



CITY OF GLENDALE, CALIFORNIA REPORT TO THE CITY COUNCIL

AGENDA ITEM

Report: Amendment to the City of Glendale Building Code to Require All Electric Design, Rooftop Solar Photovoltaic, and Higher Energy Performance for New Construction.

1. Motion directing staff to hire a consultant to assist the city in preparing a reach code to incorporate requirements for all-electric design, rooftop solar photovoltaic, and higher energy performance for new construction into the City of Glendale Building & Safety Code
2. Resolution of appropriation in the amount of \$50,000 to hire a consultant to prepare a reach code

COUNCIL ACTION

Item Type: Action Item

Approved for March 22, 2022 **calendar**

EXECUTIVE SUMMARY

To date, 50+ Cities and Counties have adopted reach codes covering building electrification and or building energy efficiency measures to further their sustainability goals. To adopt a reach code, a jurisdiction must demonstrate that the requirements of the proposed ordinance are cost-effective and result in buildings consuming less energy than is permitted by Title 24 and obtaining regulatory approval.

Studies completed for the City of Glendale in 2021 show that adopting a reach code pursuing an all electrification strategy for all new construction of low rise residential, high rise residential (including mid-rise), hotels, and non-residential motels, offices, and retail would meet the cost-effectiveness threshold.

There are two primary reach code strategies:

1. Adopt an all-electric building pathway requiring all new constructions to be all-electric.

2. Adopt an electric-preferred pathway that incentivizes the construction of all-electric buildings by mandating energy efficiency measures for mixed fuel new construction.

The transition to electrification of transportation and the built environment is gathering pace. The rising demand for electrification will impact grid infrastructure, operations, and planning. Glendale Water and Power will also have to procure sufficient energy resources and upgrade its infrastructure to manage these impacts. The City can mitigate these impacts through programming, planning, and investment. Modeling load increases for building electrification and EV charging will inform the development and language of any expected reach code and the corresponding infrastructure investments and energy procurement strategy.

Due to the complexity of this issue, staff recommends hiring a consultant to provide technical assistance and support to City staff. The consultant would also assist City staff in developing a potential reach code and associated ordinances for the City of Glendale.

The estimated cost to retain a consultant to develop a reach code is about \$50,000.

COUNCIL PRIORITIES

1. Safe and Healthy Community: Electrification can improve air quality and provide public health benefits.
2. Sustainability: Pursuing building electrification is a comprehensive strategy to reduce greenhouse gas emissions.

RECOMMENDATION

Provide direction to staff regarding the hiring of a consultant to assist the City in preparing a reach code to amend the City of Glendale Building Code to require all-electric design, rooftop solar photovoltaic, and higher energy performance for new construction. Should Council wish to direct staff to hire a consultant, it would require a resolution of appropriation in the amount of \$50,000.

BACKGROUND

In September 2020, staff presented a report to City Council asking for direction on requiring commercial development in Glendale to provide rooftop solar photovoltaic systems. In the report, staff concluded: *“Should City Council decide to pursue adoption of a Reach Code requirement for commercial photovoltaic, further study would need to be conducted toward that aim. In addition to a Glendale-specific cost-effectiveness study for commercial photovoltaics, City Council may desire to include other provisions within the Reach Code, which would require further study.”*

City Council directed staff to explore hiring a consultant team to determine the feasibility of adopting a commercial photovoltaic requirement. In addition, City Council also asked that any reach code study include information on building electrification, EV charging, battery storage, and cool roof requirements.

City Council also suggested that staff connect with the Building De-carbonization Coalition (BDC) for assistance regarding the development of reach codes and guidance on navigating the California Energy Commission approval process for adopting a reach code. The BDC assisted City staff in connecting with the local Energy Codes team. Their experts have developed robust toolkits and provided specific technical assistance to local jurisdictions (cities and counties) on adopting energy reach codes. The toolkits include cost-effectiveness research and analysis, model ordinance language and other code development and implementation tools, and specific technical assistance throughout the code adoption process.

