

2022 CODE CYCLE:  
**Custom Cost Effectiveness Analysis:  
City of Glendale**



**Prepared by:**  
Frontier Energy, Inc  
Misti Bruceri & Associates, LLC

**Prepared for:**  
Kelly Cunningham, Codes and Standards Program, Pacific Gas and Electric

### Legal Notice

This report was prepared by Pacific Gas and Electric Company and funded by the California utility customers under the auspices of the California Public Utilities Commission.

Copyright 2022, Pacific Gas and Electric Company. All rights reserved, except that this document may be used, copied, and distributed without modification.

Neither PG&E nor any of its employees makes any warranty, express or implied; or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any data, information, method, product, policy or process disclosed in this document; or represents that its use will not infringe any privately-owned rights including, but not limited to, patents, trademarks or copyrights.

### Acronym List

B/C – Benefit-to-Cost Ratio

CBECC - California Building Energy Code Compliance

CBSC - California Building Standards Commission

CEC - California Energy Commission

CZ – Climate Zone

GHG - Greenhouse Gas

GWP – Glendale Water and Power

IOU – Investor-Owned Utility

POU – Publicly Owned Utility

PG&E – Pacific Gas & Electric (utility)

SCE – Southern California Edison (utility)

SCG – Southern California Gas (utility)

SDG&E – San Diego Gas & Electric (utility)

