RESOLUTION NO. 2600

April 26, 2022

A RESOLUTION OF THE COMMISSION OF
PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY, WASHINGTON
APPROVING THE TEN-YEAR LOAD AND CUSTOMER FORECAST 2022-2031

WHEREAS, the Ten-Year Load and Customer Forecast 2022-2031 (Forecast) has been prepared by District staff and reflects customer load information; AND

WHEREAS, information contained in the Forecast is updated annually and is necessary for the District's revenue forecasting, Pacific Northwest Utilities Conference Committee's (PNUCC) and the Bonneville Power Administration's (BPA) regional load forecasting; AND

WHEREAS, the Forecast is used in conjunction with other fiscal planning tools including, but not limited to, the Cost of Service Analysis (COSA), Integrated Resource Plan (IRP), Rate Analysis, Budgeting, Power Requirements Planning, and Five-Year Capital Plan.

NOW, THEREFORE BE IT HEREBY RESOLVED that the Commission of Public Utility District No. 1 of Benton County approves and adopts the attached Ten-Year Load and Customer Forecast 2022-2031.

BE IT FURTHER RESOLVED that this Resolution supersedes Resolution No. 2571 dated April 27, 2021.

APPROVED AND ADOPTED by the Commission of Public Utility District No. 1 of Benton County at an open public meeting as required by law, this 26th day of April 2022.

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Lori Kays-Sanders, President

ATTEST:
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Jeffery D. Hall, Secretary

Public Utility District No. 1 of Benton County

Ten-Year Load & Customer Forecast 2022-2031

Contributors

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Tables

Figures

1. Executive Summary

The Ten-Year Load and Customer Forecast for 2022-2031 provides an estimate of the District's annual/monthly loads and customer counts for each customer class and the total system. The Forecast is developed annually and used as critical input to several analyses and processes including the Cost of Service Analysis (COSA), the Integrated Resource Plan (IRP), rate analysis, budgeting, power requirements planning, and the Five-Year Capital Plan.

The following are the key assumptions of the 2022-2031 Forecast:

1) Uses regression modeling to relate historical retail load/customers, economic, and weather variables to forecast future retail load/customers.
    a) 2021 Woods and Poole projections for county employment were used to forecast the number of customers
    b) Historical monthly load and customers are combined to find a historical usage per customer for each rate class
    c) Weather variables include the last 15-year average of heating degree days and cooling degree days
2) Includes 11.7 aMW of conservation achievements identified by the 2021 Conservation Potential Assessment's ten-year cost-effective potential.
3) Does not *explicitly* include electricity intensive loads (EIL) or electric vehicles (EV's) because each currently represents a relatively small component of the total system load for the District. The District did perform scenario analyses that consider electrification impacts of both EVs and Residential Natural Gas fuel switching. More detail of this can be found in **Section 4.0 Load Forecast Scenario Analyses.**

The Forecast expects the total system retail load to be 202.9 aMW in 2022 and the 5-year and 10-year annual average rates of growth to be 0.35% and 0.29%, respectively. These growth rates are lower than the previous forecast, primarily due to removing COVID recovery assumptions. For the previous forecast, the small general service load was assumed to be reduced in 2021, but then ramp back to normal, which resulted in artificially high 5-year and 10-year growth rates because of the first year being abnormally low. However, COVID-19 has continued to play a role in economic impacts to local small businesses and the future outlook will be difficult to project when this class returns to the pre-pandemic customer growth that was historically seen. Total system forecast for calendar year 2022 is about 0.1 aMW lower than was estimated by the 2021 forecast. The Forecast projects a total system retail load of 208.2 aMW in 2031, as shown below in **Figure 1-1.**

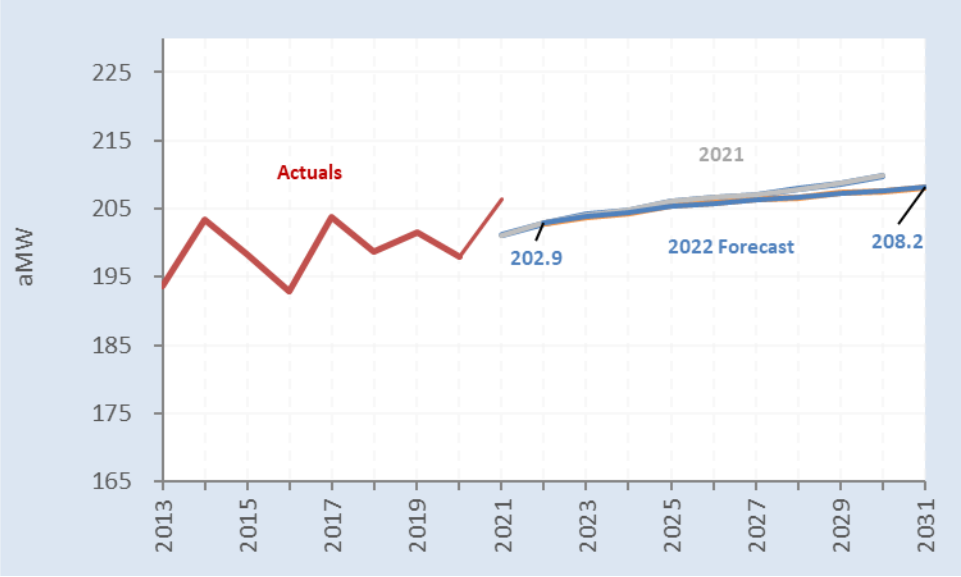


Figure 1-1 – Total system retail load comparison of 2022 Forecast to 2021 Forecast

The Forecast expects continued strong growth in the District's number of customers, with the total system number of customers forecast to increase by 709 customers in 2022. The dip in customers in 2023, as shown below, is due to an expected transfer of customers and load to the City of Richland and is anticipated to be completed in summer of 2023. Overall, the District is expecting to keep pace with recent historical annual growth in customers. The total system annual customer count increase is shown in Error! Reference source not found..

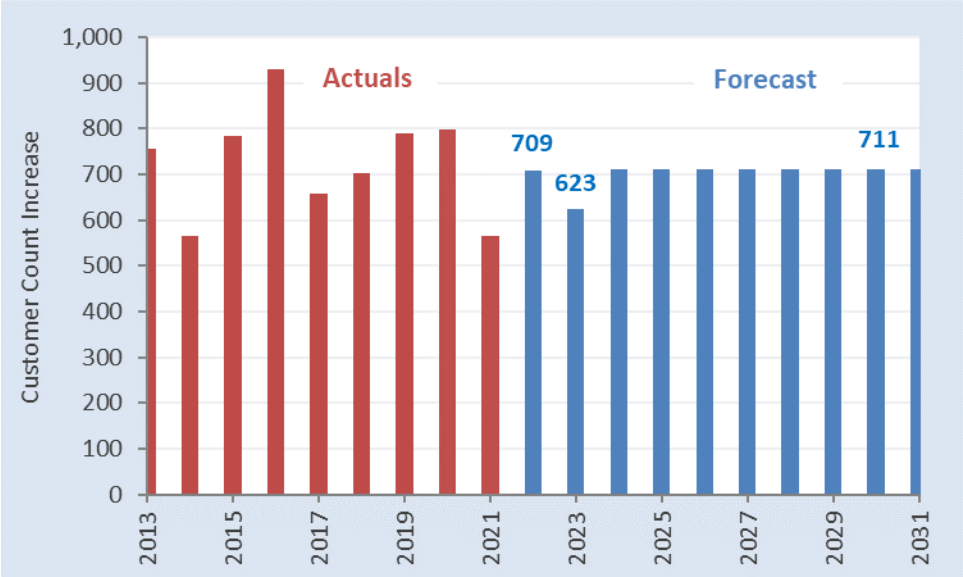


Figure 1-2 – Total system annual customer count increase

Overall, the Forecast reflects the continuing trend of the District having strong growth in our customer count, but a relatively low rate of retail load growth, primarily due to declining trends in energy usage per customer as a result of energy efficiency and conservation. The Forecast expects the total system annual usage per customer to decrease from 31.4 MWh/customer in 2022 to 29.0 MWh/customer in 2031, as shown below in **Figure 1-3**.

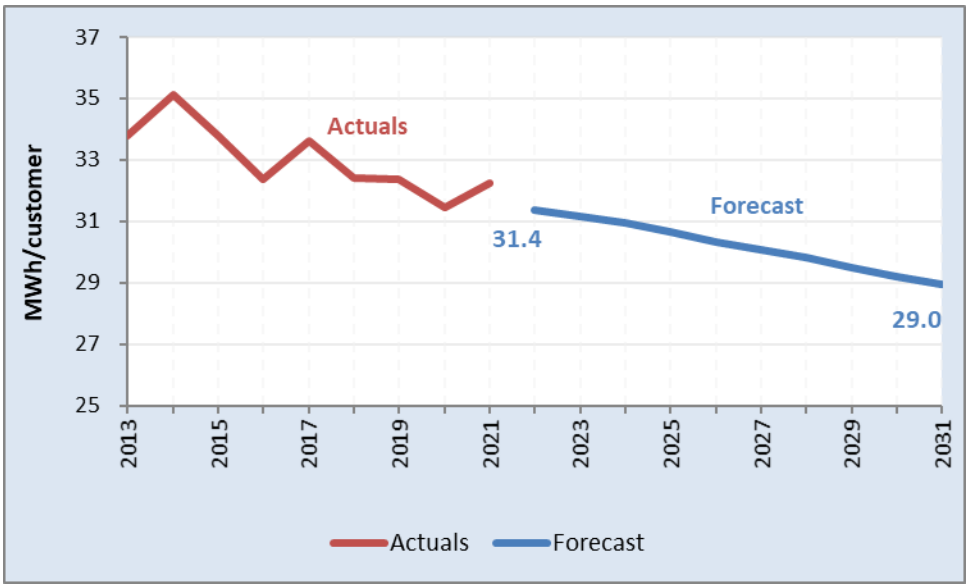


Figure 1-3 – Total system annual energy usage per customer

2. Forecast Methodology

2.1 Overview

The Ten-Year Load and Customer Forecast (Forecast) is a forecast of the District's total system and customer class annual and monthly energy (MWh), average demand (aMW), year-end number of customers, and average annual number of customers. The Forecast inputs include historical monthly loads and monthly customer counts by customer class, plus monthly historical and forecasted weather. The historical monthly load and customer counts are used to derive monthly usage per customer for each customer class. This historical usage per customer is then regressed against Heating-Degree Days (HDD) and Cooling-Degree Days (CDD) to account for weather's impact to loads. The District also produces an independent customer forecast driven by its relationship to Benton County total employment. The usage per customer and customer forecasts are combined to arrive at a class level forecast which is further aggregated to a total system forecast. Additionally, the conservation forecast and any manual adjustments as determined by District staff are also included. Additional details of the forecast methodology and assumptions are provided in the following sections.

2.2 Customer Classes

The Forecast results include a total system forecast that is a summation of the forecasts for each customer class. **Table 2-1** below summarizes the relationship of the District's customer classes (i.e. revenue classes) to its rate schedules and identifies the section of this report that discusses the Forecast results. Refer to the District's website for detailed descriptions of the rate schedules.

Table 2-1 – District customer class relationship to rate schedules

Customer Class	Rate Schedule(s)	Report Section
Total System	All	5.0
Residential	11, 12	6.1
Small General	21, 90, 95	6.2
Medium General	22	6.3
Large General	23, 24	6.4
Large Industrial	34	6.5
Small Irrigation	71	6.6
Large Irrigation	72, 73, 74, 75, 76	6.7
Street Lights	51	6.8
Security Lights	61	6.9
Unmetered Flats	85	6.10

2.3 Historical Data

Historical monthly retail energy sales (MWh) and monthly customer counts (i.e. number of active services), as reported by the District's monthly financial statements by customer class, are key inputs to the Forecast regression modeling. Additionally, the Forecast utilizes the historical monthly energy (MWh) and peak demand (MW) values reported by the Bonneville Power Administration (BPA) Meter Data Management Reporting (MDMR2) system for the District's total system load at the BPA point-of-delivery (Meter #8110).

2.4 Economic Data and COVID-19

Economic impacts are something that should be considered when forecasting future load and customer growth. The Energy Authority (TEA) subscribes to Woods & Poole Economics, a small independent firm in Washington DC that specializes in long-term county economic and demographic projections. Their forecasts, which are updated annually, provide some insight to potential growth for the future. The statements below from Woods & Poole provide a summary of their economic data, as described in *Technical Description of the Woods & Poole Economics, Inc. 2021 Regional Projections and Database:*

- "The Woods & Poole Economics, Inc. database contains more than 900 economic and demographic variables for every county in the United States for every year from 1970 to 2050. This comprehensive database includes detailed population data by age, sex, and race; employment and earnings by major industry; personal income by source of income; retail sales by kind of business; and data on the number of households, their size, and their income. All of these variables are projected for each year through 2050."
- "The Woods & Poole 2021 projections include historical data only through the year 2019, prior to the impact of the COVID-19 pandemic on U.S. population, employment, retail sales, and income. Data for the year 2020, the nadir of the COVID-19 impact, are forecast by Woods & Poole based on Bureau of Labor Statistics (BLS) total employment change 2019 to 2020 for all U.S. counties. Total U.S. retail sales data by kind of business from the Census Bureau for 2020 were used to adjust county forecasts for 2020 to reflect the COVID-19 impact. BEA Gross Domestic Product (GDP) and total personal income by source for the year 2020 were also used to adjust county forecasts for 2020 to reflect the COVID-19 impact. Data for personal current government transfer receipts for 2020 are from BEA National Income and Product Account (NIPA) estimates and were used to adjust county forecasts in 2020. BEA personal current government transfer receipts for 2020 were provided for unemployment benefits and all other transfers. Unemployment benefits transfers in 2020 were estimated based on BLS total number of people unemployed in 2020 by county."
- "The 2021 Woods & Poole projections do not show a significant long-term economic impact from COVID-19 beyond 2022."

TEA's general assessment was that Woods and Poole Economic data has proven to be a fairly reliable source of economic predictions for longer term projections and can be used as starting point to link to customer growth in multiple rate classes. For this reason, the Total Employment in Benton County was used in the creation of the customer forecast.

2.5 Weather Data

Weather data from the Tri-Cities Airport Pasco, WA weather station is a key input for the Forecast's regression modeling. **Table 2-2**Table 2-2 identifies the two key weather variables that are utilized.

Table 2-2 – Types of weather variables utilized for regression modeling

Weather Variable
Heating degree days (HDD)
Cooling degree days (CDD)

Heating degree days represent days where customers are forecasted to need heating services; whereas, cooling degree days represent days where customers are forecasted to need cooling services. As the need for heating and cooling services increases, the District's customers' energy usage increases as well. For each customer class, the regression analysis tested a range of base temperatures from 60 to 70 degrees Fahrenheit and selected the base temperature corresponding to the highest R^2 value. Monthly degree days were derived from hourly calculations aggregated for the month and then divided by 24.

In addition to the historical weather data being critical for the regression modeling, the data is also utilized to calculate a 15-year average for each weather variable to define the "normal weather" assumed for the base case forecast. **Figure 2-1**Figure 2-1 shows the annual historical values for degree days including the 15-year average at the 61-degree base. **Table 2-3** summarizes the 15-year minimum, average, and maximum values for the weather variables.

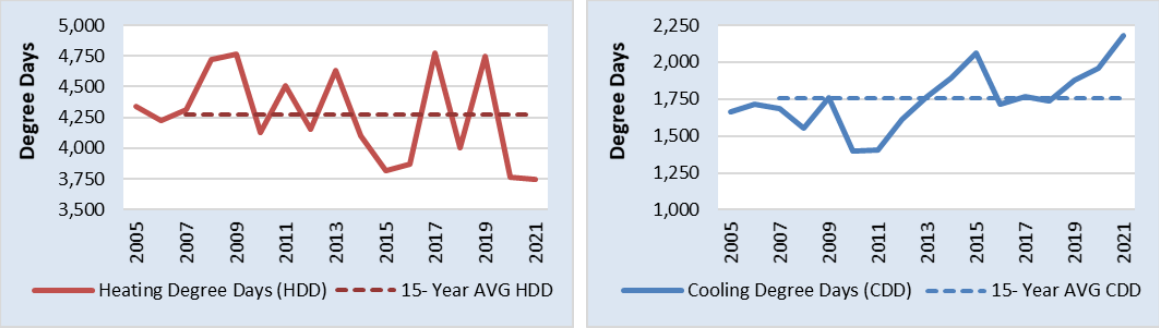


Figure 2-1 – Annual heating and cooling degree days from 2005-2021 at the Tri-Cities Airport

Table 2-3 – Weather variables 15-year min., avg. and max. values at Tri-Cities Airport

Weather Variable	Minimum	Average (Base Case)	Maximum
Heating degree days (HDD)	3748	4270	4775
Cooling degree days (CDD)	1397	1757	2177

2.6 Regression Modeling

The main component of the Forecast methodology is the regression modeling that determines the correlation, or relationship of historical loads and customers with historical weather and economic variables to produce a forecast. The District provides historical load and customer data to The Energy Authority (TEA), who the District has contracted with to perform regression modeling for the load forecast. For this year's forecast TEA has used *R-Programming Language* to perform statistical computing and creation of this year's load forecast model. R is often used among data experts and statisticians for data analysis and modeling.

TEA first separates the load forecast process into two sets of processes. The customer forecast portion must be completed first to use the output to assist with the second process. The customer forecast model starts by utilizing the historical number of customers for a given month and rate class utilizing data beginning in 2013. Customer data prior to 2013 showed several "step" changes which could make the regression provide an incorrect forecast or attempt to add additional step changes in the future.

Starting in 2013 helps eliminate counting errors or counting changes that impacted these historical values. TEA takes the provided data and runs a regression utilizing *Woods and Poole* economic data to establish a relationship between Total Employment in Benton County and customer growth. The output of this regression model is the initial customer forecast which is analyzed against recent customer growth trending for credibility.

The second process is creating the load forecast model which utilizes the customer forecast component from above to achieve the initial load results. The new modeling first takes both historical monthly load and customers by rate class to derive historical monthly usage (kWh/customer). A regression analysis on historical monthly usage is completed and plotted against historical monthly weather (HDD, CDD) to help build the model. **Figure 2-2** below represents the steps used in the load forecast process.

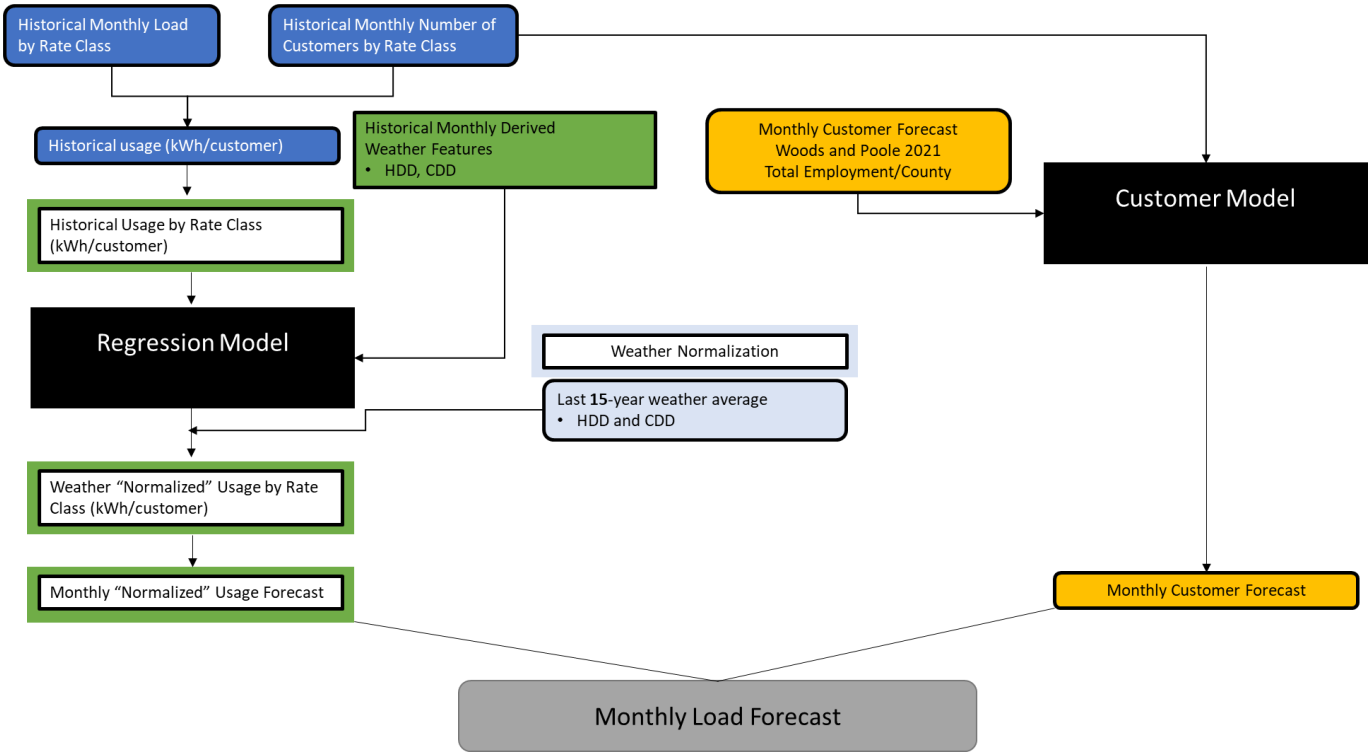


Figure 2-2 – Load Forecast Model

Weather variables from a monthly average of the last 15-years are used as input into the model for the assumed weather that will drive load going forward. This weather is the expected "normal" weather and helps establish a monthly usage per customer forecast by class. The last and final step is to apply this monthly normalized usage and multiply it by the monthly customer forecast to get the monthly load forecast. In some cases, District staff has overridden the model output (see Section 2.9 – Manual Adjustment); however, this section is intended to document the base TEA models as they evolve over time.

2.7 Monthly Shaping

The regression modeling uses historical monthly billing data and monthly weather variables to create a monthly forecast. After determining the monthly values, they are aggregated to annual forecast values where they are shaped using a 5-year average of the percentage of the month's billed retail load compared to the annual billed retail load. Monthly regression modeling on actual usage during a specific month would be preferred, but the District is currently limited to billing data. For example, a customer may be billed in February for usage that occurred from January 5 to February 5. Therefore, it would not be valid to find a correlation between the customers billed "February usage" and February weather, given that most of the usage occurred in January. The District is working on using advanced meter data combined with business intelligence analytics to overcome this limitation, which is expected to give better deliverables in the future.

2.8 Conservation Forecast

In addition to natural energy saving effects due to electricity rate inflation and economic conditions, the District has an established conservation program in place to proactively assist our customers with efforts to reduce their energy consumption. In order to account for these extra efforts, the District uses the latest Conservation Potential Assessment (CPA) report as an input to the Forecast. The CPA details recent historical conservation savings and provides a 2-year, 4-year, 10-year and 20-year forecast of conservation savings by customer sector. In October 2021, the District's Commission passed Resolution No. 2582 to adopt a new CPA, which is used as the input for the 2022 Forecast. CPA's are conducted every two years and this input is currently being updated in even years. **Figure 2-3** below shows the historical achieved conservation from 2013 to 2021 by customer sector.

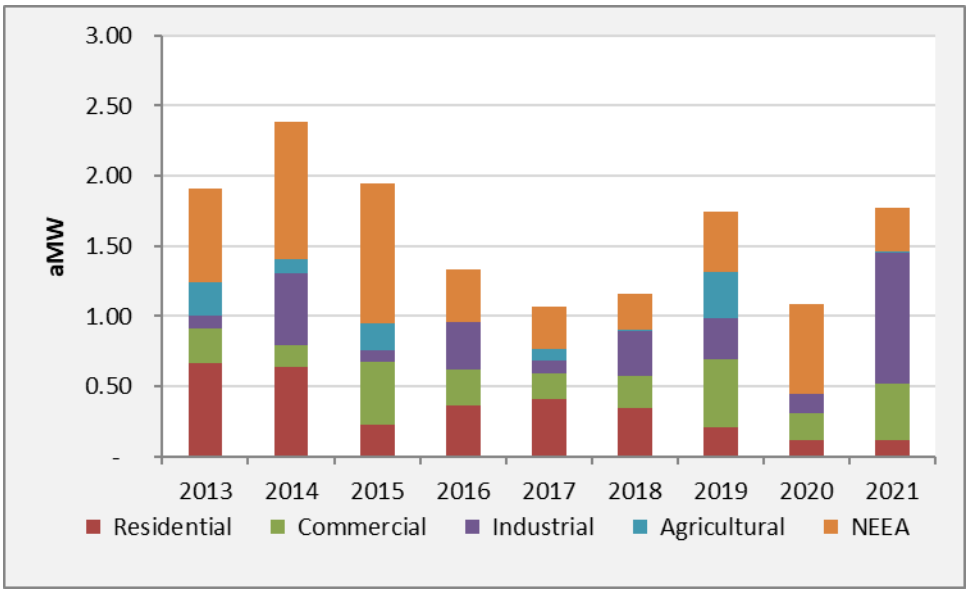


Figure 2-3 – Historical annual conservation by customer sector from 2013-2021

The CPA's forecasted conservation by customer sector is analyzed by staff, allocated to the District's customer classes and then subtracted from the forecasted loads to account for load reductions associated with conservation activities. District staff has observed that approximately 1.0 aMW of annual conservation has been consistently achieved since the year 2000. Although conservation achievements

were below historical levels in 2020 due to restrictions during the initial phases of the COVID-19 pandemic, the District is back on track with strong conservation achievements in 2021.