In addition to connecting with the BDC and local Energy Codes team, staff researched Reach Codes adopted by other jurisdictions. Based upon that research, jurisdictions, in general, are adopting building reach codes that require all new construction to be all-electric or electric-preferred with additional energy efficiency requirements. All reach codes must show cost-effectiveness. Money saved from the reduced energy costs needs to cover the initial cost within a reasonable period.

Staff invited the BDC and local Energy Codes team to provide the Sustainability Commission updates on reach codes adopted in the state and review the results of a cost-effectiveness study completed for the City of Glendale. At the November 4, 2021 Sustainability Commission meeting, staff provided Commissioners a report recommending that the City Council hire a consultant to assist the City in preparing a reach code that includes building electrification, photovoltaics systems, EV charging, battery storage, and cool roof requirements. The Sustainability Commission voted in favor of this recommendation.

ANALYSIS

This report uses information from the Statewide Reach Codes Program. The California Codes and Standards Reach Codes Program provides technical support to local governments considering adopting a local ordinance (reach code) to meet local and/or statewide energy and greenhouse gas (GHG) reduction goals. The program facilitates the adoption and implementation of the code when requested by local jurisdictions by providing resources such as cost-effectiveness studies, model language, sample findings, and other supporting documentation.

This report references all-electric buildings and mixed fuel buildings. These are defined as follows:

- **ALL-ELECTRIC BUILDING** is a building that uses electricity as the source of energy for all of its space heating, water heating, cooking, and clothes drying appliances and has no gas plumbing in the building for these end-uses.
- **MIXED-FUEL BUILDING** is a building that is built for the use of natural gas or propane as fuel for space heating, water heating, cooking, or clothes drying appliances.

The State has set ambitious renewable energy targets for new construction. It aims to achieve zero-net-energy (ZNE) for all new residential buildings by 2020 and all nonresidential buildings (including high-rise residential) by 2030.

The California Building Energy Efficiency Standards or Title 24, Part 6 (referred to in this report as “Title 24” or the “State Energy Code”) (California Energy Commission, 2018a) is maintained and updated every three years by two state agencies: The California Energy Commission (Energy Commission) and the Building Standards Commission (BSC). In addition to enforcing the code, local jurisdictions have the authority to adopt local energy efficiency ordinances—or reach codes—that exceed the minimum standards defined by Title 24 (as established by Public Resources Code Section 25402.1(h)2 and Section 10-106 of the Building Energy Efficiency Standards).

The current version of the State Energy Code (the 2019 State Energy Code) became effective on January 1, 2020. A new version, the 2022 State Energy Code, was approved by the California Energy Commission in December 2021 and will become effective on January 1, 2023.

The 2019 State Energy Code moved in the direction of ZNE performance, but there are opportunities to achieve greater energy savings and accelerate de-carbonization by improving energy efficiency and renewable standards. The 2022 version of the State Energy Code will revise energy efficiency standards for newly constructed buildings as well as alterations to existing buildings, in several areas, including:

- New standards for heat pumps (an electric technology for water and space heating that increases efficiency, reduces GHGs, and enables local flexibility);
- New single-family homes will be required to be electric-ready; and
- Extension of solar and introduction of battery storage standards for high-rise multifamily, hotel-motel, tenant space, office, medical, and clinics, retail, restaurants, schools, and civic buildings.

To date, some 50+ Cities and Counties have adopted some form of ordinance to adopt a reach code covering photovoltaics, energy efficiency measures, all electric in new construction and electric vehicle ordinances. Cities and Counties consider adopting reach codes to further their sustainability goals. The City of Glendale will be developing a Climate Action and Adaptation Plan (CAAP), with de-carbonization being a central tenet of the CAAP. The transition to all-electric buildings will be a key strategy of de-carbonization.