CPAU – City of Palo Alto Utilities

LADWP – Los Angeles Department of Water and Power

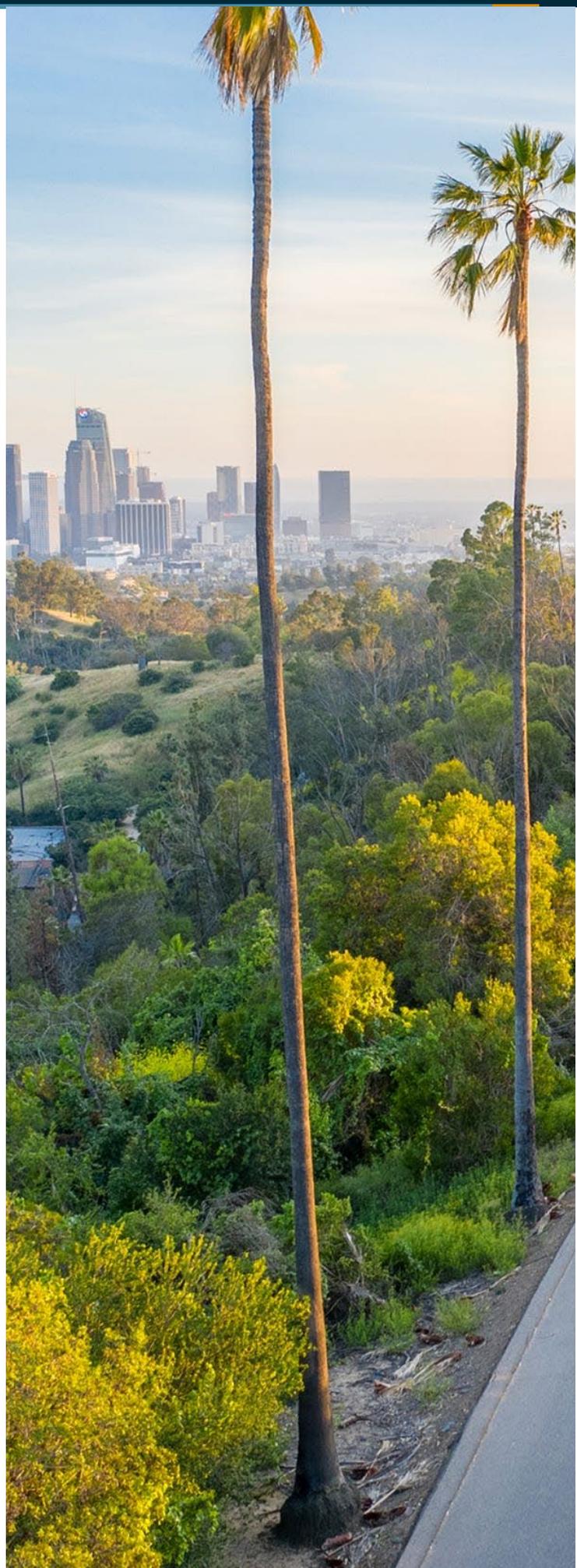
kWh – Kilowatt Hour

NPV – Net Present Value

PV - Solar Photovoltaic

TDV - Time Dependent Valuation

Title 24 – California Code of Regulations Title 24, Part 6



**TABLE OF CONTENTS**

**1 Introduction ..... 4**

**2 Methodology and Assumptions ..... 5**

    2.1 Reach Codes ..... 5

        2.1.1 Benefits ..... 5

        2.1.2 Costs ..... 5

        2.1.3 Metrics ..... 5

        2.1.4 Utility Rates ..... 6

    2.2 Greenhouse Gas Emissions ..... 6

**3 Prototype Designs and Measure Packages ..... 7**

**4 Results ..... 8**

**5 Summary ..... 10**

**6 References ..... 12**

**7 Appendices ..... 13**

    7.1 Map of California Climate Zones ..... 13

    7.2 Utility Rate Schedules ..... 14

        7.2.1 Glendale Water and Power ..... 14

        7.2.2 SCG ..... 15

        7.2.3 Fuel Escalation Rates ..... 17

**LIST OF TABLES**

Table 1. Utility Tariffs in City of Glendale ..... 6

Table 2: Residential Prototype Characteristics ..... 7

Table 3. Climate Zone 9 Single Family Cost-Effectiveness Summary ..... 9

Table 4. Climate Zone 9 ADU Cost-Effectiveness Summary ..... 9

Table 5: Summary of Single Family EDR1 Margins and Cost-Effectiveness ..... 11

Table 6: Summary of ADU EDR1 Margins and Cost-Effectiveness ..... 11

Table 7: SoCalGas Monthly Gas Rate (\$/therm) ..... 16

Table 8: Real Utility Rate Escalation Rate Assumptions ..... 17

**LIST OF FIGURES**

Figure 1. Map of California climate zones ..... 13

# 1 Introduction

The California Codes and Standards (C&S) Reach Codes program provides technical support to local governments considering adopting a local ordinance (reach code) intended to support meeting local and/or statewide energy efficiency and greenhouse gas reduction goals. The program facilitates 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.

The California Building Energy Efficiency Standards Title 24, Part 6 (Title 24) (CEC, 2019) is maintained and updated every three years by two state agencies: the California Energy Commission (the 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). Local jurisdictions must demonstrate that the requirements of the proposed ordinance are cost-effective and do not result in buildings consuming more 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 report is an addendum to the [2022 Single Family New Construction Cost-Effectiveness Study](#) (Statewide Reach Codes Team, 2024) modified to accurately represent the City of Glendale, California. The study analyzes cost-effectiveness of measures and measure packages that exceed the minimum state requirements, the 2022 Building Energy Efficiency Standards, effective January 1, 2023, 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 Codes Team.

The prototype building designs analyzed in this study are newly constructed:

- Single Family Home
- Detached Accessory Dwelling Unit (ADU)

The methodology, prototype characteristics, and measure packages are retained from the main studies referenced above except for the energy costs are calculated using local Glendale Water and Power (GWP) utility rates. Measure packages include combinations of energy efficiency, electrification, solar photovoltaics (PV), and battery storage with results evaluated for California Climate Zones 9.

This report presents measures or measure packages that local jurisdictions may consider adopting to achieve energy savings and emissions reductions beyond what will be accomplished by enforcing minimum state requirements, the 2022 Building Energy Efficiency Standards (Title 24, Part 6), effective January 1, 2023.

Local jurisdictions may also adopt ordinances that amend different Parts of the California Building Standards Code or may elect to amend other state or municipal codes. The decision regarding which code to amend will determine the specific requirements that must be followed for an ordinance to be legally enforceable. Although a cost-effectiveness study is only required to amend Part 6 of the CA Building Code, it is important to understand the economic impacts of any policy decision. This study documents the estimated costs, benefits, energy impacts and greenhouse gas emission reductions that may result from implementing an ordinance based on the results to help residents, local leadership, and other stakeholders make informed policy decisions.

Model ordinance language and other resources are posted on the C&S Reach Codes Program website at [LocalEnergyCodes.com](https://LocalEnergyCodes.com). Local jurisdictions that are considering adopting an ordinance may contact the program for further technical support at [info@localenergycodes.com](mailto:info@localenergycodes.com).

## 2 Methodology and Assumptions

The Reach Codes Team analyzed two residential prototype designs to represent a variety of common building types using the cost-effectiveness methodology detailed in this section below. The general methodology is consistent with analyses of other prototypes, whereas some specifics such as utility rate selection are customized for the City of Glendale rates.

