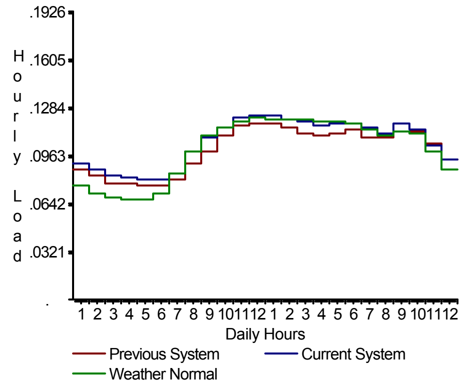
Load Shapes for May

(Hour loads as fraction of annual loads)



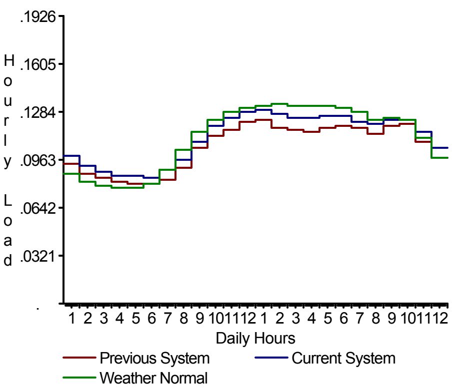
Load Shapes for June

(Hour loads as fraction of annual loads)



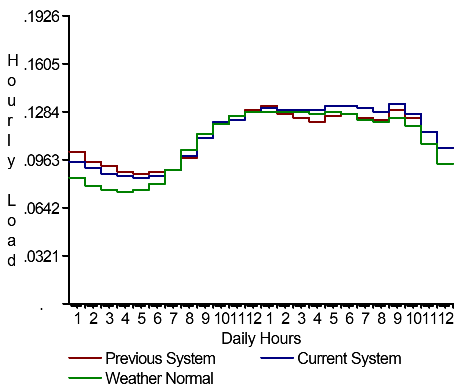
Load Shapes for July

(Hour loads as fraction of annual loads)



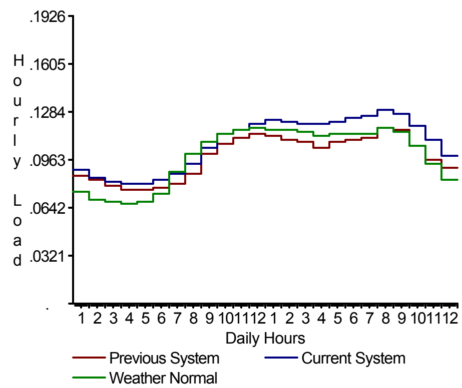
Load Shapes for August

(Hour loads as fraction of annual loads)



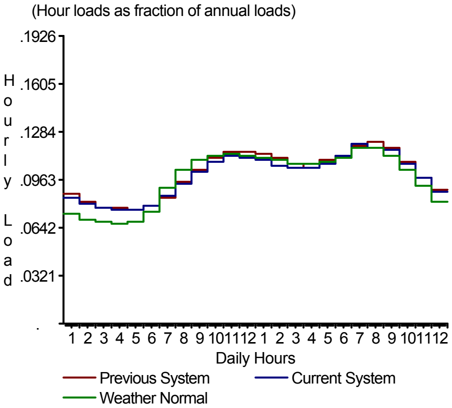
Load Shapes for September

(Hour loads as fraction of annual loads)



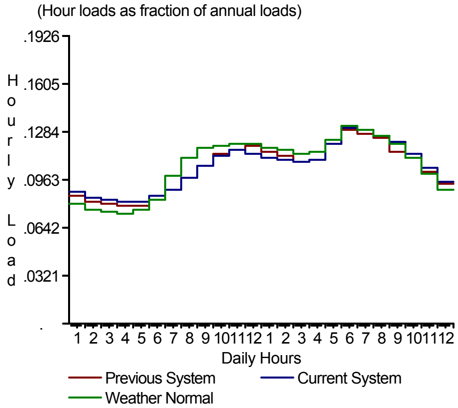
Load Shapes for October

(Hour loads as fraction of annual loads)



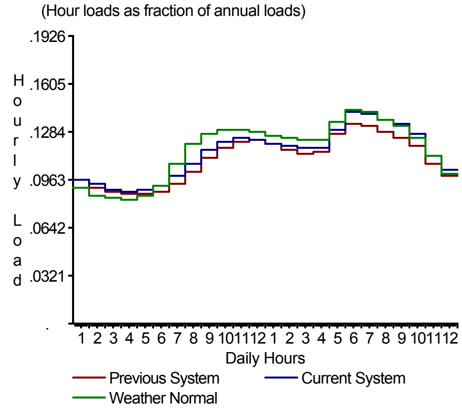
Load Shapes for November

(Hour loads as fraction of annual loads)



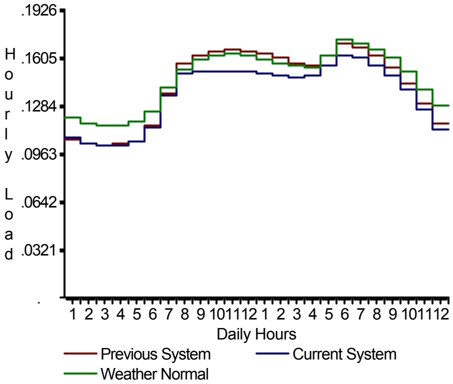
Load Shapes for December

(Hour loads as fraction of annual loads)

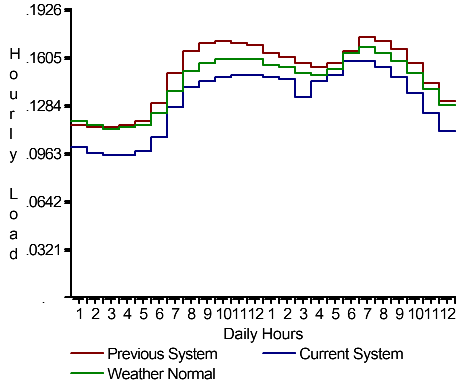


DAF System vs Weather Normal, Peakday, NE
(Hourly loads as fractions)

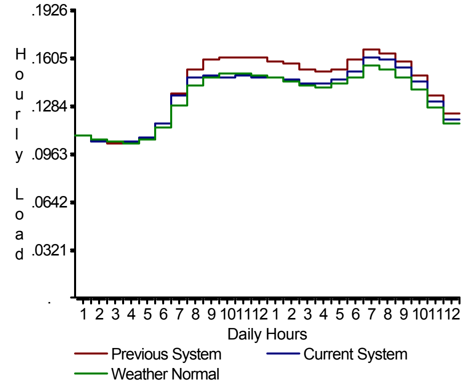
Load Shapes for January
(Hour loads as fraction of annual loads)



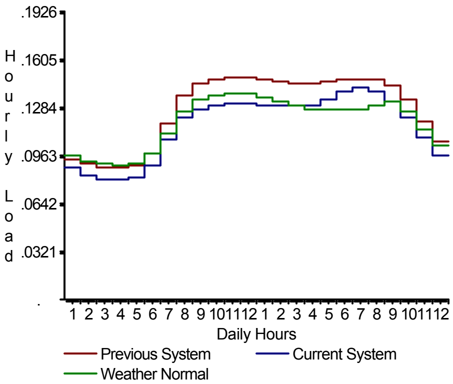
Load Shapes for February
(Hour loads as fraction of annual loads)



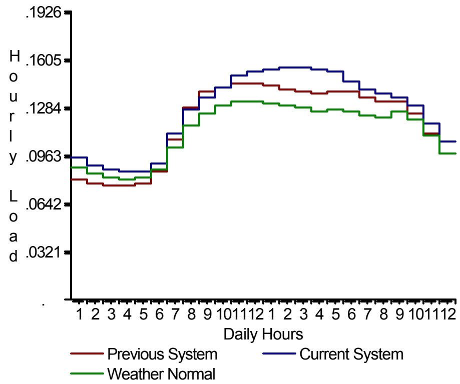
Load Shapes for March
(Hour loads as fraction of annual loads)



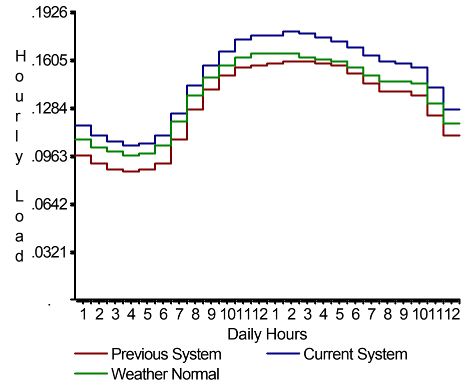
Load Shapes for April
(Hour loads as fraction of annual loads)



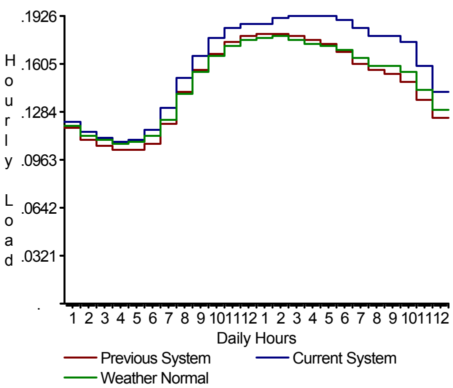
Load Shapes for May
(Hour loads as fraction of annual loads)



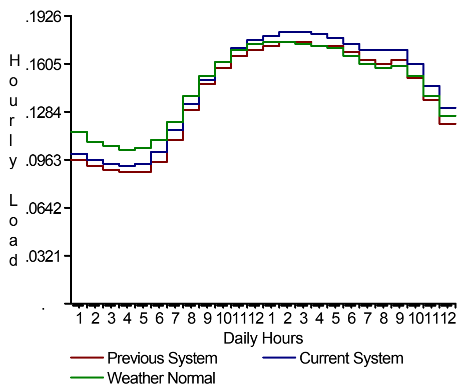
Load Shapes for June
(Hour loads as fraction of annual loads)



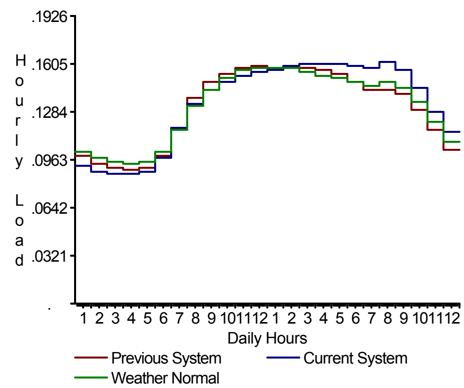
Load Shapes for July
(Hour loads as fraction of annual loads)



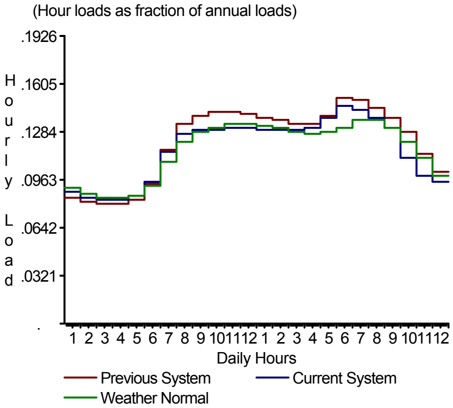
Load Shapes for August
(Hour loads as fraction of annual loads)



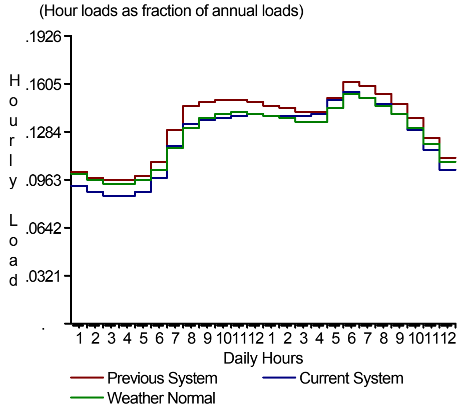
Load Shapes for September
(Hour loads as fraction of annual loads)



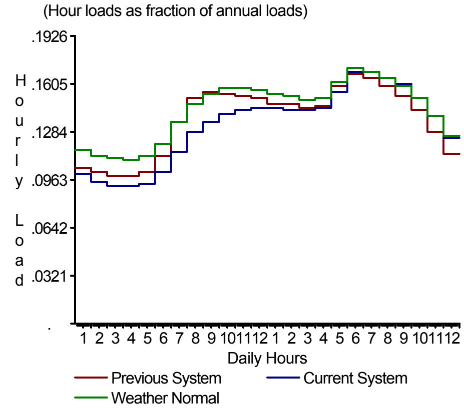
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)

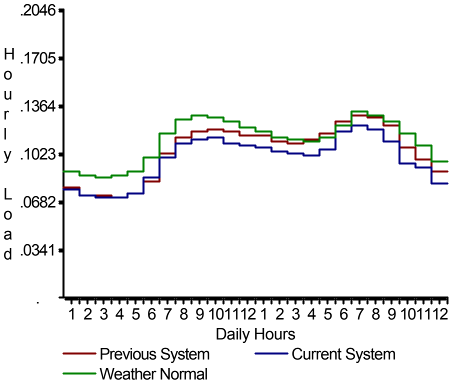


DAF System vs Weather Normal, Weekday, FL

(Hourly loads as fractions)

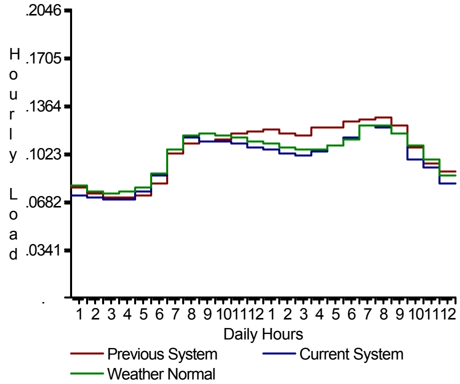
Load Shapes for January

(Hour loads as fraction of annual loads)



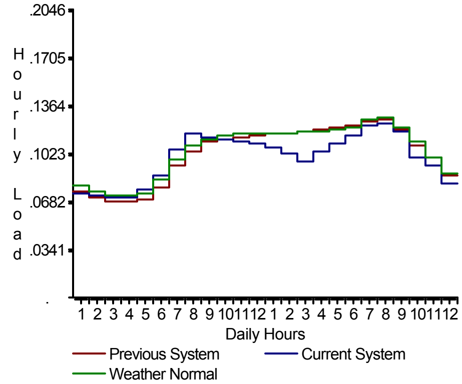
Load Shapes for February

(Hour loads as fraction of annual loads)



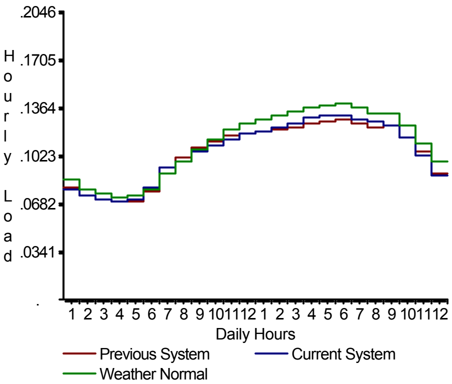
Load Shapes for March

(Hour loads as fraction of annual loads)



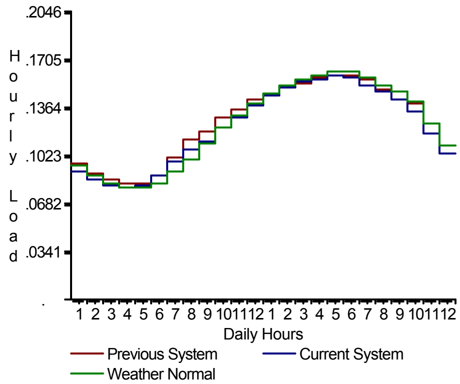
Load Shapes for April

(Hour loads as fraction of annual loads)



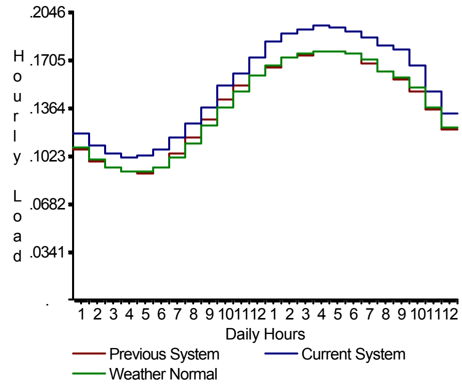
Load Shapes for May

(Hour loads as fraction of annual loads)



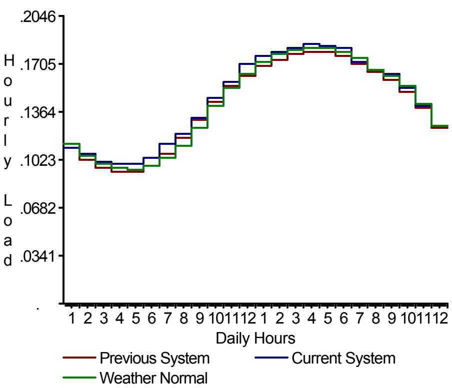
Load Shapes for June

(Hour loads as fraction of annual loads)



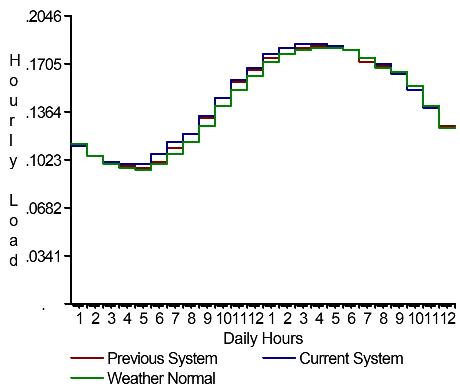
Load Shapes for July

(Hour loads as fraction of annual loads)



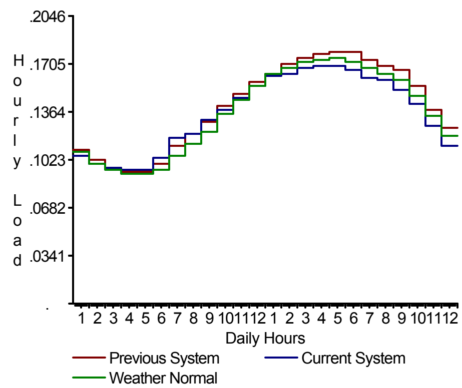
Load Shapes for August

(Hour loads as fraction of annual loads)



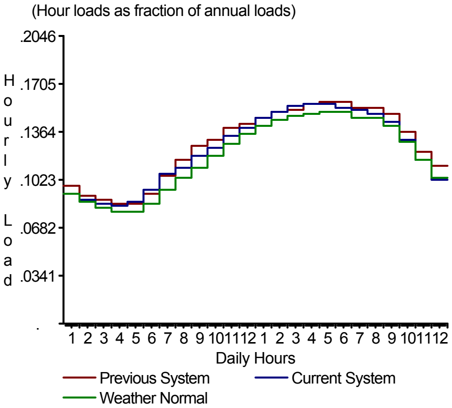
Load Shapes for September

(Hour loads as fraction of annual loads)



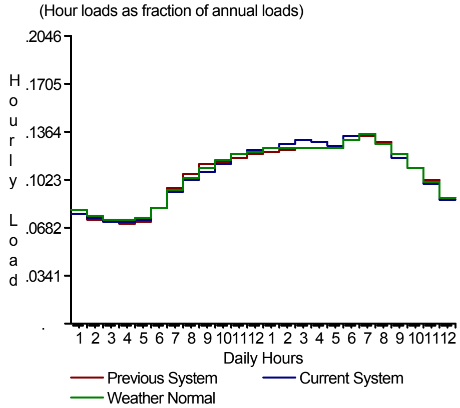
Load Shapes for October

(Hour loads as fraction of annual loads)