In order to account for the impact of historical conservation activities influencing the regression model's trend, District staff subtracts 1.0 aMW from the CPA's annual conservation projection. Therefore, the Forecast only includes the expected annual incremental conservation savings above or below 1.0 aMW.

The Forecast reflects the District's practice of targeting to achieve 60% of its 2-year target in the first year and 40% in the second year, as well as each customer class's changing percentage share of the total potential over time. The 10-year cumulative conservation potential is about 11.7 aMW. **Figure 2-4** shows the forecast of total annual cumulative conservation by customer class for the years 2022-2031.

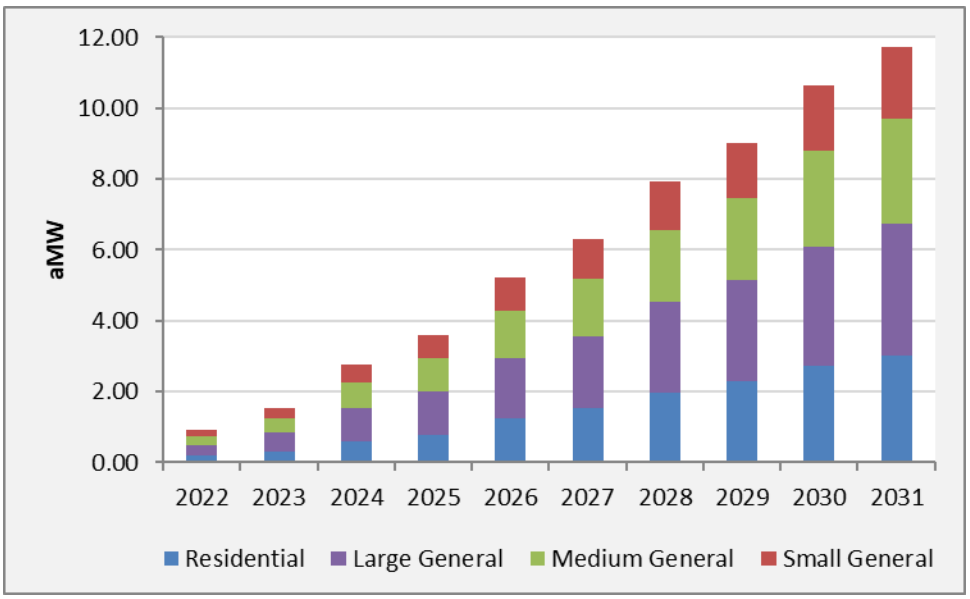


Figure 2-4 - Forecast of total cumulative conservation by customer class from 2022-2031

2.9 Manual Adjustment

Staff uses professional judgement to implement manual adjustments to the regression model's forecast, primarily for two reasons: 1) to adjust for step-changes or high growth in load or customers that the regression analysis trend would not be able to consider, and 2) to adjust for modeling results that do not reflect reasonable expectations. In general, it is preferred to make as few adjustments as possible and instead to focus on improving the modeling methodology.

The regression modeling attempts to minimize the forecast error such that the modeled values align closely with the historical actuals, but there is always some model error. At times there is a need to adjust the starting point for the first year of the forecast to account for the forecast error between the previous years modeled and actual value. Recent historical (2017-2021) load and customer trends also provided insights and known or upcoming impacts to specific rate classes. A combination of the initial model results and analysis of recent history were both utilized in the formulation of the 2022 load forecast.

Manual adjustments were also made for customer growth and loss of load due to transferring some customers to the City of Richland (COR) which is expected to occur in 2023. A complete list is shown in **Table 2-4** summarizing the manual adjustments that were utilized for the Forecast by rate class.

Table 2-4 – Manual adjustments applied to the forecast after regression modeling

Customer Class	Adjustment Type	Adjustment Description
Residential	Customer & Load	1) Increased customer growth to achieve about 57 cust./month 2) Removed customer first year forecast error 3) Adjusted customers down by 87 in 2023 due to expected transfer to COR. 4) Increased load results to linear trend since 2013
Small General	Customer & Load	5) Decreased customer growth to achieve about 3 cust./month 6) Removed customer first year forecast error 7) Adjusted customers down by 1 in 2023 due to an expected transfer to COR. 8) Increased load results to linear trend since 2013
Medium General	Customer	9) Removed customer first year forecast error
Large General	None	10) Acceptable model results
Large Industrial	Load	11) Increased load to trend 2019-2021, then held flat
Small Irrigation	Customer & Load	12) Decreased customer growth to show a decline of about 3 customers annually 13) Increased load to trend 2016-2021, then held flat
Large Irrigation	Customer & Load	14) Increased load to trend 2016-2021, then held flat 15) Adjusted customers down by 1 in 2023 due to an expected transfer to COR
Streetlights	Load	16) Acceptable. Held flat to 2021 load
Security Lights	Customer	17) Removed customer first year forecast error 18) Customer count declines at about 2 customers/month
Unmetered Flats	Load	19) Adjusted load down to start where 2021 ended

2.10 System Losses

The historical customer class load data used for the Forecast is based on the District's billed load, which includes both District metered and unmetered loads. The unmetered loads (street lighting, security lighting and flats) utilize estimates for monthly energy consumption. The aggregation of District billed load is referred to as "retail load" and this term implies the exclusion of losses associated with serving this load over the District's transmission and distribution system or the Bonneville Power Administration's (BPA's) system. Refer to the following paragraphs for additional background on system losses and to **Appendix A, Table** 7-1 for a summary of the how the losses impact the total system load.

The Bonneville Power Administration (BPA) separately meters the District's load. The District's contract with BPA defines both a "point-of-delivery" and a "point-of-metering". The aggregation of load measured by BPA's points-of-metering will include the District's entire retail load, as defined above, but only a portion of the losses associated with the District's transmission and distribution system, because not all of BPA's meters are physically positioned to measure 100% of the losses at their locations. For example, BPA metering is typically installed on the low voltage side of a substation power transformer and therefore does not measure the losses associated with the District's power transformer. Another

example is when BPA metering is installed at the substation, but the point-of-delivery is defined at a point upstream where the District's transmission line taps BPA's line. For billing, BPA estimates the losses associated with the difference between the point-of-metering and the point-of-delivery. BPA's billed aggregate load at the point-of-delivery, also referred to as the District's "wholesale load", is inclusive of the District's entire retail load and the District's entire transmission and distribution system losses.

The difference between BPA's billed total load at the point-of-delivery and the District's billed retail load is equal to the District's transmission and distribution system losses. These losses are typically represented as a percentage of the total point-of-delivery load. The Forecast assumes that the District's transmission and distribution system losses are 3.4%, which is the average of the last 10 years of historical annual losses.

The District is not only responsible for procuring the energy necessary to serve our customers' load and our system losses, but also the losses associated with the transport of electricity over BPA's equipment and transmission lines from regional generation resources to our points-of-delivery. BPA transmission customers are required to return real power losses to BPA. Schedule 11 of BPA's Open Access Transmission Tariff (OATT) sets the real power loss factor by season, at 1.95% of kWh delivered for the non-summer period and 2.31% for the summer period. The BPA summer period is identified as June 1, 12:00 AM to September 1, 12:00 AM.

2.11 Peak Forecast

To calculate a monthly peak forecast, a five year monthly average load factor was calculated using the historical relationship between the BPA point-of-delivery total system monthly average energy and monthly peak demand. The average load factor was then applied to the monthly load forecast to generate peak demands for every month. **Appendix A** – Summary Tables, **Table** 7-1 includes the historical and forecast of the system peak hourly demand.

3. Forecast Considerations

3.1 Forecast History

Figure 3-1 shows the past six years of ten-year forecasts of total system retail load, actual load and the current 2022 ten-year forecast. As seen in the graph, the District's retail load forecasts have continued to project a fractional growth rate with the most recent years being below 0.5%. The Forecasts' growth rates have maintained similar growth patterns the last several years.

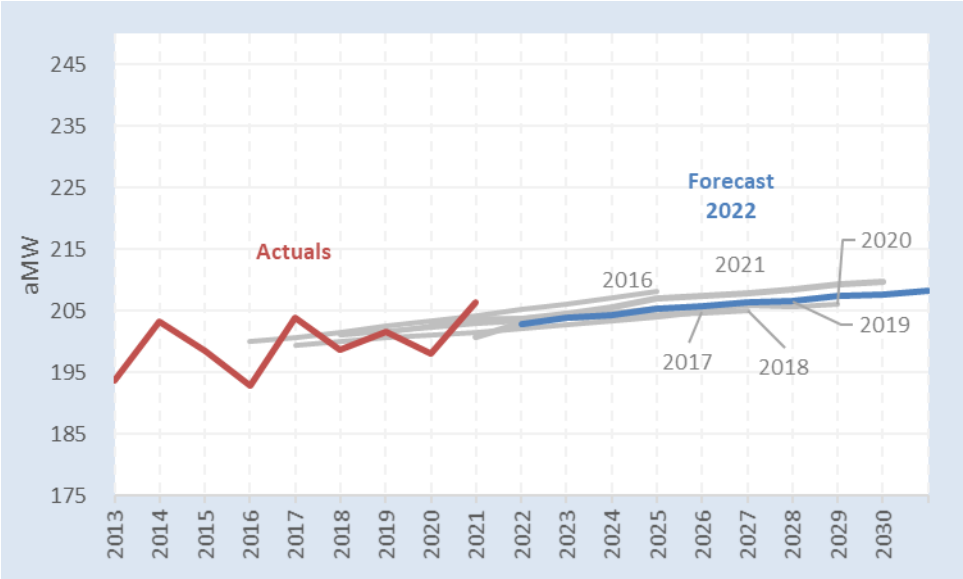


Figure 3-1 – Total system retail load ten-year forecasts from 2016 to 2022

3.2 Forecast Variances

Several factors can cause variations from the Forecast compared to actuals, including weather, large irrigation customer crop rotations, and unforeseen new loads or loss of loads. The most common driver of the variance is weather, given that the Forecast is based on average weather. **Figure 3-2** below shows that over the past 11 years the District's total system retail load forecast variance has ranged from +4.3% to -3.6%. For an annual forecast near 200 aMW, a 5% variance is equivalent to 10 aMW.

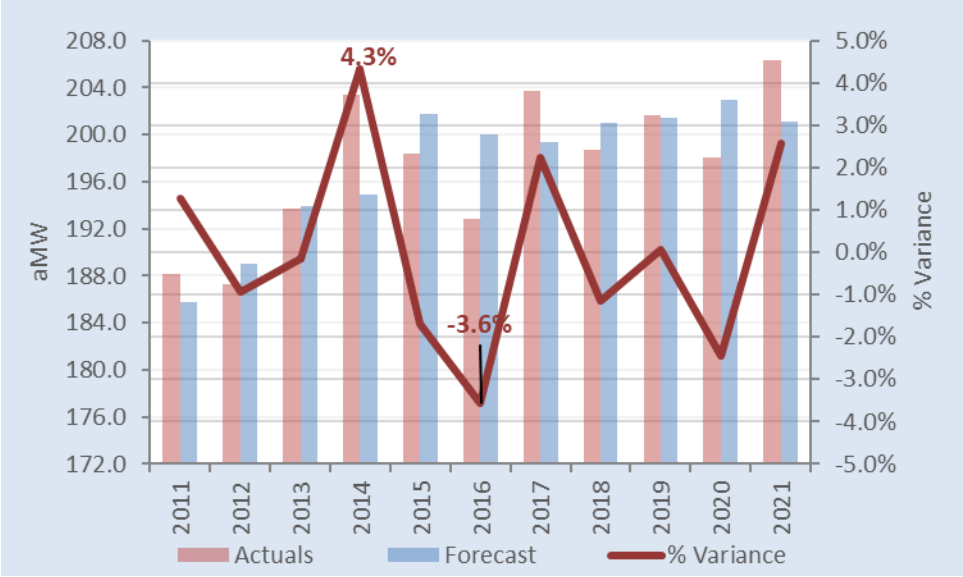


Figure 3-2 – Forecast vs. actuals variance of total system retail load from 2011 to 2021

In addition to the variance of the total system retail load, the District considers variances by customer class. In 2021, general service rate classes show mixed results after returning from pandemic level usage and irrigation loads increased due to extreme June 2021 temperatures and lack of precipitation. **Table 3-1** shows the variance by customer class for the 2021 forecast versus 2021 actuals.

Table 3-1 – Forecast vs actuals variance of retail load (aMW) by customer class for 2021

Customer Class	2021 Forecast	2021 Actual	2021 % Variance
Residential	83.08	81.26	-2.20%
Small General	13.78	13.27	-3.71%
Medium General	20.67	20.92	1.18%
Large General	26.21	27.62	5.41%
Large Industrial	7.29	7.43	1.93%
Small Irrigation	1.70	1.91	12.37%
Large Irrigation	47.66	53.19	11.61%
Street Lights	0.29	0.27	-5.95%
Security Lights	0.10	0.10	-6.23%
Unmetered Flats	0.35	0.34	-2.15%
Total System[1]	**201.13**	**206.31**	**2.58%**

1) Total of class amounts may differ from Total System due to rounding.

3.3 Forecast High & Low Cases

To account for some of the load uncertainties, the District's Forecast includes high and low cases, in addition to a base case load forecast. Similar to last year's forecast, the base case regression model output is adjusted up/down based on a statistical analysis of the historical percentage deviation from the average from 2002 to 2021 for each customer class. These historical deviations are representative of variances that can be expected going forward, including due to above or below average weather. For the 2022 Forecast, the high and low cases are ± 4.6% (± 9.2 aMW) in 2022 and ± 4.6% (± 9.5 aMW) in 2031. **Figure 3-3** shows graphically the historical annual variability along with the Forecast base, high, and low case forecasts.

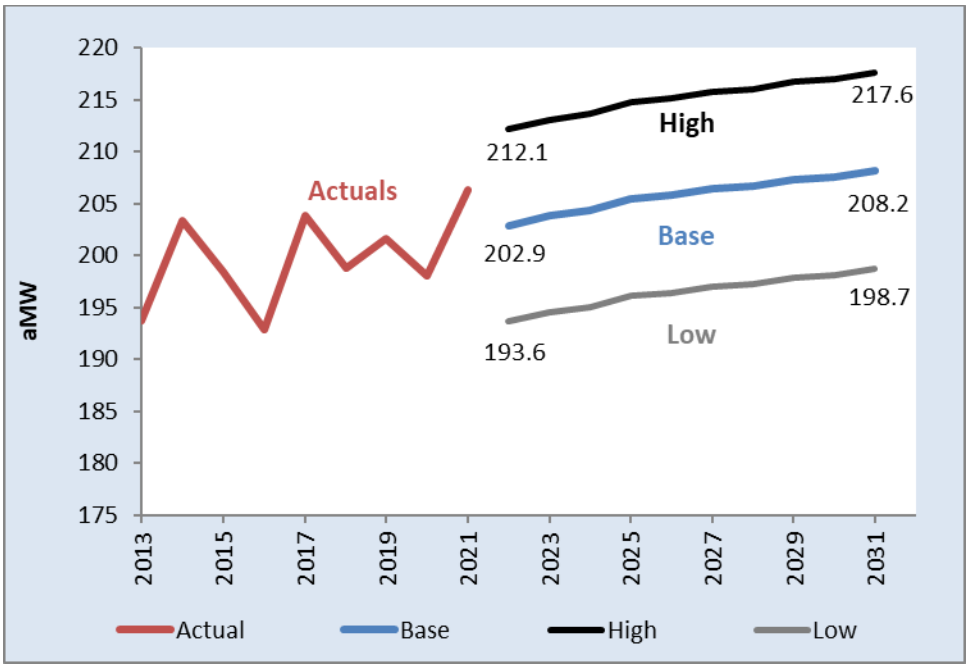


Figure 3-3 –Total system retail load historical and base forecast with high and low case

3.4 Load Preservation and Load Growth

Many utilities are experiencing lower retail sales growth due to several factors which may include general economic activity, energy efficiency programs, fuel-switching or customer generation from rooftop solar installations and community solar installations. Flattening or declining retail sales puts upward pressure on customer retail rates as general inflation causes costs to increase while sales remain stagnant. More importantly, about one-half of total utility costs are fixed costs such as poles, wires and substations required to safely and reliably serve customer loads. Fixed costs do not decrease as sales flatten or decrease.

In the current environment, it is important for the District to preserve existing load and continue to have positive load growth. The District has surplus energy above what is required to meet loads ("long on resources") on an annual average basis in an average water year and the excess energy from its resources is sold in the wholesale market. Wholesale market prices have declined significantly in recent years as a result of overbuilding of renewable generation due to state mandated renewable energy policies and because of large increases in natural gas supplies due to fracking technologies, which has kept natural gas prices low. By growing loads and selling the District's energy at retail rather than wholesale, it will decrease pressure on customer retail rates. The District has partnered with TRIDEC and other local agencies to market and highlight areas within the District's service territory that have excess capacity and are ready to interconnect new loads.

Over the last two years the market has seen a bounce back in market price volatility due to uncertainly at both state and regional levels surrounding resource adequacy concerns and Greenhouse Gas (GHG) regulatory programs. Recent clean energy legislation bills and topics like Cap-and-Trade or Carbon Tax programs are shifting states like Washington to procuring and using clean energy resources for the future. Many of these programs push other sectors such as transportation, heating/cooling building codes and infrastructure, and others away from fossil fuels and towards electrification. As demand for

clean electricity increases, higher pricing is expected to follow suit until additional generation resources are built to balance demand. It's unclear how quickly these sectors will move towards electrification, but it's anticipated that load will likely grow over the next 10-20 years as these programs are implemented. The District has performed scenario analyses around electrification and electric vehicles, which can be found in section **4.0 Load Forecast Scenario Analyses** below.

3.5 Customer Generation

In 2021 the District added 141 new services for customer generation net metering, which was slightly less than the 169 new services added in 2018 but significantly more than the 56 added in 2020. Slower solar growth after 2019 was expected due to the end of the Washington State incentive funding. However, in 2020 the federal Solar Investment Tax Credit (ITC) was extended so interested residential parties could qualify for a 26% ITC through the end of 2022 and 22% in 2023 prior to ending in 2024.The District expects on average 3-4 new services per week in 2022-2023 with the ITC still being offered.

The net metering services are predominantly roof top solar, with only about 3 services being wind generators. In addition to its net metered customers, the District has 154 customers that funded the construction of two community solar projects, the 74.8 kW Ely Community Solar Project in Kennewick, WA (commissioned July 1, 2015) and the 24.6 kW Old Inland Empire (OIE) Community Solar Project in Prosser, WA (commissioned March 4, 2016).

The aggregate of the District's customer generation, including the District's community solar projects, reduced the District's annual retail load in 2021 by about 0.75 aMW or 6,570 MWh. The single hour maximum generation was 3.8 MW from 1:00-2:00 pm on June 5, 2021. The impact of customer generation reducing load has not been explicitly modeled in the Forecast.

3.6 Electricity Intensive Loads

The District has assigned the term Electricity Intensive Loads (EIL) to the emergence of new loads associated with cryptocurrency mining and block chain operations. The District has developed a policy to address the requirements and risks associated with EIL customers. As of March 2021, the District has identified 6 customers operating a total of 9 EIL services. The combined load of all EIL customers in 2021 was about 2.6 aMW, which is up about 2.1 aMW compared to 2020. The District's largest EIL service accounted for about 1.8 aMW in 2021. Several of these customers increased their usage between May and Dec of 2021, likely impacted by the economic conditions for mining cryptocurrency. The 2022 Forecast does not explicitly model new EIL growth, but the District will continue to monitor these types of loads in the years ahead.

3.7 Electric Vehicles

Another possible source of load growth is electric vehicles (EVs). The impact of electric vehicles on load growth has not been explicitly modeled in the Forecast, but the District conducted additional analyses that include potential EV outcomes in the **4.0 Load Forecast Scenario Analyses** section below. EVs present an opportunity for the District to offset the impact of flattening or declining retail sales by preserving and possibly growing loads. Like any new business that enters the community, EVs have the potential to generate more energy sales over the long run that will help mitigate upward pressure on rates. The move to clean energy use will be something to monitor closely over the next 10-20 years, especially as EVs become more popular and affordable.

The District passed Resolution No. 2521 on November 12, 2019 to create an Electrification of Transportation Plan that will allow the District to offer incentives/rebates, advertise, and promote the adoption of EV's. Following the adoption of Resolution No. 2521, the District began promoting the

benefits of owning an electric vehicle by offering a $250 rebate to customers who purchase or lease a new electric vehicle. The District has provided 15 total rebates for EVs through March of 2022 since adopting the resolution.

The Washington State Department of Licensing (WA DOL) maintains a database and website of electric vehicles registered in Washington State. The data set includes both plug-in hybrid electric vehicles (PHEV) and battery electric vehicles (BEV). District staff is monitoring this data, particularly for increases in BEVs because this type of EV qualifies for a District rebate. BEVs are the predominant focus and long-term direction of the EV industry and has greater charging load impact than PHEV technology. According to the data, there was an increase of 110 BEV vehicles registered in the last year to one of the 3 cities in **Table 3-2** below.

Table 3-2 – Number of electric vehicle registrations by type and city as of Mar. 2022

City	Plug-in hybrid electric vehicle (PHEV)	Battery electric vehicle (BEV)	Grand Total
Prosser	11	13	24
Benton City	22	20	42
Kennewick	175	279	454
Grand Total	**208**	**312**	**520**

Assuming a single BEV uses 2,800 kWh annually–based on a Chevy Bolt at 28 kWh/100 miles driven 10,000 miles per year–the 312 BEV's would add about 0.09 aMW of annual load. If all 312 BEV's charged at the same time using a level 2 charger (240-volt, 40 amp) it would add about 3.0 MW of peak demand.

3.8 Natural Gas/Electrification

A source of potential load growth for the District could come in the form of natural gas transition and electrification due to current climate initiatives and political decisions in the state of Washington. These changes could mean consumers options and alternatives will be limited in new construction or renovation of homes or businesses. **Table 3-3** below provides the District's best estimate from currently available spatial and billing data through October of 2021, the total number of service locations and their current energy source(s). It will be important for the District to recognize the impact of future legislation and remain nimble in addressing new potential loads and/or load shifting.

Table 3-3 – Service Locations in Benton County by Energy Source

Energy Source(s)	# of Service Locations	% of Total
Full - Electric	38,079	70.6
Gas/Electric	15,932	29.4
Grand Total	**54,238**	**100.0**

4. Load Forecast Scenario Analyses

4.1 Overview

As mentioned in the previous sections, there are many considerations and future impacts to load as requirements shift over the next 10 to 20 years. Additional solar installations will reduce load during the mid-morning to late afternoon, but incremental load from new electric vehicles and potential fuel-switching from natural gas could push loads in the other direction with new regulatory action or customer adoption. Given the potential for many different future outcomes, the District analyzed an array of load scenarios that may come to fruition and could change loads significantly from the expected "base" forecast.

4.2 Natural Gas/Electrification Scenario

In 2021 HB 1084[1] was introduced during Washington State's legislative session, which if enacted into law would have prohibited natural gas infrastructure for space and water heating in both new residential and commercial construction and additionally require the removal of natural gas systems when renovation is undertaken on existing buildings.[2] Many cities in other states such as California, New York, and Massachusetts have already adopted similar codes and requirements. Given the current regulatory climate in the state and recent passages of both the Clean Energy Transformation Act (CETA) and the Climate Commitment Act (CCA), it may be only a matter of time until another bill similar to HB 1084 will pass in an upcoming legislative session. Due to the rapidly changing environment, the District thought it would be important to consider the load impacts of such a bill. However, due to data availability and the large range of electric consumption by certain rate classes, the District only performed this analysis on the residential rate class.

Analyzing historical service locations through October 2021 within the District's service territory and leveraging recently acquired spatial data and technology, the District was able to analyze which residential service locations across the territory have a gas meter present on the premises on each county parcel the District currently serves. **Figure 4-1** below, shows a small snapshot of Kennewick parcels which are color coded. Fully electric customers are shown in blue and gas/electric customers in gold.