### 2.1 Reach Codes

This section describes the approach to calculating cost-effectiveness including benefits, costs, metrics, and utility rate selection.

#### 2.1.1 Benefits

This analysis used both on-bill and time dependent valuation (TDV) of energy-based approaches to evaluate cost-effectiveness. Both on-bill and TDV require estimating and quantifying the energy savings and costs associated with energy measures. The primary difference between on-bill and TDV is how energy is valued:

- On-Bill: Customer-based lifecycle cost approach that values energy based upon estimated site energy usage and customer on-bill savings using electricity and natural gas utility rate schedules over a 30-year duration for residential and 15 years for nonresidential designs, accounting for a three percent discount rate and energy cost inflation per Appendix 7.2.3.
- TDV: TDV was developed by the Energy Commission to reflect the time dependent value of energy including long-term projected costs of energy such as the cost of providing energy during peak periods of demand and other societal costs including projected costs for carbon emissions and grid transmission impacts. This metric values energy use differently depending on the fuel source (gas, electricity, and propane), time of day, and season. Electricity used (or saved) during peak periods has a much higher value than electricity used (or saved) during off-peak periods.

The Reach Codes Team performed energy simulations using certified software available for 2022 Title 24 code compliance analysis, CBECC-Res v3.0.

#### 2.1.2 Costs

The Reach Codes Team assessed the incremental costs of the measures and packages over a 30-year lifecycle. Incremental costs represent the equipment, installation, replacement, and maintenance costs of the proposed measure relative to the 2022 Title 24 Standards minimum requirements or standard industry practices. Present value of replacement cost is included for measures with lifetimes less than the evaluation period.

In calculating On-Bill cost effectiveness, incremental first costs for the single family and ADU were assumed to be financed into a mortgage or loan with a 30-year loan term and four percent interest rate. Financing was not applied to future replacement or maintenance costs. In calculating TDV cost effectiveness, incremental first costs were not assumed to be financed into a mortgage or loan.

#### 2.1.3 Metrics

Cost-effectiveness is presented using net present value (NPV) and benefit-to-cost (B/C) ratio metrics.

- NPV: The Reach Codes Team uses net savings (NPV benefits minus NPV costs) as the cost-effectiveness metric. If the net savings of a measure or package is positive, it is considered cost effective. Negative net savings represent net costs to the consumer. A measure that has negative energy cost benefits (energy cost increase) can still be cost effective if the costs to implement the measure are even more negative (i.e., construction and maintenance cost savings).
- B/C Ratio: Ratio of the present value of all benefits to the present value of all costs over 30 years (NPV benefits divided by NPV costs). The criteria for cost-effectiveness is a B/C greater than 1.0. A value of one

indicates the savings over the life of the measure are equivalent to the incremental cost of that measure. A value greater than one represents a positive return on investment.

Improving the energy performance of a building often requires an initial investment. In most cases the benefit is represented by annual on-bill utility or TDV savings, and the cost by incremental first cost and replacement costs. However, some packages result in initial construction cost savings (negative incremental cost), and either energy cost savings (positive benefits), or increased energy costs (negative benefits). In cases where both construction costs and energy-related savings are negative, the construction cost savings are treated as the benefit while the increased energy costs are the cost. In cases where a measure or package is cost-effective immediately (i.e., upfront construction cost savings and lifetime energy cost savings), B/C ratio cost-effectiveness is represented by “>1”. Because of these situations, NPV savings are also reported, which, in these cases, are positive values.

### 2.1.4 Utility Rates

In coordination with the City of Glendale, the Reach Codes Team determined appropriate tariffs for each package, summarized in Table 1, based on the annual load profile of the prototype and the corresponding package, and the most prevalent rate for each building type.

For a more detailed breakdown of the rates selected refer to Appendix 7.2 Utility Rate Schedules.

**Table 1. Utility Tariffs in City of Glendale**

Electric / Gas Utility	Electricity	Natural Gas
<b>Residential (Single Family and Detached ADU)</b>		
GWP / SoCalGas	L-1-A	GR

Utility rates are assumed to escalate over time, using assumptions detailed in Appendix 7.2. Please see the main 2022 Single Family New Construction Reach Code Cost Effectiveness Study (Statewide Reach Codes Team, 2024) for further details on methodology.