Higher energy standards are critical to de-carbonization. High-efficiency equipment and design will lower energy requirements and reduce demand for fossil fuels and on-site renewables. Likewise, all-electric buildings are one of the key strategies to decarbonizing the state's building stock. The state's electric system is rapidly becoming cleaner, driven by escalating renewable portfolio standards and cleaner product offerings by the utilities and community choice aggregators (CCAs) and by GWP. And while it is theoretically possible to power buildings with renewable natural gas, there currently is no plan for large-scale conversion to renewable natural gas for residential and commercial application.

In addition, advances in electric heat pumps and other electrical equipment are yielding much higher overall efficiencies than their natural gas counterparts. Electric heat pumps, unlike traditional electric resistance heaters, do not generate heat, but concentrate and transfer it for end uses such as space conditioning and water heating. This process uses less primary energy and emits much less carbon, particularly when it is powered by renewable energy.

Many forms of renewable energy are not dispatchable; that is, the energy cannot be ramped up to match demand on a real-time basis. However, energy storage and load shifting technologies, combined with dynamic electricity pricing structures, can help overcome these limitations. Batteries, smart buildings, and financial incentives enable alignment of the consumer demand and supply from intermittent renewable sources such as solar and wind.

If a local jurisdiction is to adopt a reach code, it must demonstrate that the requirements of the proposed ordinance are cost-effective and result in buildings consuming less energy than is permitted by Title 24. In addition, the jurisdiction must obtain approval from the Energy Commission and file the ordinance with the BSC for the ordinance to be legally enforceable. This process involves submitting an application to the Energy Commission Executive Director with the proposed energy standards, findings and supporting analysis on the energy savings and cost effectiveness of those standards including complying with Title 24, and any required environmental review documents. The process includes a 60-day public comment period and final review and approval by the Energy Commission.

Local jurisdictions must also demonstrate that the requirements of the proposed ordinance are:

- Based on local climatic, geological, and topographical, conditions (for purposes of the Green Building Standards Code, such conditions include local environmental conditions);
- Cost-effective;
- Not less restrictive than the State requirements; and
- Do not pre-empt federal appliance efficiency standards.

Ordinance Options

The proposed approaches are based on cost-effectiveness studies commissioned by City of Glendale in 2021. The studies analyzed several prototypical buildings. For each prototype, the studies simulated operating the buildings with different combinations of energy efficiency, solar, and battery measures to determine the impacts on energy consumption, greenhouse gas emissions, costs, and savings. Costs include incremental capital costs, and, in some cases higher energy costs. In general, the initial costs of an all-electric building are lower than a mixed-fuel building due to the lack of gas plumbing.

There are multiple approaches available to adopt a reach code to further the sustainability goals of the City, which may include a mix of the following:

- All new newly constructed residential, and non-residential buildings shall be all electric buildings, and or
- Newly constructed buildings are to comply with stricter energy standards through a combination of energy efficiency, renewable energy and energy storage, and
- A requirement that buildings be “Electric Ready,” meaning that the building must include the necessary infrastructure to convert to all-electric in the future, with exceptions for industrial processes yet to be determined. (Under the new 2022 State Energy Code, “electric readiness” is required for new single-family homes).

Option A: Building Electrification – All Electric Building Pathway

A proposed all-electric pathway, where cost effective, would require, with some limited exemptions, that all new construction for low-rise residential, high-rise residential (including mid-rise) hotels, and non-residential motels, office and retail be all electric. All other nonresidential would require energy efficiency measures and solar, where:

- i. All newly constructed residential, office, retail, hotel and motel buildings shall be All-Electric Buildings
- ii. Newly constructed nonresidential buildings that are designed to utilize mixed-fuel (natural gas or propane in addition to electricity) shall comply with either the prescriptive requirements or meet stricter compliance margins.
- iii. All newly constructed nonresidential buildings, hotels and motels and high-rise (including mid-rise) residential buildings shall be required to install a solar photovoltaic (PV) system.