[1] 2021 HB 1084 Reducing GHG - https://lawfilesext.leg.wa.gov/biennium/2021-22/Pdf/Bills/House%20Bills/1084-S.pdf?q=20220324095112

[2] State Level NG Ban - https://www.natlawreview.com/article/washington-state-legislature-considers-first-its-kind-state-level-natural-gas-ban

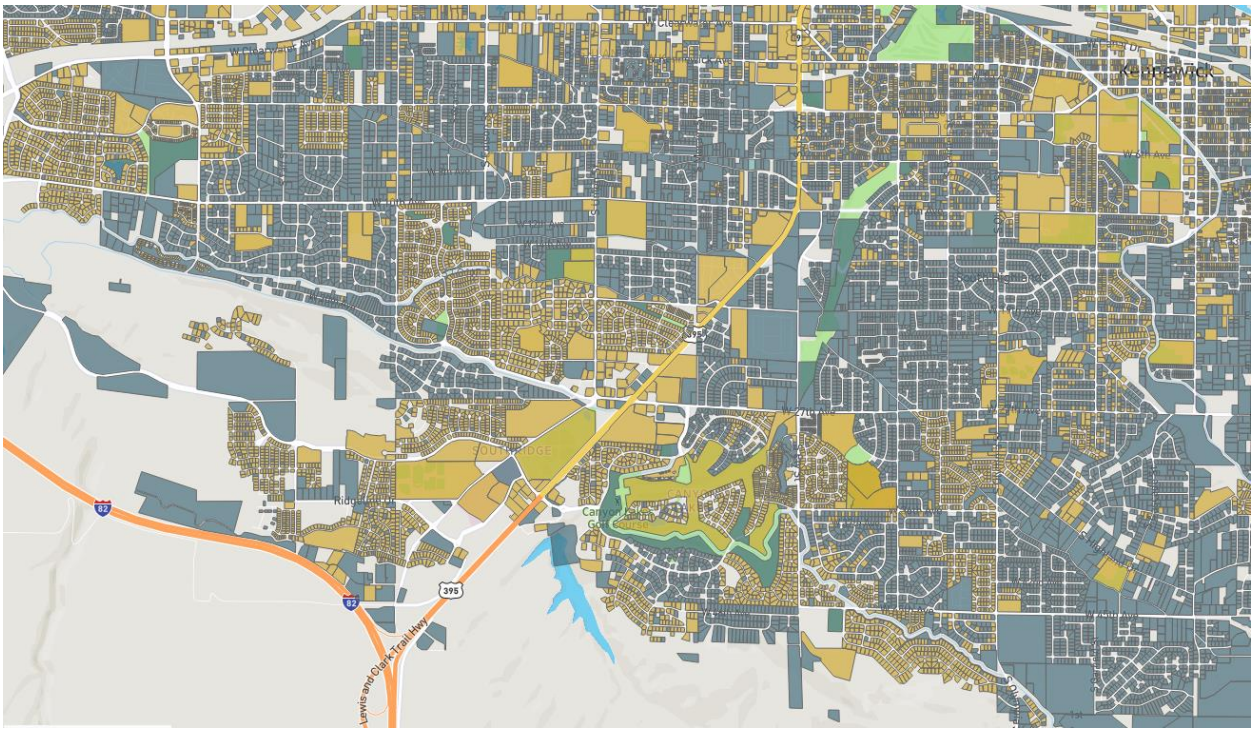


Figure 4-1 –Benton PUD Full-Electric and Gas/Electric Service locations

Customers that have a gas meter present on their property may have different uses for natural gas whether it be cooking, space heating, and/or water heating. From an electric utility perspective these customers' electricity consumption differs considerably from full-electric customers. When comparing the two load profiles, significant variances can be seen over the course of the year. **Figure 4-2** below compares the average monthly consumption of a Gas/Elec customer, Full-Electric customer, and the "Average" usage of all residential customers between Oct 2018 – Oct 2021.

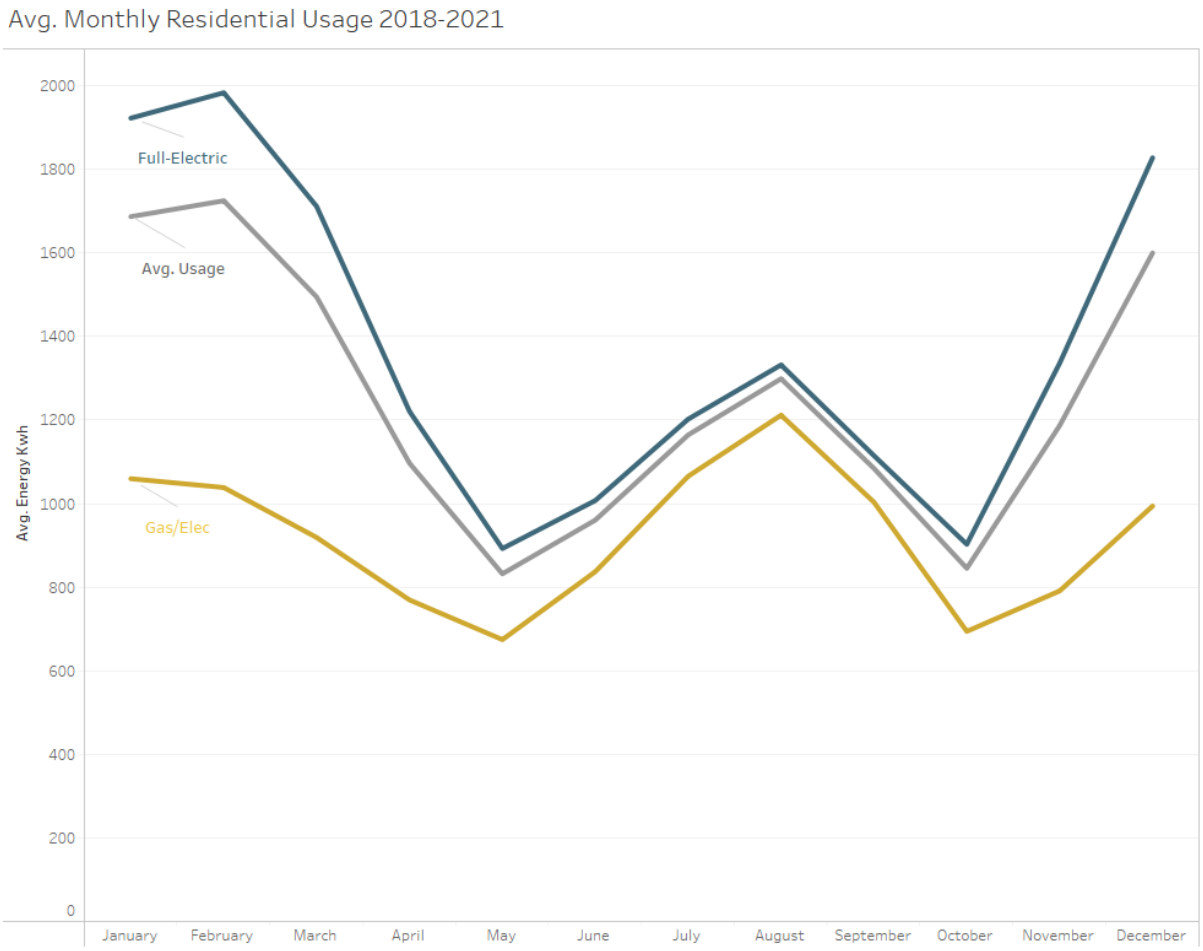


Figure 4-2 –Monthly Residential Usage (Gas/Elec, Full-Electric, and "Average" Res)

Perhaps unsurprisingly, electric usage in the fall, winter, and early spring months of the year is considerably less for customers who use both gas and electric forms of energy in their home. In fact, when comparing the annual electricity consumption, residential gas/elec. customers are currently using roughly 5,386 kWh less per year than a full electric customer when looking at recent history as can be seen in **Table 4-1** below.

Table 4-1 – Monthly Avg. Energy variance between Full-Elec. and Gas/Elec. customers (2018-2021)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Avg. Var. (kWh)	863.0	946.0	793.3	451.3	218.3	170.3	138.0	120.7	111.3	195.3	544.7	833.3	5385.6
% of Annual Total	16.0	17.6	14.7	8.4	4.1	3.2	2.6	2.2	2.1	3.6	10.1	15.5	100.0

Performing an analysis of new residential services, that the District installed between 2019-2021 revealed that approximately 36.1% of these installations had a gas meter also present at the service location/property. A total 12,928 current residential Gas/Elec customers were identified in 2021 and assuming the same percentage to the customer forecast moving forward, the District would have approximately 14,130 gas/elec. customers at the end of 2026.

Table 4-2 – Forecasted number of residential Gas/Elec Customers by 2026

Year	New Residential Customer Forecast	Total Res Service Customers	Res Gas/Elec Customers	Full-Elec Customers	% Gas Customers
2021		47,043	12,928	34,115	27.5%
2022	682	47,719	13,174	34,545	27.6%
2023	599	48,312	13,390	34,922	27.7%
2024	684	48,990	13,637	35,353	27.8%
2025	684	49,668	13,883	35,784	28.0%
2026	684	50,346	14,130	36,215	28.1%

Starting in 2027, HB 1084 stated any construction to new or existing residential buildings would be required to be fully electric going forward. Given that the average life expectancy of most gas furnaces is between 15-20 years[3], all current gas/elec. customers could conceivably be converted to full electric status by the mid-2040s. Taking a simplified assumption that 5% (1/20th) of those customers switch to full-electric needing to replace their gas heating system and utilizing the consumption variance from earlier, the District would see additional load, especially in the winter months. Under a higher transition rate of 10%, driven by potential incentives or stricter regulatory movement, the load increases even quicker with all customers transitioned to fully electric by 2036. **Table 4-3** below provides the conversion values and additional potential load.

Table 4-3 – Potential Natural Gas conversion 2026-2041

Year	Total Res Gas/Elec Customers 5%	Total Res Gas/Elec Customers 10%	5% Conversion (aMW)	10% Conversion (aMW)	Base Load (aMW)	Base Load + 5% Conversion (aMW)	Base Load + 10% Conversion (aMW)
2026	14,130	14,130	0.0	0.0	205.8	205.8	205.8
2027	13,424	12,717	0.6	1.0	206.4	206.9	207.4
2028	12,717	11,304	1.1	2.0	206.6	207.7	208.6
2029	12,011	9,891	1.7	3.0	207.3	209.0	210.3
2030	11,304	8,478	2.2	4.0	207.6	209.8	211.5
2031	10,598	7,065	2.8	5.0	208.2	211.0	213.1
2032	9,891	5,652	3.4	6.0	208.3	211.7	214.3
2033	9,185	4,239	3.9	7.0	208.9	212.9	215.9
2034	8,478	2,826	4.5	8.0	209.2	213.7	217.2
2035	7,772	1,413	5.0	9.0	209.7	214.7	218.6
2036	7,065	0	5.6	9.9	209.7	215.3	219.6
2037	6,359	0	6.2	10.1	210.3	216.5	220.4
2038	5,652	0	6.7	10.2	210.5	217.2	220.7
2039	4,946	0	7.3	10.3	210.8	218.1	221.1
2040	4,239	0	7.8	10.5	210.7	218.6	221.2
2041	3,533	0	8.4	10.6	210.9	219.3	221.5

[3] Gas Furnace Lifespan - https://www.carrier.com/residential/en/us/products/furnaces/how-long-does-a-furnaces-last

4.3 Electric Vehicle Scenario

As of March 25, 2022 Washington state signed into law HB 5974, which sets a target for all vehicles model year 2030 or newer that sold, purchased, or registered in Washington state must be electric vehicles.[4] As a part of a larger transportation package called "Move Ahead Washington" which plans to spend nearly $17 billion, the inclusion of this language will directly impact future load forecasts as the push for additional electric vehicles (EVs) continues. Further considerations are needed now to prepare for a future where EVs are the standard form of transportation and likely a significant addition to load.

The recently released 2021 Northwest Power Plan[5] from the Northwest Power and Conservation Council (NWPCC) predicts that at a regional level, annual electricity demand from electric vehicles will likely range between 1,000 aMW to 4,000 aMW by 2040[6]. Light-Duty Vehicles (LDV) are expected to significantly increase their market share and could be as high as 70%[7] of all new vehicle sales in 2030. Sweeping changes in regional climate policies and a call for emissions reductions are having a profound impact moving forward.

The NWPCC's transportation modeling methodology[8] begins by looking at a variety of historic transportation data including vehicle sales and stock, vehicle capital costs, fuel prices, vehicle efficiencies, population growth, and energy demand by fuel type. Demand requirements come from a need to fill vehicle stock requirements and fill demand resulting from population growth for LDV. The model additionally assumes that electric vehicles follow a declining cost curve over time and auto manufacturers are expected to offer multiple electric vehicle options in the near future. Forecasted results from the NWPCC study of LDV stock for both the Reference case and High-Electric case can be seen below in both **Figure 4-3** and **Figure 4-4.**

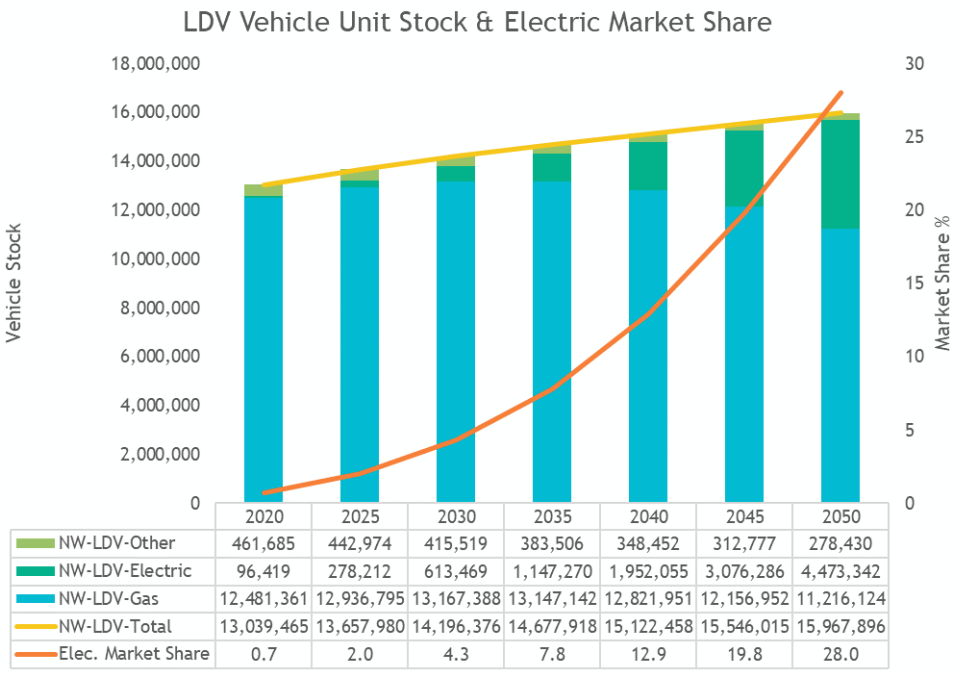
[4] 2030 All EV Sales Washington - https://electrek.co/2022/03/25/washington-passes-bill-targeting-all-electric-car-sales-by-2030-for-real-this-time/

[5] 2021 NW Power Plan - https://www.nwcouncil.org/media/filer_public/4b/68/4b681860-f663-4728-987e-7f02cd09ef9c/2021powerplan_2022-3.pdf

[6] 2040 EV Forecast Predictions - https://www.nwcouncil.org/2021powerplan_transportation-model-findings/

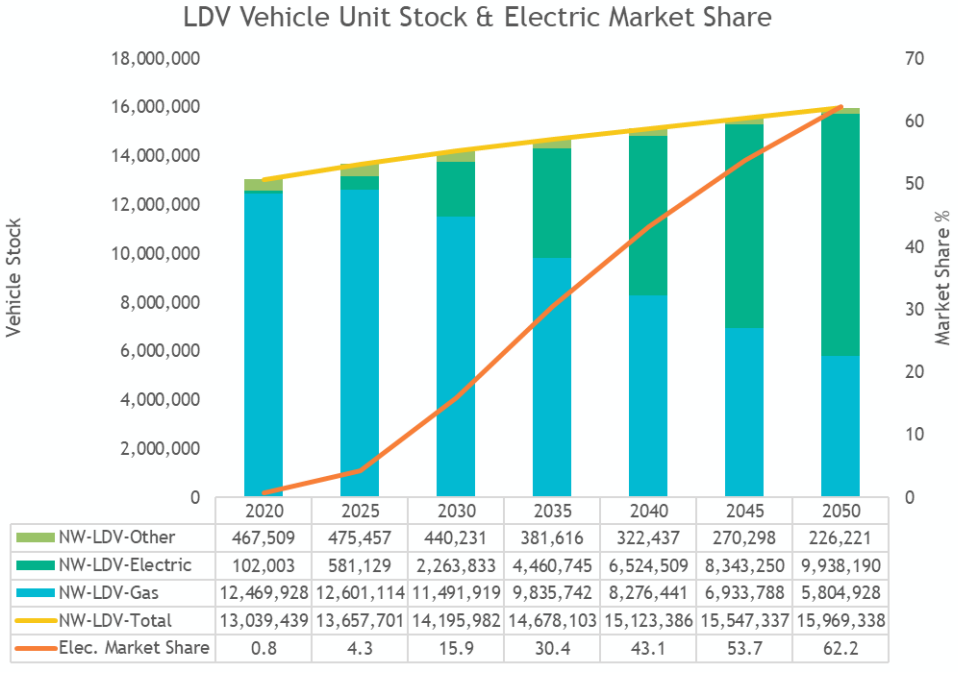
[7] Market Share of Electric Vehicle Sales in LDV Category - https://www.nwcouncil.org/2021powerplan_transportation-model-findings/

[8] NWPCC Transportation Model Methodology - https://www.nwcouncil.org/2021powerplan_transportation-model/



	2020	2025	2030	2035	2040	2045	2050
NW-LDV-Other	461,685	442,974	415,519	383,506	348,452	312,777	278,430
NW-LDV-Electric	96,419	278,212	613,469	1,147,270	1,952,055	3,076,286	4,473,342
NW-LDV-Gas	12,481,361	12,936,795	13,167,388	13,147,142	12,821,951	12,156,952	11,216,124
NW-LDV-Total	13,039,465	13,657,980	14,196,376	14,677,918	15,122,458	15,546,015	15,967,896
Elec. Market Share	0.7	2.0	4.3	7.8	12.9	19.8	28.0

Figure 4-3 –LDV Vehicle Unit Stock & Electric Market Share – Reference Case[9]



	2020	2025	2030	2035	2040	2045	2050
NW-LDV-Other	467,509	475,457	440,231	381,616	322,437	270,298	226,221
NW-LDV-Electric	102,003	581,129	2,263,833	4,460,745	6,524,509	8,343,250	9,938,190
NW-LDV-Gas	12,469,928	12,601,114	11,491,919	9,835,742	8,276,441	6,933,788	5,804,928
NW-LDV-Total	13,039,439	13,657,701	14,195,982	14,678,103	15,123,386	15,547,337	15,969,338
Elec. Market Share	0.8	4.3	15.9	30.4	43.1	53.7	62.2

Figure 4-4 –LDV Vehicle Unit Stock & Electric Market Share – High-Elec Case[10]

[9] LDV Vehicle Unit Stock & Electric Market Share Reference Case - https://www.nwcouncil.org/2021powerplan_transportation-model-reference-case-results/sites/default/files/TPT_ModelResults_Reference_Case.xlsx

[10] LDV Vehicle Unit Stock & Electric Market Share High-Elec Case - https://www.nwcouncil.org/2021powerplan_transportation-model-high-electric-case/sites/default/files/TPT_ModelResults_HiElectric_Case.xlsx

The figures above show the Northwest's potential for substantial growth in market share from electric vehicles in both the reference case and the high-electric case studies. The District analyzed these results further by disaggregating the Northwest results to focus on the Washington state which makes up over 60% of the current total electric vehicle stock in the Northwest and is the primary driver of most of the electric vehicle sales both historically and in the Council's model results. These forecasted electric vehicle stock values for Washington were then used to derive a Year-over-Year (YoY) growth percentage which was then applied to the current EV count in Benton County. At the end of 2021 Benton County had 666 EVs and after applying this methodology, the county could have between 3,324 and 10,879 EVs by 2030 based on the Reference case and High-Electric case respectively. **Table 4-4** below shows the EV numbers given both growth scenarios.

Table 4-4 – Benton County EV Growth Scenarios

Year	YoY Growth % (Ref)	YoY Growth % (Hi Elec)	EV Count (Ref)	EV Count (Hi Elec)
2021			666	666
2022	23.5%	42.6%	822	949
2023	23.4%	43.9%	1,014	1,367
2024	23.9%	43.6%	1,257	1,963
2025	21.3%	41.6%	1,524	2,779
2026	19.3%	38.2%	1,819	3,839
2027	17.9%	34.5%	2,145	5,163
2028	16.6%	32.3%	2,501	6,831
2029	15.7%	28.4%	2,893	8,769
2030	14.9%	24.1%	3,324	10,879
2031	14.2%	18.7%	3,795	12,915
2032	13.6%	15.1%	4,309	14,871
2033	13.1%	12.7%	4,873	16,756
2034	12.5%	10.9%	5,483	18,578
2035	12.1%	9.5%	6,145	20,334
2036	11.7%	8.3%	6,866	22,031
2037	11.2%	7.5%	7,637	23,674
2038	10.9%	6.7%	8,467	25,262
2039	10.5%	6.1%	9,356	26,798
2040	10.2%	5.6%	10,307	28,294
2041	9.8%	5.1%	11,316	29,741

While many popular car companies like Tesla have been selling EVs for nearly a decade, it was not until the last few years that other car manufacturers like Ford, GM, Volvo, etc. have begun offering more electric vehicle options. Ford has plans to release its fully electric Ford F-150 Lightning in 2022 and GM has made public statements about making more than 30 EV options available to consumers by 2025 and making only all-electric vehicles by 2035.

Utilizing the projected EV counts from **Table 4-4,** the District then evaluated the amount of load added each year given the YoY growth projections under both the Reference and High-Electric cases. Considering that future LDV sales will likely be a blend of both small cars and trucks, the District utilized a blend of several known models (Tesla, Nissan, Rivian, GM, and Ford) to formulate an average EV consumption

(kWh/mile)[11]. The District then utilized an average of 10,000 miles driven per year, per vehicle to quantify the potential average EV load impacts over the analysis period. **Table 4-5** below provides the cumulative additional load from EV growth under both scenarios and these assumptions.

Table 4-5 – Benton County EV Growth (aMW)

Year	Cumulative EV Ref (aMW)	Cumulative EV Hi Elec (aMW)	Base Load (aMW)	Base Load + EV Ref (aMW)	Base Load + EV Hi Elec (aMW)
2022	0.1	0.1	202.9	202.9	203.0
2023	0.1	0.3	203.8	204.0	204.1
2024	0.2	0.5	204.4	204.6	204.9
2025	0.3	0.8	205.4	205.7	206.2
2026	0.4	1.2	205.8	206.2	207.0
2027	0.6	1.7	206.4	206.9	208.1
2028	0.7	2.3	206.6	207.3	209.0
2029	0.8	3.1	207.3	208.2	210.4
2030	1.0	3.9	207.6	208.6	211.4
2031	1.2	4.7	208.2	209.4	212.8
2032	1.4	5.4	208.3	209.7	213.7
2033	1.6	6.1	208.9	210.5	215.1
2034	1.8	6.8	209.2	211.0	216.0
2035	2.1	7.5	209.7	211.8	217.1
2036	2.4	8.1	209.7	212.0	217.8
2037	2.6	8.7	210.3	212.9	219.0
2038	3.0	9.3	210.5	213.4	219.8
2039	3.3	9.9	210.8	214.1	220.7
2040	3.7	10.5	210.7	214.4	221.2
2041	4.0	11.0	210.9	215.0	222.0

4.3 Load Scenario Summary

Impacts from customer adoption, future regulatory action, and even some District intervention will likely play a role in how things develop in the future. The importance of recognizing these potential outcomes is essential for many of the workgroups at the District including Power Management, Energy Programs, Engineering and Customer Service. **Table 4-6** and **Figure 4-5** below summarize all the potential combinations of natural gas and EV scenario analyses conducted for the 2022 Load Forecast.