## 2.2 Greenhouse Gas Emissions

The analysis uses the greenhouse gas (GHG) emissions estimates built-in to CBECC-Res. There are 8760 hourly multipliers accounting for time dependent energy use and carbon emissions based on source emissions, including renewable portfolio standard projections. Natural gas fugitive emissions, which are shown to be substantial, are not included. There are two strings of multipliers—one for Northern California climate zones, and another for Southern California climate zones.<sup>1</sup>

---

<sup>1</sup> CBECC-Res multipliers are the same for CZs 1-5 and 11-13 (presumed to be Northern California), while there is another set of multipliers for CZs 6-10 and 14-16 (assumed to be Southern California).

### 3 Prototype Designs and Measure Packages

Table 2 describes the basic characteristics of each residential prototype design. The prototypes have equal geometry on all walls, windows and roof to be orientation neutral.

**Table 2: Residential Prototype Characteristics**

Characteristic	Single Family One-Story	Single Family Two-Story	ADU
Conditioned Floor Area	2,100 ft <sup>2</sup>	2,700 ft <sup>2</sup>	625 ft <sup>2</sup>
Num. of Stories	1	2	1
Num. of Bedrooms	3	4	1
Window-to-Floor Area Ratio	20%	20%	19.2%

The Reach Codes Team evaluated three packages for mixed fuel homes and five packages for all-electric homes for each prototype and climate zone, as described below.

1. All-Electric Code Minimum: This package applied the prescriptive requirements of the 2022 Title 24 Code and replaced gas equipment with minimum efficiency electric equipment.
2. Efficiency Only, all-electric: This package used only efficiency measures that don't trigger federal preemption issues including envelope, water heating distribution, and duct distribution efficiency measures. For ADUs, this also included ductless variable capacity heat pumps (VCHPs). This package was evaluated for the all-electric homes only.
3. Efficiency + High Efficiency (Preempted) Equipment, all-electric and mixed fuel: This package builds off the Efficiency Only package, adding water heating and space conditioning equipment that is more efficient than federal standards. The Reach Codes Team considers this more reflective of how builders meet above code requirements in practice. This package was evaluated to compare compliance results against the other non-preempted packages, however cost-effectiveness was not evaluated for this package since it cannot serve as the basis for adoption of a local ordinance. Specifically, it applied:
  - a. Water heating, all-electric: Heat pump water heaters with a NEEA Tier 3 rating (3.45 UEF).
  - b. Water heating, mixed fuel: High efficiency (0.95 UEF) gas tankless.
  - c. Space conditioning, single family: High efficiency (16 SEER2/8 HSPF2) heat pumps. In mixed fuel packages, for climate zones with prescriptive gas heating, high efficiency (16 SEER2/95 AFUE) units were applied.
4. Efficiency + PV, all-electric and mixed fuel: This package also builds on the Efficiency Only package, excluding preempted equipment. Instead, PV capacity was added to offset all of the estimated annual electricity use.
5. Efficiency + PV + Battery, all-electric and mixed fuel: Using the Efficiency + PV package as a starting point for the all-electric analysis, a battery system was added. For mixed fuel homes the package of efficiency measures differed from the all-electric homes in some climate zones to arrive at a cost-effective solution.

## 4 Results

Results are presented as per the prototype-specific Measure Packages described in Section 3. Overarching factors impacting the results include:

- Designation of a **'benefit'** or a **'cost'** varies with the scenarios because both energy savings, and incremental construction costs may be negative depending on the package. Typically, utility bill savings are categorized as a **'benefit'** while incremental construction costs are treated as **'costs.'** In cases where both construction costs are negative and utility bill savings are negative, the construction cost savings are treated as the **'benefit'** while the utility bill negative savings are the **'cost.'**
- All-electric packages will have lower **GHG emissions** than equivalent mixed-fuel packages in all cases, due to the clean power sources currently available from California's power providers.
- The Reach Codes Team coordinated with the City of Glendale to select the most prevalent tariffs for each prototype given the annual energy demand profile. The Reach Codes Team **did not compare a variety of tariffs** to determine their impact on cost-effectiveness although utility rate changes or updates can affect on-bill cost-effectiveness results.

Table 3 and Table 4 show results for the single family and ADU prototypes, respectively, for Climate Zone 9. Results are shown for all the evaluated packages. All packages are cost-effective based on TDV with the exception of the mixed fuel Efficiency + PV + Battery single family and ADU packages. All of the all-electric packages are On-Bill cost-effective with the exception of the All-Electric Code Minimum ADU and All-Electric Efficiency Only ADU packages.

