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Planning Forecasts and Considerations

Energy Demand Forecast

Customer energy consumption, measured in MWh, is the primary driver of load in Glendale. However, behind-the-meter solar and storage, energy efficient lighting and other energy efficiency initiatives, electric vehicle adoptions, smart thermostats and devices, and building electrification shifts are beginning to have a key secondary impact to load.

Figure 1 depicts GWP's energy forecast over the planning period with and without the projected energy savings from GWP's energy efficiency programs. The steep rise in 2028 is due to expected load increases from new customers in Glendale's territory.

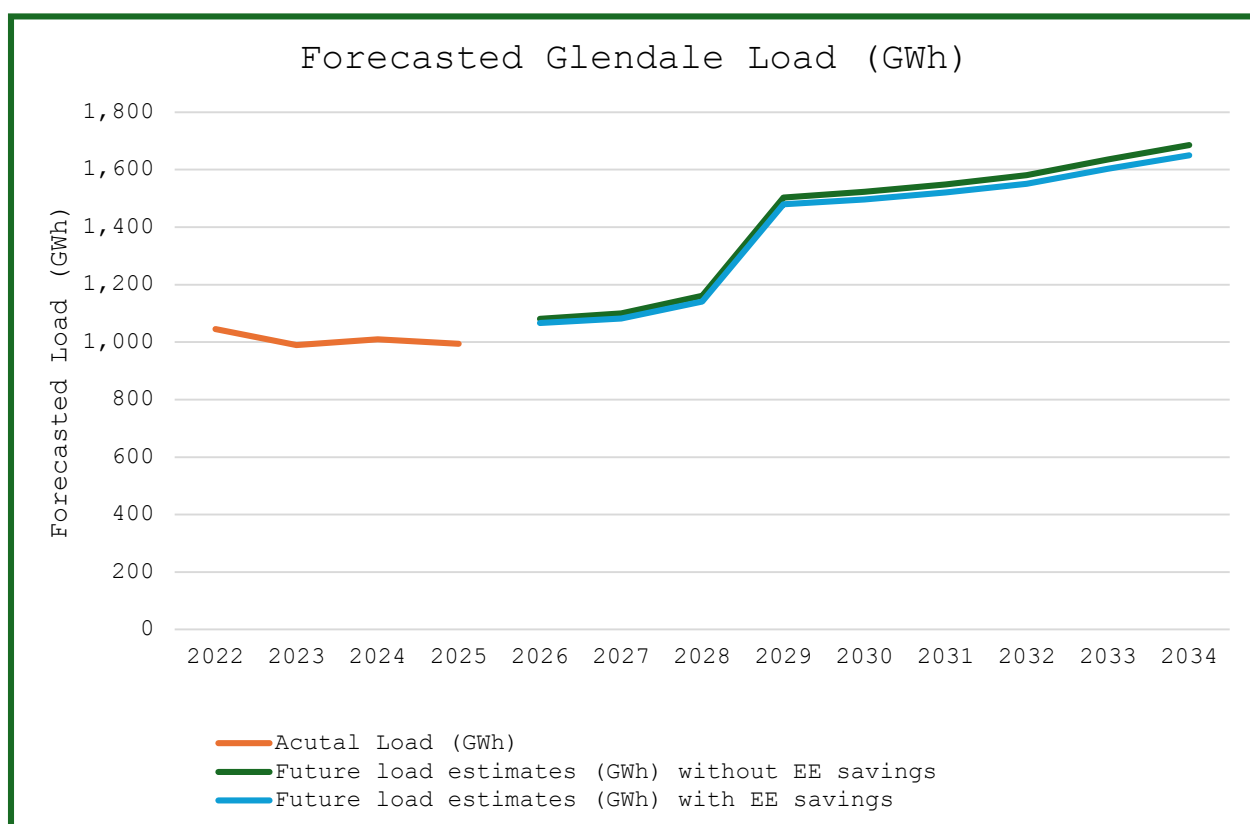


Figure 1. Energy Forecast

Peak Demand Forecast

Peak demand, measured in MW, is determined by the largest amount of power that customers are using at one time. High demand tends to occur in the summer evenings when many people return home from work and make use of home appliances. Peak demand is primarily driven by heat waves and power usage associated with air conditioning.