[11] Electric Car KWh Per Mile - https://ecocostsavings.com/electric-car-kwh-per-mile-list/

Table 4-6 – Base Forecast and Potential Load Scenarios 2022-2041

Calendar Year	Base Load (aMW)	Base Load + Ref EV (aMW)	Base Load + High EV (aMW)	Base Load + 5% Gas (aMW)	Base Load + 10% Gas (aMW)	Base Load + Ref EV/5% Gas (aMW)	Base Load + Ref EV/10% Gas (aMW)	Base Load + High EV/5% Gas (aMW)	Base Load + High EV/10% Gas (aMW)
2022	202.9	202.9	203.0	202.9	202.9	202.9	202.9	203.0	203.0
2023	203.8	204.0	204.1	203.8	203.8	204.0	204.0	204.1	204.1
2024	204.4	204.6	204.9	204.4	204.4	204.6	204.6	204.9	204.9
2025	205.4	205.7	206.2	205.4	205.4	205.7	205.7	206.2	206.2
2026	205.8	206.2	207.0	205.8	205.8	206.2	206.2	207.0	207.0
2027	206.4	206.9	208.1	206.9	207.4	207.5	207.9	208.7	209.1
2028	206.6	207.3	209.0	207.7	208.6	208.4	209.3	210.1	211.0
2029	207.3	208.2	210.4	209.0	210.3	209.9	211.2	212.1	213.4
2030	207.6	208.6	211.4	209.8	211.5	210.8	212.6	213.7	215.4
2031	208.2	209.4	212.8	211.0	213.1	212.2	214.3	215.6	217.8
2032	208.3	209.7	213.7	211.7	214.3	213.0	215.6	217.1	219.7
2033	208.9	210.5	215.1	212.9	215.9	214.5	217.5	219.0	222.0
2034	209.2	211.0	216.0	213.7	217.2	215.5	219.0	220.5	224.0
2035	209.7	211.8	217.1	214.7	218.6	216.8	220.7	222.2	226.1
2036	209.7	212.0	217.8	215.3	219.6	217.7	222.0	223.4	227.8
2037	210.3	212.9	219.0	216.5	220.4	219.1	223.0	225.2	229.1
2038	210.5	213.4	219.8	217.2	220.7	220.1	223.6	226.5	230.0
2039	210.8	214.1	220.7	218.1	221.1	221.4	224.4	228.0	231.1
2040	210.7	214.4	221.2	218.6	221.2	222.2	224.8	229.1	231.7
2041	210.9	215.0	222.0	219.3	221.5	223.4	225.6	230.4	232.6

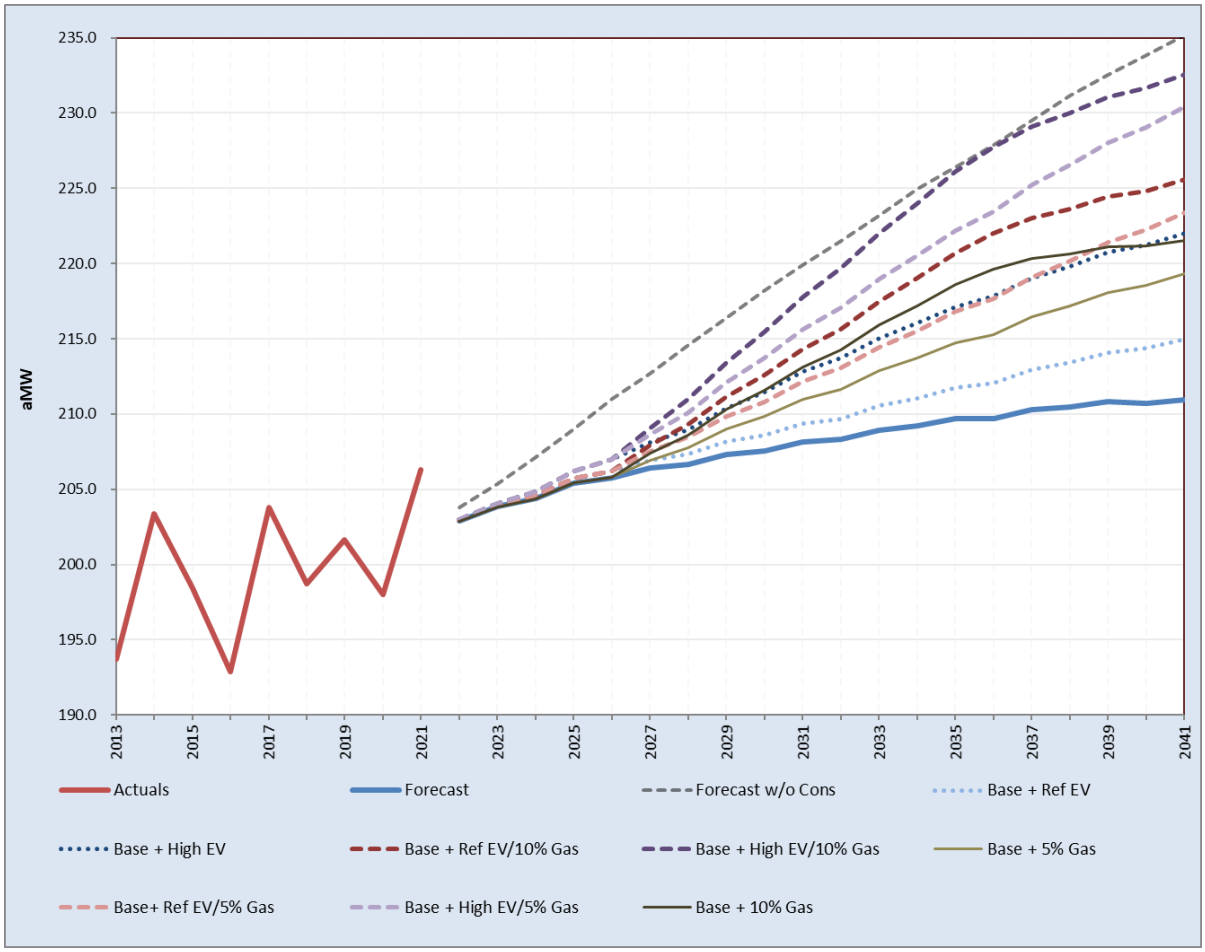


Figure 4-5 –Base Forecast and Potential Load Scenarios 2022-2041

5. Forecast for Total System

The total system forecast is an aggregation of the forecasts of each customer class. The forecast for the total system load is 202.9 aMW in 2022 and growing to 208.2 aMW in 2031. The five and ten-year average annual rates of growth are 0.35% and 0.29%, respectively. The ten-year forecast incudes 11.7 aMW of cumulative conservation expected over the 10-year period. The forecasted change in customers is expected to increase by roughly 709 total customers in 2022. See **Figure 5-1** and **Table 5-1** for the ten-year forecast detail.

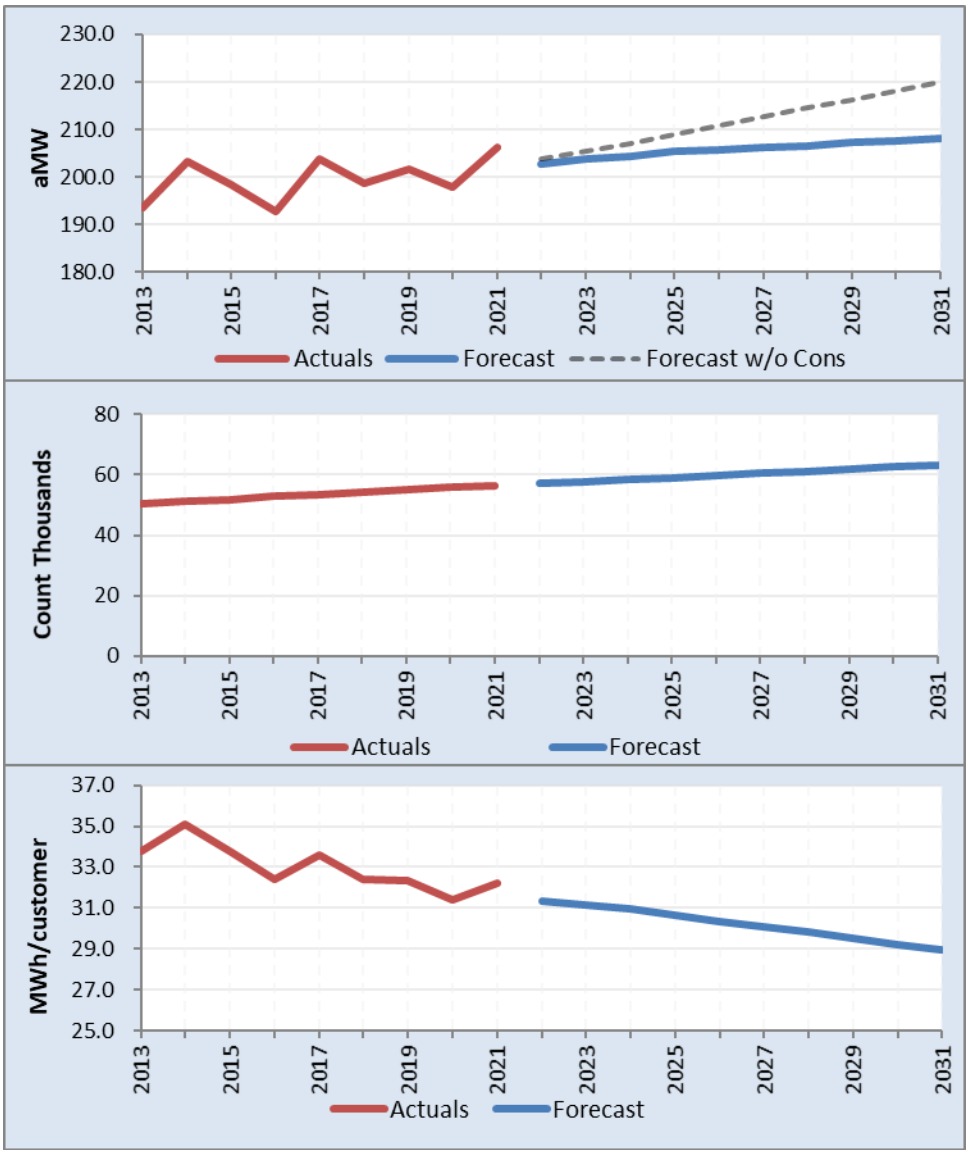


Figure 5-1 – Total System forecast of retail load, customers and usage per customer

Table 5-1 – Total System forecast of retail load, customers and usage per customer

Calendar Year	Historical Energy (MWh)	Forecast Energy (MWh)	Average Power (aMW)	Average Power % Change	Forecast without Conservation (MWh)	Forecast without Conservation (aMW)	Year-End Customer Count	Year-End Customer Change	1-Year % Change	Average Customer Count	Usage Per Customer (MWh)
2005	1,602,508	#N/A	182.93	0.62%	#N/A	#N/A	45,307	#N/A	#N/A	45,068	35.558
2006	1,555,710	#N/A	177.59	-2.92%	#N/A	#N/A	45,981	674	1.49%	45,535	34.165
2007	1,607,265	#N/A	183.48	3.31%	#N/A	#N/A	46,621	640	1.39%	46,248	34.753
2008	1,639,856	#N/A	186.69	1.75%	#N/A	#N/A	47,582	961	2.06%	47,279	34.685
2009	1,726,341	#N/A	197.07	5.56%	#N/A	#N/A	48,007	425	0.89%	47,753	36.151
2010	1,592,802	#N/A	181.83	-7.74%	#N/A	#N/A	48,616	609	1.27%	48,296	32.980
2011	1,648,362	#N/A	188.17	3.49%	#N/A	#N/A	49,134	518	1.07%	48,876	33.725
2012	1,645,277	#N/A	187.30	-0.46%	#N/A	#N/A	49,738	604	1.23%	49,389	33.313
2013	1,696,774	#N/A	193.70	3.41%	#N/A	#N/A	50,495	757	1.52%	50,199	33.801
2014	1,781,322	#N/A	203.35	4.98%	#N/A	#N/A	51,061	566	1.12%	50,732	35.112
2015	1,738,022	#N/A	198.40	-2.43%	#N/A	#N/A	51,845	784	1.54%	51,441	33.787
2016	1,694,078	#N/A	192.86	-2.79%	#N/A	#N/A	52,774	929	1.79%	52,320	32.379
2017	1,785,098	#N/A	203.78	5.66%	#N/A	#N/A	53,433	659	1.25%	53,111	33.611
2018	1,740,849	#N/A	198.73	-2.48%	#N/A	#N/A	54,136	703	1.32%	53,744	32.392
2019	1,766,171	#N/A	201.62	1.45%	#N/A	#N/A	54,926	790	1.46%	54,581	32.359
2020	1,739,433	#N/A	198.02	-1.78%	#N/A	#N/A	55,725	799	1.45%	55,342	31.431
2021	1,807,315	#N/A	206.31	4.19%	#N/A	#N/A	56,289	564	1.01%	56,072	32.232
2022	#N/A	1,777,184	202.87	-1.67%	1,785,226	203.79	56,998	709	1.26%	56,672	31.359
2023	#N/A	1,785,461	203.82	0.47%	1,798,864	205.35	57,621	623	1.09%	57,332	31.143
2024	#N/A	1,795,135	204.36	0.27%	1,819,485	207.14	58,331	710	1.23%	58,006	30.947
2025	#N/A	1,799,313	205.40	0.51%	1,830,849	209.00	59,043	712	1.22%	58,717	30.644
2026	#N/A	1,802,430	205.76	0.17%	1,848,192	210.98	59,753	710	1.20%	59,428	30.330
2027	#N/A	1,807,913	206.38	0.30%	1,863,159	212.69	60,464	711	1.19%	60,138	30.063
2028	#N/A	1,815,026	206.63	0.12%	1,884,689	214.56	61,175	711	1.18%	60,849	29.828
2029	#N/A	1,816,193	207.33	0.34%	1,895,149	216.34	61,885	710	1.16%	61,560	29.503
2030	#N/A	1,818,305	207.57	0.12%	1,911,488	218.21	62,596	711	1.15%	62,270	29.200
2031	#N/A	1,823,499	208.16	0.29%	1,926,166	219.88	63,307	711	1.14%	62,981	28.953
AARG %[1] (2022-2026)			0.35%								-0.83%
AARG %[1] (2022-2031)			0.29%								-0.88%

1) AARG % = Annual Average Rate of Growth Percentage

6. Forecast by Customer Class

6.1 Residential

The forecast for residential retail load is 83.1 aMW in 2022 and growing to 87.9 aMW in 2031. The five and ten-year average annual rates of growth are 0.64% and 0.63% respectively. The ten-year forecast incudes 3.0 aMW of cumulative conservation. The forecasted change in customers is an increase of 682 customers in 2022. The District will be transferring 87 of its residential customers and load to the City of Richland in summer of 2023. See **Figure 6-1** and **Table 6-1** for the ten-year forecast detail.

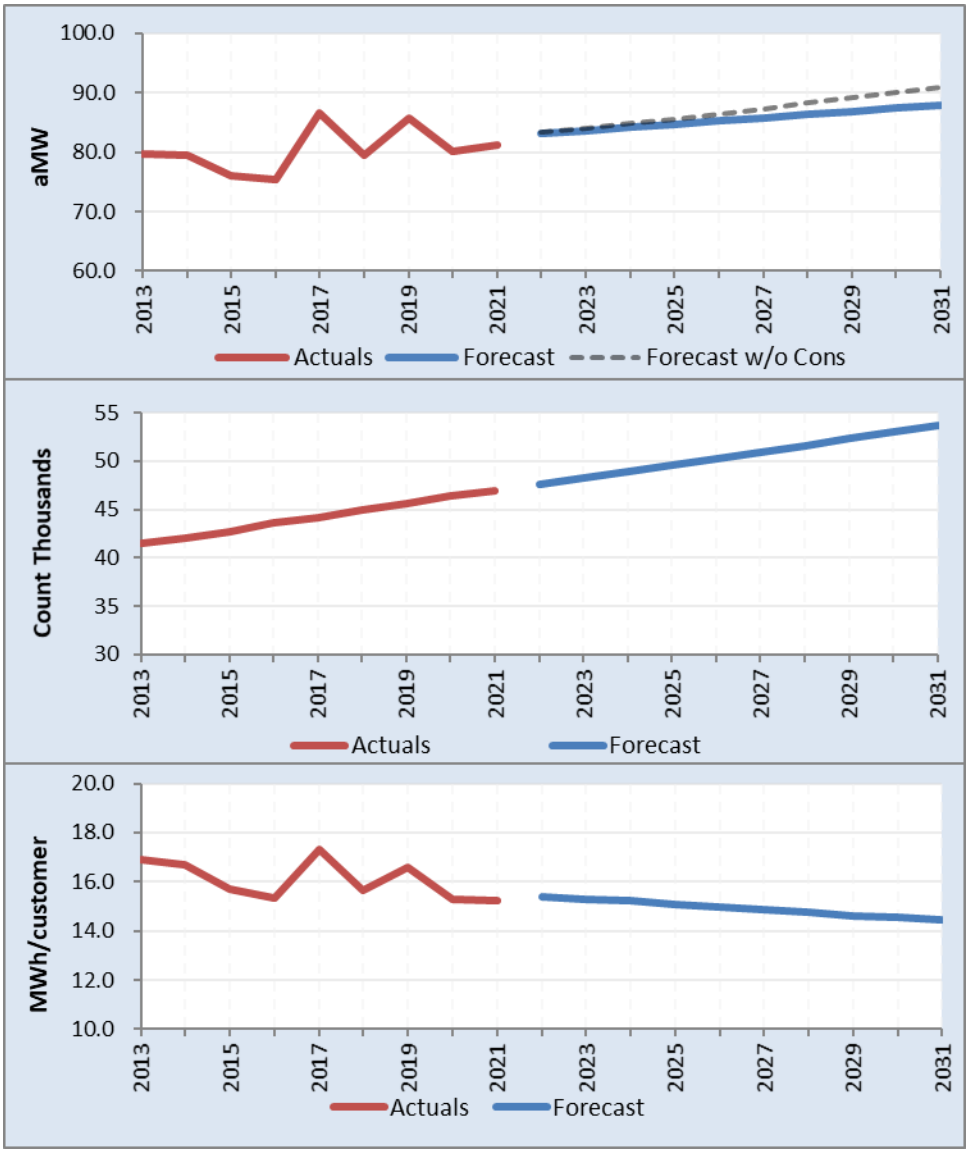


Figure 6-1 - Residential forecast of retail load, customers and usage per customer

Table 6-1 – Residential forecast of retail load, customers and usage per customer

Calendar Year	Historical Energy (MWh)	Forecast Energy (MWh)	Average Power (aMW)	Average Power % Change	Forecast without Conservation (MWh)	Forecast without Conservation (aMW)	Year-End Customer Count	Year-End Customer Change	1-Year % Change	Average Customer Count	Usage Per Customer (MWh)
2005	622,639	#N/A	71.08	0.48%	#N/A	#N/A	37,236	#N/A	#N/A	36,963	16.845
2006	632,213	#N/A	72.17	1.54%	#N/A	#N/A	37,802	566	1.52%	37,418	16.896
2007	644,392	#N/A	73.56	1.93%	#N/A	#N/A	38,285	483	1.28%	37,969	16.972
2008	666,418	#N/A	75.87	3.14%	#N/A	#N/A	39,095	810	2.12%	38,855	17.151
2009	721,719	#N/A	82.39	8.60%	#N/A	#N/A	39,430	335	0.86%	39,220	18.402
2010	654,775	#N/A	74.75	-9.28%	#N/A	#N/A	39,973	543	1.38%	39,687	16.498
2011	687,953	#N/A	78.53	5.07%	#N/A	#N/A	40,432	459	1.15%	40,201	17.113
2012	668,018	#N/A	76.05	-3.16%	#N/A	#N/A	40,955	523	1.29%	40,645	16.435
2013	697,887	#N/A	79.67	4.76%	#N/A	#N/A	41,561	606	1.48%	41,321	16.889
2014	696,804	#N/A	79.54	-0.16%	#N/A	#N/A	42,039	478	1.15%	41,758	16.687
2015	665,505	#N/A	75.97	-4.49%	#N/A	#N/A	42,724	685	1.63%	42,375	15.705
2016	661,742	#N/A	75.33	-0.84%	#N/A	#N/A	43,574	850	1.99%	43,157	15.333
2017	759,634	#N/A	86.72	15.11%	#N/A	#N/A	44,177	603	1.38%	43,870	17.316
2018	697,107	#N/A	79.58	-8.23%	#N/A	#N/A	44,946	769	1.74%	44,550	15.648
2019	751,107	#N/A	85.74	7.75%	#N/A	#N/A	45,666	720	1.60%	45,319	16.574
2020	704,408	#N/A	80.19	-6.47%	#N/A	#N/A	46,398	732	1.60%	46,027	15.304
2021	711,831	#N/A	81.26	1.33%	#N/A	#N/A	46,936	538	1.16%	46,690	15.246
2022	#N/A	728,130	83.12	2.29%	729,786	83.31	47,618	682	1.45%	47,305	15.392
2023	#N/A	732,817	83.65	0.64%	735,576	83.97	48,217	599	1.26%	47,939	15.286
2024	#N/A	739,521	84.19	0.64%	744,773	84.79	48,901	684	1.42%	48,588	15.220
2025	#N/A	742,132	84.72	0.63%	749,022	85.50	49,585	684	1.40%	49,272	15.062
2026	#N/A	746,844	85.26	0.63%	757,654	86.49	50,269	684	1.38%	49,956	14.950
2027	#N/A	751,554	85.79	0.63%	764,979	87.33	50,953	684	1.36%	50,640	14.841
2028	#N/A	758,325	86.33	0.63%	775,717	88.31	51,637	684	1.34%	51,324	14.775
2029	#N/A	760,912	86.86	0.62%	780,871	89.14	52,321	684	1.32%	52,008	14.631
2030	#N/A	765,560	87.39	0.61%	789,440	90.12	53,005	684	1.31%	52,692	14.529
2031	#N/A	770,294	87.93	0.62%	796,788	90.96	53,689	684	1.29%	53,376	14.432
AARG %[1] (2022-2026)			0.64%								-0.73%
AARG %[1] (2022-2031)			0.63%								-0.71%

1) AARG % = Annual Average Rate of Growth Percentage

6.2 Small General

The forecast for small general service retail load is 13.5 aMW in 2022 and decreasing to 12.7 aMW in 2031. The five and ten-year average annual rates of growth are -0.67% and -0.68% respectively. The ten-year forecast incudes 2.0 aMW of cumulative conservation. The first-year increase in the customer forecast is smaller than recent history because the District will be transferring 1 customer to the City of Richland in Summer of 2023. This rate-class was the most impacted by COVID-19 and is therefore difficult to forecast due to lower loads and slowed customer growth since 2020. See **Figure 6-2** and **Table 6-2** for the ten-year forecast detail.

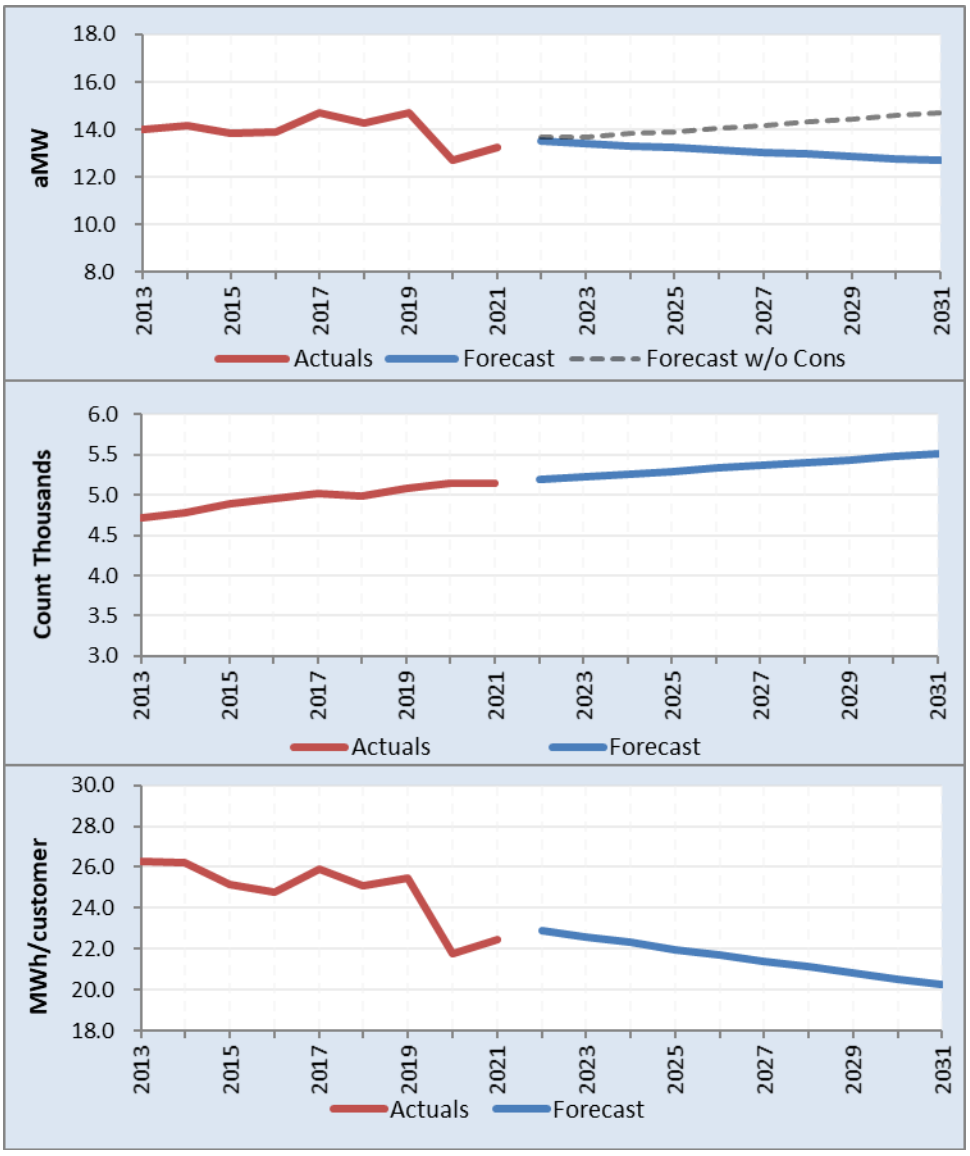


Figure 6-2 – Small General forecast of retail load, customers and usage per customer

Table 6-2 – Small General forecast of retail load, customers and usage per customer

Calendar Year	Historical Energy (MWh)	Forecast Energy (MWh)	Average Power (aMW)	Average Power % Change	Forecast without Conservation (MWh)	Forecast without Conservation (aMW)	Year-End Customer Count	Year-End Customer Change	1-Year % Change	Average Customer Count	Usage Per Customer (MWh)
2005	114,710	#N/A	13.09	-0.48%	#N/A	#N/A	4,128	#N/A	#N/A	4,144	27.681
2006	112,705	#N/A	12.87	-1.75%	#N/A	#N/A	4,232	104	2.52%	4,169	27.034
2007	115,049	#N/A	13.13	2.08%	#N/A	#N/A	4,324	92	2.17%	4,295	26.787
2008	115,616	#N/A	13.16	0.22%	#N/A	#N/A	4,445	121	2.80%	4,385	26.366
2009	121,580	#N/A	13.88	5.45%	#N/A	#N/A	4,484	39	0.88%	4,460	27.260
2010	113,483	#N/A	12.95	-6.66%	#N/A	#N/A	4,528	44	0.98%	4,503	25.202
2011	118,338	#N/A	13.51	4.28%	#N/A	#N/A	4,576	48	1.06%	4,553	25.991
2012	119,421	#N/A	13.60	0.64%	#N/A	#N/A	4,652	76	1.66%	4,610	25.905
2013	122,928	#N/A	14.03	3.22%	#N/A	#N/A	4,709	57	1.23%	4,682	26.255
2014	124,285	#N/A	14.19	1.10%	#N/A	#N/A	4,784	75	1.59%	4,741	26.215
2015	121,498	#N/A	13.87	-2.24%	#N/A	#N/A	4,883	99	2.07%	4,828	25.165
2016	121,868	#N/A	13.87	0.03%	#N/A	#N/A	4,949	66	1.35%	4,915	24.795
2017	129,054	#N/A	14.73	6.19%	#N/A	#N/A	5,011	62	1.25%	4,977	25.930
2018	124,864	#N/A	14.25	-3.25%	#N/A	#N/A	4,991	-20	-0.40%	4,972	25.114
2019	128,836	#N/A	14.71	3.18%	#N/A	#N/A	5,081	90	1.80%	5,055	25.487
2020	111,746	#N/A	12.72	-13.50%	#N/A	#N/A	5,146	65	1.28%	5,134	21.766
2021	116,212	#N/A	13.27	4.28%	#N/A	#N/A	5,148	2	0.04%	5,169	22.483
2022	#N/A	118,301	13.50	1.80%	119,785	13.67	5,185	37	0.72%	5,169	22.889
2023	#N/A	117,553	13.42	-0.63%	120,027	13.70	5,220	35	0.68%	5,204	22.589
2024	#N/A	117,078	13.33	-0.68%	121,516	13.83	5,256	36	0.69%	5,240	22.345
2025	#N/A	115,969	13.24	-0.68%	121,698	13.89	5,292	36	0.68%	5,276	21.983
2026	#N/A	115,181	13.15	-0.68%	123,306	14.08	5,328	36	0.68%	5,312	21.685
2027	#N/A	114,350	13.05	-0.72%	124,071	14.16	5,364	36	0.68%	5,348	21.384
2028	#N/A	113,907	12.97	-0.66%	126,057	14.35	5,400	36	0.67%	5,384	21.159
2029	#N/A	112,803	12.88	-0.70%	126,517	14.44	5,436	36	0.67%	5,420	20.814
2030	#N/A	112,010	12.79	-0.70%	128,119	14.63	5,472	36	0.66%	5,456	20.532
2031	#N/A	111,225	12.70	-0.70%	128,931	14.72	5,508	36	0.66%	5,492	20.254
AARG %[1] (2022-2026)			-0.67%								-1.34%
AARG %[1] (2022-2031)			-0.68%								-1.35%

1) AARG % = Annual Average Rate of Growth Percentage

6.3 Medium General

The forecast for medium general service retail load is 20.8 aMW in 2022 and sustaining to 20.8 aMW in 2031. The five and ten-year average annual rates of growth are 0.23% and 0.01% respectively. The ten-year forecast incudes nearly 3.0 aMW of cumulative conservation. The forecasted change in customers is an increase of about 11 customers in 2022. See **Figure 6-3** and **Table 6-3** for the ten-year forecast detail.