**Table 3. Climate Zone 9 Single Family Cost-Effectiveness Summary**

Case	Total EDR1 Margin	Annual Elec Savings (kWh)	Annual Gas Savings (therms)	Annual GHG Savings (mtons)	Utility Cost Savings		Incremental Cost		On-Bill		TDV	
					First Year	Lifecycle (2022\$)	First Year	Lifecycle (2022\$)	B/C Ratio	NPV	B/C Ratio	NPV
<b>All-Electric</b>												
Code Minimum	3.6	-1,453	84	0.3	(\$268)	(\$5,210)	(\$7,065)	(\$6,983)	1.3	\$1,774	5.5	\$5,013
Efficiency Only	4.4	-1,285	84	0.3	(\$222)	(\$4,172)	(\$5,870)	(\$5,642)	1.4	\$1,470	>1	\$5,087
Efficiency + PV	7.1	923	84	0.4	\$354	\$8,785	(\$2,441)	(\$1,039)	>1	\$9,824	>1	\$8,007
Efficiency + PV + Battery	21.8	783	84	0.9	\$318	\$7,977	\$4,432	\$13,555	0.6	(\$5,578)	1.3	\$3,630
<b>Mixed Fuel</b>												
Efficiency + PV	2.0	923	2.7	0.1	\$242	\$5,475	\$2,220	\$2,762	2.0	\$2,713	1.5	\$1,256
Efficiency + PV + Battery	16.2	833	3	0.5	\$219	\$4,960	\$9,152	\$17,435	0.3	(\$12,475)	0.8	(\$3,839)

**Table 4. Climate Zone 9 ADU Cost-Effectiveness Summary**

Case	Total EDR1 Margin	Annual Elec Savings (kWh)	Annual Gas Savings (therms)	Annual GHG Savings (mtons)	Utility Cost Savings		Incremental Cost		On-Bill		TDV	
					First Year	Lifecycle (2022\$)	First Year	Lifecycle (2022\$)	B/C Ratio	NPV	B/C Ratio	NPV
<b>All-Electric</b>												
Code Minimum	0.4	-903	38	0.1	(\$230)	(\$4,877)	(\$4,692)	(\$4,605)	0.9	(\$272)	2.4	\$2,321
Efficiency Only	1.1	-815	38	0.1	(\$201)	(\$4,217)	(\$3,404)	(\$2,648)	0.6	(\$1,569)	2.3	\$1,280
Efficiency + PV	4.5	3,487	38	0.3	\$947	\$21,630	\$3,278	\$6,322	3.4	\$15,308	2.4	\$7,709
Efficiency + PV + Battery	24.9	3,470	38	0.7	\$942	\$21,531	\$10,230	\$21,020	1.0	\$510	1.0	(\$279)
<b>Mixed Fuel</b>												
Efficiency + PV	1.7	3,487	0	0.1	\$903	\$20,341	\$5,744	\$7,635	2.7	\$12,706	1.7	\$4,913
Efficiency + PV + Battery	19.6	3,497	0.2	0.5	\$906	\$20,415	\$12,691	\$22,327	0.9	(\$1,913)	0.8	(\$3,318)

## 5 Summary

The purpose of this study was to examine and document the code compliance and cost-effectiveness impacts of improving performance among single family new construction – both standard sized homes and ADUs. To this end, the Reach Codes Team evaluated packages of energy efficiency measures as well as packages combining energy efficiency with solar PV generation and battery storage, simulated them in building modeling software, and gathered costs to determine the cost-effectiveness of multiple scenarios. The Reach Codes Team coordinated with multiple utilities, cities, and building community experts to develop a set of assumptions considered reasonable in the current market. Changing assumptions, such as the period of analysis, measure selection, cost assumptions, energy escalation rates, or utility tariffs are likely to change results.

Table 5 (single family) and Table 6 (ADU) summarize results for each prototype and depict the EDR1 compliance margins achieved for each package. Because local reach codes must both exceed the Energy Commission performance budget (i.e., have a positive compliance margin) and be cost-effective, the Reach Codes Team highlighted cells meeting these two requirements to help clarify the upper boundary for potential reach code policies. All results presented in this study have a positive compliance margin.

- Cells highlighted in **green** depict a positive compliance margin and cost-effective results using both On-Bill and TDV approaches.
- Cells highlighted in **yellow** depict a positive compliance and cost-effective results using either the On-Bill or TDV approach.
- Cells **not highlighted** depict a package that was not cost-effective using either the On-Bill or TDV approach.
- Cells highlighted in **grey** depict the high efficiency equipment packages where cost-effectiveness was not evaluated.