The net load peak is the largest amount of power that is supplied by the grid after contributions from solar and wind are considered. Since solar and wind resources tend to provide energy during the afternoon and early morning hours, respectively, they are generally not well-suited for meeting the power demands during these crucial peak evening hours. This leads to the so-called “duck curve” effect where net load dips during the afternoon as solar production rises, but the evening peak remains largely unaffected.

During the summer months, solar generation shifts the net load peak from late afternoon to early evening while providing a mild decrease in the total peak. As solar penetration increases, the net load peak will correspond to the loss of solar generation and be largely unchanged by further solar penetration. Thus, while increases in energy efficiency and rooftop solar may reduce energy consumption, these resources do not have a large effect on peak load.

Avoiding blackouts requires meeting customer power demand at all times, thus it is imperative to have enough resources available to meet customer demand during peak hours. Peak load depends mainly on weather conditions; as such, it is far more variable than energy requirements.

Figure 2 depicts GWP’s peak demand forecast over the planning period. The planning reserve margin (PRM) covers uncertainty in the peak demand forecast as well as contingency reserves.

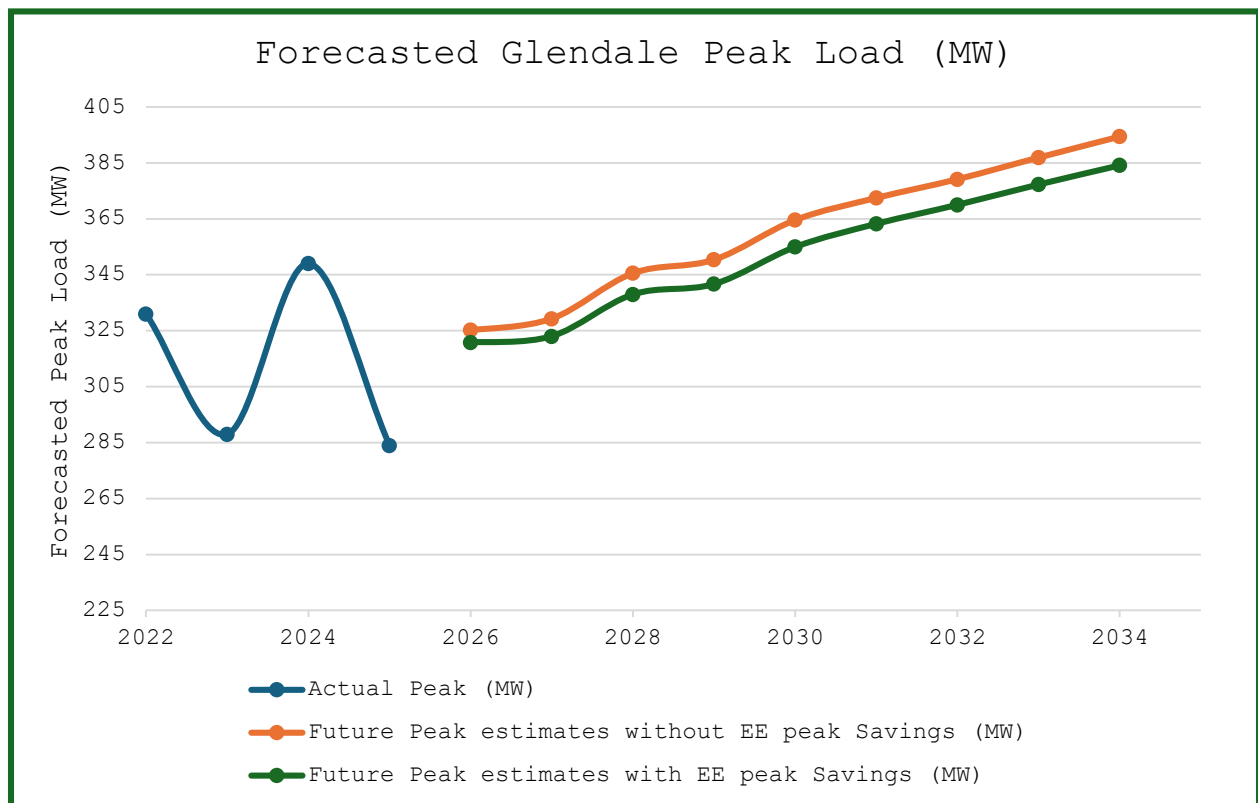


Figure 2. Peak Demand plus Reserve Margin Forecast

Rooftop Solar PV Installations

Figure 3 depicts the forecasted growth in customer-sited solar PV installations using historical data as well as internally set targets for Solar PV Distributed Energy Resources.