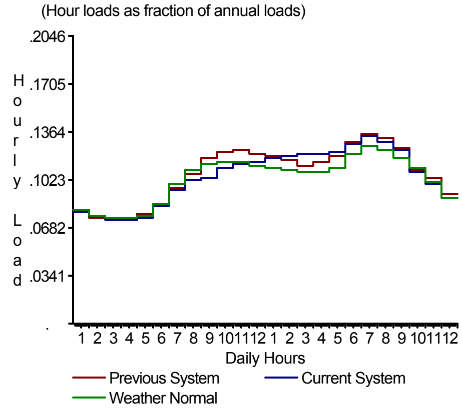
Load Shapes for November

(Hour loads as fraction of annual loads)



Load Shapes for December

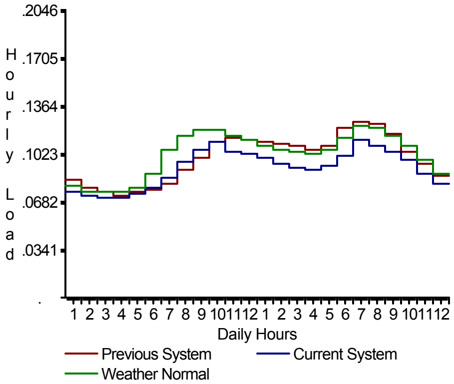
(Hour loads as fraction of annual loads)



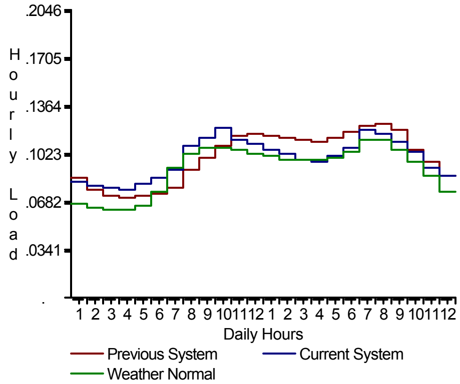
DAF System vs Weather Normal, Weekend, FL

(Hourly loads as fractions)

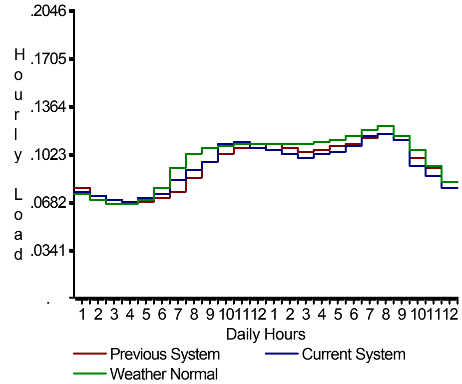
Load Shapes for January
(Hour loads as fraction of annual loads)



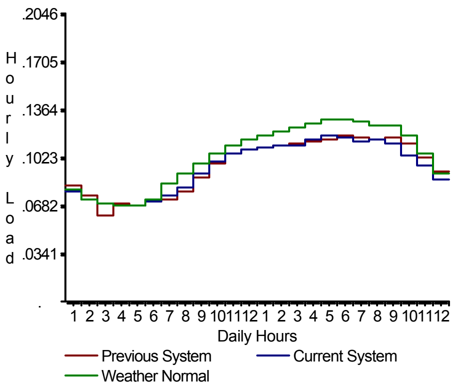
Load Shapes for February
(Hour loads as fraction of annual loads)



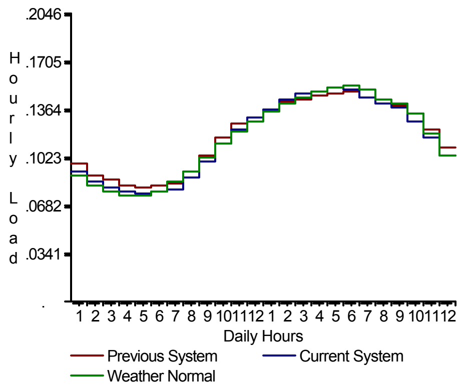
Load Shapes for March
(Hour loads as fraction of annual loads)



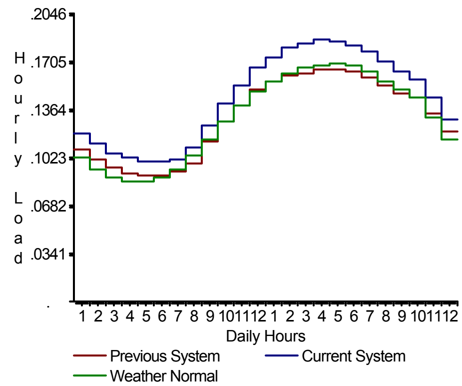
Load Shapes for April
(Hour loads as fraction of annual loads)



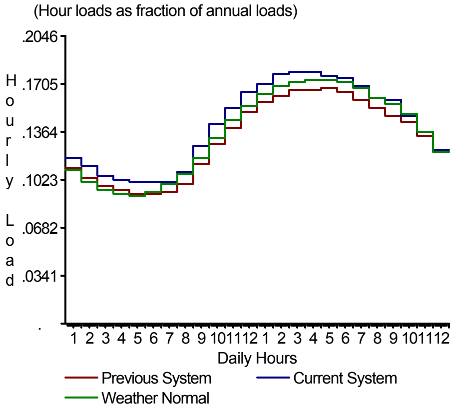
Load Shapes for May
(Hour loads as fraction of annual loads)



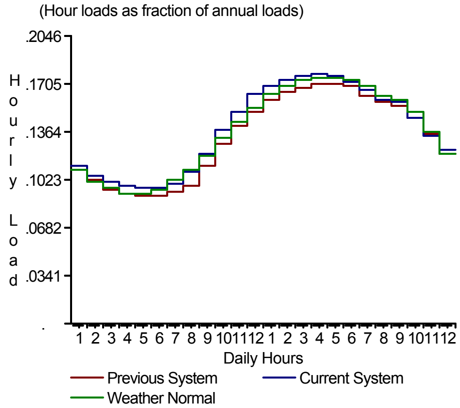
Load Shapes for June
(Hour loads as fraction of annual loads)



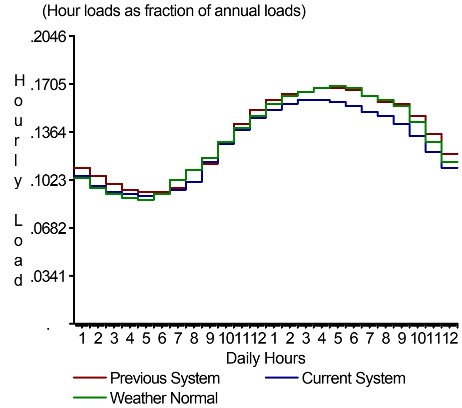
Load Shapes for July
(Hour loads as fraction of annual loads)



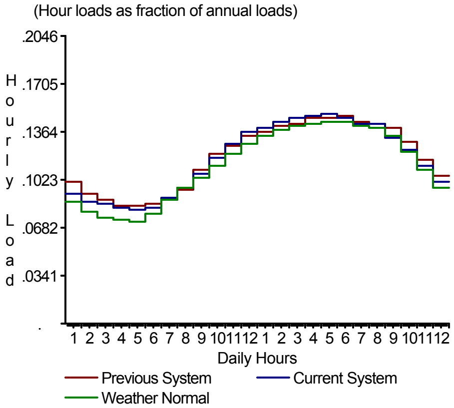
Load Shapes for August
(Hour loads as fraction of annual loads)



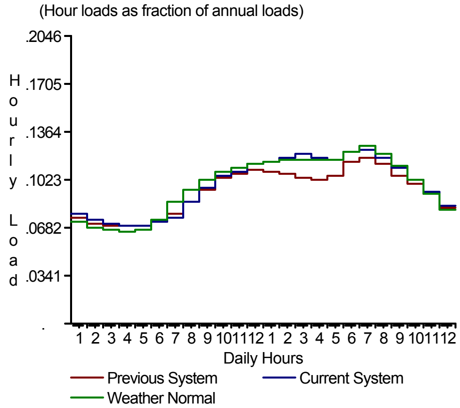
Load Shapes for September
(Hour loads as fraction of annual loads)



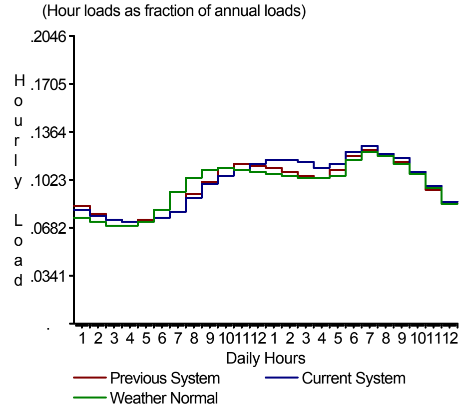
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)

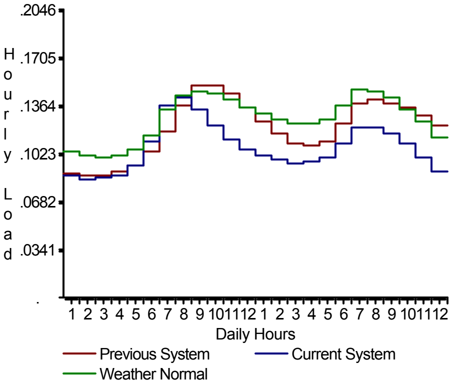


Load Shapes for December
(Hour loads as fraction of annual loads)

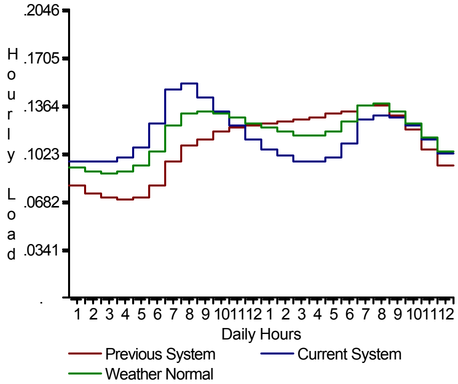


DAF System vs Weather Normal, Peakday, FL
(Hourly loads as fractions)

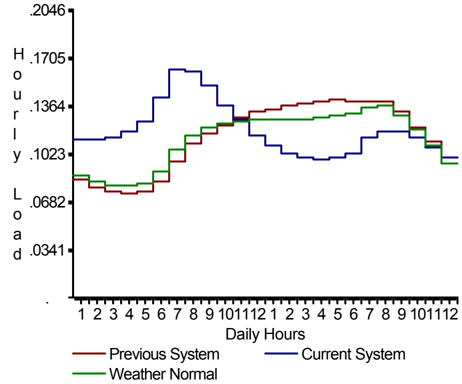
Load Shapes for January
(Hour loads as fraction of annual loads)



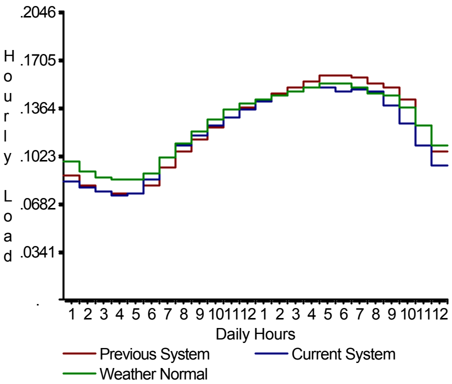
Load Shapes for February
(Hour loads as fraction of annual loads)



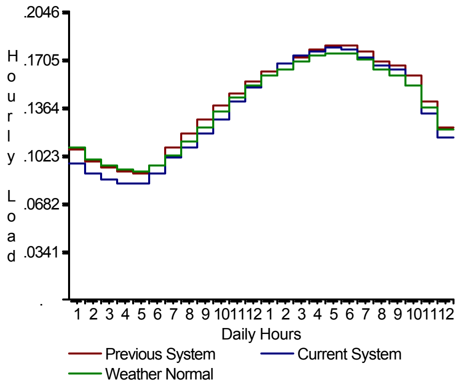
Load Shapes for March
(Hour loads as fraction of annual loads)



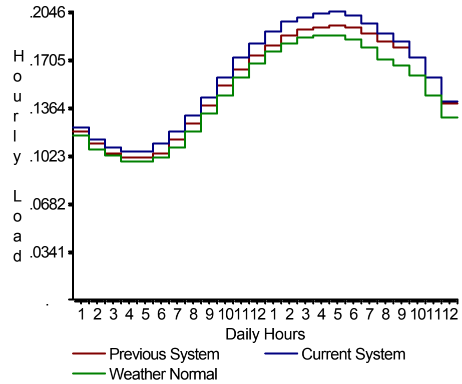
Load Shapes for April
(Hour loads as fraction of annual loads)



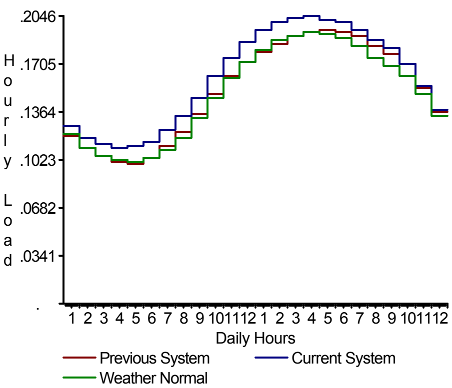
Load Shapes for May
(Hour loads as fraction of annual loads)



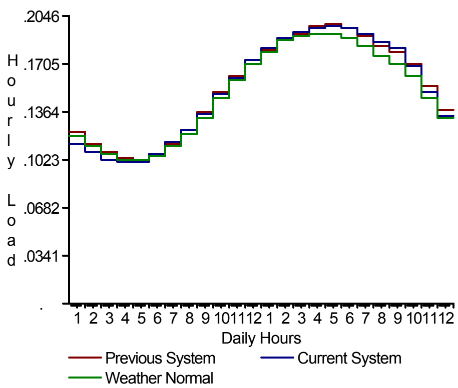
Load Shapes for June
(Hour loads as fraction of annual loads)



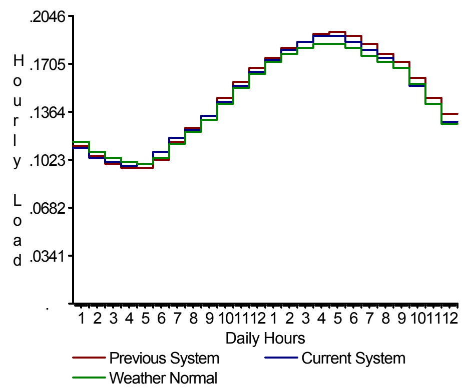
Load Shapes for July
(Hour loads as fraction of annual loads)



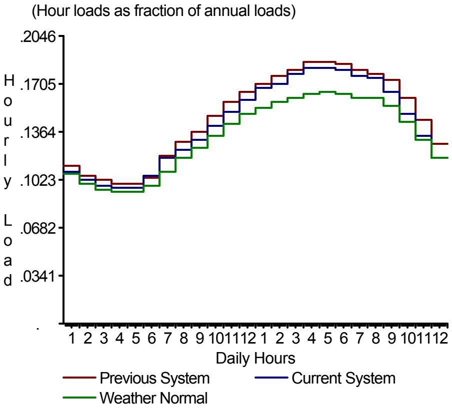
Load Shapes for August
(Hour loads as fraction of annual loads)



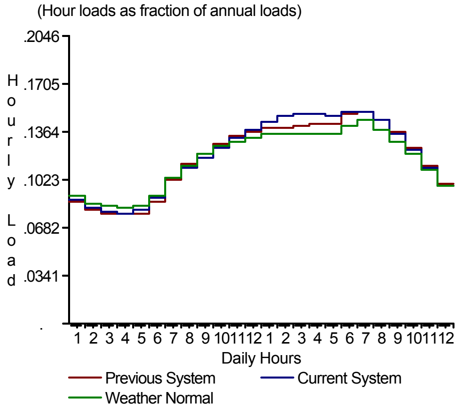
Load Shapes for September
(Hour loads as fraction of annual loads)



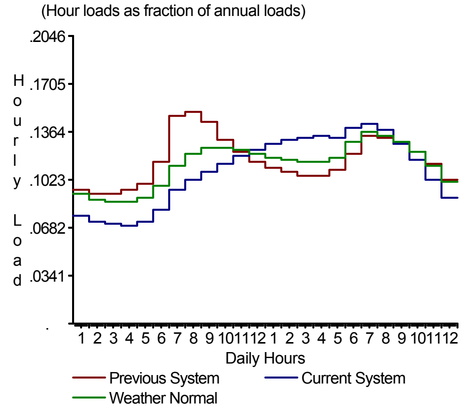
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)

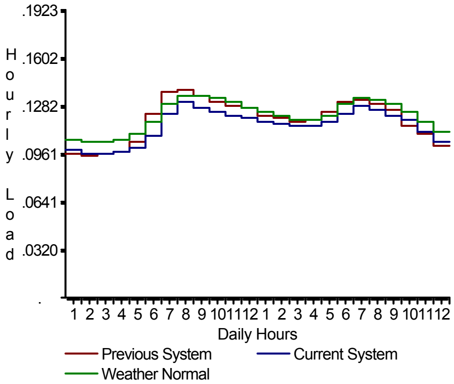


Load Shapes for December
(Hour loads as fraction of annual loads)

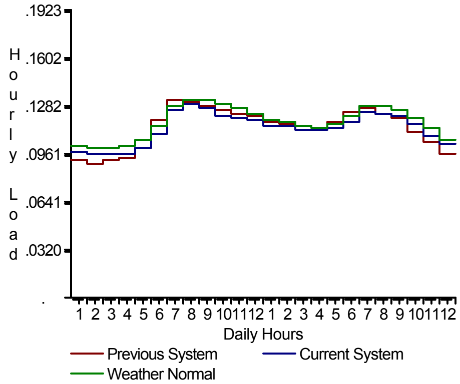


DAF System vs Weather Normal, Weekday, STV
(Hourly loads as fractions)

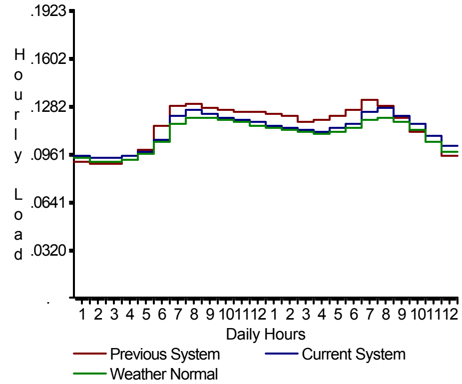
Load Shapes for January
(Hour loads as fraction of annual loads)



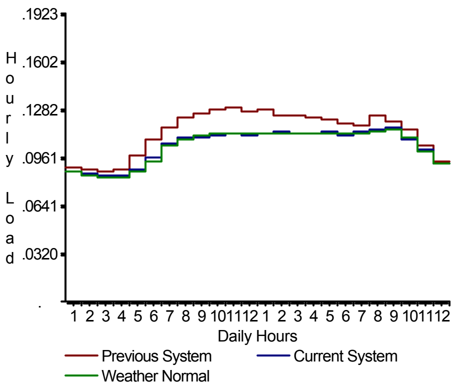
Load Shapes for February
(Hour loads as fraction of annual loads)