The Reach Codes Team concluded the following from the results of this study.

- The all-electric single family and ADU homes were found to be cost-effective based on TDV in all cases.
- All-electric code minimum construction results in an increase in first year utility costs relative to a mixed fuel. The addition of efficiency measures, market dominant HPWHs that meet NEEA's Advanced Water Heating Specification, high efficiency heat pumps, increased PV, and batteries all reduce utility costs, and a combination of these options was found to reduce annual utility costs relative to a mixed fuel home in all cases.
- A reach code with a single performance target based on source energy, EDR1 for single family / ADU, can be structured to strongly encourage electrification. This approach requires equivalent performance for all buildings and in allowing mixed fuel buildings it minimizes the risk of violating federal preemption.

**Table 5: Summary of Single Family EDR1 Margins and Cost-Effectiveness**

Climate Zone	Electric /Gas Utility	All-Electric					Mixed Fuel		
		Code Minimum	Efficiency	Efficiency + High Efficiency Equipment	Efficiency + PV	Efficiency + PV + Battery	Efficiency + High Efficiency Equipment	Efficiency + PV	Efficiency + PV + Battery
CZ09	GWP/SCG	3.6	4.4	5.7	7.1	21.8	3.2	2.0	16.2

**Table 6: Summary of ADU EDR1 Margins and Cost-Effectiveness**

Climate Zone	Electric /Gas Utility	All-Electric					Mixed Fuel		
		Code Minimum	Efficiency	Efficiency + High Efficiency Equipment	Efficiency + PV	Efficiency + PV + Battery	Efficiency + High Efficiency Equipment	Efficiency + PV	Efficiency + PV + Battery
CZ09	GWP/SCG	0.4	1.1	2.3	4.5	24.9	1.9	1.7	0.4

## 6 References

California Public Utilities Commission. (2021a). *Utility Costs and Affordability of the Grid of the Future: An Evaluation of Electric Costs, Rates, and Equity Issues Pursuant to P.U. Code Section 913.1*. Retrieved from [https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/office-of-governmental-affairs-division/reports/2021/senate-bill-695-report-2021-and-en-banc-whitepaper\\_final\\_04302021.Statewide](https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/office-of-governmental-affairs-division/reports/2021/senate-bill-695-report-2021-and-en-banc-whitepaper_final_04302021.Statewide)

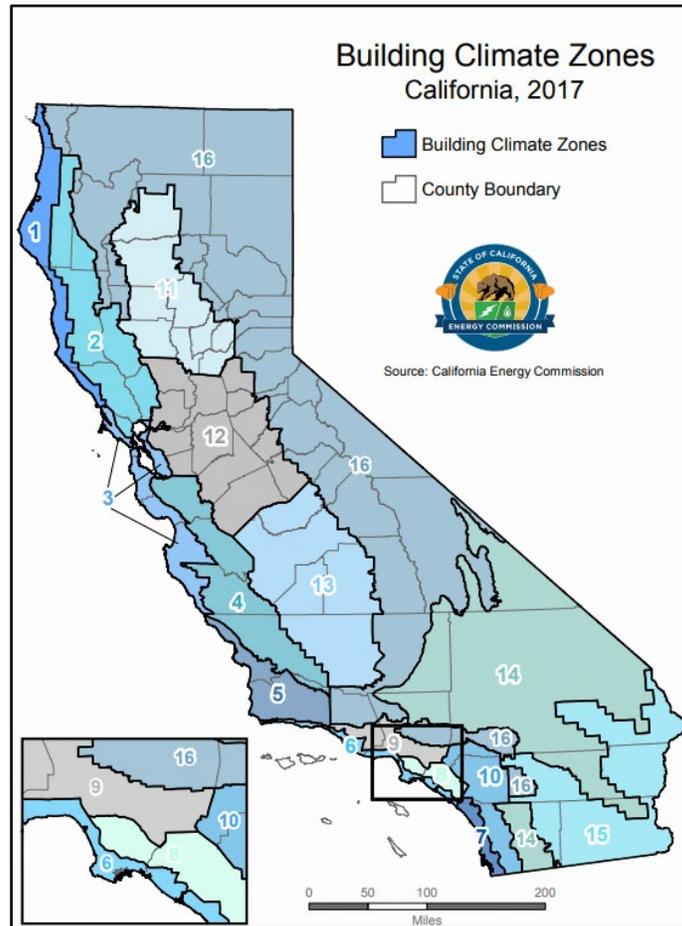
Reach Codes Team. (2024, September). *2022 Cost-Effectiveness Study: Single Family New Construction*. Prepared for Pacific Gas and Electric Company. Prepared by Frontier Energy. Modified in 2024. Retrieved from [https://localenergycodes.com/download/1240/file\\_path/fieldList/2022%20Single%20Family%20NewCon%20Cost-eff%20Study.docx](https://localenergycodes.com/download/1240/file_path/fieldList/2022%20Single%20Family%20NewCon%20Cost-eff%20Study.docx)