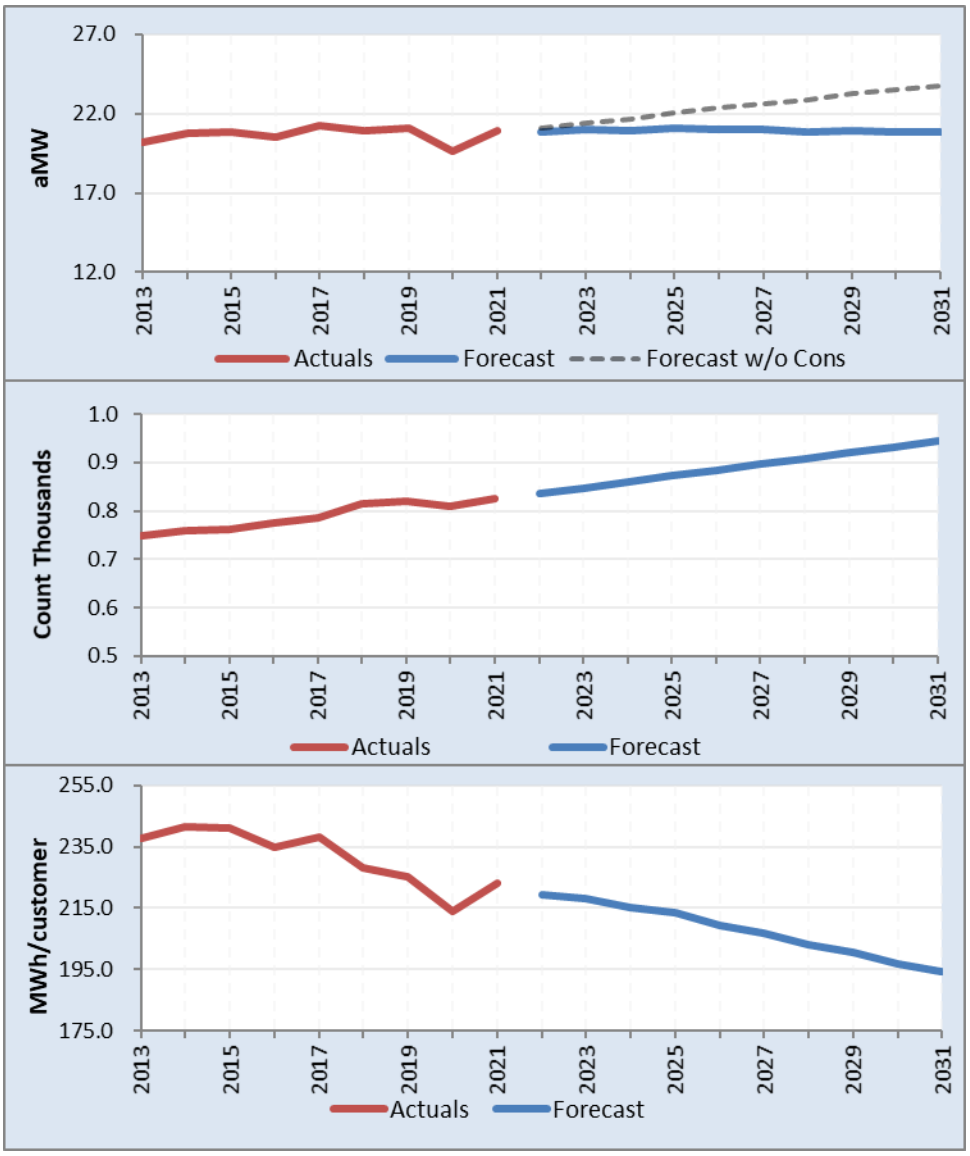


Figure 6-3 – Medium General forecast of retail load, customers and usage per customer

Table 6-3 – Medium General forecast of retail load, customers and usage per customer

Calendar Year	Historical Energy (MWh)	Forecast Energy (MWh)	Average Power (aMW)	Average Power % Change	Forecast without Conservation (MWh)	Forecast without Conservation (aMW)	Year-End Customer Count	Year-End Customer Change	1-Year % Change	Average Customer Count	Usage Per Customer (MWh)
2005	164,043	#N/A	18.73	-1.87%	#N/A	#N/A	627	#N/A	#N/A	637	257.524
2006	160,440	#N/A	18.32	-2.20%	#N/A	#N/A	641	14	2.23%	636	252.263
2007	165,186	#N/A	18.86	2.96%	#N/A	#N/A	665	24	3.74%	654	252.577
2008	169,571	#N/A	19.30	2.37%	#N/A	#N/A	683	18	2.71%	676	250.845
2009	175,265	#N/A	20.01	3.64%	#N/A	#N/A	707	24	3.51%	695	252.179
2010	170,868	#N/A	19.51	-2.51%	#N/A	#N/A	725	18	2.55%	718	237.977
2011	175,463	#N/A	20.03	2.69%	#N/A	#N/A	747	22	3.03%	732	239.704
2012	175,999	#N/A	20.04	0.03%	#N/A	#N/A	742	-5	-0.67%	747	235.607
2013	177,250	#N/A	20.23	0.99%	#N/A	#N/A	750	8	1.08%	746	237.601
2014	182,044	#N/A	20.78	2.70%	#N/A	#N/A	758	8	1.07%	754	241.437
2015	182,610	#N/A	20.85	0.31%	#N/A	#N/A	762	4	0.53%	758	240.911
2016	180,467	#N/A	20.54	-1.44%	#N/A	#N/A	775	13	1.71%	768	234.983
2017	186,155	#N/A	21.25	3.43%	#N/A	#N/A	785	10	1.29%	782	238.050
2018	183,125	#N/A	20.90	-1.63%	#N/A	#N/A	815	30	3.82%	803	228.051
2019	184,797	#N/A	21.10	0.91%	#N/A	#N/A	821	6	0.74%	820	225.362
2020	172,572	#N/A	19.65	-6.87%	#N/A	#N/A	809	-12	-1.46%	806	214.110
2021	183,223	#N/A	20.92	6.46%	#N/A	#N/A	825	16	1.98%	821	223.171
2022	#N/A	182,322	20.81	-0.49%	184,497	21.06	836	11	1.33%	831	219.533
2023	#N/A	183,901	20.99	0.87%	187,526	21.41	848	12	1.44%	843	218.280
2024	#N/A	184,026	20.95	-0.21%	190,530	21.69	860	12	1.42%	855	215.361
2025	#N/A	184,890	21.11	0.74%	193,284	22.06	872	12	1.40%	867	213.376
2026	#N/A	184,033	21.01	-0.46%	195,936	22.37	884	12	1.38%	879	209.485
2027	#N/A	184,289	21.04	0.14%	198,532	22.66	896	12	1.36%	891	206.950
2028	#N/A	183,396	20.88	-0.76%	201,197	22.90	908	12	1.34%	903	203.209
2029	#N/A	183,463	20.94	0.31%	203,556	23.24	920	12	1.32%	915	200.616
2030	#N/A	182,381	20.82	-0.59%	205,983	23.51	932	12	1.30%	927	196.850
2031	#N/A	182,413	20.82	0.02%	208,354	23.78	944	12	1.29%	939	194.366
AARG %[1] (2022-2026)			0.23%								-1.16%
AARG %[1] (2022-2031)			0.01%								-1.34%

1) AARG % = Annual Average Rate of Growth Percentage

6.4 Large General

The forecast for large general service retail load is 27.8 aMW in 2022 and increasing to 29.2 aMW in 2031. The five and ten-year average annual rates of growth are 0.89% and 0.55% respectively. The ten-year forecast incudes 3.71 aMW of cumulative conservation. The forecasted change in customers is an increase of about 4 customers in 2022. See **Figure 6-4** and **Table 6-4** for the ten-year forecast detail.

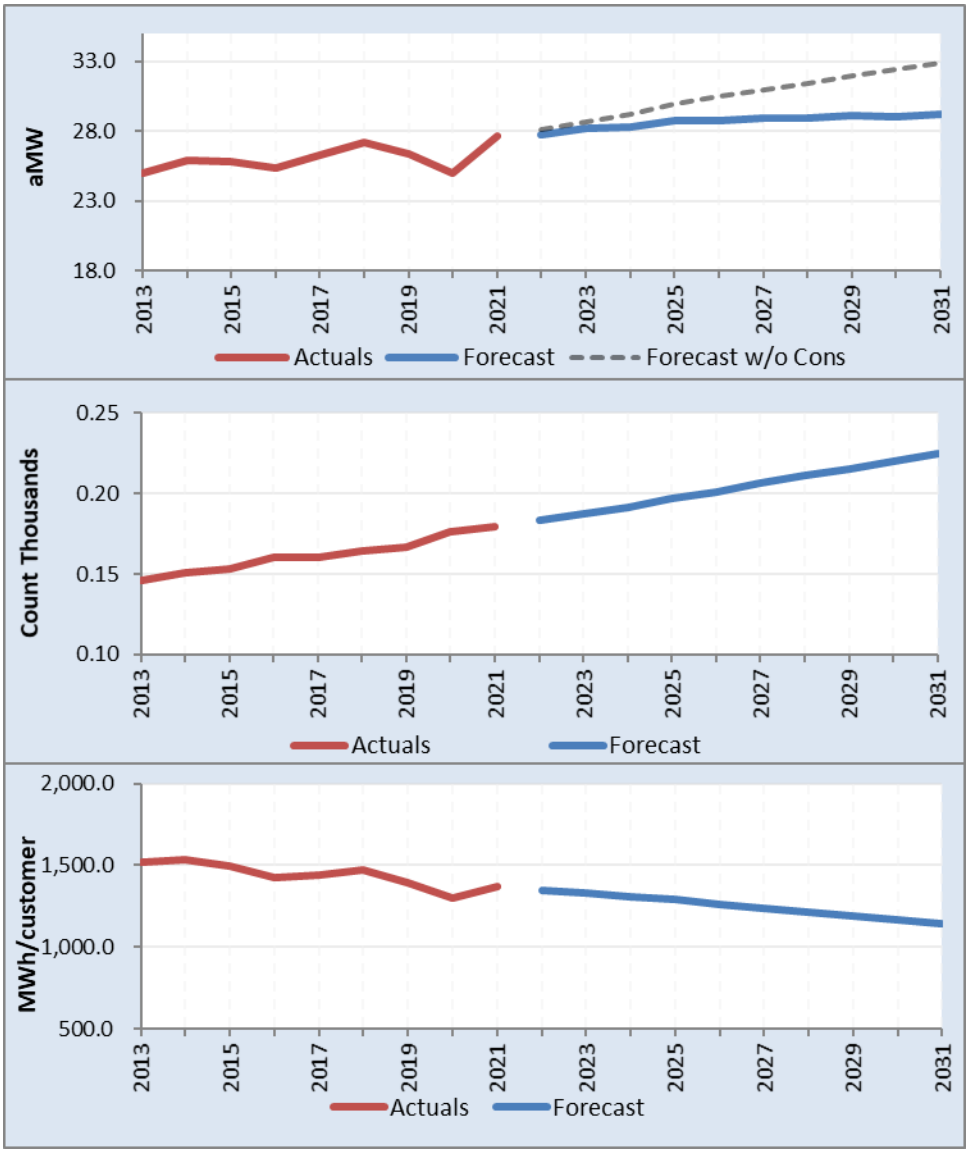


Figure 6-4 – Large General forecast of retail load, customers and usage per customer

Table 6-4 – Large General forecast of retail load, customers and usage per customer

Calendar Year	Historical Energy (MWh)	Forecast Energy (MWh)	Average Power (aMW)	Average Power % Change	Forecast without Conservation (MWh)	Forecast without Conservation (aMW)	Year-End Customer Count	Year-End Customer Change	1-Year % Change	Average Customer Count	Usage Per Customer (MWh)
2005	242,555	#N/A	27.69	1.26%	#N/A	#N/A	123	#N/A	#N/A	122	1,988.160
2006	236,908	#N/A	27.04	-2.33%	#N/A	#N/A	127	4	3.25%	126	1,880.220
2007	223,317	#N/A	25.49	-5.74%	#N/A	#N/A	131	4	3.15%	128	1,744.660
2008	224,958	#N/A	25.61	0.46%	#N/A	#N/A	132	1	0.76%	131	1,717.234
2009	233,410	#N/A	26.65	4.04%	#N/A	#N/A	135	3	2.27%	134	1,741.869
2010	218,686	#N/A	24.96	-6.31%	#N/A	#N/A	135	0	0.00%	135	1,619.899
2011	209,669	#N/A	23.93	-4.12%	#N/A	#N/A	141	6	4.44%	136	1,541.682
2012	217,377	#N/A	24.75	3.39%	#N/A	#N/A	143	2	1.42%	142	1,530.826
2013	219,315	#N/A	25.04	1.17%	#N/A	#N/A	146	3	2.10%	144	1,523.024
2014	226,679	#N/A	25.88	3.36%	#N/A	#N/A	151	5	3.42%	148	1,531.617
2015	226,175	#N/A	25.82	-0.22%	#N/A	#N/A	153	2	1.32%	151	1,497.847
2016	223,268	#N/A	25.42	-1.56%	#N/A	#N/A	160	7	4.58%	157	1,422.089
2017	230,674	#N/A	26.33	3.60%	#N/A	#N/A	160	0	0.00%	160	1,441.715
2018	238,606	#N/A	27.24	3.44%	#N/A	#N/A	164	4	2.50%	162	1,472.877
2019	231,448	#N/A	26.42	-3.00%	#N/A	#N/A	167	3	1.83%	166	1,394.263
2020	219,313	#N/A	24.97	-5.50%	#N/A	#N/A	176	9	5.39%	169	1,297.712
2021	241,981	#N/A	27.62	10.64%	#N/A	#N/A	179	3	1.70%	177	1,367.123
2022	#N/A	243,364	27.78	0.57%	246,091	28.09	183	4	2.23%	181	1,345.792
2023	#N/A	246,780	28.17	1.40%	251,325	28.69	187	4	2.19%	185	1,332.147
2024	#N/A	248,800	28.32	0.54%	256,954	29.25	191	4	2.14%	190	1,308.325
2025	#N/A	252,052	28.77	1.58%	262,576	29.97	197	6	3.14%	195	1,290.919
2026	#N/A	252,159	28.79	0.04%	267,084	30.49	201	4	2.03%	200	1,262.375
2027	#N/A	253,570	28.95	0.56%	271,428	30.98	206	5	2.49%	204	1,241.469
2028	#N/A	253,916	28.91	-0.14%	276,235	31.45	211	5	2.43%	209	1,213.456
2029	#N/A	254,967	29.11	0.69%	280,159	31.98	215	4	1.90%	214	1,192.826
2030	#N/A	254,363	29.04	-0.24%	283,956	32.42	220	5	2.33%	218	1,165.467
2031	#N/A	255,622	29.18	0.50%	288,149	32.89	225	5	2.27%	223	1,145.005
AARG %[1] (2022-2026)			0.89%								-1.59%
AARG %[1] (2022-2031)			0.55%								-1.78%

1) AARG % = Annual Average Rate of Growth Percentage

6.5 Large Industrial

The forecast for large industrial service retail load in 2022 is 7.34 aMW and is estimated to remain flat over the ten-year forecast period, with no incremental conservation and no additional customers added. See **Figure 6-5** and **Table 6-5** for the ten-year forecast detail.

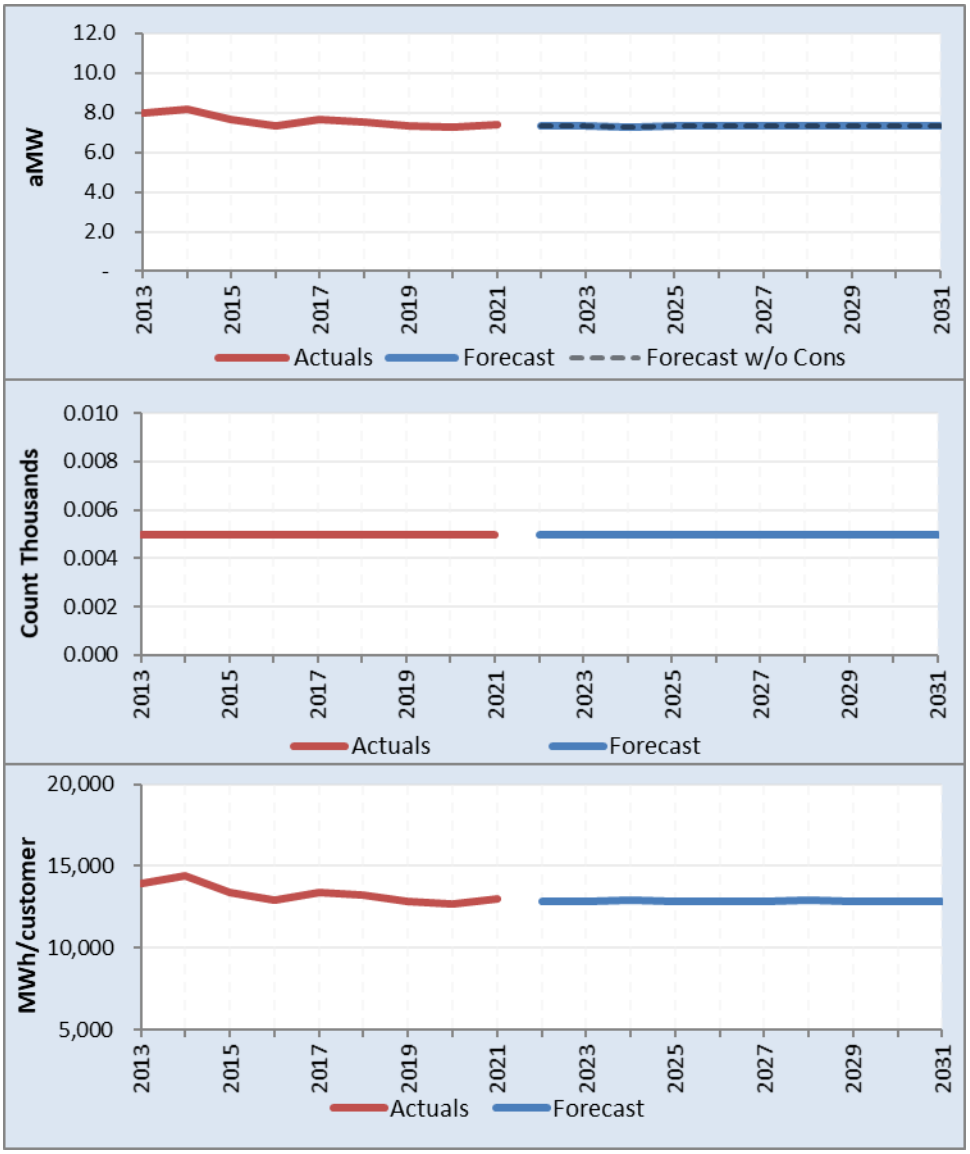


Figure 6-5 – Large Industrial forecast of retail load, customers and usage per customer

Table 6-5 – Large Industrial forecast of retail load, customers and usage per customer

Calendar Year	Historical Energy (MWh)	Forecast Energy (MWh)	Average Power (aMW)	Average Power % Change	Forecast without Conservation (MWh)	Forecast without Conservation (aMW)	Year-End Customer Count	Year-End Customer Change	1-Year % Change	Average Customer Count	Usage Per Customer (MWh)
2005	53,286	#N/A	6.08	-23.10%	#N/A	#N/A	5	#N/A	#N/A	5	10,657.159
2006	37,456	#N/A	4.28	-29.71%	#N/A	#N/A	5	0	0.00%	5	7,491.183
2007	49,045	#N/A	5.60	30.94%	#N/A	#N/A	3	-2	-40.00%	5	9,809.030
2008	47,760	#N/A	5.44	-2.89%	#N/A	#N/A	5	2	66.67%	5	9,552.059
2009	38,909	#N/A	4.44	-18.31%	#N/A	#N/A	5	0	0.00%	5	7,781.815
2010	55,365	#N/A	6.32	42.29%	#N/A	#N/A	5	0	0.00%	5	11,072.932
2011	65,411	#N/A	7.47	18.15%	#N/A	#N/A	5	0	0.00%	5	13,082.162
2012	70,575	#N/A	8.03	7.60%	#N/A	#N/A	5	0	0.00%	5	14,115.033
2013	69,803	#N/A	7.97	-0.82%	#N/A	#N/A	5	0	0.00%	5	13,960.556
2014	71,869	#N/A	8.20	2.96%	#N/A	#N/A	5	0	0.00%	5	14,373.897
2015	66,942	#N/A	7.64	-6.86%	#N/A	#N/A	5	0	0.00%	5	13,388.377
2016	64,612	#N/A	7.36	-3.74%	#N/A	#N/A	5	0	0.00%	5	12,922.450
2017	67,084	#N/A	7.66	4.11%	#N/A	#N/A	5	0	0.00%	5	13,416.822
2018	65,997	#N/A	7.53	-1.62%	#N/A	#N/A	5	0	0.00%	5	13,199.344
2019	64,318	#N/A	7.34	-2.54%	#N/A	#N/A	5	0	0.00%	5	12,863.616
2020	63,625	#N/A	7.24	-1.35%	#N/A	#N/A	5	0	0.00%	5	12,725.056
2021	65,084	#N/A	7.43	2.57%	#N/A	#N/A	5	0	0.00%	5	13,016.760
2022	#N/A	64,295	7.34	-1.21%	64,295	7.34	5	0	0.00%	5	12,859.003
2023	#N/A	64,298	7.34	0.01%	64,298	7.34	5	0	0.00%	5	12,859.699
2024	#N/A	64,470	7.34	-0.01%	64,470	7.34	5	0	0.00%	5	12,894.064
2025	#N/A	64,297	7.34	0.00%	64,297	7.34	5	0	0.00%	5	12,859.337
2026	#N/A	64,300	7.34	0.01%	64,300	7.34	5	0	0.00%	5	12,860.032
2027	#N/A	64,295	7.34	-0.01%	64,295	7.34	5	0	0.00%	5	12,858.975
2028	#N/A	64,475	7.34	0.01%	64,475	7.34	5	0	0.00%	5	12,895.059
2029	#N/A	64,302	7.34	0.00%	64,302	7.34	5	0	0.00%	5	12,860.365
2030	#N/A	64,297	7.34	-0.01%	64,297	7.34	5	0	0.00%	5	12,859.308
2031	#N/A	64,300	7.34	0.01%	64,300	7.34	5	0	0.00%	5	12,860.003
AARG %[1] (2022-2026)			0.00%								0.00%
AARG %[1] (2022-2031)			0.00%								0.00%

6.6 Small Irrigation

The forecast for small irrigation retail load is 1.7 aMW in 2022 and sustaining 1.7 aMW into 2031. The five and ten-year average annual rates of growth are -0.43% and -0.40% respectively, due to a small, expected reduction in load (less than 0.1 aMW) over the 10 year period. The forecasted change in customers is expected to lose about 3-4 customers annually. The ten-year forecast does not include any conservation See **Figure 6-6** and **Table 6-6** for the ten-year forecast detail.