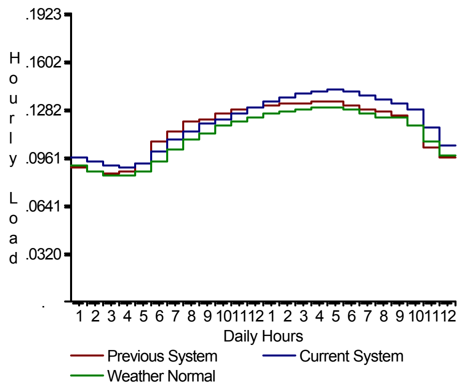
Load Shapes for March
(Hour loads as fraction of annual loads)



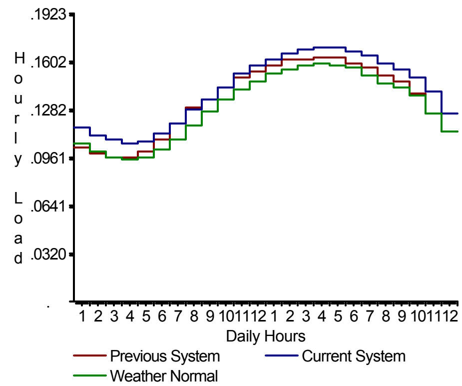
Load Shapes for April
(Hour loads as fraction of annual loads)



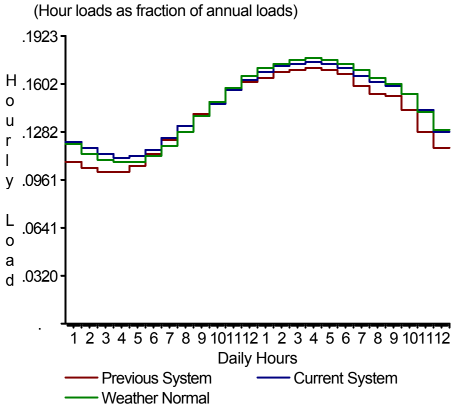
Load Shapes for May
(Hour loads as fraction of annual loads)



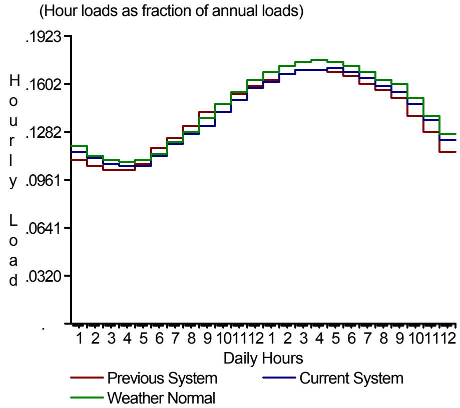
Load Shapes for June
(Hour loads as fraction of annual loads)



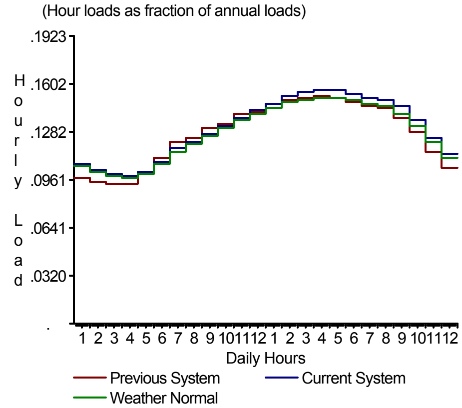
Load Shapes for July
(Hour loads as fraction of annual loads)



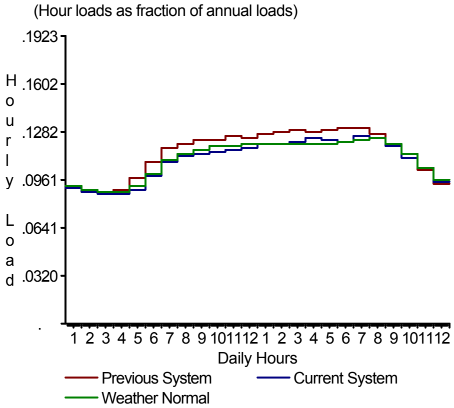
Load Shapes for August
(Hour loads as fraction of annual loads)



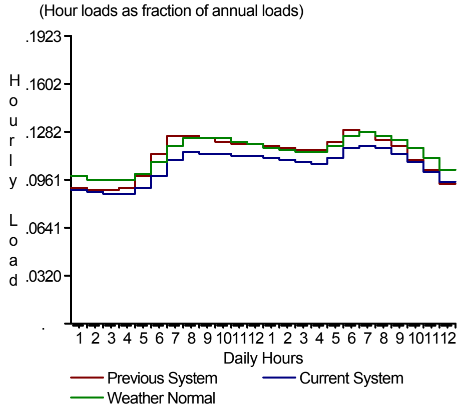
Load Shapes for September
(Hour loads as fraction of annual loads)



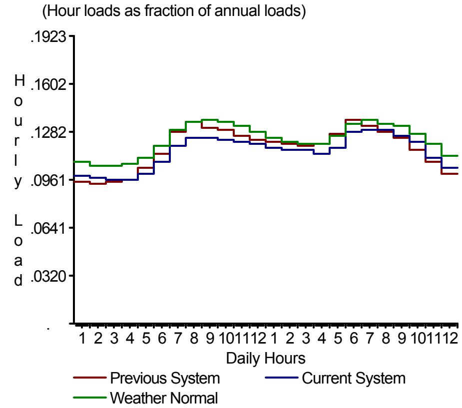
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)

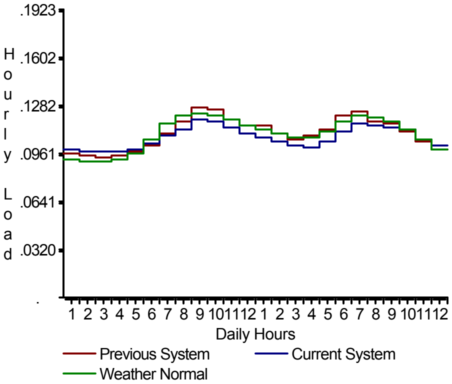


DAF System vs Weather Normal, Weekend, STV

(Hourly loads as fractions)

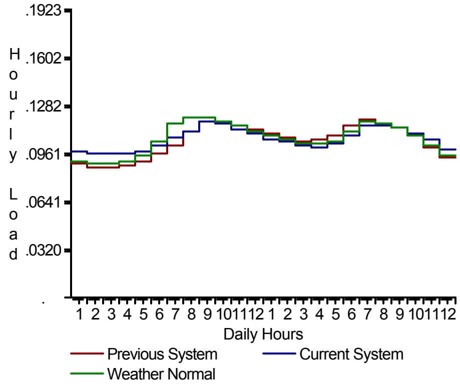
Load Shapes for January

(Hour loads as fraction of annual loads)



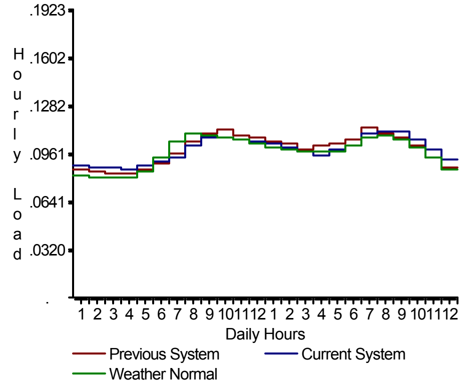
Load Shapes for February

(Hour loads as fraction of annual loads)



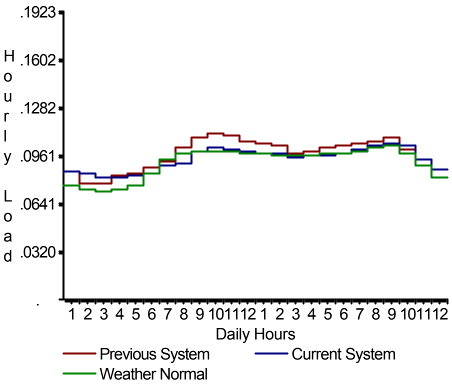
Load Shapes for March

(Hour loads as fraction of annual loads)



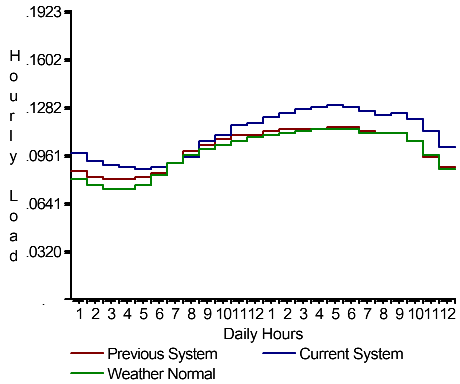
Load Shapes for April

(Hour loads as fraction of annual loads)



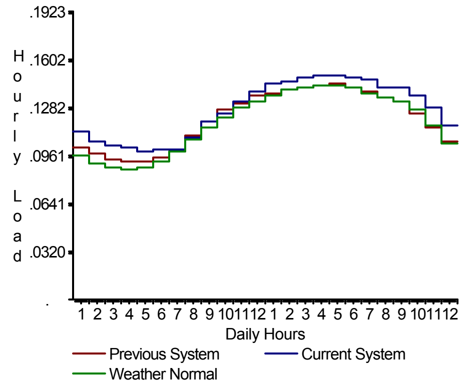
Load Shapes for May

(Hour loads as fraction of annual loads)



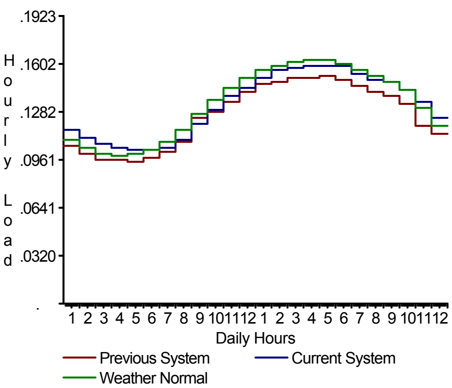
Load Shapes for June

(Hour loads as fraction of annual loads)



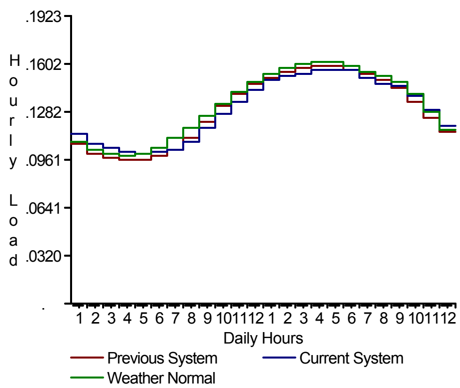
Load Shapes for July

(Hour loads as fraction of annual loads)



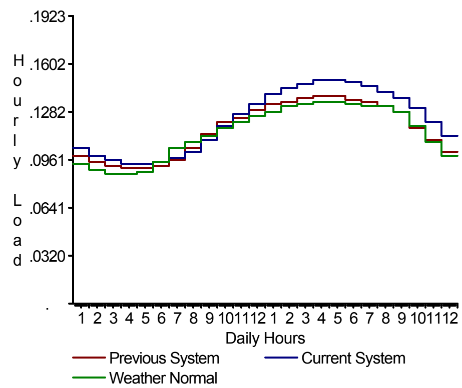
Load Shapes for August

(Hour loads as fraction of annual loads)



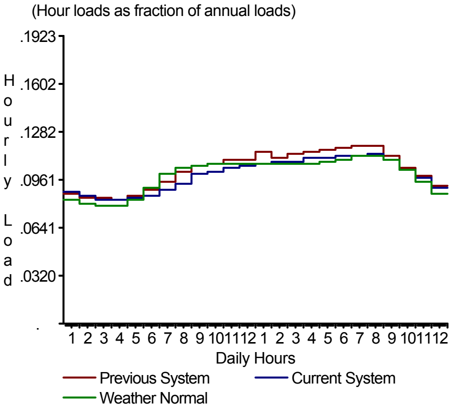
Load Shapes for September

(Hour loads as fraction of annual loads)



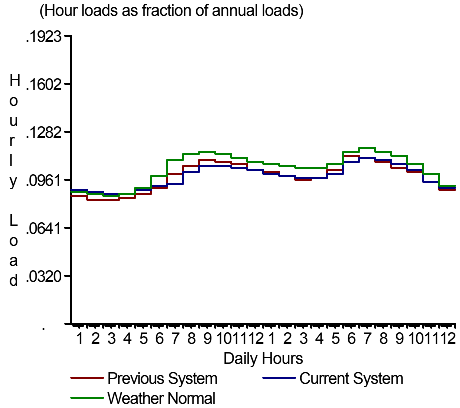
Load Shapes for October

(Hour loads as fraction of annual loads)



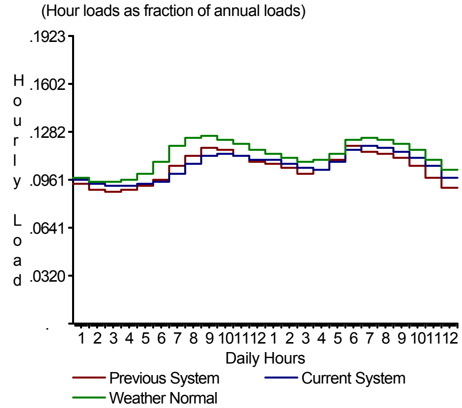
Load Shapes for November

(Hour loads as fraction of annual loads)



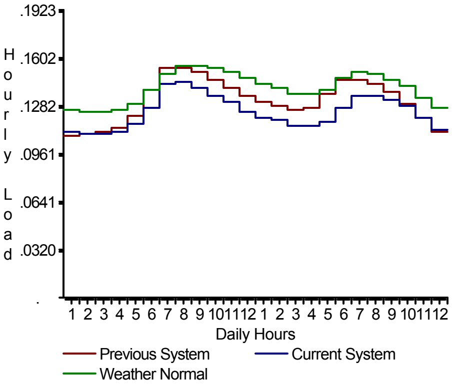
Load Shapes for December

(Hour loads as fraction of annual loads)

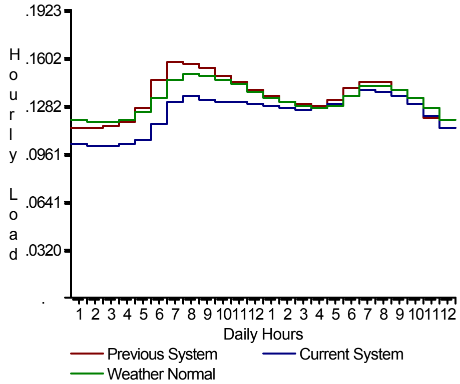


DAF System vs Weather Normal, Peakday, STV
(Hourly loads as fractions)

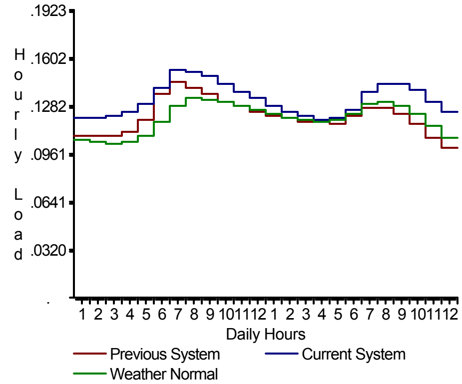
Load Shapes for January
(Hour loads as fraction of annual loads)



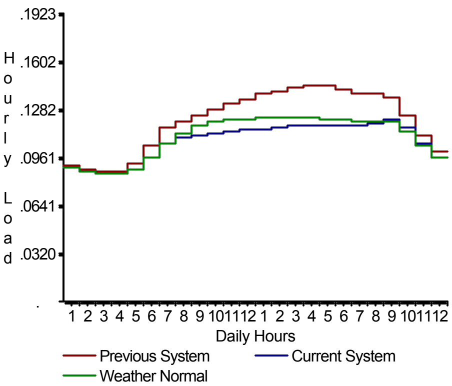
Load Shapes for February
(Hour loads as fraction of annual loads)



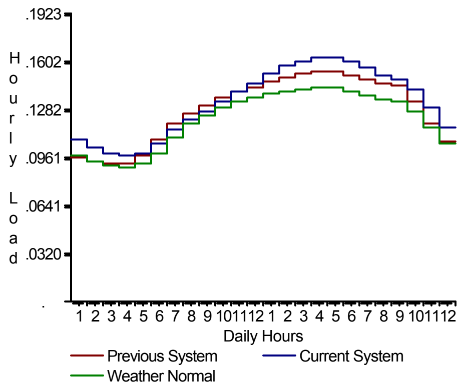
Load Shapes for March
(Hour loads as fraction of annual loads)



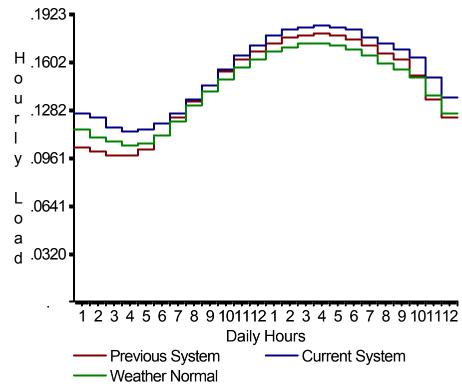
Load Shapes for April
(Hour loads as fraction of annual loads)



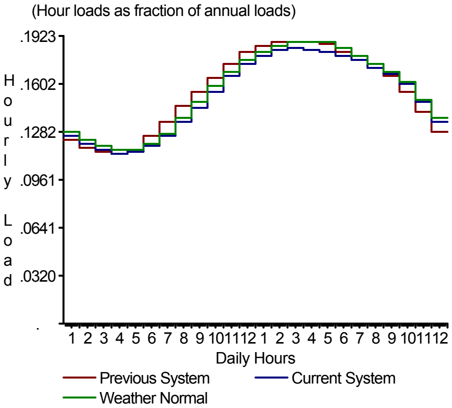
Load Shapes for May
(Hour loads as fraction of annual loads)



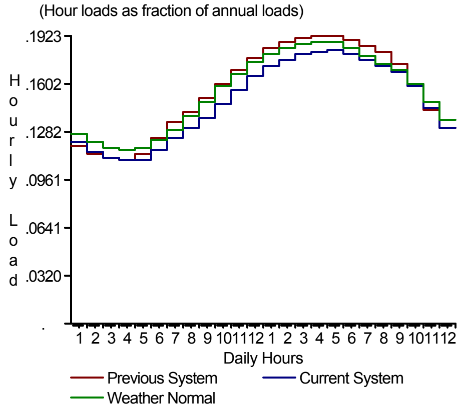
Load Shapes for June
(Hour loads as fraction of annual loads)



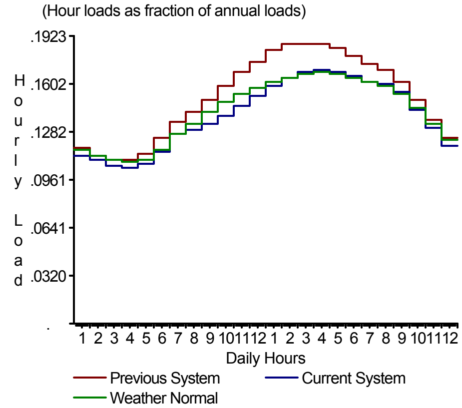
Load Shapes for July
(Hour loads as fraction of annual loads)