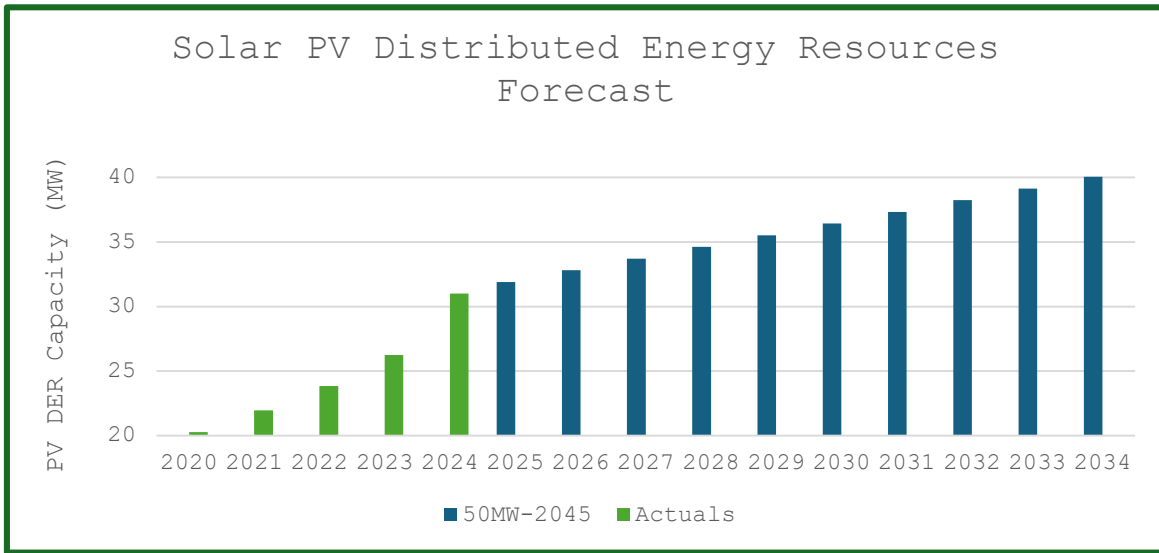


Figure 1. Solar PV Distributed Energy Resources Forecast

Energy Efficiency Savings Forecast

GWP has implemented various customer programs to promote the efficient use of energy with a specific focus on key areas smart thermostats, lighting, refrigeration, and air conditioning. In total, these programs have generated approximately 21,001 MWh in annual energy savings for fiscal year 2024. GWP forecasts cumulative net energy savings of over 416 GWh over the course of the long-term planning period until 2034.

Figure 4 depicts the annual savings throughout the planning period.