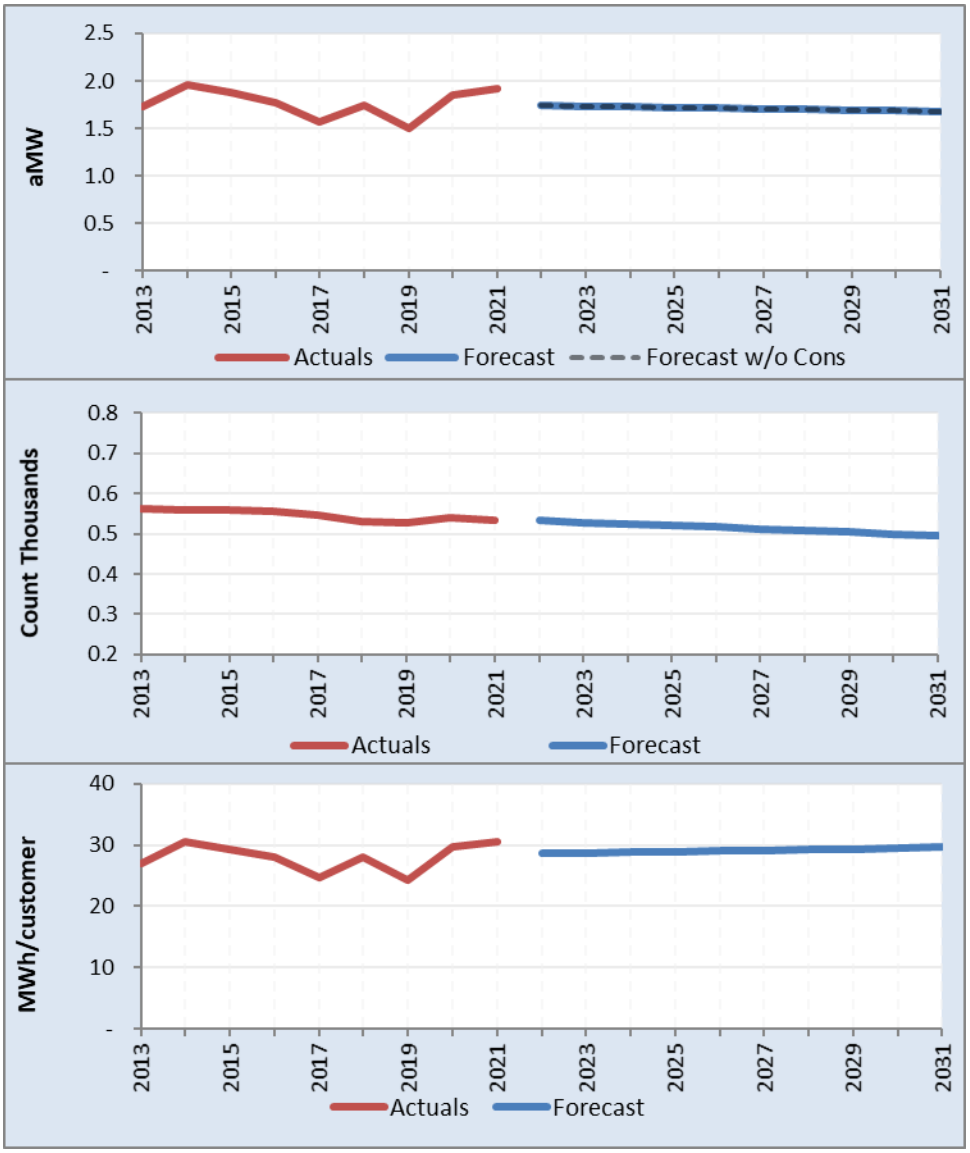


Figure 6-6 – Small Irrigation forecast of retail load, customers and usage per customer

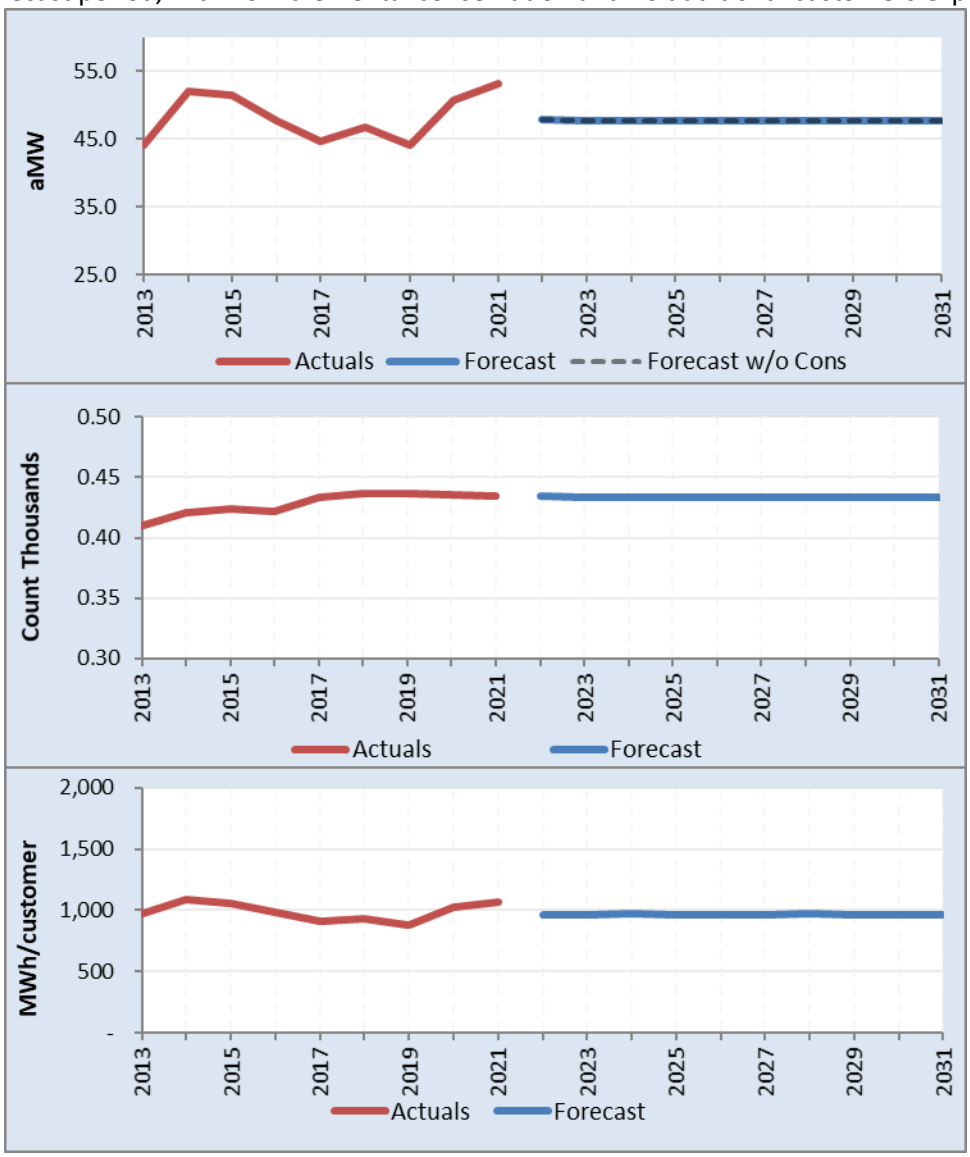
Table 6-6 – Small Irrigation forecast of retail load, customers and usage per customer

Calendar Year	Historical Energy (MWh)	Forecast Energy (MWh)	Average Power (aMW)	Average Power % Change	Forecast without Conservation (MWh)	Forecast without Conservation (aMW)	Year-End Customer Count	Year-End Customer Change	1-Year % Change	Average Customer Count	Usage Per Customer (MWh)
2005	15,724	#N/A	1.80	4.62%	#N/A	#N/A	619	#N/A	#N/A	622	25.280
2006	14,305	#N/A	1.63	-9.03%	#N/A	#N/A	602	-17	-2.75%	614	23.298
2007	15,849	#N/A	1.81	10.79%	#N/A	#N/A	609	7	1.16%	607	26.110
2008	16,043	#N/A	1.83	0.95%	#N/A	#N/A	615	6	0.99%	615	26.086
2009	16,884	#N/A	1.93	5.53%	#N/A	#N/A	610	-5	-0.81%	615	27.453
2010	14,446	#N/A	1.65	-14.44%	#N/A	#N/A	594	-16	-2.62%	602	23.997
2011	14,607	#N/A	1.67	1.11%	#N/A	#N/A	573	-21	-3.54%	582	25.097
2012	15,165	#N/A	1.73	3.54%	#N/A	#N/A	555	-18	-3.14%	563	26.936
2013	15,211	#N/A	1.74	0.58%	#N/A	#N/A	563	8	1.44%	564	26.970
2014	17,209	#N/A	1.96	13.13%	#N/A	#N/A	559	-4	-0.71%	563	30.566
2015	16,425	#N/A	1.87	-4.56%	#N/A	#N/A	558	-1	-0.18%	560	29.330
2016	15,597	#N/A	1.78	-5.30%	#N/A	#N/A	556	-2	-0.36%	558	27.952
2017	13,754	#N/A	1.57	-11.57%	#N/A	#N/A	546	-10	-1.80%	557	24.694
2018	15,312	#N/A	1.75	11.32%	#N/A	#N/A	529	-17	-3.11%	546	28.043
2019	13,199	#N/A	1.51	-13.79%	#N/A	#N/A	528	-1	-0.19%	542	24.353
2020	16,316	#N/A	1.86	23.28%	#N/A	#N/A	540	12	2.27%	548	29.774
2021	16,768	#N/A	1.91	3.05%	#N/A	#N/A	535	-5	-0.93%	549	30.543
2022	#N/A	15,267	1.74	-8.95%	15,267	1.74	532	-3	-0.56%	534	28.617
2023	#N/A	15,198	1.73	-0.45%	15,198	1.73	528	-4	-0.75%	530	28.703
2024	#N/A	15,192	1.73	-0.31%	15,192	1.73	524	-4	-0.76%	526	28.909
2025	#N/A	15,067	1.72	-0.55%	15,067	1.72	520	-4	-0.76%	522	28.891
2026	#N/A	15,004	1.71	-0.41%	15,004	1.71	516	-4	-0.77%	518	28.993
2027	#N/A	14,944	1.71	-0.40%	14,944	1.71	512	-4	-0.78%	514	29.102
2028	#N/A	14,949	1.70	-0.24%	14,949	1.70	508	-4	-0.78%	510	29.341
2029	#N/A	14,830	1.69	-0.53%	14,830	1.69	504	-4	-0.79%	506	29.336
2030	#N/A	14,776	1.69	-0.36%	14,776	1.69	500	-4	-0.79%	502	29.463
2031	#N/A	14,724	1.68	-0.35%	14,724	1.68	496	-4	-0.80%	498	29.596
AARG %[1] (2022-2026)			-0.43%								0.33%
AARG %[1] (2022-2031)			-0.40%								0.37%

1) AARG % = Annual Average Rate of Growth Percentage

6.7 Large Irrigation

The forecast for large irrigation retail load is 47.9 aMW in 2022 and declines to 47.8 aMW in 2023 after 1 customer is expected to transfer to City of Richland (COR). It is estimated to remain roughly flat over the ten-year forecast period, with no incremental conservation and no additional customers expected to be added. See **Figure** 6-7 and **Table 6-7** for the ten-year forecast detail.



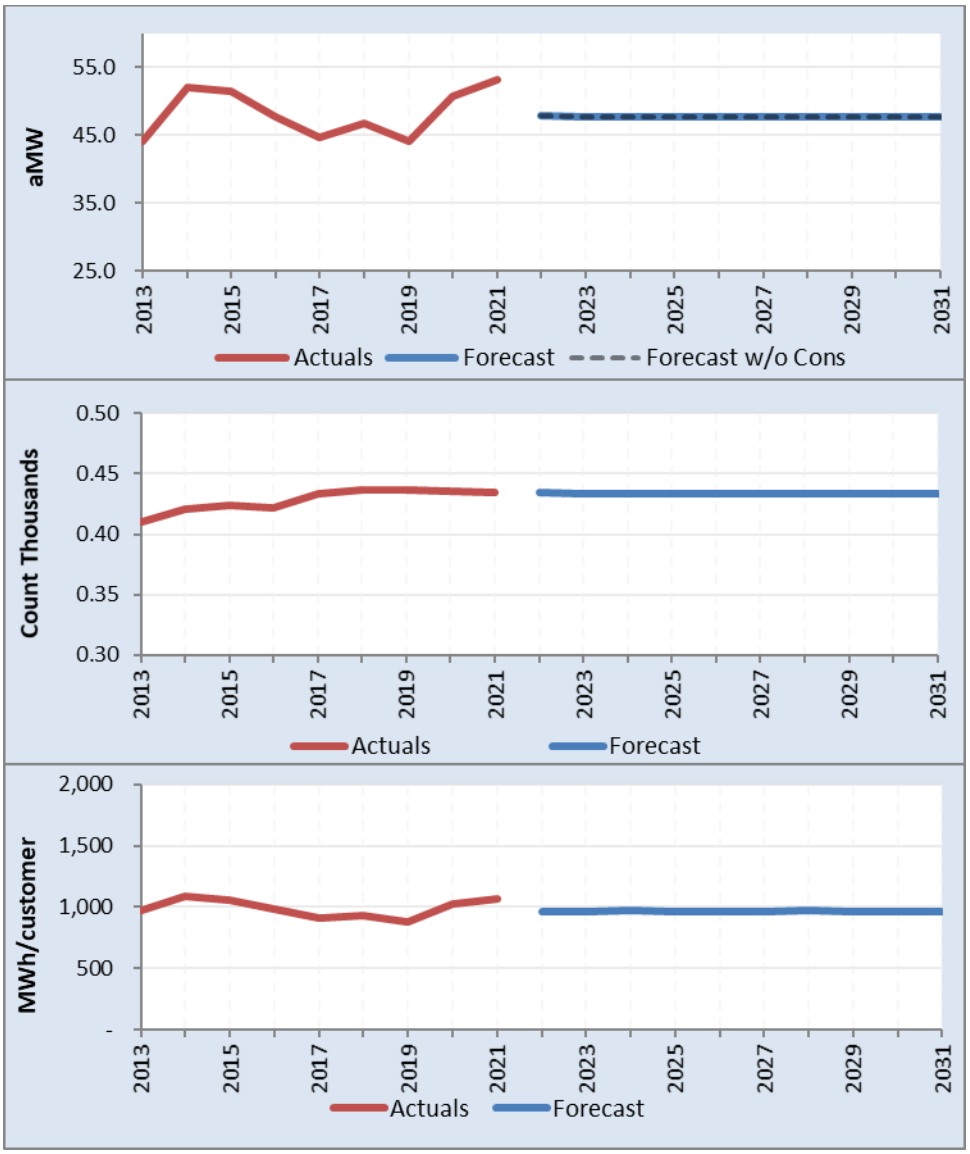


Figure 6-7 – Large Irrigation forecast of retail load, customers and usage per customer

Table 6-7 – Large Irrigation forecast of retail load, customers and usage per customer

Calendar Year	Historical Energy (MWh)	Forecast Energy (MWh)	Average Power (aMW)	Average Power % Change	Forecast without Conservation (MWh)	Forecast without Conservation (aMW)	Year-End Customer Count	Year-End Customer Change	1-Year % Change	Average Customer Count	Usage Per Customer (MWh)
2005	381,927	#N/A	43.60	6.30%	#N/A	#N/A	288	#N/A	#N/A	288	1,326.136
2006	353,743	#N/A	40.38	-7.38%	#N/A	#N/A	293	5	1.74%	291	1,215.612
2007	386,402	#N/A	44.11	9.23%	#N/A	#N/A	308	15	5.12%	302	1,279.477
2008	391,389	#N/A	44.56	1.01%	#N/A	#N/A	316	8	2.60%	313	1,250.444
2009	410,386	#N/A	46.85	5.14%	#N/A	#N/A	325	9	2.85%	323	1,270.544
2010	356,875	#N/A	40.74	-13.04%	#N/A	#N/A	322	-3	-0.92%	326	1,094.709
2011	367,393	#N/A	41.94	2.95%	#N/A	#N/A	334	12	3.73%	332	1,106.605
2012	370,573	#N/A	42.19	0.59%	#N/A	#N/A	355	21	6.29%	350	1,058.781
2013	387,408	#N/A	44.22	4.83%	#N/A	#N/A	410	55	15.49%	400	968.520
2014	455,435	#N/A	51.99	17.56%	#N/A	#N/A	421	11	2.68%	417	1,092.169
2015	451,777	#N/A	51.57	-0.80%	#N/A	#N/A	424	3	0.71%	426	1,060.510
2016	419,588	#N/A	47.77	-7.38%	#N/A	#N/A	422	-2	-0.47%	425	987.267
2017	392,051	#N/A	44.75	-6.31%	#N/A	#N/A	433	11	2.61%	430	911.746
2018	409,299	#N/A	46.72	4.40%	#N/A	#N/A	437	4	0.92%	437	936.611
2019	385,979	#N/A	44.06	-5.70%	#N/A	#N/A	437	0	0.00%	437	883.247
2020	444,958	#N/A	50.66	14.97%	#N/A	#N/A	436	-1	-0.23%	436	1,020.546
2021	465,974	#N/A	53.19	5.01%	#N/A	#N/A	434	-2	-0.46%	437	1,066.301
2022	#N/A	419,232	47.86	-10.03%	419,232	47.86	434	0	0.00%	434	965.973
2023	#N/A	418,652	47.79	-0.14%	418,652	47.79	433	-1	-0.23%	433	965.935
2024	#N/A	419,787	47.79	0.00%	419,787	47.79	433	0	0.00%	433	969.486
2025	#N/A	418,640	47.79	0.00%	418,640	47.79	433	0	0.00%	433	966.837
2026	#N/A	418,640	47.79	0.00%	418,640	47.79	433	0	0.00%	433	966.837
2027	#N/A	418,640	47.79	0.00%	418,640	47.79	433	0	0.00%	433	966.837
2028	#N/A	419,787	47.79	0.00%	419,787	47.79	433	0	0.00%	433	969.486
2029	#N/A	418,640	47.79	0.00%	418,640	47.79	433	0	0.00%	433	966.837
2030	#N/A	418,640	47.79	0.00%	418,640	47.79	433	0	0.00%	433	966.837
2031	#N/A	418,640	47.79	0.00%	418,640	47.79	433	0	0.00%	433	966.837
AARG %[1] (2022-2026)			-0.04%								0.02%
AARG %[1] (2022-2031)			-0.02%								0.01%

6.8 Street Lighting

The forecast for street lighting retail load is 0.27 aMW in 2022 and is estimated to remain flat over the ten-year forecast period, with no conservation measures and no additional customers expected be added. Note that new street lighting installations are typically metered and therefore would be classified as small general service. See **Figure 6-8** and **Table 6-8** for the ten-year forecast detail.

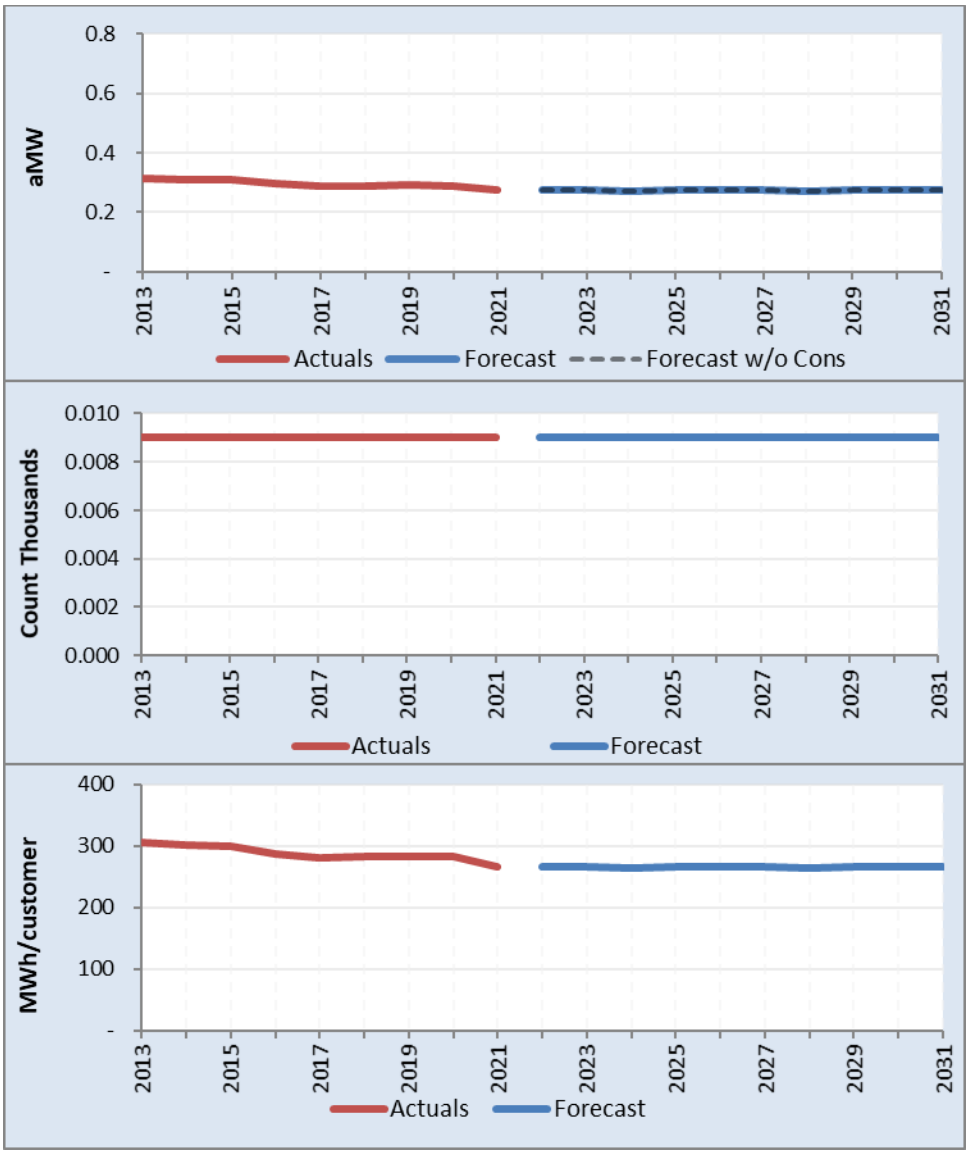


Figure 6-8 – Street Lighting forecast of retail load, customers and usage per customer

Table 6-8 – Street Lighting forecast of retail load, customers and usage per customer

Calendar Year	Historical Energy (MWh)	Forecast Energy (MWh)	Average Power (aMW)	Average Power % Change	Forecast without Conservation (MWh)	Forecast without Conservation (aMW)	Year-End Customer Count	Year-End Customer Change	1-Year % Change	Average Customer Count	Usage Per Customer (MWh)
2005	4,067	#N/A	0.46	3.06%	#N/A	#N/A	9	#N/A	#N/A	9	451.882
2006	4,084	#N/A	0.47	0.41%	#N/A	#N/A	9	0	0.00%	9	453.740
2007	4,151	#N/A	0.47	1.66%	#N/A	#N/A	9	0	0.00%	9	461.266
2008	4,218	#N/A	0.48	1.33%	#N/A	#N/A	9	0	0.00%	9	468.669
2009	4,268	#N/A	0.49	1.46%	#N/A	#N/A	9	0	0.00%	9	474.203
2010	4,339	#N/A	0.50	1.68%	#N/A	#N/A	9	0	0.00%	9	482.159
2011	5,532	#N/A	0.63	27.48%	#N/A	#N/A	9	0	0.00%	9	614.671
2012	4,136	#N/A	0.47	-25.43%	#N/A	#N/A	9	0	0.00%	9	459.597
2013	2,751	#N/A	0.31	-33.31%	#N/A	#N/A	9	0	0.00%	9	305.647
2014	2,721	#N/A	0.31	-1.10%	#N/A	#N/A	9	0	0.00%	9	302.278
2015	2,704	#N/A	0.31	-0.62%	#N/A	#N/A	9	0	0.00%	9	300.405
2016	2,589	#N/A	0.29	-4.50%	#N/A	#N/A	9	0	0.00%	9	287.682
2017	2,535	#N/A	0.29	-1.83%	#N/A	#N/A	9	0	0.00%	9	281.642
2018	2,537	#N/A	0.29	0.10%	#N/A	#N/A	9	0	0.00%	9	281.920
2019	2,546	#N/A	0.29	0.34%	#N/A	#N/A	9	0	0.00%	9	282.868
2020	2,547	#N/A	0.29	-0.22%	#N/A	#N/A	9	0	0.00%	9	283.029
2021	2,393	#N/A	0.27	-5.80%	#N/A	#N/A	9	0	0.00%	9	265.894
2022	#N/A	2,392	0.27	-0.06%	2,392	0.27	9	0	0.00%	9	265.723
2023	#N/A	2,392	0.27	0.00%	2,392	0.27	9	0	0.00%	9	265.723
2024	#N/A	2,391	0.27	-0.30%	2,391	0.27	9	0	0.00%	9	265.640
2025	#N/A	2,392	0.27	0.31%	2,392	0.27	9	0	0.00%	9	265.723
2026	#N/A	2,392	0.27	0.00%	2,392	0.27	9	0	0.00%	9	265.723
2027	#N/A	2,392	0.27	0.00%	2,392	0.27	9	0	0.00%	9	265.723
2028	#N/A	2,391	0.27	-0.30%	2,391	0.27	9	0	0.00%	9	265.640
2029	#N/A	2,392	0.27	0.31%	2,392	0.27	9	0	0.00%	9	265.723
2030	#N/A	2,392	0.27	0.00%	2,392	0.27	9	0	0.00%	9	265.723
2031	#N/A	2,392	0.27	0.00%	2,392	0.27	9	0	0.00%	9	265.723
AARG %[1] (2022-2026)			0.00%								0.00%
AARG %[1] (2022-2031)			0.00%								0.00%

1) AARG % = Annual Average Rate of Growth Percentage

6.9 Security Lighting

The forecast for security lighting retail load is 0.10 aMW in 2022. The five and ten-year average annual rates of growth are -2.15% and -1.96% respectively. No conservation measures and no additional customers are expected to be added. See **Figure 6-9** and **Table 6-9** for the ten-year forecast detail.