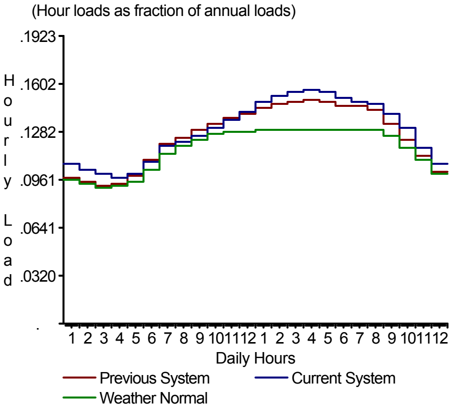
Load Shapes for August
(Hour loads as fraction of annual loads)



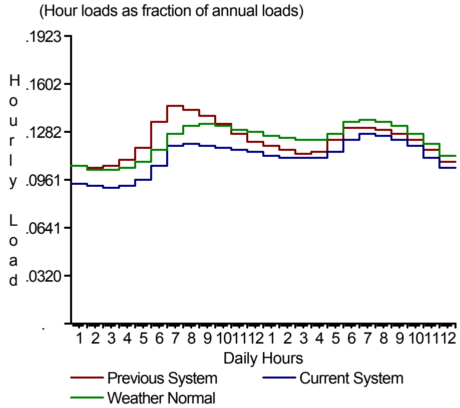
Load Shapes for September
(Hour loads as fraction of annual loads)



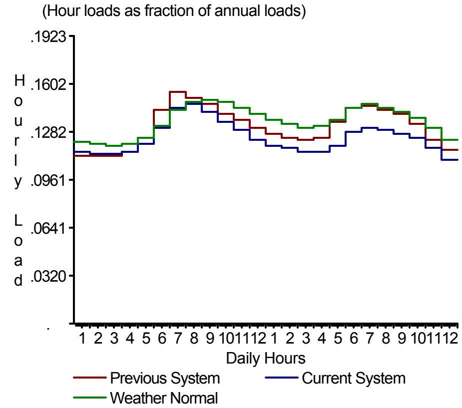
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)

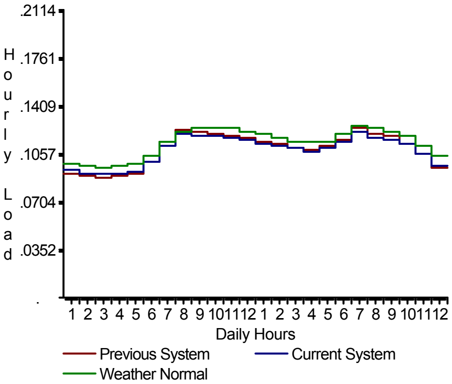


Load Shapes for December
(Hour loads as fraction of annual loads)

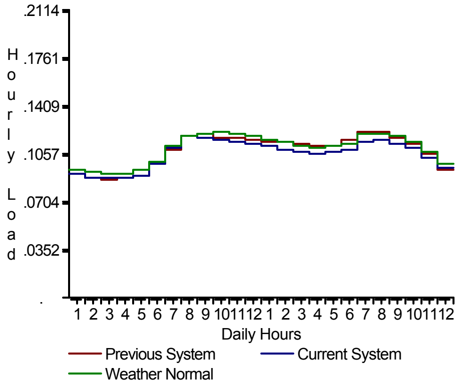


DAF System vs Weather Normal, Weekday, SPP
(Hourly loads as fractions)

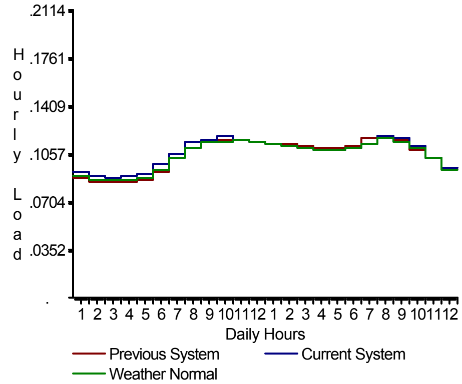
Load Shapes for January
(Hour loads as fraction of annual loads)



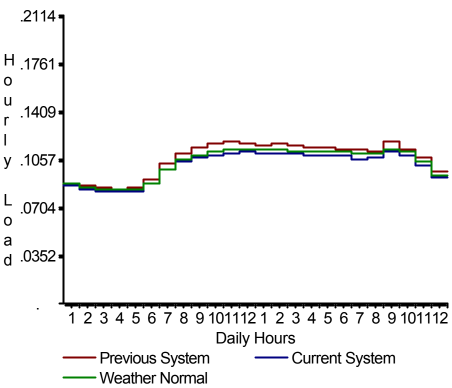
Load Shapes for February
(Hour loads as fraction of annual loads)



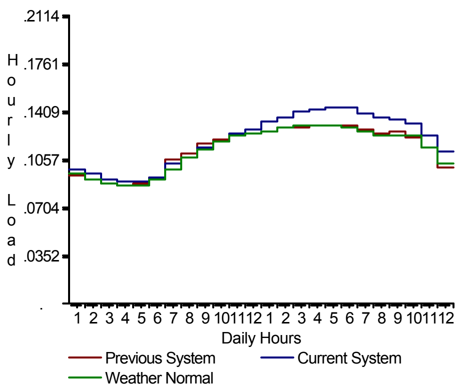
Load Shapes for March
(Hour loads as fraction of annual loads)



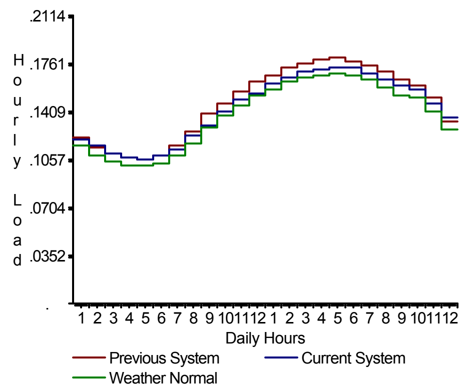
Load Shapes for April
(Hour loads as fraction of annual loads)



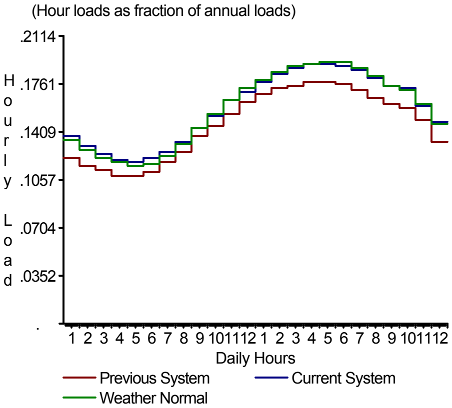
Load Shapes for May
(Hour loads as fraction of annual loads)



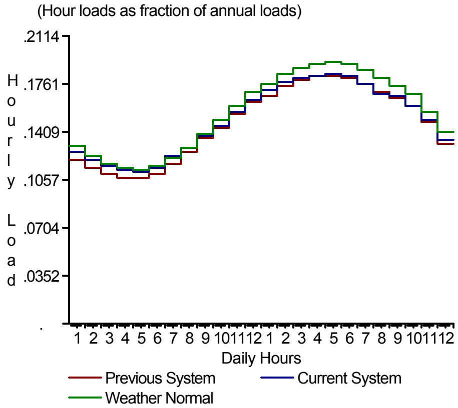
Load Shapes for June
(Hour loads as fraction of annual loads)



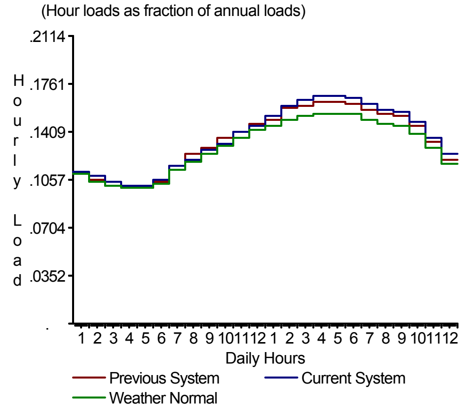
Load Shapes for July
(Hour loads as fraction of annual loads)



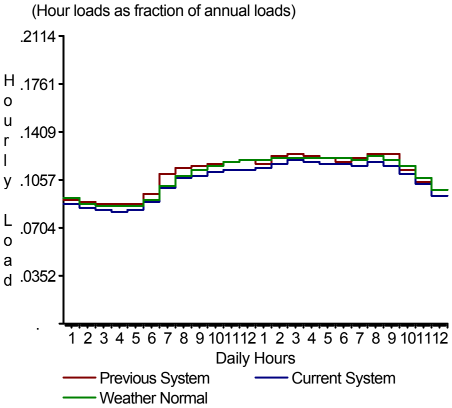
Load Shapes for August
(Hour loads as fraction of annual loads)



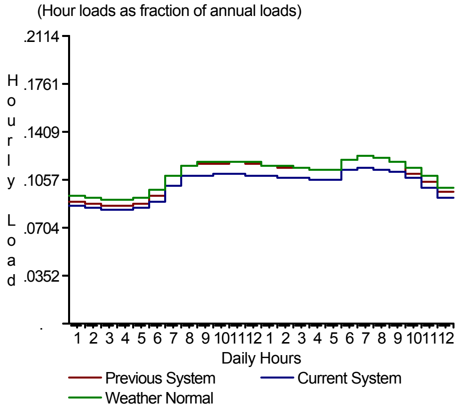
Load Shapes for September
(Hour loads as fraction of annual loads)



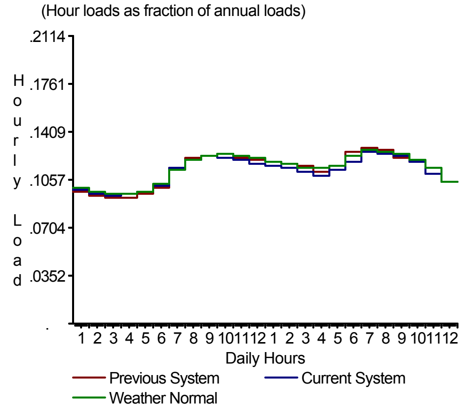
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



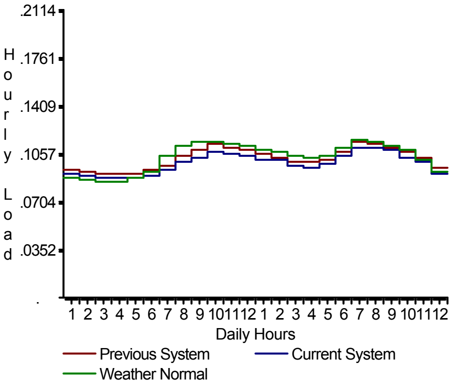
Load Shapes for December
(Hour loads as fraction of annual loads)



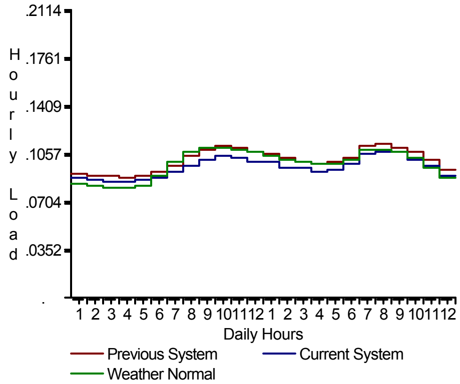
DAF System vs Weather Normal, Weekend, SPP

(Hourly loads as fractions)

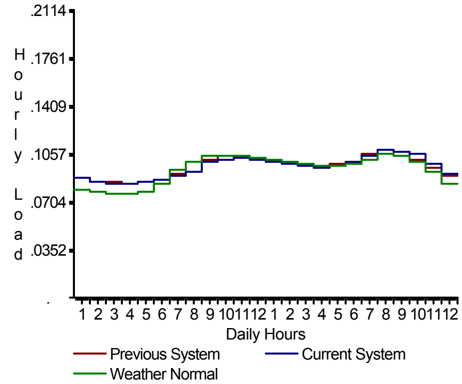
Load Shapes for January
(Hour loads as fraction of annual loads)



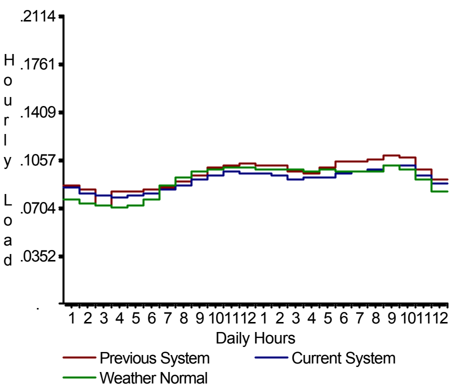
Load Shapes for February
(Hour loads as fraction of annual loads)



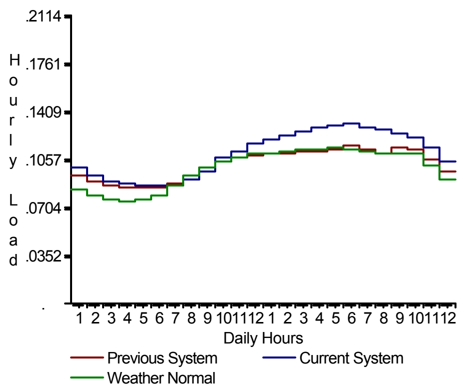
Load Shapes for March
(Hour loads as fraction of annual loads)



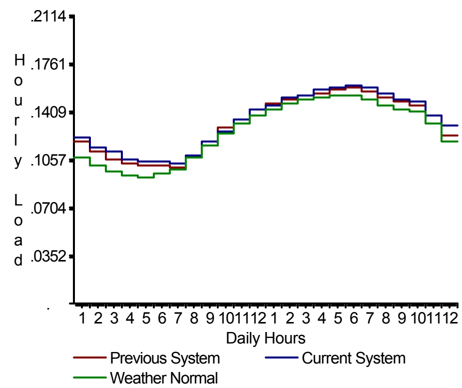
Load Shapes for April
(Hour loads as fraction of annual loads)



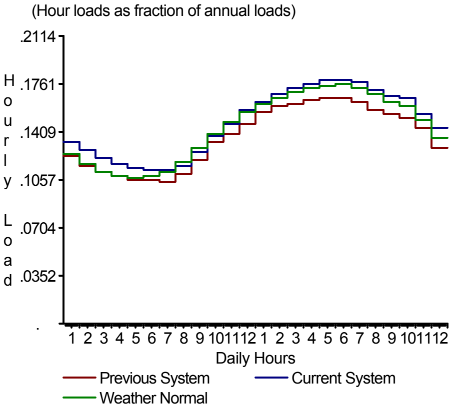
Load Shapes for May
(Hour loads as fraction of annual loads)



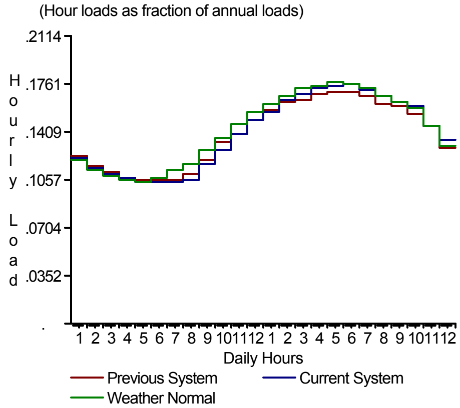
Load Shapes for June
(Hour loads as fraction of annual loads)



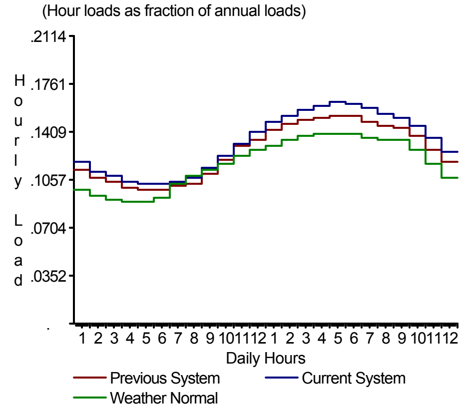
Load Shapes for July
(Hour loads as fraction of annual loads)



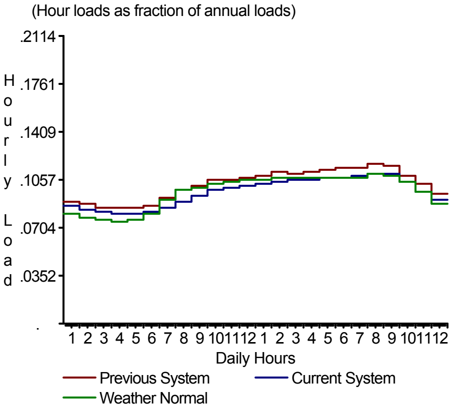
Load Shapes for August
(Hour loads as fraction of annual loads)



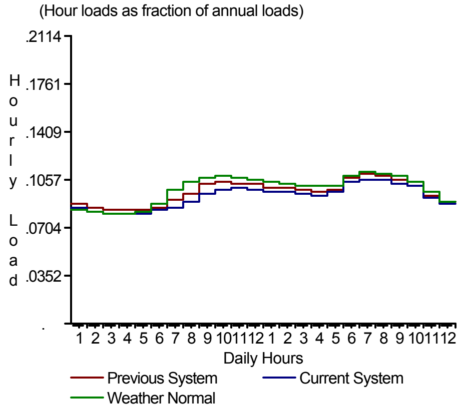
Load Shapes for September
(Hour loads as fraction of annual loads)



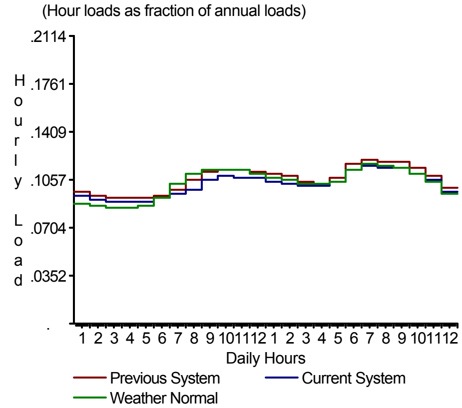
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)

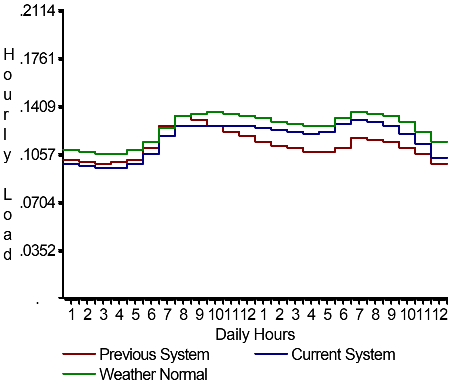


DAF System vs Weather Normal, Peakday, SPP

(Hourly loads as fractions)

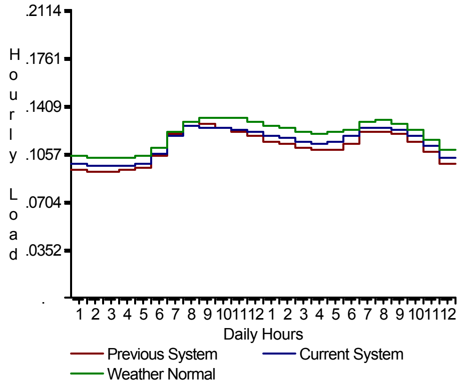
Load Shapes for January

(Hour loads as fraction of annual loads)



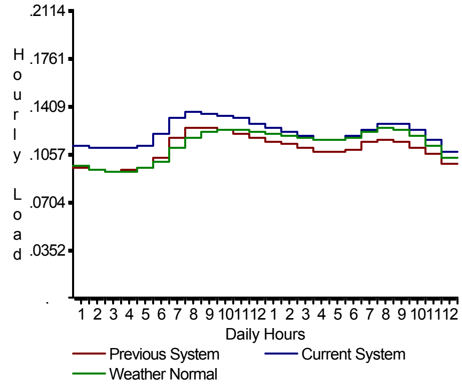
Load Shapes for February

(Hour loads as fraction of annual loads)