## 7 Appendices

### 7.1 Map of California Climate Zones

Climate zone geographical boundaries are depicted in Figure 1. The map in Figure 1 along with a zip-code search directory is available at: [https://ww2.energy.ca.gov/maps/renewable/building\\_climate\\_zones.html](https://ww2.energy.ca.gov/maps/renewable/building_climate_zones.html)

Figure 1. Map of California climate zones.



## 7.2 Utility Rate Schedules

The Reach Codes Team used the City of Glendale tariffs detailed below to determine the On-Bill savings for each package.

### 7.2.1 Glendale Water and Power

#### 7.2.1.1 Residential

Following shows the City of Glendale electricity tariffs applied in this study. The L-1-A Phase 2 rate was applied to all packages.

**Current and Proposed Electric Rates:  
Residential Service L-1-A**

Item	Unit	Current Rate	Proposed Rates				
			Phase 1 Dec 1, 2023	Phase 2 Jul 1, 2024	Phase 3 Jul 1, 2025	Phase 4 Jul 1, 2026	Phase 5 Jul 1, 2027
Customer	Meter/Day	\$0.64	\$0.70	\$0.75	\$0.75	\$0.75	\$0.75
Energy	kWh						
High Season - First 10 kWh/day		\$0.1661	\$0.2481	\$0.2863	\$0.3335	\$0.3335	\$0.3335
High Season - Next 10 kWh/day		\$0.2059	\$0.3075	\$0.3549	\$0.4134	\$0.4134	\$0.4134
High Season - Remaining kWh		\$0.2459	\$0.3673	\$0.4238	\$0.4937	\$0.4937	\$0.4937
Low Season - First 10 kWh/day		\$0.1393	\$0.2081	\$0.2401	\$0.2797	\$0.2797	\$0.2797
Low Season - Next 10 kWh/day		\$0.1725	\$0.2577	\$0.2973	\$0.3464	\$0.3464	\$0.3464
Low Season - Remaining kWh		\$0.2128	\$0.3179	\$0.3668	\$0.4273	\$0.4273	\$0.4273
ECAC	kWh	\$0.0001	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000
RAC	kWh	\$0.0250	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000
RDC	kWh	\$0.0159	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000

Note: These rates also apply to Residential Solar (L-1-D).  
 High Season are months July, August, September, October  
 Low Season are months November through June

The following reflects the details for the net energy metering (NEM) arrangement applied in this analysis per [Net Energy Metering \(NEM\) Program | City of Glendale, CA \(glendaleca.gov\)](https://www.glendaleca.gov/energy-metering-nem-program). A NEM compensation rate of \$ 0.0817/kWh was applied based on information provided by City of Glendale staff.

Although incentives are no longer offered, GWP continues to make NEM available to customers who are interested in installing solar photovoltaic systems in their home or business. With NEM, solar customers are eligible to receive a bill credit for any excess generation produced by their solar system and have the credit automatically applied to their account when it is needed.

### IMPORTANT CHANGES EFFECTIVE 11/01/2023

1. All residential and commercial PC systems sized up to 10kW CEC-AC will be exempt from the 110% historical usage cap. Self-certification of system size need will be required within the PC Interconnection Application on PowerClerk. Customers who meet these criteria may also install up to 30 kWh of PV paired energy storage.
2. Energy storage meter will no longer be required for any residential or commercial energy storage systems. For the most recent versions of the Distributed Energy Resources Diagrams please refer to the [Distributed Energy Resources](#) section of the [Electrical Service Requirements](#).
3. Inverters with PCS (Power Control Systems) capabilities will now be allowed in the City of Glendale. Customer-Generator and Solar Contractor will be required to complete a [Power Control System Agreement](#) and submit as an additional document.

Please review the [Guide for Applying for PV Interconnection and NEM \(for under 15 kW CEC-AC residential systems\)](#) if installing an under 15 kW CEC-AC residential system.