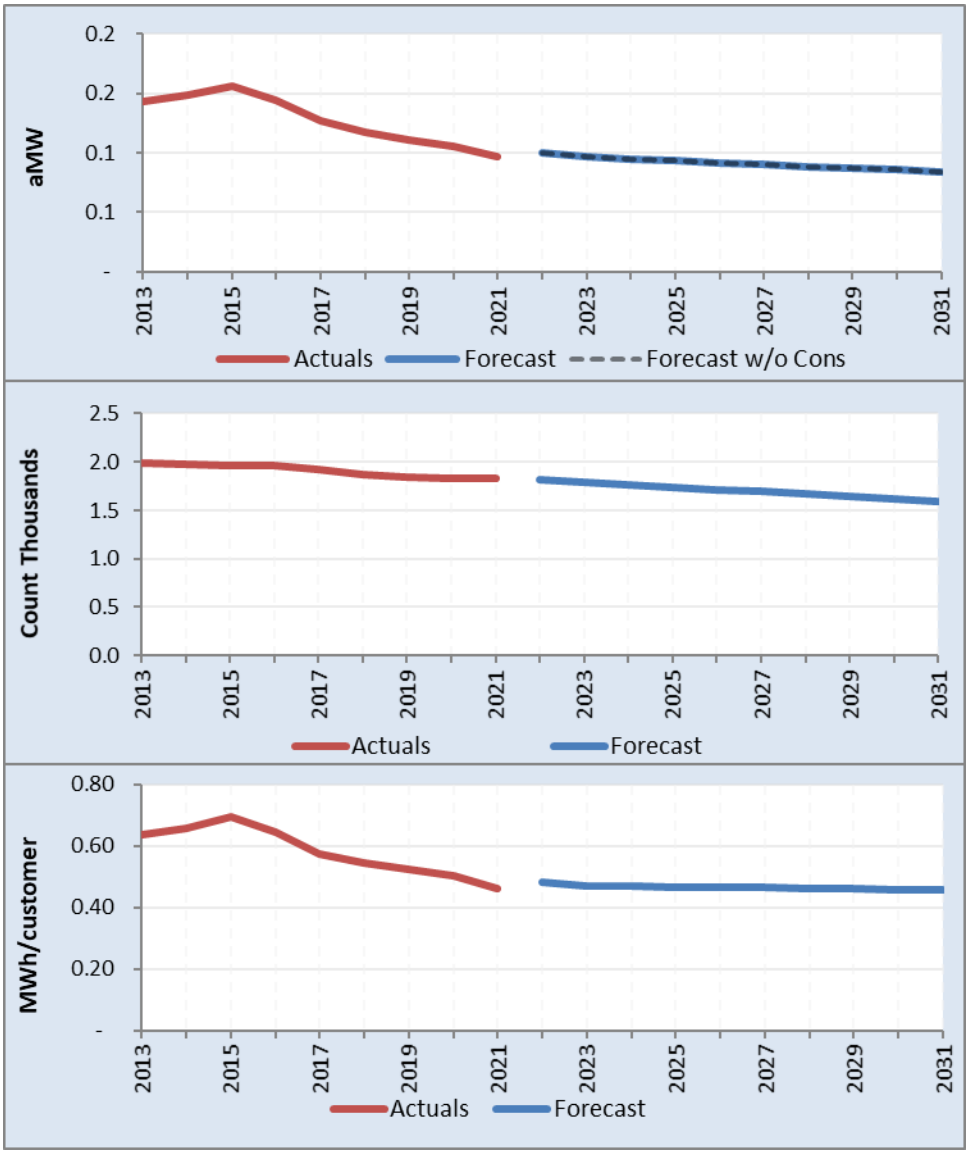


Figure 6-9 – Security Lighting forecast of retail load, customers and usage per customer

Table 6-9 – Security Lighting forecast of retail load, customers and usage per customer

Calendar Year	Historical Energy (MWh)	Forecast Energy (MWh)	Average Power (aMW)	Average Power % Change	Forecast without Conservation (MWh)	Forecast without Conservation (aMW)	Year-End Customer Count	Year-End Customer Change	1-Year % Change	Average Customer Count	Usage Per Customer (MWh)
2005	1,066	#N/A	0.12	-1.99%	#N/A	#N/A	1,920	#N/A	#N/A	1,925	0.554
2006	1,025	#N/A	0.12	-3.92%	#N/A	#N/A	1,916	-4	-0.21%	1,914	0.535
2007	1,028	#N/A	0.12	0.29%	#N/A	#N/A	1,933	17	0.89%	1,925	0.534
2008	1,036	#N/A	0.12	0.52%	#N/A	#N/A	1,928	-5	-0.26%	1,936	0.535
2009	1,045	#N/A	0.12	1.19%	#N/A	#N/A	1,947	19	0.99%	1,938	0.539
2010	1,068	#N/A	0.12	2.22%	#N/A	#N/A	1,963	16	0.82%	1,953	0.547
2011	1,087	#N/A	0.12	1.72%	#N/A	#N/A	1,966	3	0.15%	1,967	0.553
2012	1,084	#N/A	0.12	-0.56%	#N/A	#N/A	1,968	2	0.10%	1,965	0.552
2013	1,257	#N/A	0.14	16.34%	#N/A	#N/A	1,985	17	0.86%	1,973	0.637
2014	1,297	#N/A	0.15	3.12%	#N/A	#N/A	1,974	-11	-0.55%	1,978	0.656
2015	1,364	#N/A	0.16	5.19%	#N/A	#N/A	1,963	-11	-0.56%	1,967	0.693
2016	1,263	#N/A	0.14	-7.64%	#N/A	#N/A	1,958	-5	-0.25%	1,961	0.644
2017	1,112	#N/A	0.13	-11.72%	#N/A	#N/A	1,929	-29	-1.48%	1,943	0.572
2018	1,028	#N/A	0.12	-7.60%	#N/A	#N/A	1,870	-59	-3.06%	1,888	0.544
2019	969	#N/A	0.11	-5.68%	#N/A	#N/A	1,837	-33	-1.76%	1,854	0.523
2020	924	#N/A	0.11	-4.92%	#N/A	#N/A	1,826	-11	-0.60%	1,829	0.505
2021	847	#N/A	0.10	-8.12%	#N/A	#N/A	1,836	10	0.55%	1,833	0.462
2022	#N/A	878	0.10	3.65%	878	0.10	1,812	-24	-1.31%	1,823	0.481
2023	#N/A	846	0.10	-3.54%	846	0.10	1,788	-24	-1.32%	1,799	0.471
2024	#N/A	832	0.09	-1.98%	832	0.09	1,764	-24	-1.34%	1,775	0.469
2025	#N/A	819	0.09	-1.35%	819	0.09	1,740	-24	-1.36%	1,751	0.467
2026	#N/A	805	0.09	-1.71%	805	0.09	1,716	-24	-1.38%	1,727	0.466
2027	#N/A	791	0.09	-1.74%	791	0.09	1,692	-24	-1.40%	1,703	0.464
2028	#N/A	776	0.09	-2.11%	776	0.09	1,668	-24	-1.42%	1,679	0.462
2029	#N/A	763	0.09	-1.46%	763	0.09	1,644	-24	-1.44%	1,655	0.461
2030	#N/A	749	0.09	-1.83%	749	0.09	1,620	-24	-1.46%	1,631	0.459
2031	#N/A	735	0.08	-1.87%	735	0.08	1,596	-24	-1.48%	1,607	0.457
AARG %[1] (2022-2026)			-2.15%								-0.82%
AARG %[1] (2022-2031)			-1.96%								-0.57%

1) AARG % = Annual Average Rate of Growth Percentage

6.10 Unmetered Flats

The forecast for unmetered flats retail load is 0.34 aMW in 2022 and is estimated to increase slowly over the ten-year forecast period to 0.36 by 2031. There are no expected conservation measures and approximately 2 additional customers are expected to be added annually. See **Figure 6-10** and **Table 6-10** for the ten-year forecast detail.

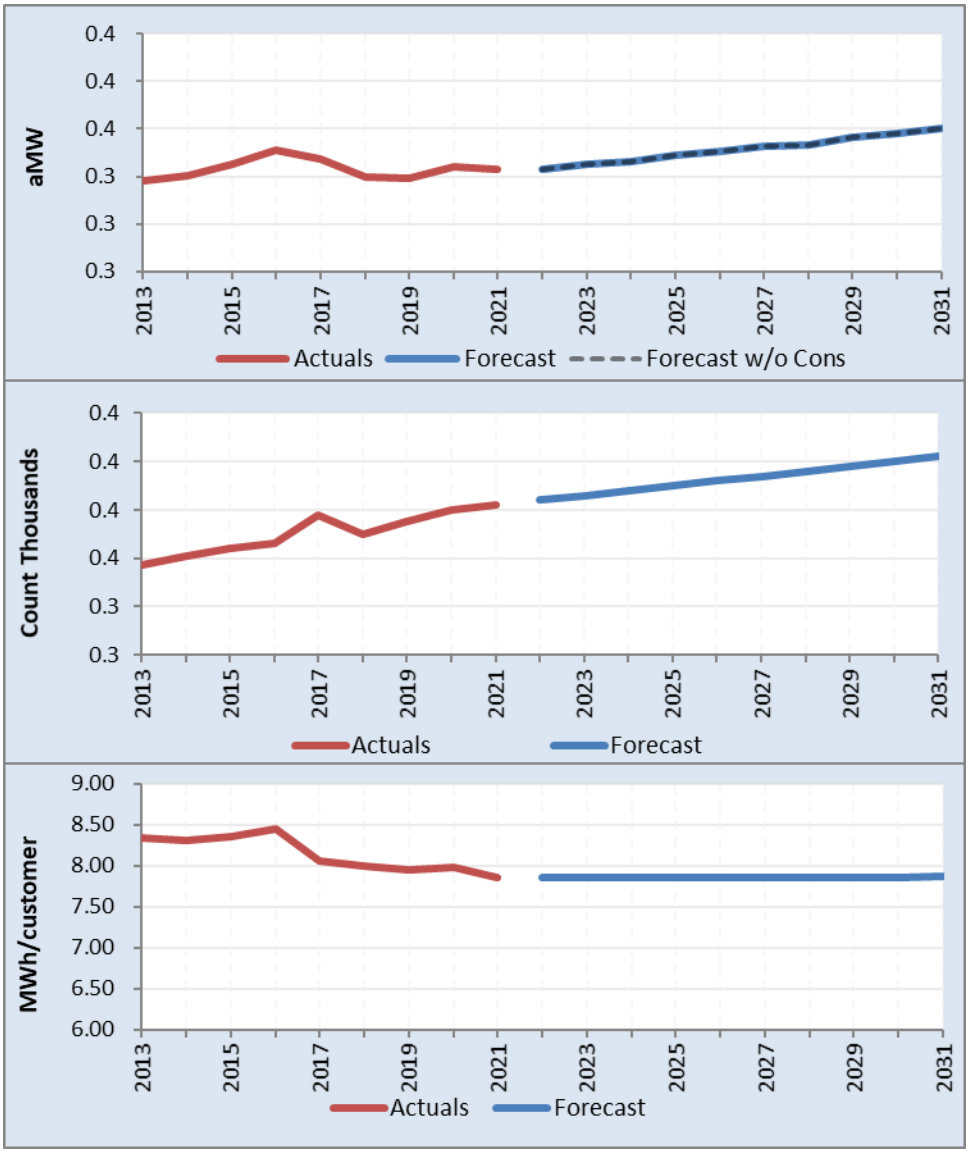


Figure 6-10 – Unmetered Flats forecast of retail load, customers and usage per customer

Table 6-10 – Unmetered Flats forecast of retail load, customers and usage per customer

Calendar Year	Historical Energy (MWh)	Forecast Energy (MWh)	Average Power (aMW)	Average Power % Change	Forecast without Conservation (MWh)	Forecast without Conservation (aMW)	Year-End Customer Count	Year-End Customer Change	1-Year % Change	Average Customer Count	Usage Per Customer (MWh)
2005	2,492	#N/A	0.28	4.56%	#N/A	#N/A	352	#N/A	#N/A	353	7.059
2006	2,833	#N/A	0.32	13.70%	#N/A	#N/A	354	2	0.57%	353	8.026
2007	2,846	#N/A	0.32	0.47%	#N/A	#N/A	354	0	0.00%	354	8.041
2008	2,848	#N/A	0.32	-0.21%	#N/A	#N/A	354	0	0.00%	354	8.046
2009	2,875	#N/A	0.33	1.22%	#N/A	#N/A	355	1	0.28%	354	8.122
2010	2,896	#N/A	0.33	0.72%	#N/A	#N/A	362	7	1.97%	358	8.089
2011	2,909	#N/A	0.33	0.46%	#N/A	#N/A	351	-11	-3.04%	359	8.103
2012	2,928	#N/A	0.33	0.36%	#N/A	#N/A	354	3	0.85%	353	8.294
2013	2,964	#N/A	0.34	1.50%	#N/A	#N/A	357	3	0.85%	355	8.348
2014	2,981	#N/A	0.34	0.57%	#N/A	#N/A	361	4	1.12%	359	8.302
2015	3,023	#N/A	0.35	1.41%	#N/A	#N/A	364	3	0.83%	362	8.350
2016	3,083	#N/A	0.35	1.72%	#N/A	#N/A	366	2	0.55%	365	8.447
2017	3,044	#N/A	0.35	-0.98%	#N/A	#N/A	378	12	3.28%	378	8.054
2018	2,975	#N/A	0.34	-2.28%	#N/A	#N/A	370	-8	-2.12%	372	7.997
2019	2,971	#N/A	0.34	-0.12%	#N/A	#N/A	375	5	1.35%	374	7.944
2020	3,023	#N/A	0.34	1.47%	#N/A	#N/A	380	5	1.33%	379	7.977
2021	3,003	#N/A	0.34	-0.39%	#N/A	#N/A	382	2	0.53%	382	7.862
2022	#N/A	3,004	0.34	0.03%	3,004	0.34	384	2	0.52%	383	7.850
2023	#N/A	3,023	0.35	0.63%	3,023	0.35	386	2	0.52%	385	7.852
2024	#N/A	3,039	0.35	0.25%	3,039	0.35	388	2	0.52%	387	7.853
2025	#N/A	3,056	0.35	0.82%	3,056	0.35	390	2	0.52%	389	7.855
2026	#N/A	3,072	0.35	0.53%	3,072	0.35	392	2	0.51%	391	7.857
2027	#N/A	3,088	0.35	0.53%	3,088	0.35	394	2	0.51%	393	7.858
2028	#N/A	3,104	0.35	0.24%	3,104	0.35	396	2	0.51%	395	7.859
2029	#N/A	3,121	0.36	0.81%	3,121	0.36	398	2	0.51%	397	7.861
2030	#N/A	3,137	0.36	0.52%	3,137	0.36	400	2	0.50%	399	7.863
2031	#N/A	3,153	0.36	0.52%	3,153	0.36	402	2	0.50%	401	7.864
AARG %[1] (2022-2026)			0.56%								0.02%
AARG %[1] (2022-2031)			0.54%								0.02%

1) AARG % = Annual Average Rate of Growth Percentage

7. Appendix A – Summary Tables

Appendix A

Table 7-1 – Total system historical and forecast of annual load, losses and peak demand

Calendar Year	Total Retail Load (aMW)			+ BPUD T&D[1] System Losses (aMW)	(%)	= Total Load at BPA Point-of-Delivery (aMW)			+ BPA Trans.[2] Loss Returns (aMW)	(%)	= Total Power Supply Requirement (aMW)			System Peak Hourly Demand (MW)		
2005	182.9			4.5	2.4%	187.5			#N/A	#N/A	#N/A			366.5		
2006	177.6			5.3	2.9%	182.9			#N/A	#N/A	#N/A			373.3		
2007	183.5			6.7	3.5%	190.2			#N/A	#N/A	#N/A			384.3		
2008	186.7			7.3	3.8%	194.0			#N/A	#N/A	#N/A			396.9		
2009	197.1			6.2	3.1%	203.3			#N/A	#N/A	#N/A			402.1		
2010	181.8			7.0	3.7%	188.9			#N/A	#N/A	#N/A			392.1		
2011	188.2			6.2	3.2%	194.3			#N/A	#N/A	#N/A			379.5		
2012	187.3			5.8	3.0%	193.1			3.5	1.8%	196.7			394.0		
2013	193.7			8.7	4.3%	202.4			3.3	1.6%	205.7			414.5		
2014	203.3			5.1	2.4%	208.4			3.5	1.7%	211.9			430.5		
2015	198.4			7.5	3.6%	205.9			3.4	1.7%	209.3			429.5		
2016	192.9			7.4	3.7%	200.3			3.2	1.6%	203.4			425.1		
2017	203.8			7.1	3.4%	210.9			3.2	1.5%	214.1			426.0		
2018	198.7			5.9	2.9%	204.7			3.2	1.6%	207.9			419.0		
2019	201.6			7.5	3.6%	209.1			4.1	1.9%	213.2			407.7		
2020	198.0			7.5	3.6%	205.5			3.2	1.5%	208.6			437.0		
2021	206.3			8.3	3.9%	214.6			3.1	1.4%	217.7			489.6		
Forecast	**Low**	**Base**	**High**	**aMW**	**%**	**Low**	**Base**	**High**	**aMW**	**%**	**Low**	**Base**	**High**	**Low**	**Base**	**High**
2022	193.6	202.9	212.1	7.0	3.4%	200.6	209.9	219.1	4.3	2.0%	204.9	214.2	223.4	405.7	424.1	442.6
2023	194.5	203.8	213.1	7.0	3.4%	201.6	210.8	220.1	4.3	2.0%	205.9	215.2	224.4	407.7	426.1	444.5
2024	195.1	204.4	213.7	7.0	3.4%	202.1	211.4	220.7	4.3	2.0%	206.4	215.8	225.0	410.1	428.4	446.8
2025	196.1	205.4	214.7	7.1	3.4%	203.1	212.5	221.8	4.3	2.0%	207.5	216.9	226.2	411.1	429.4	447.8
2026	196.4	205.8	215.1	7.1	3.4%	203.5	212.8	222.2	4.3	2.0%	207.8	217.3	226.5	411.9	430.2	448.5
2027	197.0	206.4	215.8	7.1	3.4%	204.1	213.5	222.9	4.4	2.0%	208.5	217.9	227.2	413.3	431.5	449.8
2028	197.2	206.6	216.0	7.1	3.4%	204.3	213.8	223.2	4.4	2.0%	208.7	218.2	227.5	415.0	433.3	451.6
2029	197.9	207.3	216.8	7.1	3.4%	205.0	214.5	223.9	4.4	2.0%	209.4	218.9	228.3	415.4	433.6	451.8
2030	198.1	207.6	217.0	7.2	3.4%	205.3	214.7	224.2	4.4	2.0%	209.7	219.2	228.6	416.0	434.2	452.4
2031	198.7	208.2	217.6	7.2	3.4%	205.9	215.3	224.8	4.4	2.0%	210.3	219.8	229.2	417.2	435.4	453.6

1) BPUD T&D = Benton P.U.D. Transmission & Distribution; Forcast loss factor is equal to the 10-year historical average.

2) BPA Trans. = Bonneville Power Administration Transmission; Forecast loss factor is per Schedule 11 of BPA's Open Access Transmission Tariff (OATT).

Appendix A

Table 7-2 – Historical & BASE case forecast of annual retail load (aMW) by customer class

Calendar Year	Residential	Small General	Medium General	Large General	Large Industrial	Small Irrigation	Large Irrigation	Street Lights	Security Lights	Unmetered Flats	Total System	Annual % Change
2005	71.1	13.1	18.7	27.7	6.1	1.8	43.6	0.5	0.1	0.3	182.9	0.62%
2006	72.2	12.9	18.3	27.0	4.3	1.6	40.4	0.5	0.1	0.3	177.6	-2.92%
2007	73.6	13.1	18.9	25.5	5.6	1.8	44.1	0.5	0.1	0.3	183.5	3.31%
2008	75.9	13.2	19.3	25.6	5.4	1.8	44.6	0.5	0.1	0.3	186.7	1.75%
2009	82.4	13.9	20.0	26.6	4.4	1.9	46.8	0.5	0.1	0.3	197.1	5.56%
2010	74.7	13.0	19.5	25.0	6.3	1.6	40.7	0.5	0.1	0.3	181.8	-7.74%
2011	78.5	13.5	20.0	23.9	7.5	1.7	41.9	0.6	0.1	0.3	188.2	3.49%
2012	76.0	13.6	20.0	24.7	8.0	1.7	42.2	0.5	0.1	0.3	187.3	-0.46%
2013	79.7	14.0	20.2	25.0	8.0	1.7	44.2	0.3	0.1	0.3	193.7	3.41%
2014	79.5	14.2	20.8	25.9	8.2	2.0	52.0	0.3	0.1	0.3	203.3	4.98%
2015	76.0	13.9	20.8	25.8	7.6	1.9	51.6	0.3	0.2	0.3	198.4	-2.43%
2016	75.3	13.9	20.5	25.4	7.4	1.8	47.8	0.3	0.1	0.4	192.9	-2.79%
2017	86.7	14.7	21.3	26.3	7.7	1.6	44.8	0.3	0.1	0.3	203.8	5.66%
2018	79.6	14.3	20.9	27.2	7.5	1.7	46.7	0.3	0.1	0.3	198.7	-2.48%
2019	85.7	14.7	21.1	26.4	7.3	1.5	44.1	0.3	0.1	0.3	201.6	1.45%
2020	80.2	12.7	19.6	25.0	7.2	1.9	50.7	0.3	0.1	0.3	198.0	-1.78%
2021	81.3	13.3	20.9	27.6	7.4	1.9	53.2	0.3	0.1	0.3	206.3	4.19%
2022	83.1	13.5	20.8	27.8	7.3	1.7	47.9	0.3	0.1	0.3	202.9	-1.67%
2023	83.7	13.4	21.0	28.2	7.3	1.7	47.8	0.3	0.1	0.3	203.8	0.47%
2024	84.2	13.3	21.0	28.3	7.3	1.7	47.8	0.3	0.1	0.3	204.4	0.27%
2025	84.7	13.2	21.1	28.8	7.3	1.7	47.8	0.3	0.1	0.3	205.4	0.51%
2026	85.3	13.1	21.0	28.8	7.3	1.7	47.8	0.3	0.1	0.4	205.8	0.17%
2027	85.8	13.1	21.0	28.9	7.3	1.7	47.8	0.3	0.1	0.4	206.4	0.30%
2028	86.3	13.0	20.9	28.9	7.3	1.7	47.8	0.3	0.1	0.4	206.6	0.12%
2029	86.9	12.9	20.9	29.1	7.3	1.7	47.8	0.3	0.1	0.4	207.3	0.34%
2030	87.4	12.8	20.8	29.0	7.3	1.7	47.8	0.3	0.1	0.4	207.6	0.12%
2031	87.9	12.7	20.8	29.2	7.3	1.7	47.8	0.3	0.1	0.4	208.2	0.29%
AARG %[1] 2022-2026	**0.64%**	**-0.67%**	**0.23%**	**0.89%**	**0.00%**	**-0.43%**	**-0.04%**	**0.00%**	**-2.15%**	**0.56%**	**0.35%**	
AARG %[1] 2022-2031	**0.63%**	**-0.68%**	**0.01%**	**0.55%**	**0.00%**	**-0.40%**	**-0.02%**	**0.00%**	**-1.96%**	**0.54%**	**0.29%**	