Staff would recommend including guaranteed exemptions to this requirement for hospitals and certain other health care facilities. It will be necessary to determine if any other operations, such as commercial kitchens, or critical facilities are exempt, and the scope and scale of any such exemptions from the reach code, in order to quantify the impact of exemptions upon the effectiveness of any reach code.

Table 1: Examples All Electric Ordinances

Jurisdiction	Ordinance type	Nonresidential Requirement
Berkeley	AE	New – All Electric
Brisbane	AE	New – Except Life science occupancies and gas specific for profit kitchen
Cupertino	AE	New – Exception for Fire, High Hazard, Laboratory, and “Essential Facilities” occupancies – pre wire for all electric
Hayward	AE	New – All Electric or 10% Compliance margin (15% for office and retail)
Healdsburg	AE	New – Exception for cooktops, fireplaces, pool/spa, Essential Services, technical processes; pre wire for electric
Pacifica	AE	New – Exception for Fire and Police occupancies and for-profit kitchen cooking equipment

Option B: Electric Preferred- Energy Efficiency Pathway

A proposed electric preferred pathway is designed to prioritize the construction of all-electric buildings through incentives and amendments to Building Code. Incentives to adopt this approach will be requiring all new mixed-fuel buildings to achieve higher

energy performance over the California Energy Code. The program may include the following components:

- All other new mixed-fuel buildings must comply with higher performance standards or prescriptive requirements.
- All-Electric Buildings would have to comply with the latest edition of the California Energy Code.
- Requiring new buildings with natural gas to include the necessary infrastructure to convert to all-electric in the future, known as “retrofit ready” requirements (the 2022 Building Code will require this for single family residential new buildings).
- All new buildings must install a PV system as a mandatory measure.

As with option A, it will be necessary to determine the scope and scale of any exemptions from the reach code to quantify the impact of exemptions upon the effectiveness of any reach code.

Similar to the structure of the State Energy Code, the City of Glendale may offer two pathways for compliance with the program: all-electric design and mixed-fuel design. As an incentive to design all-electric buildings, the reach code may require mixed-fuel buildings to have a higher level of energy efficiency.

Based upon an analysis of the 2019 Building Code, staff proposed the following potential compliance pathway options:

Low Rise Residential and Single Family Approach

- | | |
|--------------|---|
| All Electric | 1. Comply with 2019 California Energy Code |
| Mixed Fuel | 1. Comply with 2019 California Energy Code including City requirements for enhanced building energy performance |
| | 2. Pre-wire to be electric ready |

Nonresidential Approach

- | | |
|--------------|---|
| All Electric | 1. Comply with 2019 California Energy Code |
| | 2. Comply with City Solar Requirements to be included in the reach code |
| Mixed Fuel | 1. Comply with 2019 California Energy Code including City requirements for enhanced building energy performance |

2. Comply with City Solar requirements to be included in the reach code

3. Pre-wire to be electric ready

Because the 2022 California Energy Code changes certain requirements from the 2019 California Energy Code, certain adjustments to the proposed reach code will be necessary. Some of the “reach” requirements will no longer be required to the extent they are already made part of the 2022 California Energy Code. For example, the 2022 California Energy Code will require new single family residential homes to be electric ready. The consultant will analyze the effect of the 2022 California Energy Code changes on the proposed reach codes, update the cost-benefit analysis, and provide recommendations.