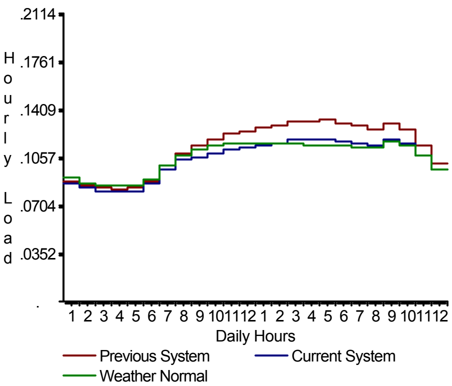
Load Shapes for March

(Hour loads as fraction of annual loads)



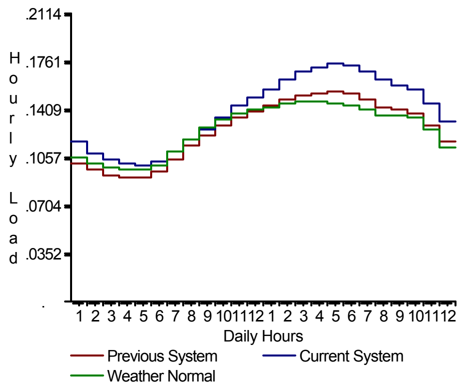
Load Shapes for April

(Hour loads as fraction of annual loads)



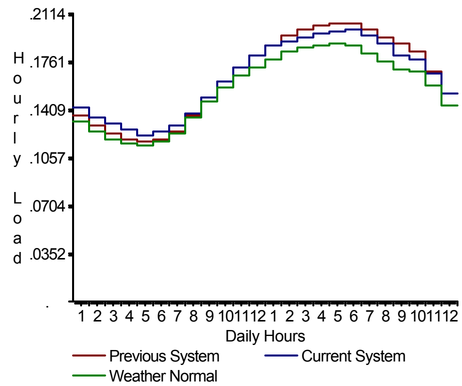
Load Shapes for May

(Hour loads as fraction of annual loads)



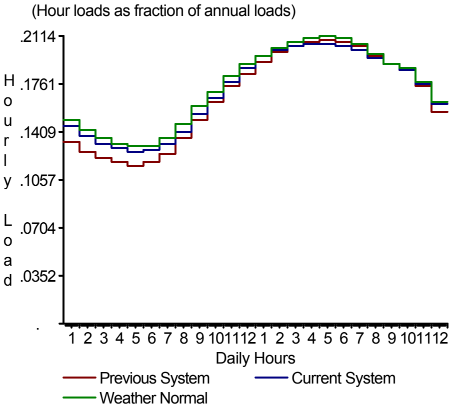
Load Shapes for June

(Hour loads as fraction of annual loads)



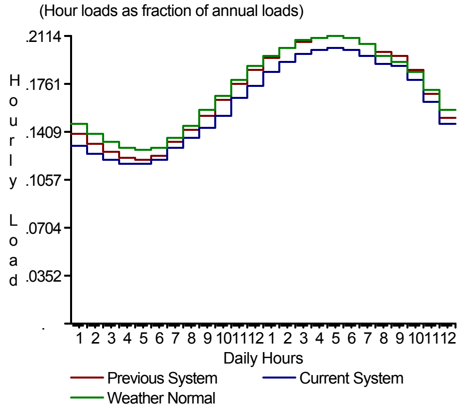
Load Shapes for July

(Hour loads as fraction of annual loads)



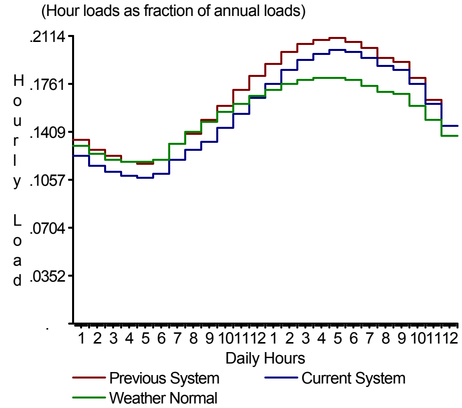
Load Shapes for August

(Hour loads as fraction of annual loads)



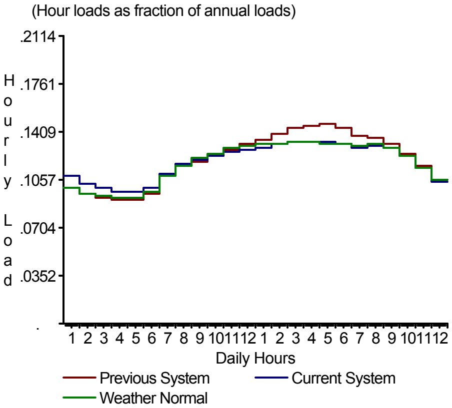
Load Shapes for September

(Hour loads as fraction of annual loads)



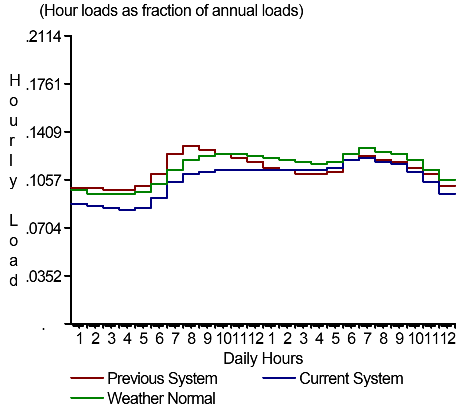
Load Shapes for October

(Hour loads as fraction of annual loads)



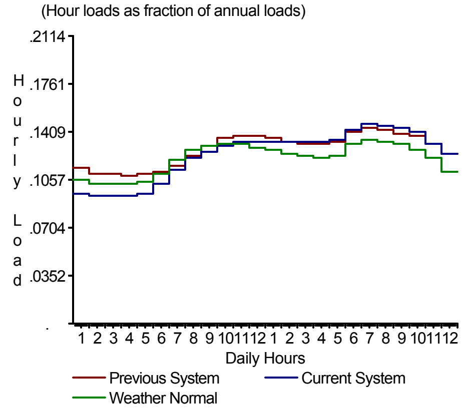
Load Shapes for November

(Hour loads as fraction of annual loads)



Load Shapes for December

(Hour loads as fraction of annual loads)

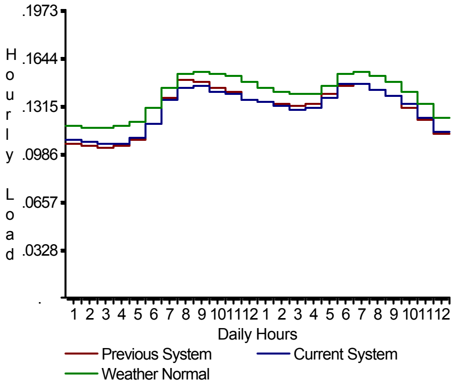


DAF System vs Weather Normal, Weekday, NWP

(Hourly loads as fractions)

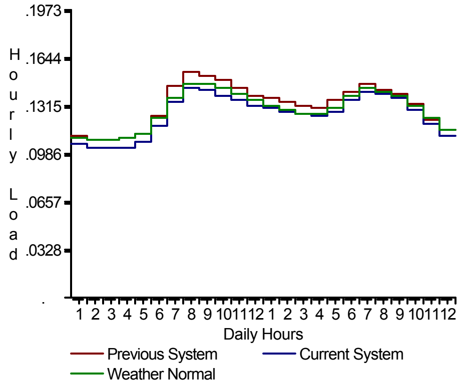
Load Shapes for January

(Hour loads as fraction of annual loads)



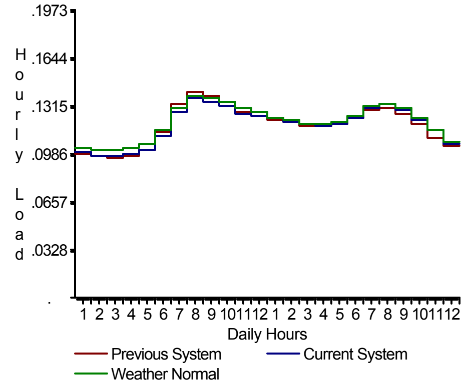
Load Shapes for February

(Hour loads as fraction of annual loads)



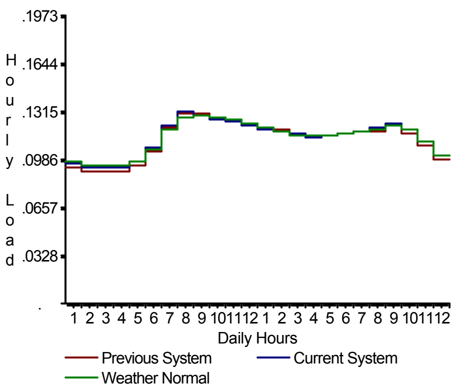
Load Shapes for March

(Hour loads as fraction of annual loads)



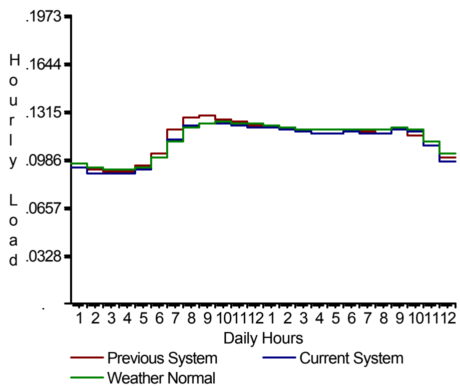
Load Shapes for April

(Hour loads as fraction of annual loads)



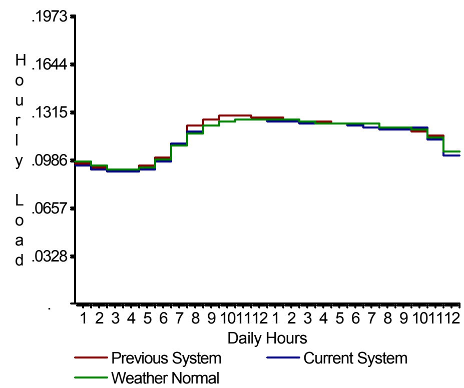
Load Shapes for May

(Hour loads as fraction of annual loads)



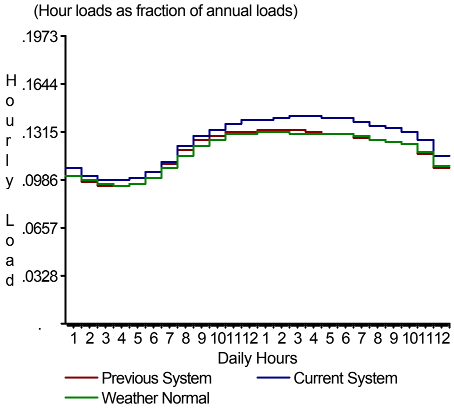
Load Shapes for June

(Hour loads as fraction of annual loads)



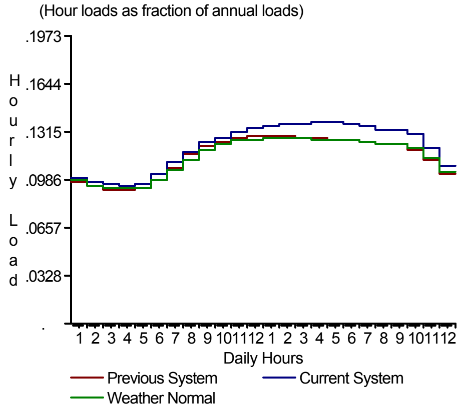
Load Shapes for July

(Hour loads as fraction of annual loads)



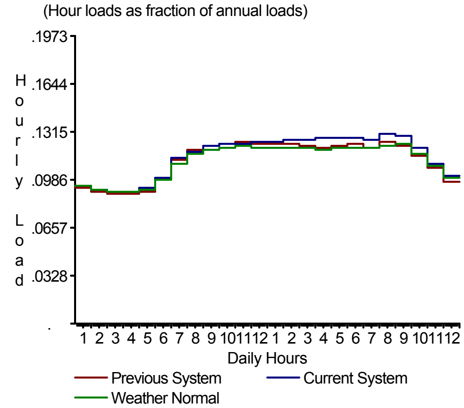
Load Shapes for August

(Hour loads as fraction of annual loads)



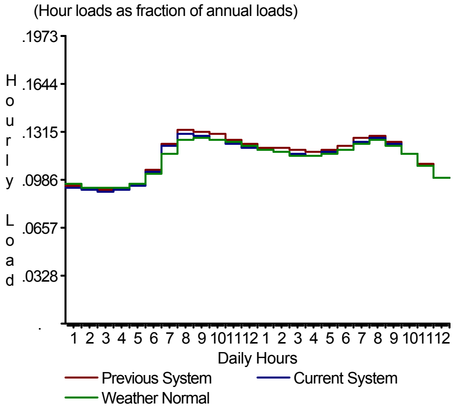
Load Shapes for September

(Hour loads as fraction of annual loads)



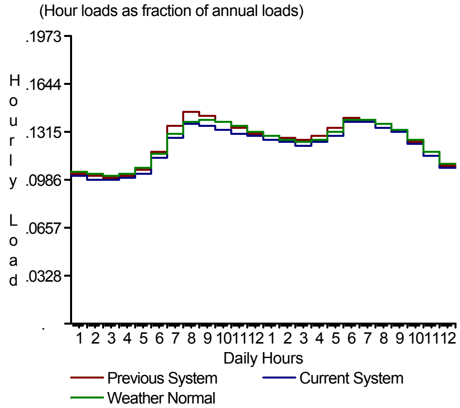
Load Shapes for October

(Hour loads as fraction of annual loads)



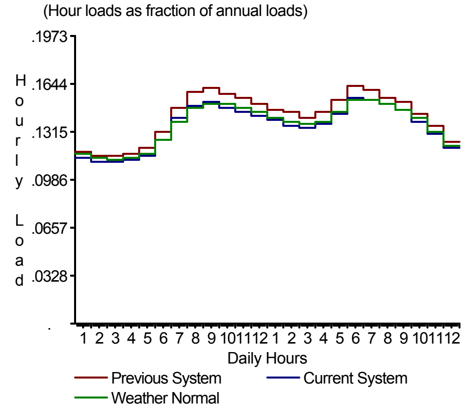
Load Shapes for November

(Hour loads as fraction of annual loads)



Load Shapes for December

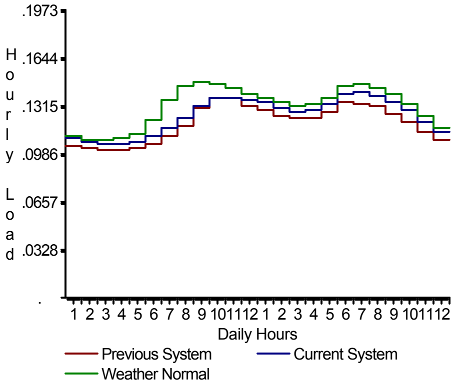
(Hour loads as fraction of annual loads)



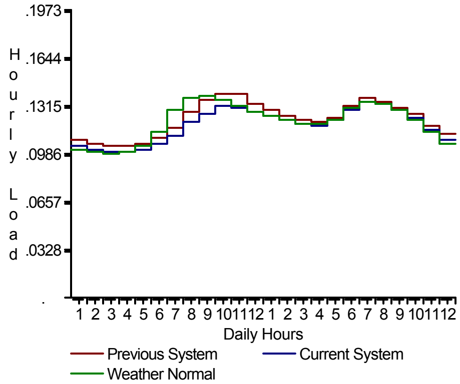
DAF System vs Weather Normal, Weekend, NWP

(Hourly loads as fractions)

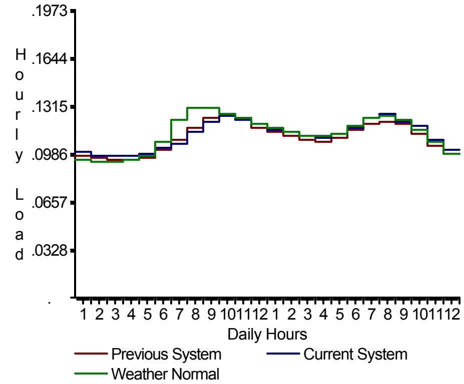
Load Shapes for January
(Hour loads as fraction of annual loads)



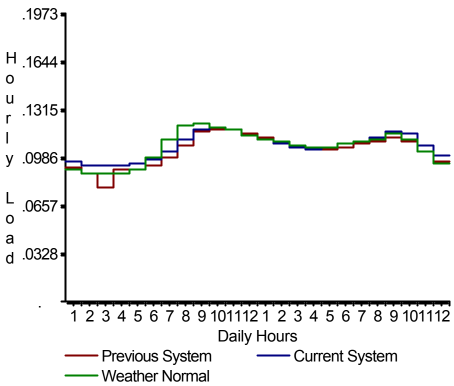
Load Shapes for February
(Hour loads as fraction of annual loads)



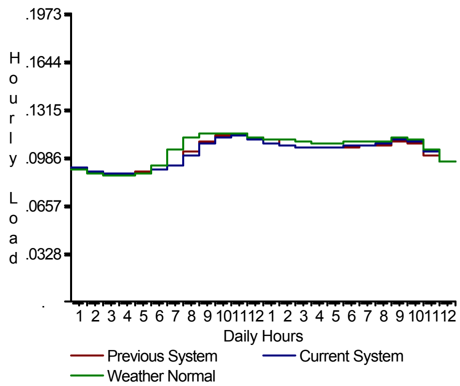
Load Shapes for March
(Hour loads as fraction of annual loads)



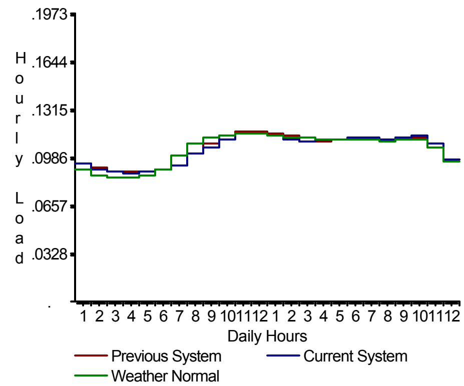
Load Shapes for April
(Hour loads as fraction of annual loads)



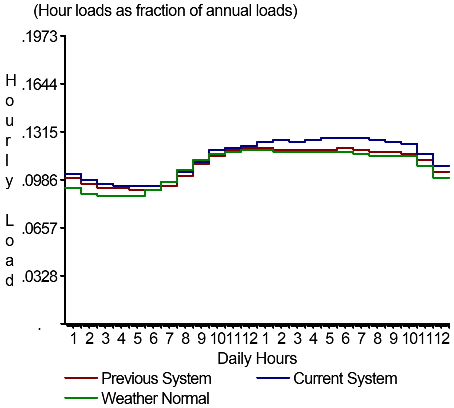
Load Shapes for May
(Hour loads as fraction of annual loads)



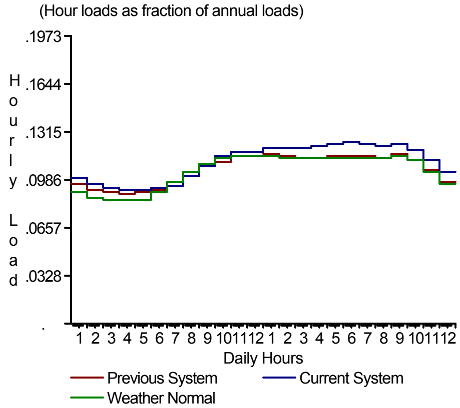
Load Shapes for June
(Hour loads as fraction of annual loads)