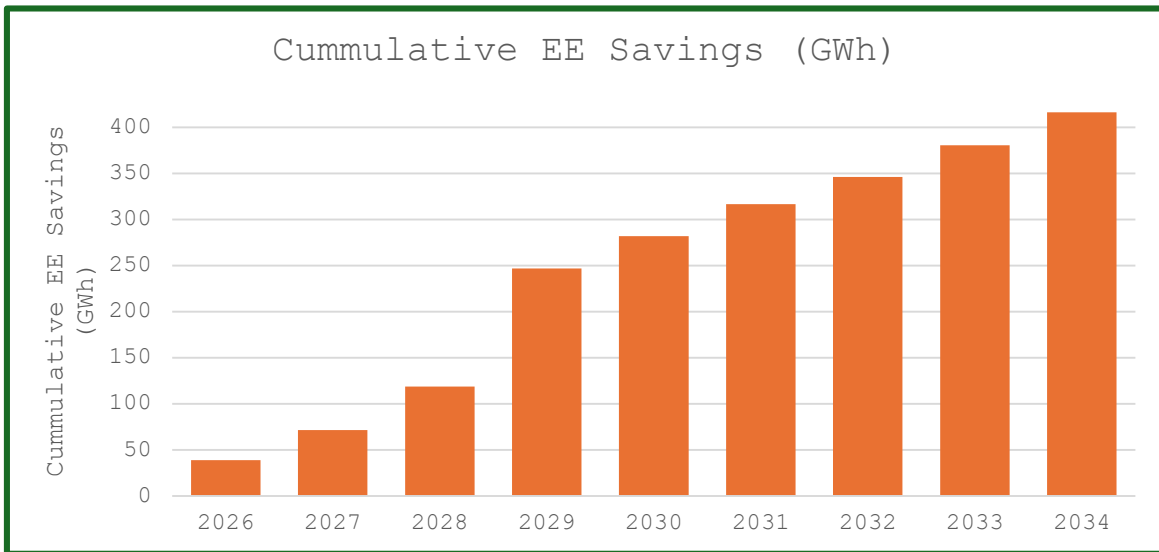


Figure 4. Energy Efficiency Savings Forecast

A series of energy efficiency regulations apply to GWP, including SB 1037, AB 2227, and SB 350. The City's existing and future building codes also include the state's green building requirements outlined in Title 24 and CALGreen, which contains specific regulations for energy efficiency.

Transportation Electrification Impacts

The transition to transportation electrification has been spurred by SB 350 and three CARB measures: the ACC II, Advanced Clean Trucks (ACT), and Advanced Clean Fleets (ACF) rules.

The CEC's IEPR, through an AATE framework, forecasts the adoption rate and energy impacts from three ZEV sectors (light-duty, medium-duty, and heavy-duty) by modeling three scenarios:

Baseline Scenario: Economic and demographic inputs; vehicle attributes such as price, range, refueling time, acceleration, and model availability; federal tax credits, state rebates and rewards, and high-occupancy vehicle access incentives; incentives resulting from the 2022 Inflation Reduction Act; consumer model preference; and CARB's Innovative Clean Transit regulation.

Scenario 2: Direct, post-process alignment of light-duty ZEV sales that capture delayed compliance or some exemptions with CARB's policies, in particular the ACC II rule; lower prices for medium-duty battery-electric trucks to capture increased electrification.

Scenario 3: Full compliance with all regulations (including the Advanced Clean Fleets rule) with a postprocess alignment of new vehicle sales with state light-duty and proposed medium- and heavy-duty regulations.

The load forecast used the Baseline Scenario forecast in modeling for EV penetration. The CEC forecasts ZEV growth for the entire state, then proportionally allocates that forecast to individual utilities based on the relative size of each utility.

Figure 5 shows the forecast for medium-duty and heavy-duty ZEVs a few years beyond the short-term planning period.

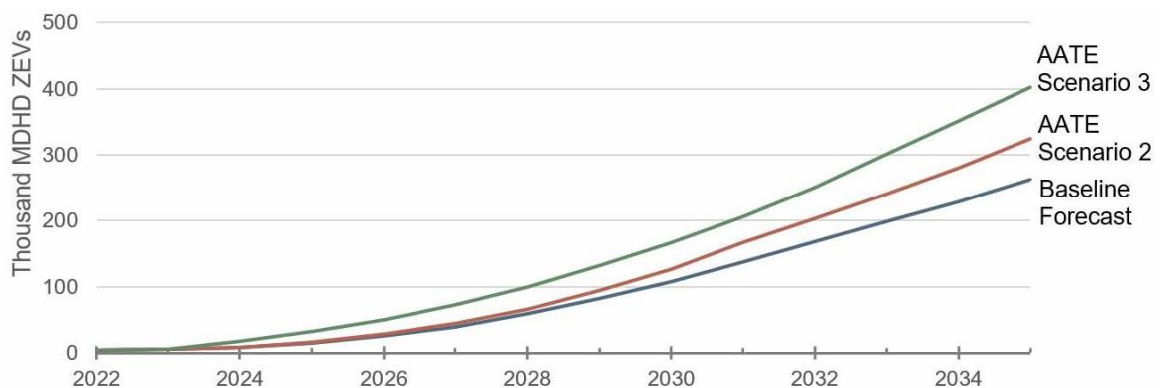


Figure 5. Medium-Duty and Heavy-Duty Electric Vehicle Population Forecast

Increases in electricity energy consumption complement the increasing ZEV adoption forecast. The AATE framework used a managed forecast, which is an energy demand scenario that adjusts a baseline forecast to reflect either or all the following:

- The impacts of policies and programs that cannot be included within the basic architecture of the forecasting model.
- Significant uncertainties about existing programs, funding, or implementation features.
- Uncertainties regarding new policies and programs motivated by state or federal goals.

Figure 6 depicts the corresponding increase in energy growth over the same adoption rate period. An increase of approximately 35,000 GWh is forecast for 2031.