Based upon the earlier cost-effectiveness studies prepared for the City of Glendale, the Proposed Energy Performance Standards vary by building type as follows:

Table 2: Examples of Improved Energy Performance Standards for Mixed Fuel Buildings based on Cost Effectiveness Studies

Building Type	Performance Requirement	Justification
Single family	Exceed EDR* by 8.5 points	Maximum cost effective TEDR*
Detached Accessory Dwelling Units (ADUs)	Exceed EDR by 12.90 points	Maximum cost effective TEDR
Low-rise multifamily (1 to 3 habitable stories)	Exceed EDR by 9.5 points	Maximum cost effective TEDR
Mid-rise multifamily (4 to 7 habitable stories)	6.5% Compliance Margin*	Maximum cost effective compliance margin
High-rise multifamily (8 and above habitable stories)	7.6% Compliance Margin	Maximum cost effective compliance margin
Medium Office	16% Compliance Margin	Maximum cost effective compliance margin
Medium Retail	10% Compliance Margin	Maximum cost effective compliance margin
Small Hotel	5% Compliance Margin	Maximum cost effective compliance margin

*The Energy Design Rating (EDR) score is based on total estimated energy use. 100 represents a home built to 2006 building code. 0 represents a zero net energy home. An EDR score of around 20 points meets compliance with the 2019 code. “TEDR” refers to Total Energy Design Rating. The “Compliance Margin” represents improvement relative to the energy budget calculated for the Standard Design Building.

Below are examples of Energy Efficiency Pathways from other California jurisdictions:

Table 3: Energy Efficiency Pathway Examples

Jurisdiction	Ordinance type	Nonresidential Requirement
Berkeley	EE	New – All Electric OR Mixed-Fuel: 10% compliance margin AND electric ready. Exception: labs, industrial manufacturing occupancies
Milpitas	EE	New – All Electric OR Office & Retail > 14% compliance margin; Industrial/Manufacturing + 0%; All other non-residential occupancies >6% compliance margin AND electric ready
San Anselmo	EE	New – All Electric OR limited mixed fuel: 5% compliance margin, prewired for induction OR mixed fuel: 10% compliance margin, pre wired for induction
San Luis Obispo	AE	New – All Electric OR Office/retail 15% compliance margin, others 5% compliance margin AND electric ready
Santa Monica	AE	New – All Electric OR mixed fuel and > 10% Compliance margin

Solar Requirements

City Council directed staff to explore hiring a consultant team to determine the feasibility of adopting a commercial photovoltaic requirement.

The 2019 Building Code, which includes Title 24, went into effect on January 1, 2020. It requires solar PV systems on all new single-family and low-rise multifamily buildings (three stories or less). The 2019 Building Code also requires nonresidential buildings to reserve at least 15 percent of the roof area as a “solar zone”. Other Cities have adopted alternate options. Examples are in Table 4.

Table 4: Example Local PV Requirements

Jurisdiction	Ordinance type	Nonresidential Requirement
Berkeley	EE	PV system to fill solar zone (>15% of roof area)
Brisbane	EE	PV of 3 kW min for < 10,000sq. ft. and 5 kW min for > 10,000sq. ft. or solar thermal

Carlsbad	PV	PV that offsets 80%; 15 kW per 10,000 sf.; 5 kW for < 10,000 sf
Santa Monica	PV	2 watts per sq. ft.
West Hollywood	EE, Cool Roofs	PV to offset 15% of usage OR solar thermal with min 0.5 solar fraction or vegetative roof covering minimum 30%

Electric Ready

The all-electric readiness requirements from the 2019 State Energy Code apply only to buildings and additions plumbed for gas. These requirements include circuits and/or conduits for water and space heating equipment, cooking equipment, and clothes dryers, as well as space requirements for water heaters. The requirements may not apply to industrial processes and commercial kitchens.

Cost-Effective Studies

Information contained within this report relies on information provided by the Local Energy Codes Cost-Effective Studies. The report is an addendum to the *2019 Nonresidential New Construction Reach Code Cost-Effectiveness Study* and *2020 New Construction Cost-Effectiveness Analysis: Detached Accessory Dwelling Units* to accurately represent the City of Glendale, California. The study analyzed the cost-effectiveness of measure packages that exceed the minimum state requirements as set forth in the 2019 Building Energy Efficiency Standards, effective January 1, 2020 - for design in newly constructed buildings. This report was developed in coordination with the California Statewide Investor Owned Utilities (IOUs) Codes and Standards Program, key consultants, and engaged cities - collectively known as the Reach Code Team.