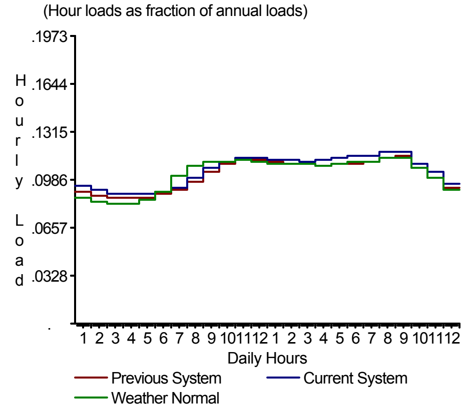
Load Shapes for July
(Hour loads as fraction of annual loads)



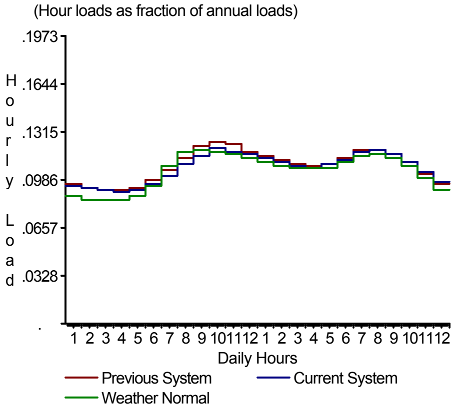
Load Shapes for August
(Hour loads as fraction of annual loads)



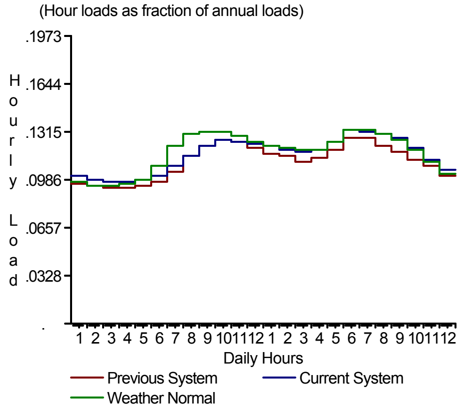
Load Shapes for September
(Hour loads as fraction of annual loads)



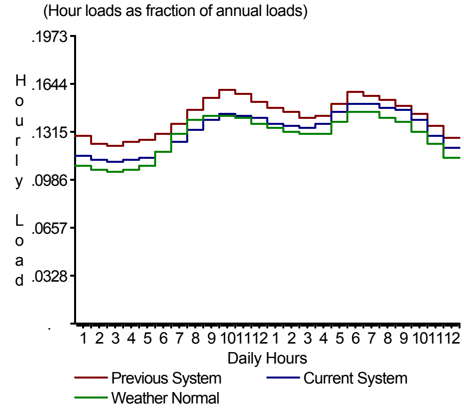
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)

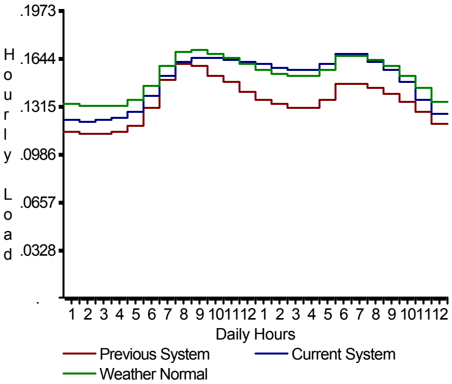


DAF System vs Weather Normal, Peakday, NWP

(Hourly loads as fractions)

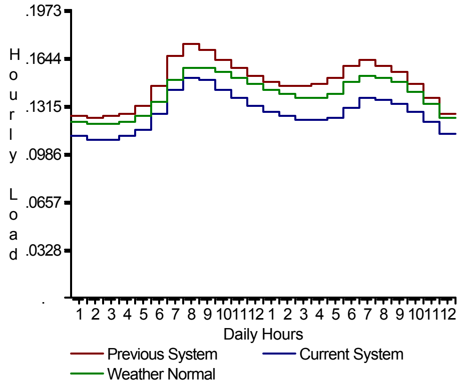
Load Shapes for January

(Hour loads as fraction of annual loads)



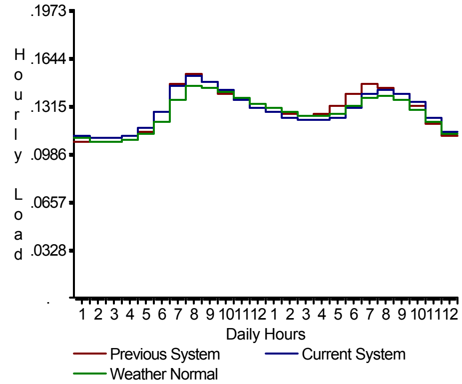
Load Shapes for February

(Hour loads as fraction of annual loads)



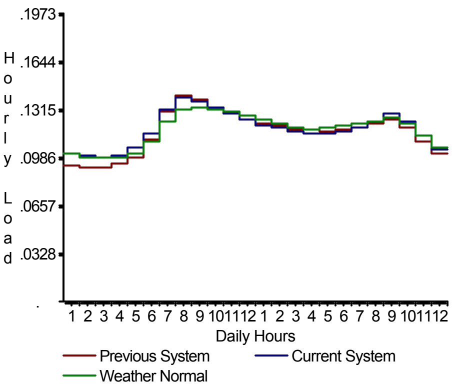
Load Shapes for March

(Hour loads as fraction of annual loads)



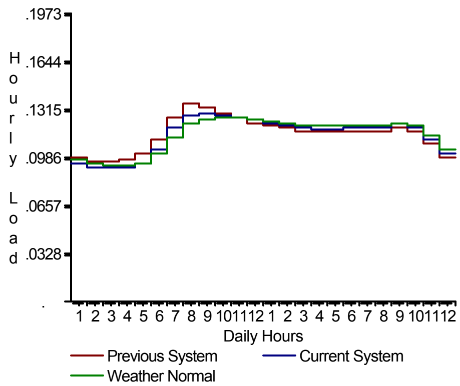
Load Shapes for April

(Hour loads as fraction of annual loads)



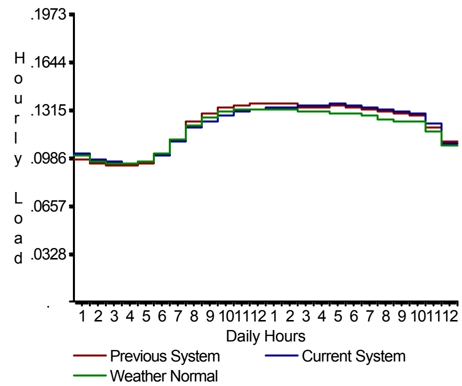
Load Shapes for May

(Hour loads as fraction of annual loads)



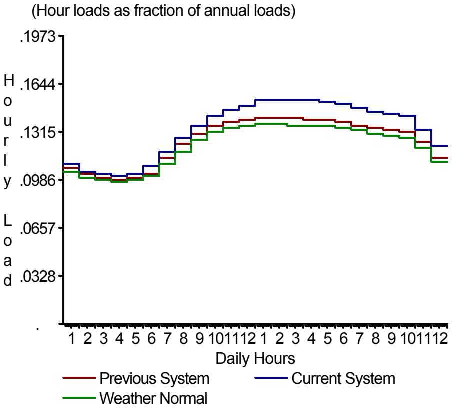
Load Shapes for June

(Hour loads as fraction of annual loads)



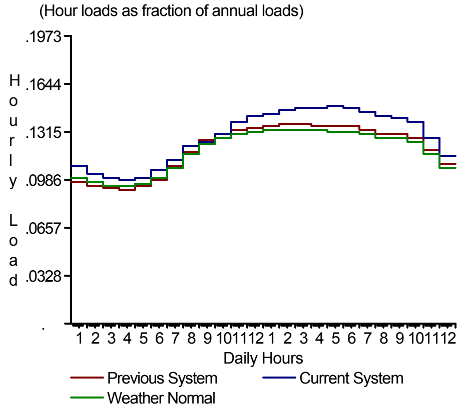
Load Shapes for July

(Hour loads as fraction of annual loads)



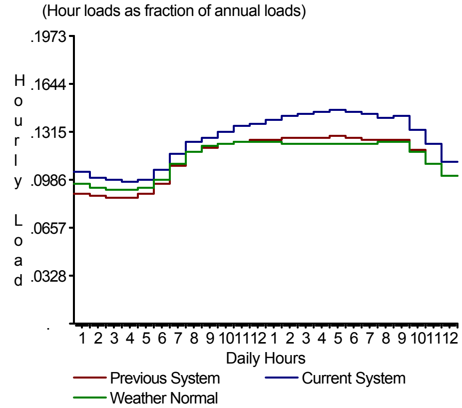
Load Shapes for August

(Hour loads as fraction of annual loads)



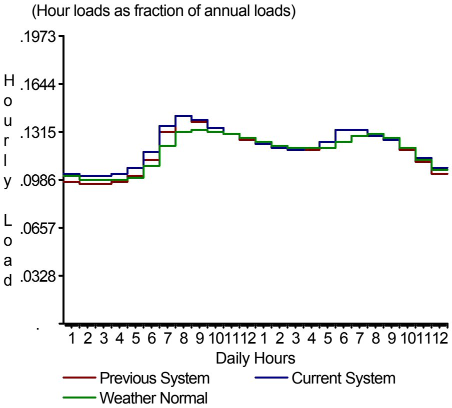
Load Shapes for September

(Hour loads as fraction of annual loads)



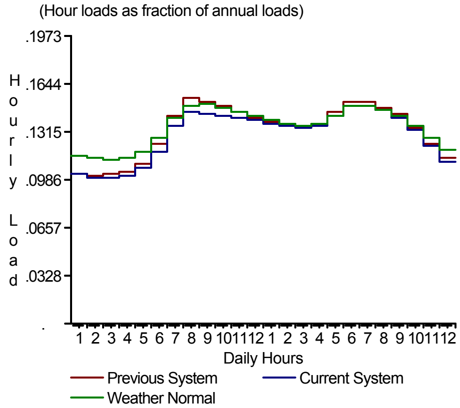
Load Shapes for October

(Hour loads as fraction of annual loads)



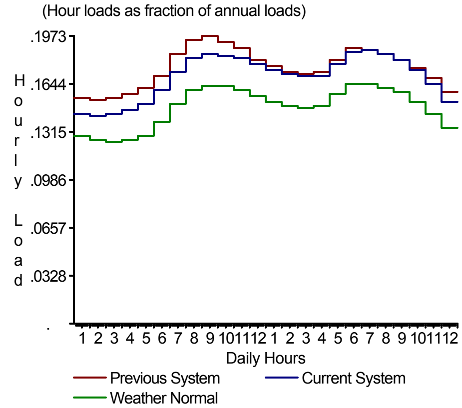
Load Shapes for November

(Hour loads as fraction of annual loads)



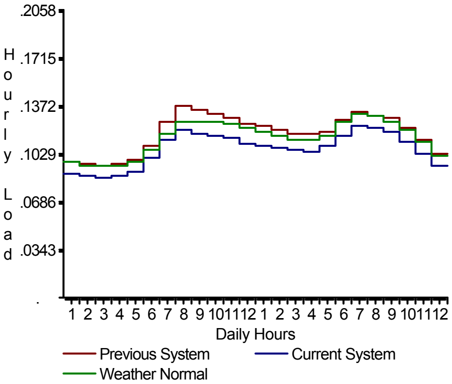
Load Shapes for December

(Hour loads as fraction of annual loads)

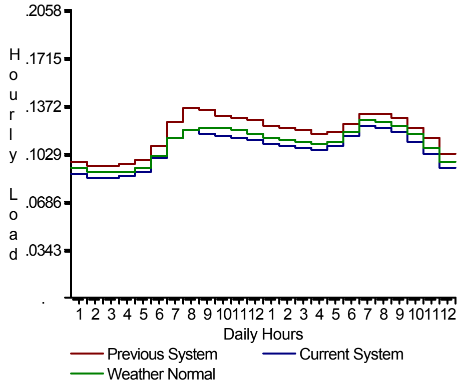


DAF System vs Weather Normal, Weekday, RA
(Hourly loads as fractions)

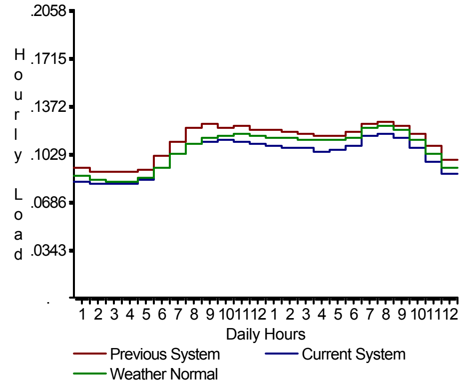
Load Shapes for January
(Hour loads as fraction of annual loads)



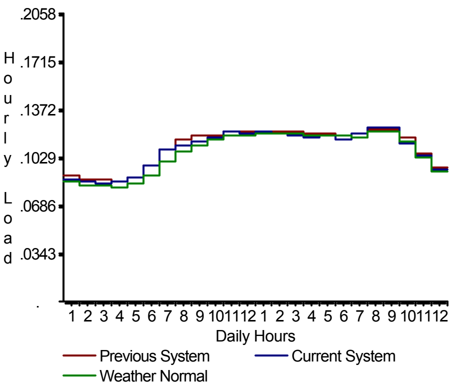
Load Shapes for February
(Hour loads as fraction of annual loads)



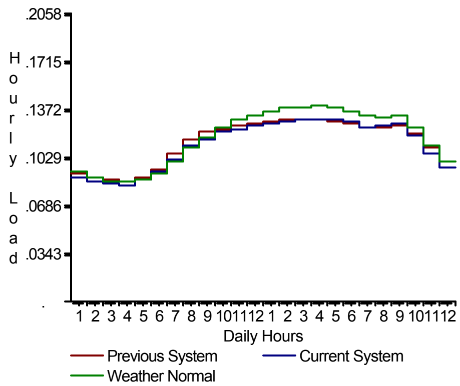
Load Shapes for March
(Hour loads as fraction of annual loads)



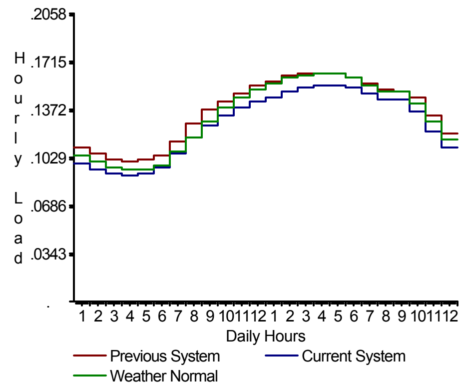
Load Shapes for April
(Hour loads as fraction of annual loads)



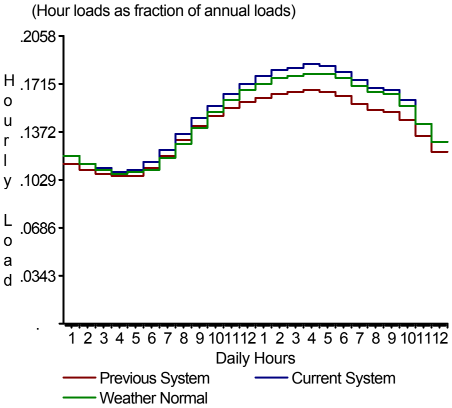
Load Shapes for May
(Hour loads as fraction of annual loads)



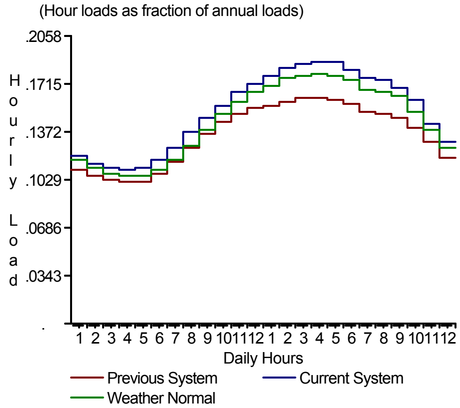
Load Shapes for June
(Hour loads as fraction of annual loads)



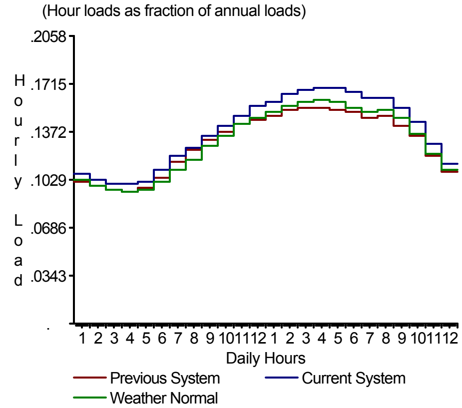
Load Shapes for July
(Hour loads as fraction of annual loads)



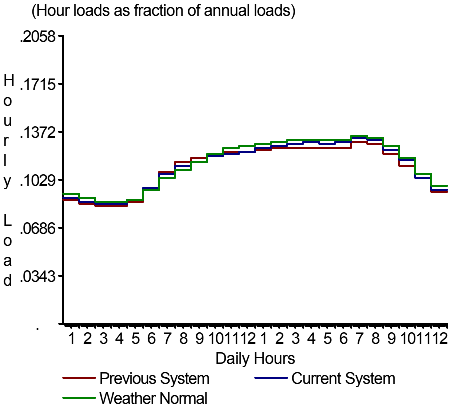
Load Shapes for August
(Hour loads as fraction of annual loads)



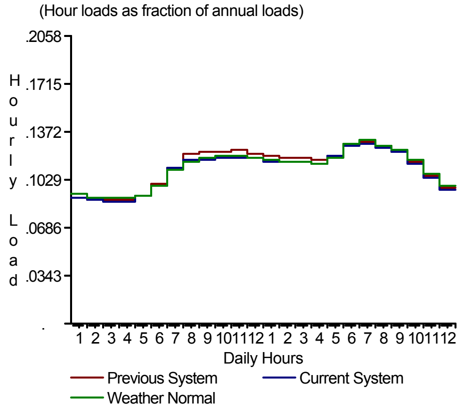
Load Shapes for September
(Hour loads as fraction of annual loads)



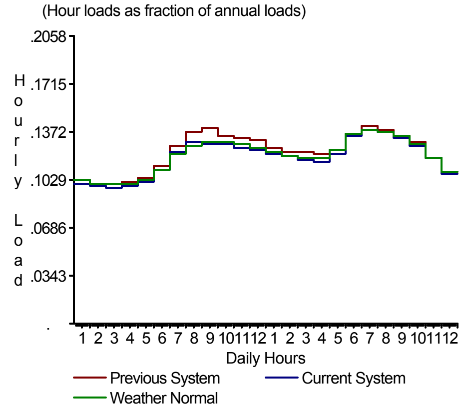
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)

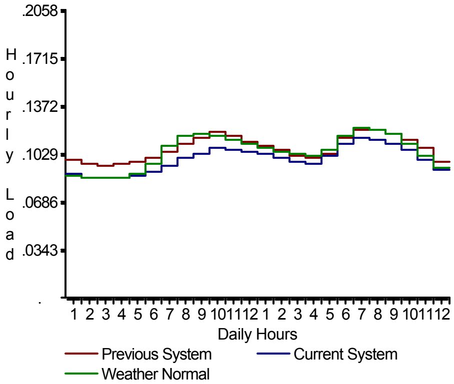


Load Shapes for December
(Hour loads as fraction of annual loads)