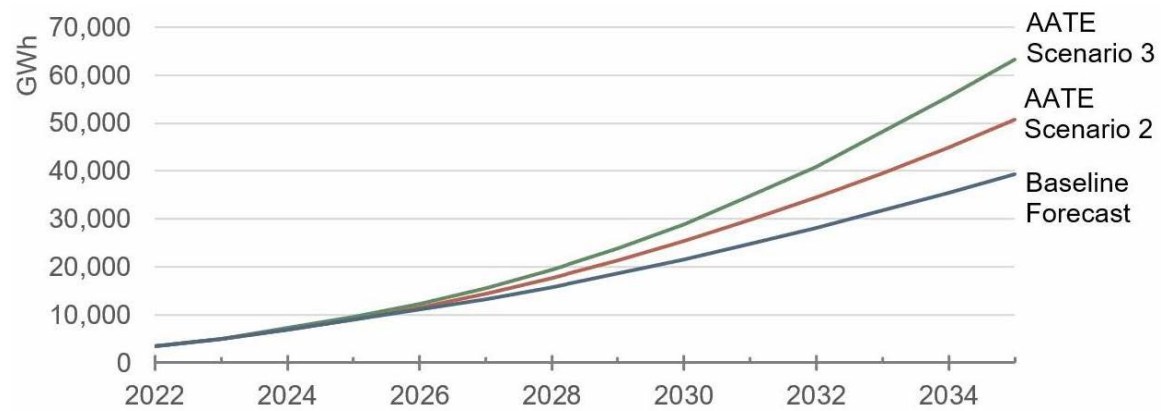


Figure 6. Transportation Electrification Demand Forecast

Technological advances have increased the efficiency of ZEVs. Improved fuel economy, vehicle travel model improvements, and consumption improvements for PHEVs have slightly lowered the energy consumption of ZEVs.

Energy Efficiency Programs and Initiatives

GWP continues to provide ways to help residents and businesses become stewards of the planet's natural resources and to wisely manage energy costs at home and at work through various residential, business, and community programs promoting energy efficiency and demand reduction.

Conservation and Utility Modernization

A key part of GWP's diversified power supply is an ongoing commitment to energy efficiency. GWP continues to invest significant resources in conservation and energy efficiency programs for commercial, industrial, and residential customers. Energy efficiency remains the most cost-effective way to accommodate future energy needs, and projects in partnership with industrial customers are slated to surpass any previous savings in the utility's history.

Contributions to Peak Demand

Energy efficiency programs, DSM, DR, and DERs aid GWP in reducing peak demand. Glendale has several programs in place and plans to implement additional programs in the planning horizon.

GWP continues to exceed its annual energy efficiency savings goals. GWP's current savings targets are based on the Energy Efficiency Potential Forecasting for California's Publicly Owned Utilities by GDS Associates, Inc.

GWP estimates that its current energy efficiency programs have approximately 2 MW of peak demand impact, which is embedded in the peak demand forecast projections. In addition to the energy efficiency embedded in the demand forecast projections, clean energy and load reduction programs included in the recommend power plan provide average additional savings on peak.

Energy Efficiency Programs

Since January 1, 1998, GWP customers have paid a state-mandated fee on their electric bill known as the Public Benefits Charge (PBC). Pursuant to Glendale Municipal Code section 13.44.425, the fee in Glendale is set at 3.6 percent of retail revenues. PBC revenues are maintained in a separate fund to be used for programs serving one or more of the following purposes:

- Cost-effective demand-side management services to promote energy-efficiency and energy conservation
- New investment in renewable energy resources and technologies
- Research, development, and demonstration programs
- Services provided for low-income electricity customers, including, but not limited to, targeted energy efficiency service, education, weatherization, and rate discounts

Section 9615 of the California Public Utilities Code requires each publicly owned utility to acquire all cost effective, reliable, and feasible energy efficiency and demand-reduction resources prior to other resources and Section 9505(a) of the California Public Utilities Code requires each publicly owned utility to report its investment on energy efficiency and demand reduction programs annually to its customers and to the CEC.

Since 1999, GWP has been a leader in the development and implementation of energy efficiency programs for its customers, and GWP programs have consistently ranked among the best in the State in terms of annual energy savings produced. Since 2000, GWP has invested over \$57.7 million on energy efficiency programs for the benefit of Glendale customers and have saved over 286,000 MWhs. At today's average electric rate, GWP energy efficiency programs will have produced over \$378 million in customer bill reductions over the life of installed measures.