The prototypes analyzed in these studies are:

- Detached Accessory Dwelling Units (ADUs)
- Single-family homes
- Low-rise multifamily
- Mid-rise multifamily
- High-rise multifamily
- Medium Office
- Medium Retail
- Small Hotel

Summary of Findings

The Reach Code team developed packages of energy efficiency measures and packages combining energy efficiency with PV generation and/or battery storage systems. They simulated them in building modeling software and gathered costs to determine the cost-effectiveness of multiple scenarios. The Reach Code team coordinated assumptions with multiple utilities, cities, and building community experts to develop a set of assumptions that were considered reasonable in the current market at the time the study was performed. Changing assumptions, such as the period of analysis, measure selection, cost assumptions, energy escalation rates, or utility tariffs, are likely to change results.

The Reach Code team provided the following high-level takeaways from the results:

- **Detached ADU:** All-electric detached ADUs have near-zero or positive 'Total EDR Margins' implying that they comply with the code or exceed the 2019 Title 24 minimum requirements. They are cost-effective in Glendale using the On-Bill metric.
- **Medium Office:** Both mixed-fuel energy efficiency packages are cost-effective and have positive compliance margins with and without solar PV and battery. All-electric packages are cost-effective and compliant against the standard mixed-fuel baseline model with efficiency measures and/or solar PV and battery. The all-electric office is cost-effective but requires additional efficiency measures to achieve compliance with federal minimum efficiency equipment and support an all-electric reach code.
- **Medium Retail:** All mixed fuel and all-electric energy efficiency packages are cost-effective with positive compliance margins.
- **Small Hotel:** Mixed-fuel efficiency and PV with battery packages are cost-effective with positive compliance margin but not On-Bill cost-effective with efficiency measures alone. Electrification packages are cost-effective but require additional efficiency measures to achieve compliance with federal minimum efficiency equipment. Hence, an all-electric reach code can be required when combined with efficiency measures alone or with efficiency plus solar PV and/or battery.

Reach code policies requiring all-electric buildings with added efficiency and/or solar PV are feasible for detached ADUs, medium office, medium retail, and small hotel building types. Electric- preferred policies, where a mixed-fuel prototype must achieve a higher compliance margin than an all-electric building, are supported for all building types. In addition, PV only and PV + Battery reach codes policies are feasible for nonresidential

new construction building types. In practice, PV system size is optimized for the specific building.

- **Mid-Rise and High-Rise Multifamily New Construction:** This analysis found cost-effective, non-preempted packages for mid-rise multifamily buildings under both mixed-fuel and all-electric cases. The analysis results support the City of Glendale's adoption of reach codes.
- **Single Family and Low-Rise Multifamily New Construction:** The analysis found cost-effective, non-preempted packages for both single-family and low-rise multifamily buildings, for both mixed fuel and all-electric cases.

The Cost-Effectiveness studies are included as Exhibits 1 & 2 in this report. It is important to note that the Cost-Effectiveness studies analyze potential reach code measures based on the 2019 State Energy Code. Determining the cost-effectiveness of potential reach codes based upon the forthcoming 2022 State Energy Code would require further study.

Grid Impacts of Electrification

Over the last decade, US energy consumption has increased at a slower pace than it had previously. However, this trend is expected to change significantly in the future, and energy consumption is expected to accelerate more rapidly as the transition to electrification for transportation and the built environment gathers pace. These electrification scenarios show a low electrification rate of 32% and a high scenario of 85% by 2050. The projected growth requires changes in grid infrastructure, operation, and planning (Blonsky *et al* 2019).

Transportation electrification will increase primarily due to light-duty electric vehicles (the family car) as countries and states put in place policies to reduce GHG emissions from transportation. For example, in 2017, approximately 580,000 EVs were sold in the USA, accounting for 1 TWh per year. California has a goal of 5 million EVs on the road by 2030, accounting for approximately 11 TWh per year, and in September 2020, Governor Gavin Newsom adopted an Executive Order requiring that, by 2035, all new cars and passenger trucks sold in California be zero-emission vehicles.