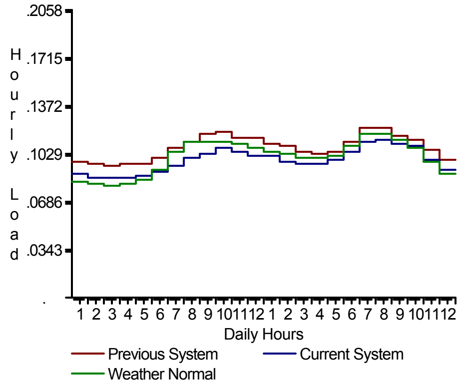


DAF System vs Weather Normal, Weekend, RA
(Hourly loads as fractions)

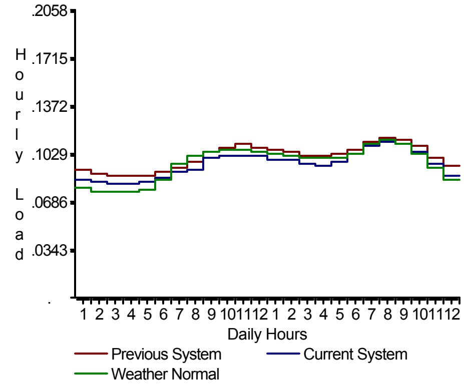
Load Shapes for January
(Hour loads as fraction of annual loads)



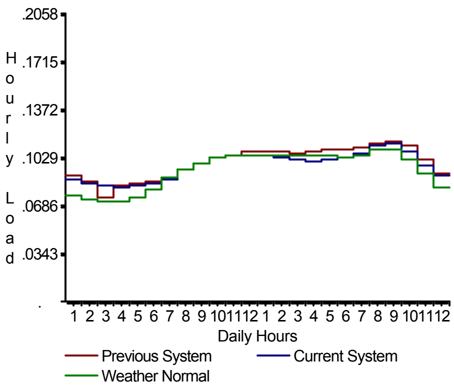
Load Shapes for February
(Hour loads as fraction of annual loads)



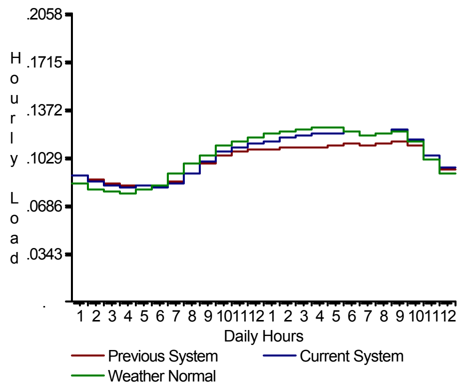
Load Shapes for March
(Hour loads as fraction of annual loads)



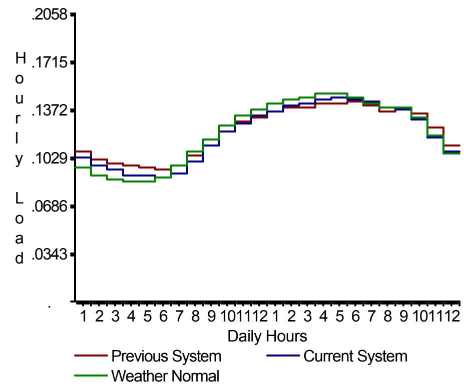
Load Shapes for April
(Hour loads as fraction of annual loads)



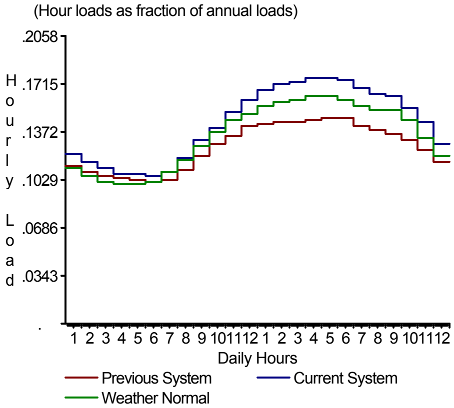
Load Shapes for May
(Hour loads as fraction of annual loads)



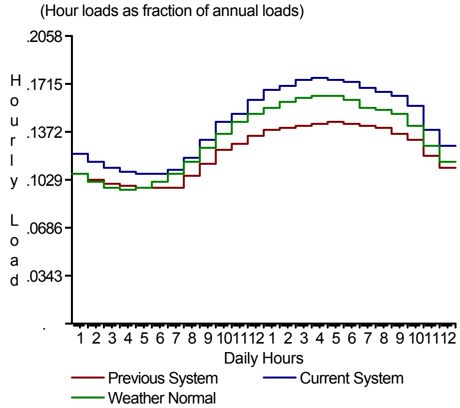
Load Shapes for June
(Hour loads as fraction of annual loads)



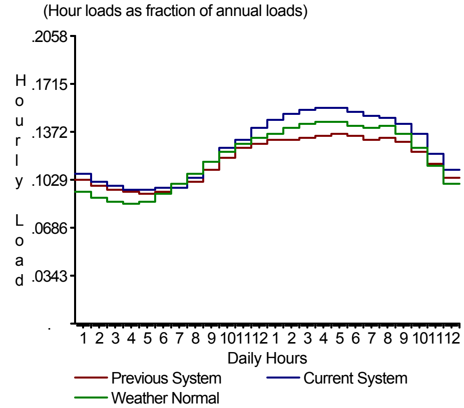
Load Shapes for July
(Hour loads as fraction of annual loads)



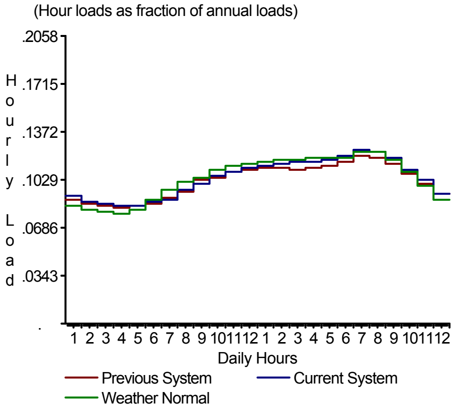
Load Shapes for August
(Hour loads as fraction of annual loads)



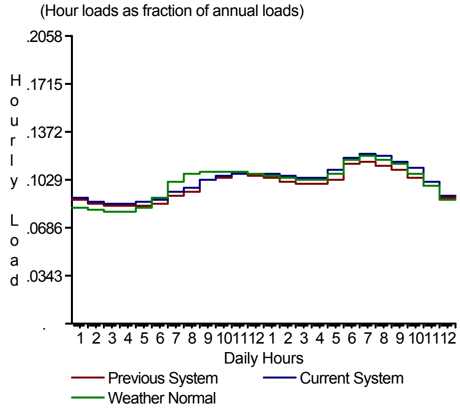
Load Shapes for September
(Hour loads as fraction of annual loads)



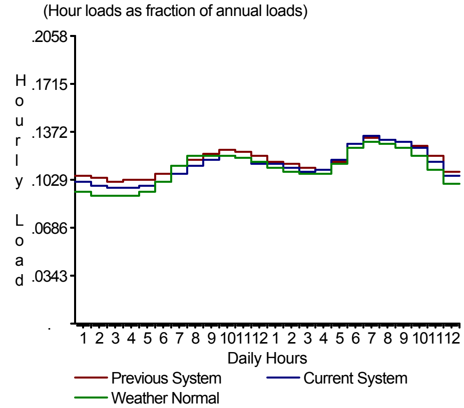
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)

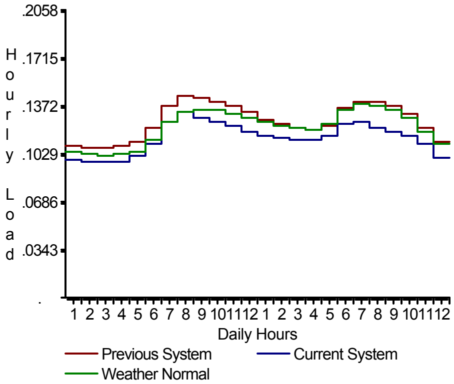


DAF System vs Weather Normal, Peakday, RA

(Hourly loads as fractions)

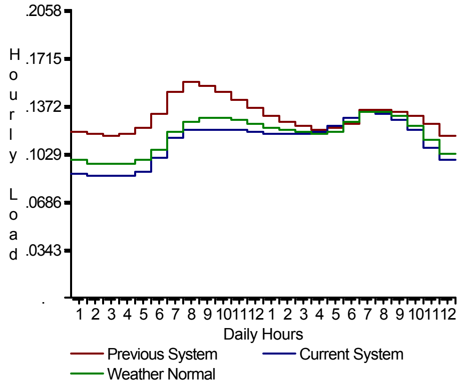
Load Shapes for January

(Hour loads as fraction of annual loads)



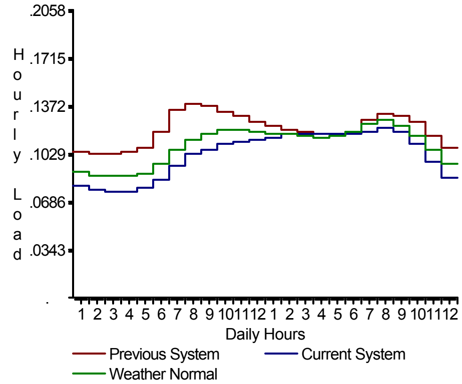
Load Shapes for February

(Hour loads as fraction of annual loads)



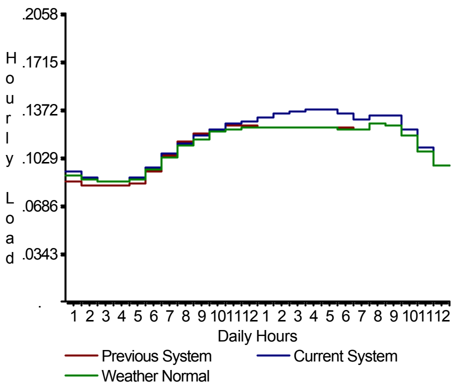
Load Shapes for March

(Hour loads as fraction of annual loads)



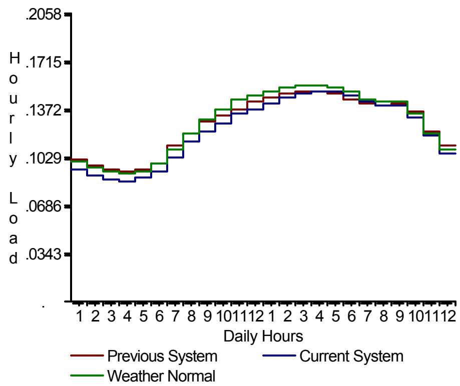
Load Shapes for April

(Hour loads as fraction of annual loads)



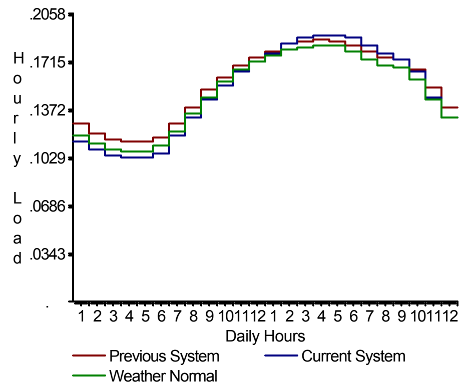
Load Shapes for May

(Hour loads as fraction of annual loads)



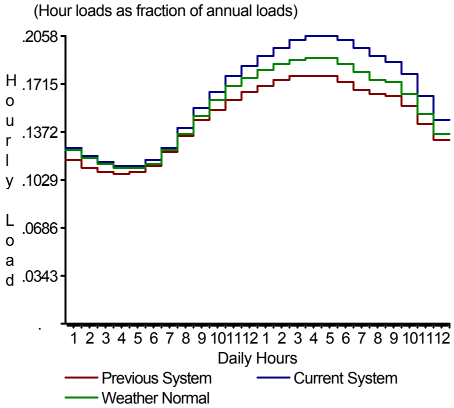
Load Shapes for June

(Hour loads as fraction of annual loads)



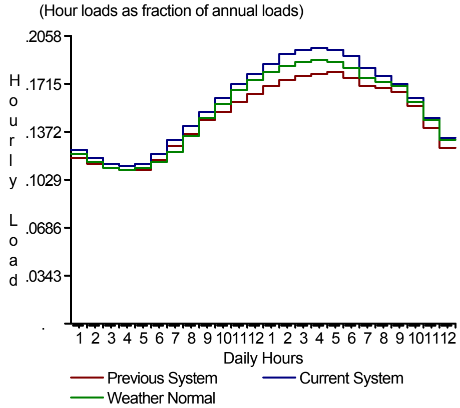
Load Shapes for July

(Hour loads as fraction of annual loads)



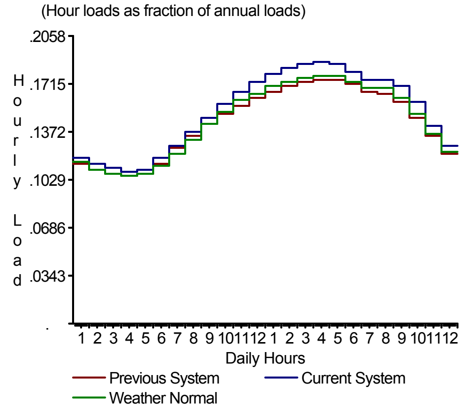
Load Shapes for August

(Hour loads as fraction of annual loads)



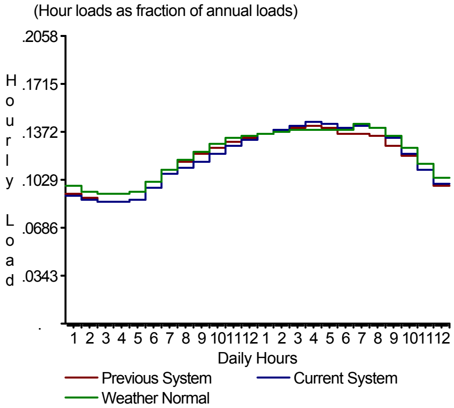
Load Shapes for September

(Hour loads as fraction of annual loads)



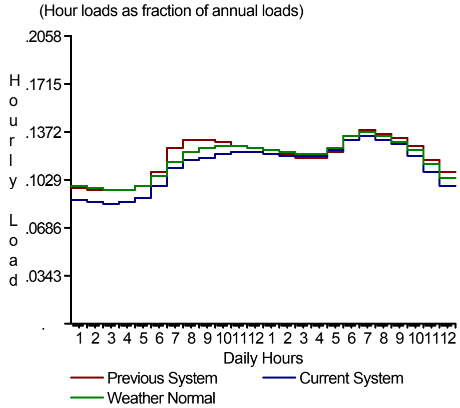
Load Shapes for October

(Hour loads as fraction of annual loads)



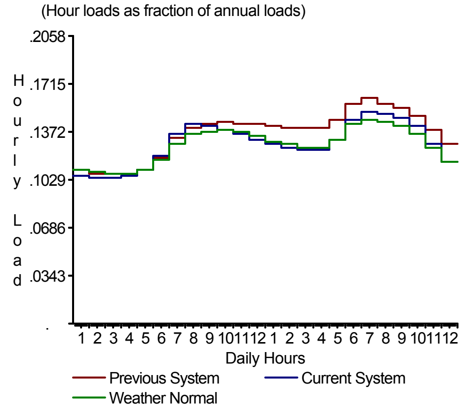
Load Shapes for November

(Hour loads as fraction of annual loads)



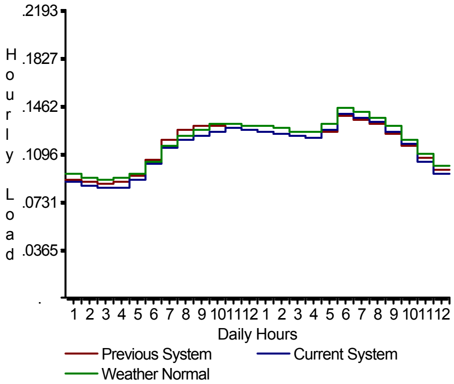
Load Shapes for December

(Hour loads as fraction of annual loads)

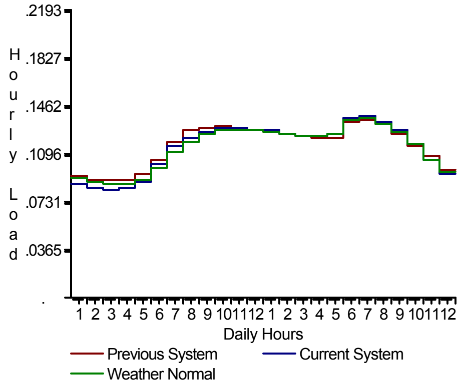


DAF System vs Weather Normal, Weekday, CNV
(Hourly loads as fractions)

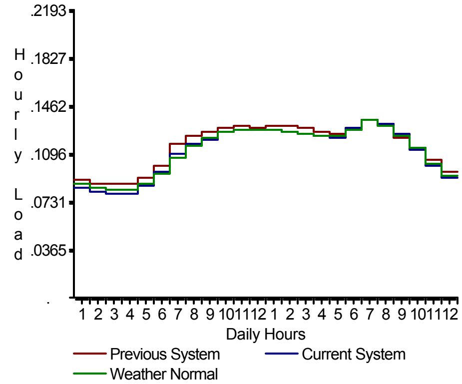
Load Shapes for January
(Hour loads as fraction of annual loads)



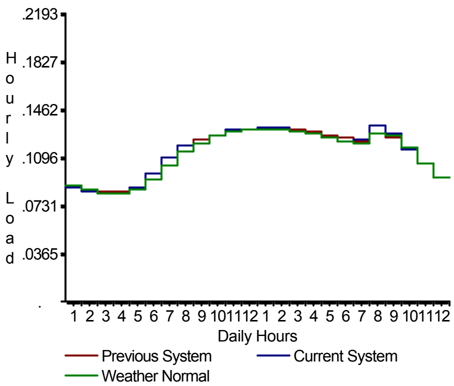
Load Shapes for February
(Hour loads as fraction of annual loads)



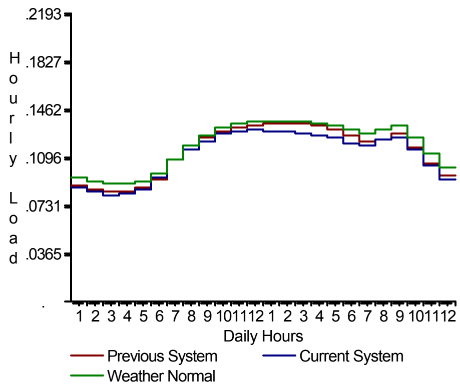
Load Shapes for March
(Hour loads as fraction of annual loads)



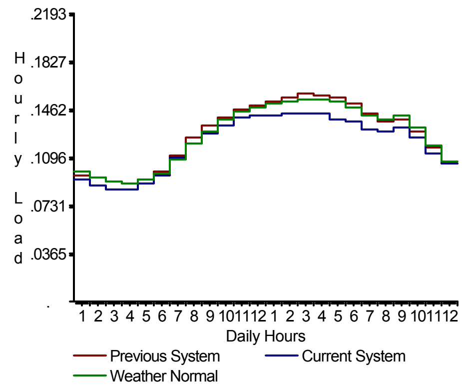
Load Shapes for April
(Hour loads as fraction of annual loads)