Presently, GWP offers over 16 energy and water efficiency programs to help Glendale customers reduce their utility bills and operation costs. Over the past four years, Glendale reported saving 63.4 GWh from FY 2019 through FY 2022.

Energy Efficiency Portfolio Results

In FY 2024, GWP participation increased in many energy efficiency programs, which resulted in higher MWh savings. During this reporting year, GWP was able to reopen customer programs that were closed during the pandemic.

GWP's new Business Energy Upgrade program, Home Energy Reports, Business Energy Solutions Program, and the Smart Home Energy and Water Saving Upgrade Program continued to produce the most energy savings. The Home Energy Reports had the greatest impact on residential customers reaching the majority of customers and providing constant communication and engagement. GWP also launched the Weekly Energy Updates to engage and educate customers with personalized insights and programs marketing via email.

Some other relevant facts include:

- Glendale spent over \$3.3 million on energy efficiency programs.
- Glendale programs reduced peak demand by 1.5 MW.
- Glendale's energy efficiency portfolio scored a 1.4 in the Total Resource Cost (TRC) metric, a calculation used to measure and determine program cost-effectiveness.

Setting Energy Efficiency Potential Targets

AB 2021 requires each publicly owned utility to identify potential energy efficiency savings, establish energy efficiency targets, and report on these findings to the CEC and customers. AB 2227 updated the reporting frequency of the 10-year potential study to every four years.

Table 2 shows GWP's energy efficiency targets as defined in the load forecast.

Glendale	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Energy Efficiency (MWh)	14,571	17,892	20,794	23,631	26,339	28,129	30,219	32,797	35,494	38,393
Total Incremental Potential % of Total Sales	1.4%	1.69%	1.86%	1.63%	1.8%	1.89%	1.99%	2.09%	2.2%	2.31%

Table 2. Energy Efficiency Targets with Codes and Standards

Figure 7 provides the market potential for the residential and non-residential sectors and CVR, as well as the total incremental potential as a percentage of total sales for the 10-year period of 2026 to 2035.