Building electrification will rise internationally, nationally, and locally, as residential and commercial buildings electrify space heating/cooling, water heating, electric dryers, and cooking. Heat pumps will be the primary driver of building electrification. Heat pumps in the US currently account for 10-15% of space heating. To reduce carbon emissions in

line with California state mandates, an estimated 75% of space heating will need to be supplied by heat pumps.

Grid operators must ensure that supply meets demand and prepare grid infrastructure, operations, and planning for increased demand. The potential impacts of electrification on grid infrastructure, operations, and planning are summarized below.

1. **Capacity:** Electrification will increase electricity demand and affect the time and scale of that demand. Tailored incentives and rate structures can help shift EV charging demand. Demand for space heating, cooling, and cooking will increase peak demand at certain times and is subject to less flexibility. Therefore, programs, policies, technologies, and adequate electrical capacity will need to be developed, deployed, and available to manage these demand curves.
2. **Integrated Resource Planning:** In general, utilities will need new power plants to meet the forecasted demand increase. Additionally, state mandates and the public demand that new power utilize low carbon technology.
3. **Voltage Regulation:** Higher demand for electricity increases current levels in the distribution systems, which means a lower voltage at the customer connection point. Voltage requirements at the customer point need to meet ANSI limits of +/- 5%. Disruptions to voltage regulation needs effective management to maintain the stability and reliability of the electric system.
4. **Distribution Upgrades:** Increases in electricity consumption require significant investment in infrastructure and may include increasing the capacity of lines, updating transformers, and upgrading electrical substations.

The impacts of electrification summarized above are also of concern to GWP. GWP has additional unique issues to consider, as outlined below.

GWP Specific Impacts

Supporting the transition to electrification of the transportation and building sectors will impact GWP infrastructure, operations, and planning. Any ordinance requiring all-electric or electric preferred buildings and supporting the expansion of EV charging capacity needs to manage where the potential load increases are not detrimental to GWP operations. Programming and planning need to mitigate these impacts.

A number of the implications of building electrification for GWP, and issues that will need to be considered and addressed, are summarized below.

- Modeling of load increases for building electrification and EV chargers. Electrification will increase the load on the GWP system. Understanding when the load demand is expected and from what source (building or transportation) will inform the development and language of any expected reach code.
- Analysis of transmission and distribution upgrades needed to meet the growth in electric demand. In order to plan for and support a future with increased electrification, GWP needs to understand what infrastructure developments are required, when they are needed, and which part of the system needs to be upgraded. One option would be to develop a phased-in schedule for building electrification. This may focus initially on new residential and non-residential construction (including ADUs). Retrofitting existing building stock may be a later phase of building electrification.
- Analysis of financial impacts of the upgrades that will be needed to GWP's infrastructure to accommodate additional electrification, and the preparation of a cost of service analysis to develop rates to fund such costs.
- Analysis of the impact of PV Solar and battery storage on the GWP distribution grid and on load.

NEXT STEPS

Due to the complexity of this issue, staff recommend hiring a consultant to provide technical assistance and support to City staff in developing potential reach codes and associated ordinances for the City of Glendale. The consultant's work may include assisting staff in developing draft ordinances for building electrification, photovoltaics, and EV infrastructure in new construction, supporting outreach and engagement processes, and helping staff and City Council in the reach code adoption process.

The reach code consultant will bring expertise to address multiples items that staff have not addressed in this report, including but not limited to:

1. **Community Outreach.** At this time, staff have not undertaken outreach activities with potentially affected communities to obtain their input on any of the proposed ordinance options. Community outreach is a critical step, especially when determining when exemptions to any proposed ordinance may apply and what those exemptions are. Outreach will also assist in preparing builders, architects, and property owners to prepare for the proposed local amendments to the State Energy code.
2. **Determine which of the many reach code options are appropriate for the City of Glendale.** This would include recommending any exemptions from any proposed reach code.