1) AARG % = Annual Average Rate of Growth Percentage

Table 7-3 – HIGH case forecast of annual retail load (aMW) by customer class

Calendar Year	Residential	Small General	Medium General	Large General	Large Industrial	Small Irrigation	Large Irrigation	Street Lights	Security Lights	Unmetered Flats	Total System
2022	87.2	14.0	21.5	28.6	7.3	1.8	51.0	0.3	0.1	0.3	212.1
2023	87.7	13.9	21.7	29.0	7.3	1.8	50.9	0.3	0.1	0.3	213.1
2024	88.3	13.8	21.7	29.2	7.3	1.8	50.9	0.3	0.1	0.3	213.7
2025	88.8	13.7	21.8	29.7	7.3	1.8	50.9	0.3	0.1	0.3	214.7
2026	89.4	13.6	21.7	29.7	7.3	1.8	50.9	0.3	0.1	0.4	215.1
2027	90.0	13.5	21.7	29.8	7.3	1.8	50.9	0.3	0.1	0.4	215.8
2028	90.5	13.4	21.6	29.8	7.3	1.8	50.9	0.3	0.1	0.4	216.0
2029	91.1	13.3	21.7	30.0	7.3	1.8	50.9	0.3	0.1	0.4	216.8
2030	91.6	13.2	21.5	29.9	7.3	1.8	50.9	0.3	0.1	0.4	217.0
2031	92.2	13.1	21.5	30.1	7.3	1.8	50.9	0.3	0.1	0.4	217.6
AARG %[1] 2022-2026	**0.64%**	**-0.67%**	**0.23%**	**0.89%**	**0.00%**	**-0.43%**	**-0.04%**	**0.00%**	**-2.15%**	**0.56%**	**0.35%**
AARG %[1] 2022-2031	**0.63%**	**-0.68%**	**0.01%**	**0.55%**	**0.00%**	**-0.40%**	**-0.02%**	**0.00%**	**-1.96%**	**0.54%**	**0.29%**

1) AARG % = Annual Average Rate of Growth Percentage

Table 7-4 – LOW case forecast of annual retail load (aMW) by customer class

Calendar Year	Residential	Small General	Medium General	Large General	Large Industrial	Small Irrigation	Large Irrigation	Street Lights	Security Lights	Unmetered Flats	Total System
2022	79.1	13.0	20.1	26.9	7.3	1.7	44.8	0.3	0.1	0.3	193.6
2023	79.6	13.0	20.3	27.3	7.3	1.6	44.7	0.3	0.1	0.3	194.5
2024	80.1	12.9	20.2	27.5	7.3	1.6	44.7	0.3	0.1	0.3	195.1
2025	80.6	12.8	20.4	27.9	7.3	1.6	44.7	0.3	0.1	0.3	196.1
2026	81.1	12.7	20.3	27.9	7.3	1.6	44.7	0.3	0.1	0.4	196.4
2027	81.6	12.6	20.3	28.1	7.3	1.6	44.7	0.3	0.1	0.4	197.0
2028	82.1	12.5	20.2	28.0	7.3	1.6	44.7	0.3	0.1	0.4	197.2
2029	82.6	12.4	20.2	28.2	7.3	1.6	44.7	0.3	0.1	0.4	197.9
2030	83.2	12.3	20.1	28.2	7.3	1.6	44.7	0.3	0.1	0.4	198.1
2031	83.7	12.3	20.1	28.3	7.3	1.6	44.7	0.3	0.1	0.4	198.7
AARG %[1] 2022-2026	**0.64%**	**-0.67%**	**0.23%**	**0.89%**	**0.00%**	**-0.43%**	**-0.04%**	**0.00%**	**-2.15%**	**0.56%**	**0.35%**
AARG %[1] 2022-2031	**0.63%**	**-0.68%**	**0.01%**	**0.55%**	**0.00%**	**-0.40%**	**-0.02%**	**0.00%**	**-1.96%**	**0.54%**	**0.29%**

1) AARG % = Annual Average Rate of Growth Percentage

Appendix A

Table 7-5 – Total System Historical BASE case forecast of MONTHLY and annual retail load (aMW)

Calendar Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2005	188.8	165.8	163.5	168.1	177.3	229.3	255.6	251.2	170.2	124.0	134.7	164.2	182.9
2006	167.3	162.9	155.4	151.7	177.2	221.6	250.4	233.4	171.8	131.1	135.0	171.0	177.6
2007	182.2	185.4	148.3	155.5	187.7	235.0	254.1	236.0	187.5	127.6	143.7	158.6	183.5
2008	176.4	188.5	147.5	182.2	191.7	228.2	262.4	234.6	177.5	149.1	127.3	174.0	186.7
2009	201.8	185.2	161.9	172.6	209.5	258.3	267.4	250.3	187.6	144.4	142.3	181.6	197.1
2010	191.9	157.1	150.6	180.6	175.6	204.6	253.5	250.5	167.1	133.4	129.5	183.6	181.8
2011	186.4	180.8	156.1	173.6	174.5	221.0	247.3	253.8	209.0	136.1	136.1	182.3	188.2
2012	190.0	188.1	145.8	165.4	205.4	207.7	245.0	258.7	197.4	141.2	146.8	155.2	187.3
2013	185.8	187.3	150.1	167.3	206.6	234.1	274.0	249.5	186.1	148.6	148.8	184.3	193.7
2014	194.0	207.4	161.0	184.7	210.4	265.2	283.5	255.1	199.3	161.9	145.4	172.1	203.3
2015	178.8	178.2	148.2	181.5	201.0	288.8	296.2	248.9	197.7	154.4	136.6	168.9	198.4
2016	191.6	175.0	145.0	193.5	205.2	257.1	258.1	249.9	190.4	143.8	135.2	168.4	192.9
2017	228.0	221.2	169.4	160.9	191.5	266.3	289.6	261.5	193.4	148.1	148.5	167.1	203.8
2018	194.5	177.9	163.2	170.5	210.0	260.7	285.1	263.1	191.1	146.0	148.8	171.1	198.7
2019	178.1	215.8	192.3	168.6	193.8	271.3	259.8	257.0	195.7	151.1	160.2	176.8	201.6
2020	178.9	181.0	163.8	194.3	188.1	243.0	274.6	277.4	201.8	152.4	149.3	170.4	198.0
2021	179.4	195.6	169.2	197.3	227.1	283.6	313.9	260.5	195.1	153.6	145.6	153.9	206.3
Min. 2005-2021	**167.3**	**157.1**	**145.0**	**151.7**	**174.5**	**204.6**	**245.0**	**233.4**	**167.1**	**124.0**	**127.3**	**153.9**	**177.6**
Avg. 2017-2021	**191.8**	**198.3**	**171.6**	**178.3**	**202.1**	**265.0**	**284.6**	**263.9**	**195.4**	**150.2**	**150.5**	**167.9**	**201.7**
Max. 2005-2021	**228.0**	**221.2**	**192.3**	**197.3**	**227.1**	**288.8**	**313.9**	**277.4**	**209.0**	**161.9**	**160.2**	**184.3**	**206.3**
2022	184.6	187.7	161.3	166.8	194.3	239.8	294.8	271.5	205.9	161.2	174.0	190.3	202.9
2023	186.1	188.3	161.8	167.4	195.5	241.1	296.5	272.8	206.2	161.6	174.5	191.6	203.8
2024	187.2	183.5	161.4	168.1	198.2	244.8	299.9	271.9	205.0	161.4	175.6	193.2	204.4
2025	188.5	189.0	162.1	167.9	196.9	244.0	300.1	275.3	207.0	162.0	175.2	194.3	205.4
2026	189.4	189.0	162.0	167.9	197.2	244.9	301.3	276.0	207.0	161.6	175.0	195.1	205.8
2027	190.5	189.3	162.0	167.9	197.9	246.0	302.9	277.1	207.1	161.7	175.2	196.3	206.4
2028	191.4	185.9	161.4	168.4	200.2	248.9	305.5	275.6	205.3	161.1	176.0	197.7	206.6
2029	192.5	190.9	161.9	167.9	198.5	247.9	305.3	278.6	207.1	161.3	175.1	198.3	207.3
2030	193.2	191.3	161.5	167.6	198.8	248.4	306.4	279.2	206.8	160.9	175.0	199.1	207.6
2031	194.3	192.2	161.6	167.6	199.2	249.4	307.8	280.1	206.8	160.9	175.2	200.2	208.2

Table 7-6 – 2022 BASE case forecast of MONTHLY and annual retail load (aMW) by customer class

Customer Class	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Small Irrigation	0.0	0.2	0.6	1.4	2.4	3.4	4.5	4.1	2.7	1.2	0.3	0.0	1.7
Large Irrigation	0.0	3.5	12.3	32.7	64.9	98.9	135.5	119.5	70.2	26.9	6.2	0.0	47.9
Residential	115.1	109.0	82.1	65.5	60.0	65.5	79.9	74.6	62.7	67.3	97.4	119.6	83.1
Small General	14.5	14.9	12.5	12.0	12.1	13.5	15.2	14.5	12.8	11.8	13.6	14.8	13.5
Medium General	20.9	22.4	19.7	19.8	19.7	21.2	22.2	21.7	20.7	19.4	20.9	21.3	20.8
Large General	25.9	28.8	26.3	27.5	27.4	29.3	29.6	29.2	28.9	26.9	27.3	26.4	27.8
Large Industrial	7.5	8.1	7.2	7.3	7.0	7.3	7.3	7.2	7.2	7.1	7.5	7.5	7.3
Street Lights	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Security Lights	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Unmetered Flats	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
System Total	**184.6**	**187.7**	**161.3**	**166.8**	**194.3**	**239.8**	**294.8**	**271.5**	**205.9**	**161.2**	**174.0**	**190.3**	**202.9**

Figure 7-1 – 2021 BASE case forecast of MONTHLY and annual retail load (aMW) by customer class

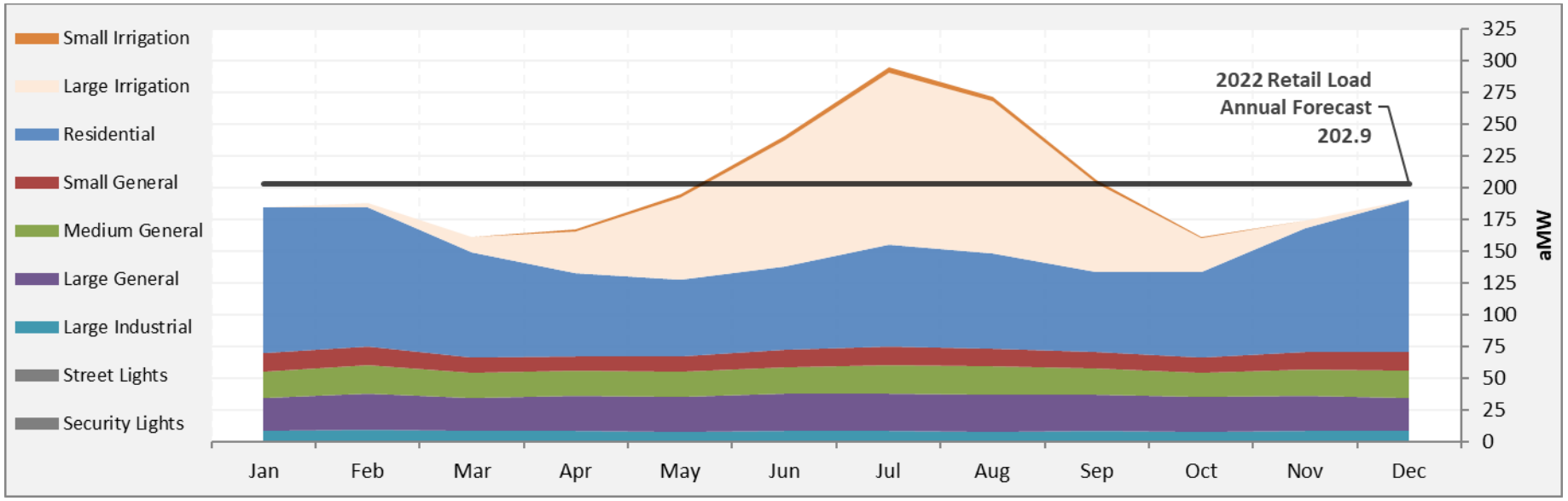


Table 7-7 – Historical and forecast of annual average number of customers by customer class

Calendar Year	Residential	Small General	Medium General	Large General	Large Industrial	Small Irrigation	Large Irrigation	Street Lights	Security Lights	Unmetered Flats	Total System	Annual % Change
2005	36,963	4,144	637	122	5	622	288	9	1,925	353	45,068	#N/A
2006	37,418	4,169	636	126	5	614	291	9	1,914	353	45,535	1.04%
2007	37,969	4,295	654	128	5	607	302	9	1,925	354	46,248	1.57%
2008	38,855	4,385	676	131	5	615	313	9	1,936	354	47,279	2.23%
2009	39,220	4,460	695	134	5	615	323	9	1,938	354	47,753	1.00%
2010	39,687	4,503	718	135	5	602	326	9	1,953	358	48,296	1.14%
2011	40,201	4,553	732	136	5	582	332	9	1,967	359	48,876	1.20%
2012	40,645	4,610	747	142	5	563	350	9	1,965	353	49,389	1.05%
2013	41,321	4,682	746	144	5	564	400	9	1,973	355	50,199	1.64%
2014	41,758	4,741	754	148	5	563	417	9	1,978	359	50,732	1.06%
2015	42,375	4,828	758	151	5	560	426	9	1,967	362	51,441	1.40%
2016	43,157	4,915	768	157	5	558	425	9	1,961	365	52,320	1.71%
2017	43,870	4,977	782	160	5	557	430	9	1,943	378	53,111	1.51%
2018	44,550	4,972	803	162	5	546	437	9	1,888	372	53,744	1.19%
2019	45,319	5,055	820	166	5	542	437	9	1,854	374	54,581	1.56%
2020	46,027	5,134	806	169	5	548	436	9	1,829	379	55,342	1.39%
2021	46,690	5,169	821	177	5	549	437	9	1,833	382	56,072	1.32%
2022	47,305	5,169	831	181	5	534	434	9	1,823	383	56,672	1.07%
2023	47,939	5,204	843	185	5	530	433	9	1,799	385	57,332	1.16%
2024	48,588	5,240	855	190	5	526	433	9	1,775	387	58,006	1.18%
2025	49,272	5,276	867	195	5	522	433	9	1,751	389	58,717	1.23%
2026	49,956	5,312	879	200	5	518	433	9	1,727	391	59,428	1.21%
2027	50,640	5,348	891	204	5	514	433	9	1,703	393	60,138	1.20%
2028	51,324	5,384	903	209	5	510	433	9	1,679	395	60,849	1.18%
2029	52,008	5,420	915	214	5	506	433	9	1,655	397	61,560	1.17%
2030	52,692	5,456	927	218	5	502	433	9	1,631	399	62,270	1.15%
2031	53,376	5,492	939	223	5	498	433	9	1,607	401	62,981	1.14%
AARG %[1] 2022-2026	**1.37%**	**0.68%**	**1.41%**	**2.52%**	**0.00%**	**-0.76%**	**-0.06%**	**0.00%**	**-1.34%**	**0.54%**	**1.19%**	
AARG %[1] 2022-2031	**1.35%**	**0.68%**	**1.37%**	**2.37%**	**0.00%**	**-0.77%**	**-0.03%**	**0.00%**	**-1.39%**	**0.52%**	**1.18%**	

1) AARG % = Annual Average Rate of Growth Percentage

Table 7-8 – Historical and BASE case forecast of annual usage per customer (kWh) by customer class

Calendar Year	Residential	Small General	Medium General	Large General	Large Industrial	Small Irrigation	Large Irrigation	Street Lights	Security Lights	Unmetered Flats	Total System	Annual % Change
2005	16,845	27,681	257,524	1,988,160	10,657,159	25,280	1,326,136	451,882	554	7,059	35,558	#N/A
2006	16,896	27,034	252,263	1,880,220	7,491,183	23,298	1,215,612	453,740	535	8,026	34,165	-3.92%
2007	16,972	26,787	252,577	1,744,660	9,809,030	26,110	1,279,477	461,266	534	8,041	34,753	1.72%
2008	17,151	26,366	250,845	1,717,234	9,552,059	26,086	1,250,444	468,669	535	8,046	34,685	-0.20%
2009	18,402	27,260	252,179	1,741,869	7,781,815	27,453	1,270,544	474,203	539	8,122	36,151	4.23%
2010	16,498	25,202	237,977	1,619,899	11,072,932	23,997	1,094,709	482,159	547	8,089	32,980	-8.77%
2011	17,113	25,991	239,704	1,541,682	13,082,162	25,097	1,106,605	614,671	553	8,103	33,725	2.26%
2012	16,435	25,905	235,607	1,530,826	14,115,033	26,936	1,058,781	459,597	552	8,294	33,313	-1.22%
2013	16,889	26,255	237,601	1,523,024	13,960,556	26,970	968,520	305,647	637	8,348	33,801	1.47%
2014	16,687	26,215	241,437	1,531,617	14,373,897	30,566	1,092,169	302,278	656	8,302	35,112	3.88%
2015	15,705	25,165	240,911	1,497,847	13,388,377	29,330	1,060,510	300,405	693	8,350	33,787	-3.78%
2016	15,333	24,795	234,983	1,422,089	12,922,450	27,952	987,267	287,682	644	8,447	32,379	-4.17%
2017	17,316	25,930	238,050	1,441,715	13,416,822	24,694	911,746	281,642	572	8,054	33,611	3.80%
2018	15,648	25,114	228,051	1,472,877	13,199,344	28,043	936,611	281,920	544	7,997	32,392	-3.63%
2019	16,574	25,487	225,362	1,394,263	12,863,616	24,353	883,247	282,868	523	7,944	32,359	-0.10%
2020	15,304	21,766	214,110	1,297,712	12,725,056	29,774	1,020,546	283,029	505	7,977	31,431	-2.87%
2021	15,246	22,483	223,171	1,367,123	13,016,760	30,543	1,066,301	265,894	462	7,862	32,232	2.55%
2022	15,392	22,889	219,533	1,345,792	12,859,003	28,617	965,973	265,723	481	7,850	31,359	-2.71%
2023	15,286	22,589	218,280	1,332,147	12,859,699	28,703	965,935	265,723	471	7,852	31,143	-0.69%
2024	15,220	22,345	215,361	1,308,325	12,894,064	28,909	969,486	265,640	469	7,853	30,947	-0.63%
2025	15,062	21,983	213,376	1,290,919	12,859,337	28,891	966,837	265,723	467	7,855	30,644	-0.98%
2026	14,950	21,685	209,485	1,262,375	12,860,032	28,993	966,837	265,723	466	7,857	30,330	-1.02%
2027	14,841	21,384	206,950	1,241,469	12,858,975	29,102	966,837	265,723	464	7,858	30,063	-0.88%
2028	14,775	21,159	203,209	1,213,456	12,895,059	29,341	969,486	265,640	462	7,859	29,828	-0.78%
2029	14,631	20,814	200,616	1,192,826	12,860,365	29,336	966,837	265,723	461	7,861	29,503	-1.09%
2030	14,529	20,532	196,850	1,165,467	12,859,308	29,463	966,837	265,723	459	7,863	29,200	-1.03%
2031	14,432	20,254	194,366	1,145,005	12,860,003	29,596	966,837	265,723	457	7,864	28,953	-0.85%
AARG %[1] 2022-2026	**-0.73%**	**-1.34%**	**-1.16%**	**-1.59%**	**0.00%**	**0.33%**	**0.02%**	**0.00%**	**-0.82%**	**0.02%**	**-0.83%**	
AARG %[1] 2022-2031	**-0.71%**	**-1.35%**	**-1.34%**	**-1.78%**	**0.00%**	**0.37%**	**0.01%**	**0.00%**	**-0.57%**	**0.02%**	**-0.88%**	

1) AARG % = Annual Average Rate of Growth Percentage

Table 7-9 – Historical and forecast annual year-end number of customers by customer class

Calendar Year	Residential	Small General	Medium General	Large General	Large Industrial	Small Irrigation	Large Irrigation	Street Lights	Security Lights	Unmetered Flats	Total System	Annual % Change
2005	37,236	4,128	627	123	5	619	288	9	1,920	352	45,307	#N/A
2006	37,802	4,232	641	127	5	602	293	9	1,916	354	45,981	1.49%
2007	38,285	4,324	665	131	5	609	308	9	1,933	354	46,623	1.40%
2008	39,095	4,445	683	132	5	615	316	9	1,928	354	47,582	2.06%
2009	39,430	4,484	707	135	5	610	325	9	1,947	355	48,007	0.89%
2010	39,973	4,528	725	135	5	594	322	9	1,963	362	48,616	1.27%
2011	40,432	4,576	747	141	5	573	334	9	1,966	351	49,134	1.07%
2012	40,955	4,652	742	143	5	555	355	9	1,968	354	49,738	1.23%
2013	41,561	4,709	750	146	5	563	410	9	1,985	357	50,495	1.52%
2014	42,039	4,784	758	151	5	559	421	9	1,974	361	51,061	1.12%
2015	42,724	4,883	762	153	5	558	424	9	1,963	364	51,845	1.54%
2016	43,574	4,949	775	160	5	556	422	9	1,958	366	52,774	1.79%
2017	44,177	5,011	785	160	5	546	433	9	1,929	378	53,433	1.25%
2018	44,946	4,991	815	164	5	529	437	9	1,870	370	54,136	1.32%
2019	45,666	5,081	821	167	5	528	437	9	1,837	375	54,926	1.46%
2020	46,398	5,146	809	176	5	540	436	9	1,826	380	55,725	1.45%
2021	46,936	5,148	825	179	5	535	434	9	1,836	382	56,289	1.01%
2022	47,618	5,185	836	183	5	532	434	9	1,812	384	56,998	1.26%
2023	48,217	5,220	848	187	5	528	433	9	1,788	386	57,621	1.09%
2024	48,901	5,256	860	191	5	524	433	9	1,764	388	58,331	1.23%
2025	49,585	5,292	872	197	5	520	433	9	1,740	390	59,043	1.22%
2026	50,269	5,328	884	201	5	516	433	9	1,716	392	59,753	1.20%
2027	50,953	5,364	896	206	5	512	433	9	1,692	394	60,464	1.19%
2028	51,637	5,400	908	211	5	508	433	9	1,668	396	61,175	1.18%
2029	52,321	5,436	920	215	5	504	433	9	1,644	398	61,885	1.16%
2030	53,005	5,472	932	220	5	500	433	9	1,620	400	62,596	1.15%
2031	53,689	5,508	944	225	5	496	433	9	1,596	402	63,307	1.14%
AARG %[1] 2022-2026	**1.36%**	**0.68%**	**1.41%**	**2.37%**	**0.00%**	**-0.76%**	**-0.06%**	**0.00%**	**-1.35%**	**0.52%**	**1.19%**	
AARG %[1] 2022-2026	**1.34%**	**0.67%**	**1.36%**	**2.32%**	**0.00%**	**-0.78%**	**-0.03%**	**0.00%**	**-1.40%**	**0.51%**	**1.17%**	

1) AARG % = Annual Average Rate of Growth Percentage

Table 7-10 – Historical and forecast annual change in number of customers by customer class

Calendar Year	Residential	Small General	Medium General	Large General	Large Industrial	Small Irrigation	Large Irrigation	Street Lights	Security Lights	Unmetered Flats	Total System	Annual % Change
2005	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
2006	566	104	14	4	0	(17)	5	0	(4)	2	674	#N/A
2007	483	92	24	4	0	7	15	0	17	0	642	-4.75%
2008	810	121	18	1	0	6	8	0	(5)	0	959	49.38%
2009	335	39	24	3	0	(5)	9	0	19	1	425	-55.68%
2010	543	44	18	0	0	(16)	(3)	0	16	7	609	43.29%
2011	459	48	22	6	0	(21)	12	0	3	(11)	518	-14.94%
2012	523	76	(5)	2	0	(18)	21	0	2	3	604	16.60%
2013	606	57	8	3	0	8	55	0	17	3	757	25.33%
2014	478	75	8	5	0	(4)	11	0	(11)	4	566	-25.23%
2015	685	99	4	2	0	(1)	3	0	(11)	3	784	38.52%
2016	850	66	13	7	0	(2)	(2)	0	(5)	2	929	18.49%
2017	603	62	10	0	0	(10)	11	0	(29)	12	659	-29.06%
2018	769	(20)	30	4	0	(17)	4	0	(59)	(8)	703	6.68%
2019	720	90	6	3	0	(1)	0	0	(33)	5	790	12.38%
2020	732	65	(12)	9	0	12	(1)	0	(11)	5	799	1.14%
2021	538	2	16	3	0	(5)	(2)	0	10	2	564	-29.41%
2022	682	37	11	4	0	(3)	0	0	(24)	2	709	25.71%
2023	599	35	12	4	0	(4)	(1)	0	(24)	2	623	-12.13%
2024	684	36	12	4	0	(4)	0	0	(24)	2	710	13.96%
2025	684	36	12	6	0	(4)	0	0	(24)	2	712	0.28%
2026	684	36	12	4	0	(4)	0	0	(24)	2	710	-0.28%
2027	684	36	12	5	0	(4)	0	0	(24)	2	711	0.14%
2028	684	36	12	5	0	(4)	0	0	(24)	2	711	0.00%
2029	684	36	12	4	0	(4)	0	0	(24)	2	710	-0.14%
2030	684	36	12	5	0	(4)	0	0	(24)	2	711	0.14%
2031	684	36	12	5	0	(4)	0	0	(24)	2	711	0.00%