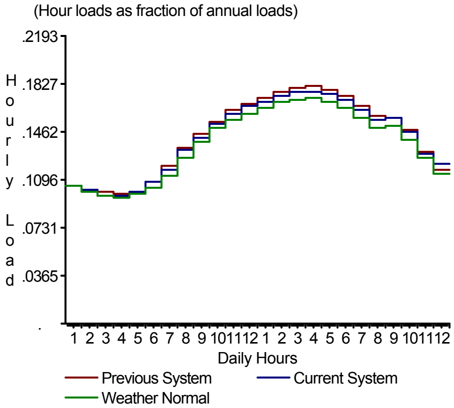
Load Shapes for May
(Hour loads as fraction of annual loads)



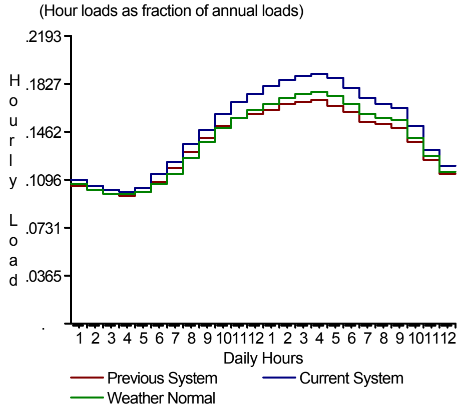
Load Shapes for June
(Hour loads as fraction of annual loads)



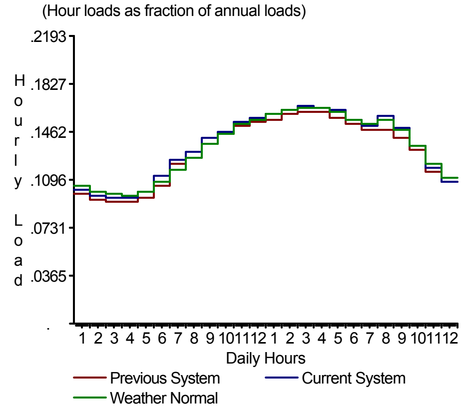
Load Shapes for July
(Hour loads as fraction of annual loads)



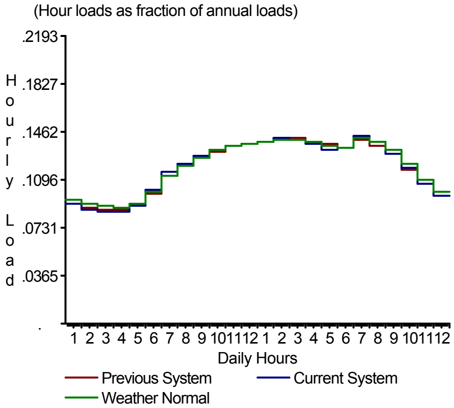
Load Shapes for August
(Hour loads as fraction of annual loads)



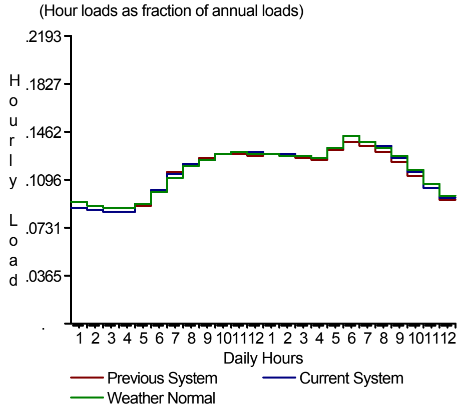
Load Shapes for September
(Hour loads as fraction of annual loads)



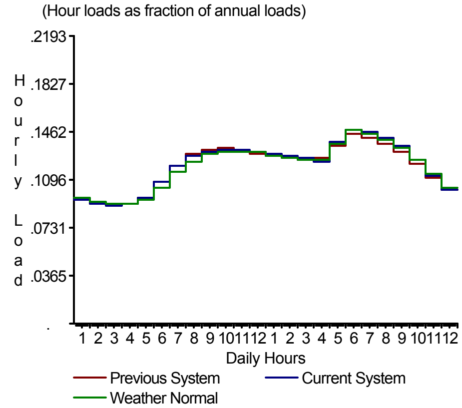
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)

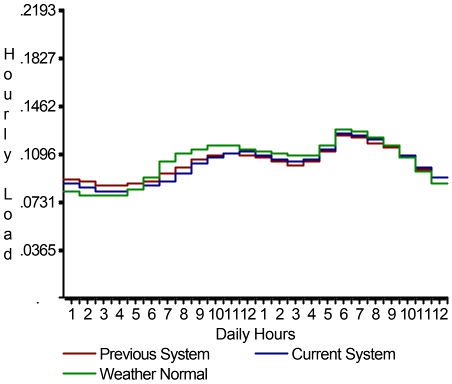


Load Shapes for December
(Hour loads as fraction of annual loads)

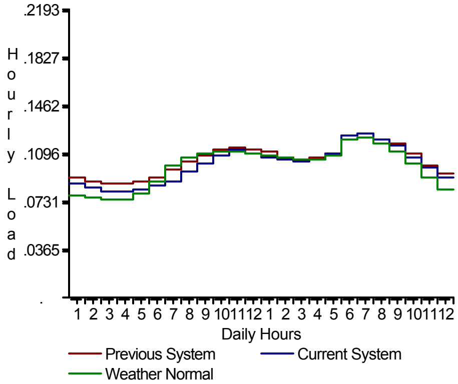


DAF System vs Weather Normal, Weekend, CNV
(Hourly loads as fractions)

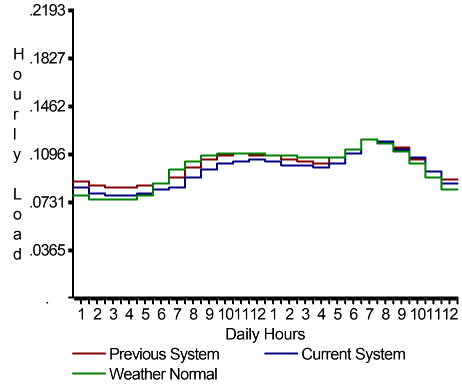
Load Shapes for January
(Hour loads as fraction of annual loads)



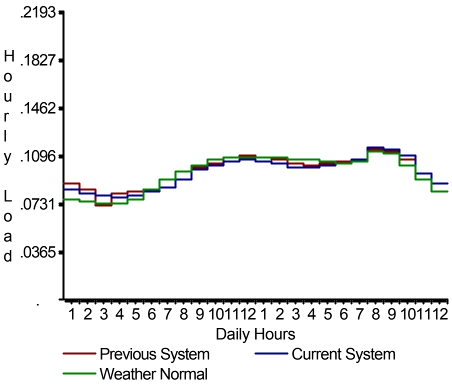
Load Shapes for February
(Hour loads as fraction of annual loads)



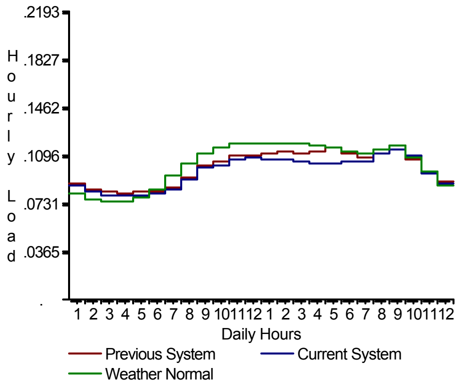
Load Shapes for March
(Hour loads as fraction of annual loads)



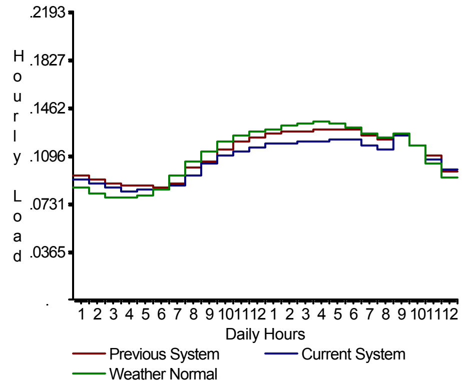
Load Shapes for April
(Hour loads as fraction of annual loads)



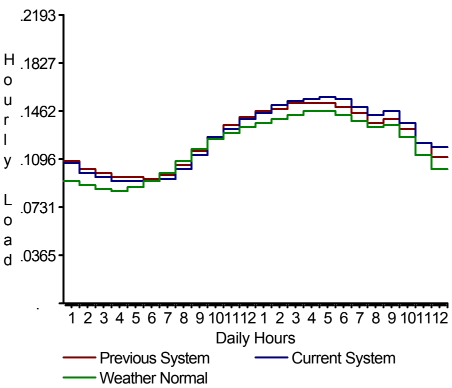
Load Shapes for May
(Hour loads as fraction of annual loads)



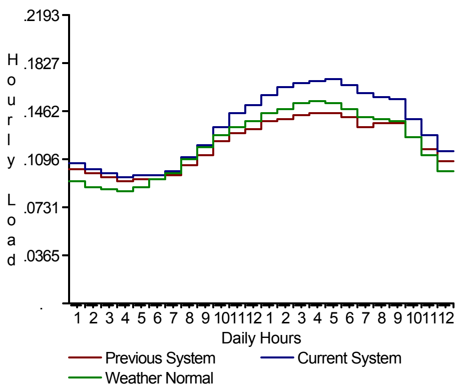
Load Shapes for June
(Hour loads as fraction of annual loads)



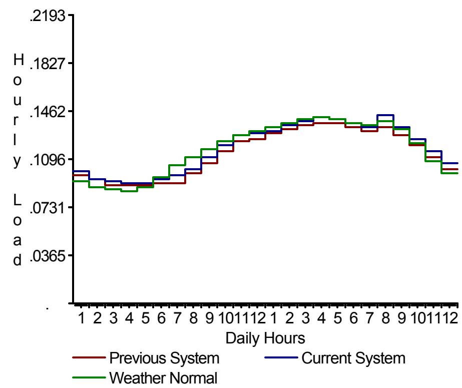
Load Shapes for July
(Hour loads as fraction of annual loads)



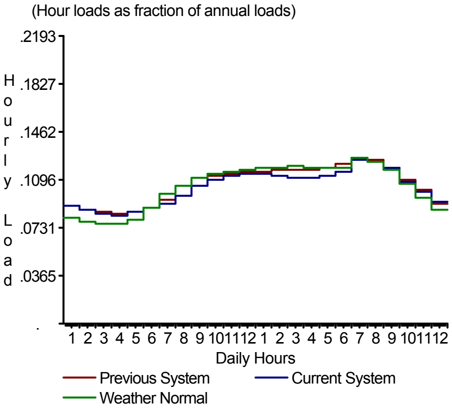
Load Shapes for August
(Hour loads as fraction of annual loads)



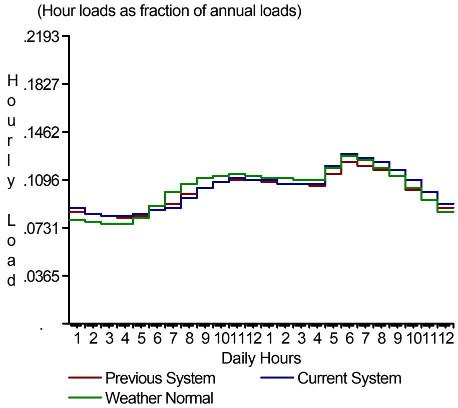
Load Shapes for September
(Hour loads as fraction of annual loads)



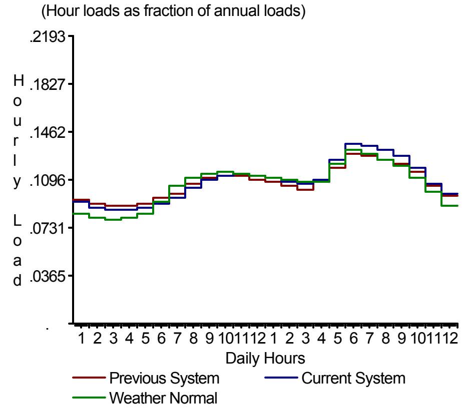
Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



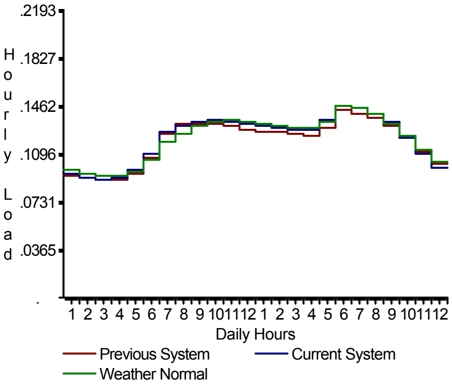
Load Shapes for December
(Hour loads as fraction of annual loads)



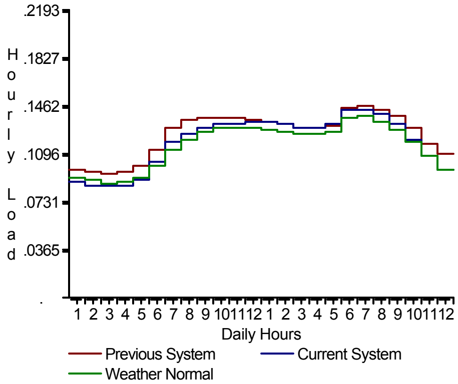
DAF System vs Weather Normal, Peakday, CNV

(Hourly loads as fractions)

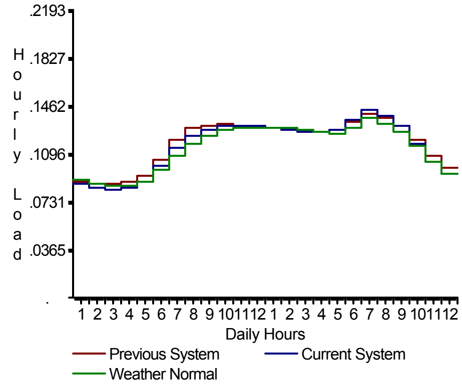
Load Shapes for January
(Hour loads as fraction of annual loads)



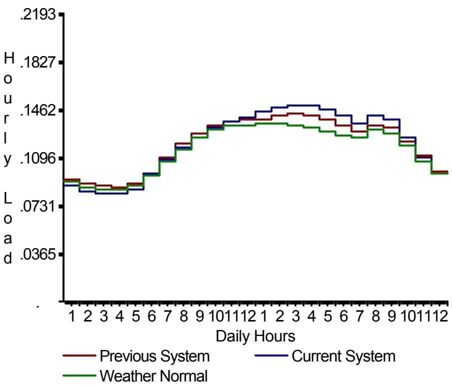
Load Shapes for February
(Hour loads as fraction of annual loads)



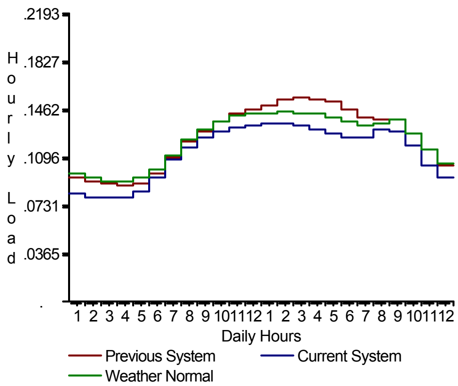
Load Shapes for March
(Hour loads as fraction of annual loads)



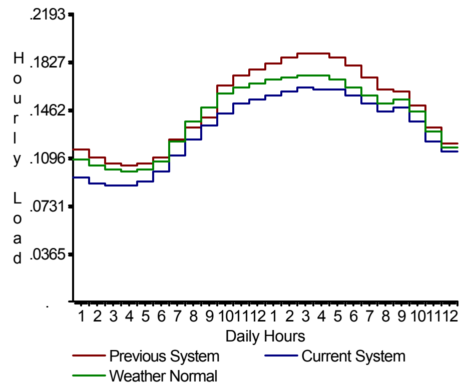
Load Shapes for April
(Hour loads as fraction of annual loads)



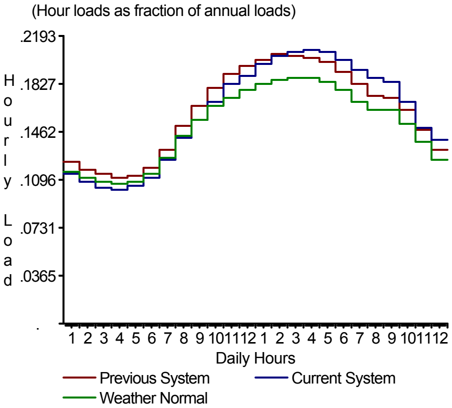
Load Shapes for May
(Hour loads as fraction of annual loads)



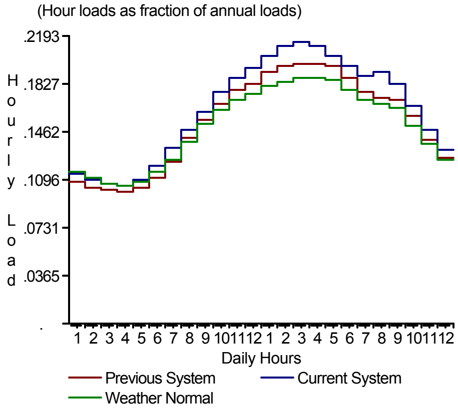
Load Shapes for June
(Hour loads as fraction of annual loads)



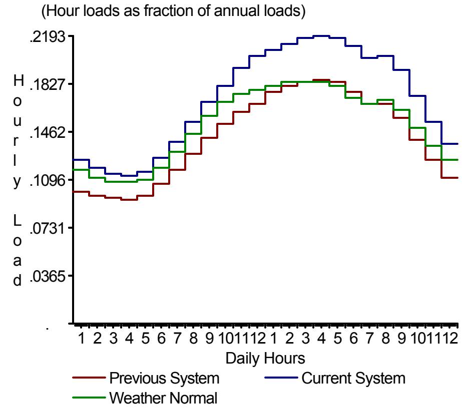
Load Shapes for July
(Hour loads as fraction of annual loads)



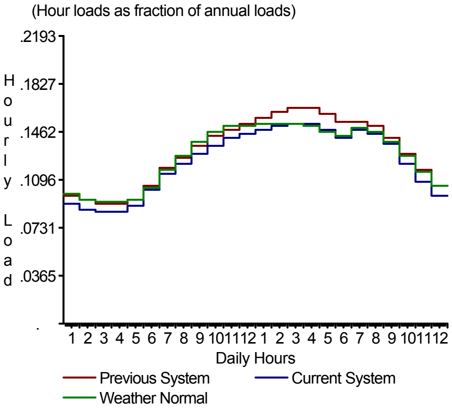
Load Shapes for August
(Hour loads as fraction of annual loads)



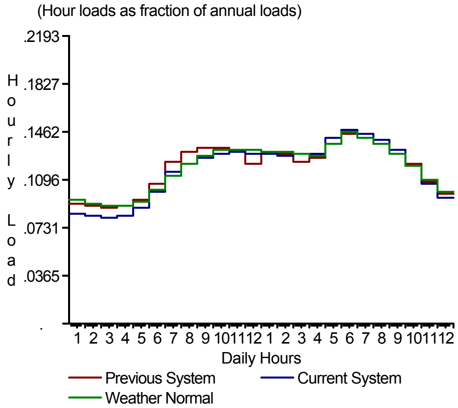
Load Shapes for September
(Hour loads as fraction of annual loads)



Load Shapes for October
(Hour loads as fraction of annual loads)



Load Shapes for November
(Hour loads as fraction of annual loads)



Load Shapes for December
(Hour loads as fraction of annual loads)