3. **Updates on the Building Energy Efficiency Standards.** The 2019 Building Energy Efficiency Standards became effective January 1, 2020. The Building Energy Efficiency Standards will update in 2022 and take effect on January 1, 2023. It will be necessary to determine how the 2022 State Electric Code standards will influence proposed reach code ordinances and impact affected communities, and to evaluate the cost-benefit of proposed reach codes changes to the 2022 State Electric Code.
4. **Consider impacts to GWP and propose solutions to plan for electrification.** While the consultant would interface with GWP, the consultant's scope of work will not include any studies of GWP system upgrades, integrated resource planning, cost of service analysis, or rate development associated with the reach codes.
5. **Assist staff in preparing building electrification, solar photovoltaic, EV charging, and battery storage ordinances for adoption by the City Council.**
6. **Assist staff in preparing the required documentation for submission to the California Energy Commission and Building Standards Commission.**

The estimated cost of a consultant to perform these tasks is around \$50,000.

STAKEHOLDERS/OUTREACH

On November 4, 2021, the Glendale Sustainability Commission held a public meeting to discuss hiring a consultant to assist the City in preparing reach codes to amend the City of Glendale's Building Code to require all-electric design, solar power, and higher energy performance for new construction.

Staff from the Sustainability Office reached out to Glendale Water and Power (GWP) staff regarding pursuing a building electrification strategy and will be further coordinating with GWP to discuss and collaborate on the development of the proposed reach codes.

FISCAL IMPACT

If Council provides direction to staff to hire a consultant to assist in the development of a reach code, the consultant contract will cost \$50,000 which was not included as a part of the FY 2021-22 approved budget. Therefore, staff is requesting for an appropriation of \$50,000 from General Fund Undesignated Fund Balance. The appropriation request is outlined below:

Requesting Appropriation			
Amount	From	To	Funding Source
\$50,000	GL: 25300-1010-000	GL: 43110-1010-MSD-6510-P0000	General Fund – Undesignated Fund Balance

The fiscal impacts of the reach code itself, including the cost of any necessary upgrades to GWP infrastructure, will dependent upon the terms of the reach code ordinance and will require further study. Such fiscal impacts are not included in this report.

ENVIRONMENTAL REVIEW (CEQA/NEPA)

This item is not subject to CEQA as it is not a project approval.

CAMPAIGN DISCLOSURE

This item is exempt from campaign disclosure requirements.

ALTERNATIVES

Alternative 1: Direct staff to hire a consultant to assist the city in the preparation of a reach code to amend the 2019 City of Glendale Building Code to require all-electric design, rooftop solar photovoltaic, and higher energy performance for new construction and adopt a resolution of appropriation in the amount of \$50,000 to hire a consultant.

Alternative 2: Direct staff to hire a consultant to assist the city in the preparation of a reach code based upon the forthcoming 2022 California Energy Codes and to prepare cost-effectiveness studies related to such reach codes.

Alternative 3: Direct staff not to pursue the preparation of a reach code at this time and to wait until the 2022 California Building Efficiency Standards become effective on January 1, 2023.

Alternative 4: Council may choose to direct staff to not hire a consultant to assist staff in the development of a reach code at this time.

Alternative 5: Council may consider any other alternative not presented by staff.

ADMINISTRATIVE ACTION

Prepared by:

David Jones, Sustainability Officer

Approved by:

Roubik R. Golanian, P.E., City Manager

EXHIBITS/ATTACHMENTS

Exhibit 1: 2020 Analysis of Detached Accessory Dwelling Unit, Medium Office, Medium Retail and Small Hotel – City of Glendale

Exhibit 2: 2020 Analysis of Residential Construction Cost Effectiveness – City of Glendale