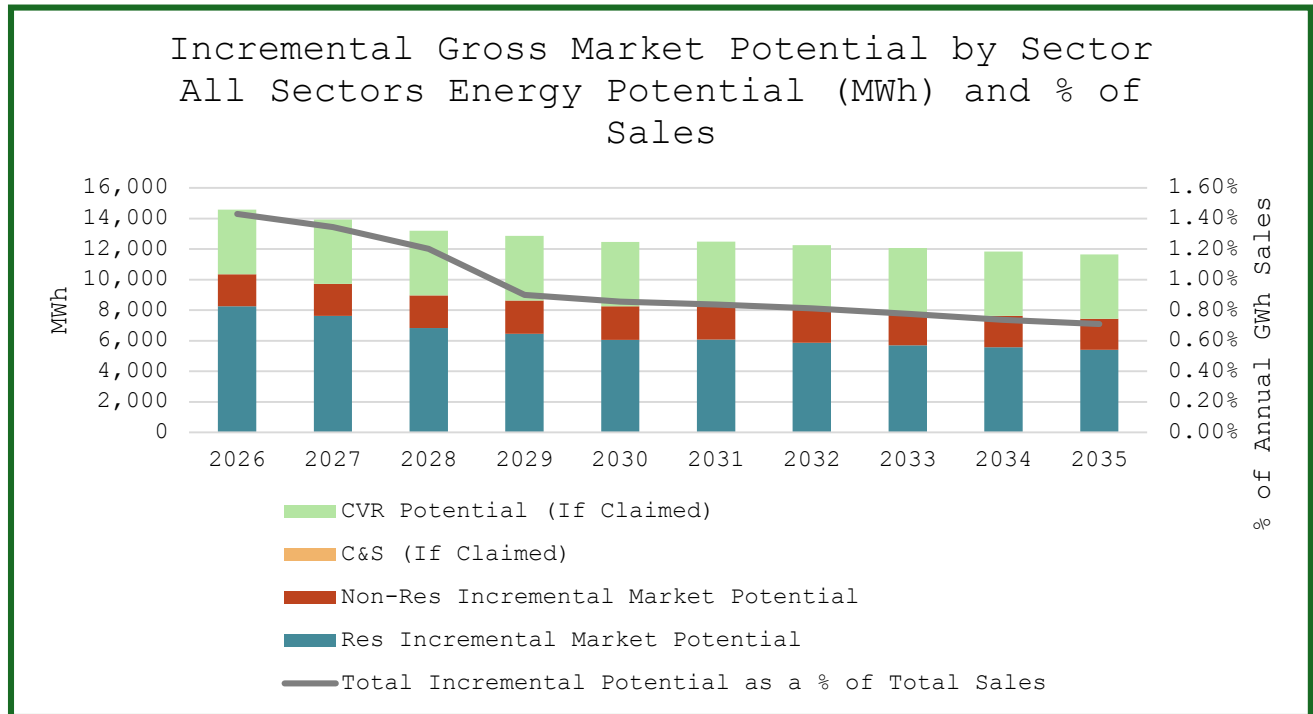


Figure 7. Net Incremental Market Potential by Sector and Percent of Sales

Demand Response Programs

Demand Response is an increasingly valuable resource that will support Glendale in meeting electricity demand and help maintain reliability. GWP sends email notifications to its top 300 customers asking them to conserve energy. Notifications are also placed on the GWP website as well as Twitter and Facebook. A press release is issued with energy conservation tips to all local news outlets. Glendale's local GTV6 channel is also notified and displays information related to an upcoming peak day alert. These communications encourage customers to adjust their energy consumption during periods of peak energy demand.

Transportation Electrification Initiatives

Electric vehicle infrastructure is an important part of the Los Angeles region's future. GWP is planning to direct resources to planning Glendale's future EV infrastructure needs. Future planning studies explore this topic in more depth, including understanding how to manage EV charging to avoid new peaking capacity and distribution grid upgrades.

At this current early stage of EV development, most efforts revolve around expanding the EV charging station network and conversion of public vehicles to electric.¹ These measures include:

- Charging stations and preferential parking at public parking lots.

¹ For more guidance for cities on vehicle electrification strategy, see: <https://cleantechnica.com/files/2018/04/EV-Charging-Infrastructure-Guidelines-for-Cities.pdf>

- Incentives for local businesses to install EV chargers at workplace parking lots.
- Requirements of apartment building owners to make EV charging accessible to residents.
- Converting bus fleets and city fleets to electric.²

Electric Vehicle Infrastructure

The number of EVs in the City of Glendale has grown substantially. Given this situation, GWP is expanding its EV charging station infrastructure throughout the City of Glendale. The goal is to create a web of conveniently located charging stations to make traveling for EV owners more accessible, dependable, and hassle free. GWP's efforts directly support Governor Brown's 2018 Executive Order B-48-18 setting targets of 250,000 EV chargers and 10,000 DCFCs by 2025, and Governor Newsom's 2021 Executive Order N-79-20 to have 100 percent of new light-duty vehicles sales be zero emission vehicles by 2035.

With growth in EV sales, newer generations of EV users have different types of charging needs. Multi-unit dwellings and workplace charging are emerging in importance. New types of public charging can play a key role in supporting these uses. Opportunity for highly visible and convenient chargers, such as curbside chargers in the public right-of-way, help ensure equitable access to EV infrastructure for all user groups in Glendale.

Many factors affect where charging stations are installed. These factors include power source distance to the electric vehicle supply equipment (EVSE), ADA compliance, EVSE availability in the area, installation cost, public visibility, feasibility to install DCFCs, proximity to multi-family buildings, and proximity to disadvantaged and low-income areas. As of May 2023, GWP has installed a total of 66 EV charging stations. GWP also installed an additional 12 public charging stations in June 2023 and bringing the total to 78 charging stations.

These projects will be primarily performed by Shell Oil Products US, who acquired Zeco Systems, Inc. Zeco Systems, Inc was one of the contractors selected by SCPPA through a competitive RFP process to purchase, install, license, communicate, and maintain EV charging stations for SCPPA members. GWP proposes to contract with Shell through a participation agreement with SCPPA. A separate Task Order to the SCPPA-vendor contract will be prepared documenting the services to be provided for Glendale and Glendale's cost, including a not-to-exceed amount. GWP will also consider using other vendors that were selected by SCPPA through a competitive bidding process for EV charging station purchase, installation, licensing, communication, and maintenance.

² Incentives are available from the State of California. See: <https://www.californiahvip.org/>