All installations of commercial PV systems and installations of 15+ kW CEC-AC residential PV systems need to follow the [Guide for Applying for PV Interconnection and NEM \(for commercial and 15+ kW CEC-AC residential systems\)](#).

In case of questions please contact the GWP Solar Team by sending an email to [GWPSolarSolutions@glendaleca.gov](mailto:GWPSolarSolutions@glendaleca.gov) or by calling 818-548-2750.

## 7.2.2 SCG

Following are the SoCalGas natural gas tariffs applied in this study. For Climate Zone 9 the baseline territory of 1 was assumed.

The SoCalGas monthly gas rate in \$/therm was applied on a monthly basis according to the rates shown in Table 7. These rates are based on applying a normalization curve to the April 2024 tariff based on ten years of historical gas

data. Long-term historical natural gas rate data was only available for SoCalGas’ procurement charges.<sup>2</sup> The baseline and excess transmission charges were found to be consistent over the course of a year and applied for the entire year based on 2024 rates. CARE rates reflect the 20 percent discount per the GR tariff.

**Table 7: SoCalGas Monthly Gas Rate (\$/therm)**

Month	Procurement Charge	Transportation Charge		Total Charge	
		Baseline	Excess	Baseline	Excess
January	\$0.52	\$0.93	\$1.35	\$1.44	\$1.87
February	\$0.35	\$0.93	\$1.35	\$1.27	\$1.70
March	\$0.30	\$0.93	\$1.35	\$1.23	\$1.66
April	\$0.26	\$0.93	\$1.35	\$1.19	\$1.61
May	\$0.28	\$0.93	\$1.35	\$1.20	\$1.63
June	\$0.30	\$0.93	\$1.35	\$1.23	\$1.66
July	\$0.32	\$0.93	\$1.35	\$1.24	\$1.67
August	\$0.35	\$0.93	\$1.35	\$1.28	\$1.71
September	\$0.32	\$0.93	\$1.35	\$1.25	\$1.67
October	\$0.30	\$0.93	\$1.35	\$1.23	\$1.65
November	\$0.33	\$0.93	\$1.35	\$1.26	\$1.69
December	\$0.39	\$0.93	\$1.35	\$1.31	\$1.74

Southern California Gas Company												
Residential Rates												
24-Apr												
Customer Type			Procurement Charge		Transportation Charge		New Rate				Absolute	
Rate Schedule	Commodity	Charge	Charge	Charge	Charge	Effective	Effective	Effective	Effective	Rate	%	
Rate Schedule	Commodity	Charge	Charge	Charge	Charge	4/1/2024	3/1/2024	2/1/2024	1/1/2024	Change	Change	
<b>Residential Individually Metered</b>												
Schedule No.	GR	Baseline	25.874	92.671	118.545	137.281	146.941	141.97	-18.736	-13.60%		
Res. Service	GR	on Baseline	25.874	135.332	161.206	179.942	189.602	184.631	-18.736	-10.40%		
	GT-R	Baseline	0	92.671	92.671	92.671	92.671	92.671	0	0.00%		
	GT-R	on Baseline	0	135.332	135.332	135.332	135.332	135.332	0	0.00%		

<sup>2</sup> The SoCalGas procurement and transmission charges were obtained from the following site: <https://www.socalgas.com/for-your-business/energy-market-services/gas-prices/RES2023.xlsx> (live.com)

### 7.2.3 Fuel Escalation Rates

#### 7.2.3.1 Residential Occupancies

The average annual escalation rates in Table 8 were used in this study. These are based on assumptions from the CPUC 2021 En Banc hearings on utility costs through 2030 (California Public Utilities Commission, 2021a). Escalation rates through the remainder of the 30-year evaluation period are based on the escalation rate assumptions within the 2022 TDV factors. Rates were applied for the same 30-year period and are based on the escalation rate assumptions within the 2025 LSC factors from 2027 through 2053.<sup>3</sup> These rates were developed for electricity use statewide (not utility-specific) and assume steep increases in gas rates in the latter half of the analysis period. Data was not available for years 2024, 2025, and 2026 and so the CPUC En Banc assumptions were applied for those years using the average rate across the three IOUs for statewide electricity escalation. No data was available to estimate electricity escalation rates for the utilities that serve Glendale, therefore electricity escalation rates for SCE and statewide natural gas escalation rates were applied.

**Table 8: Real Utility Rate Escalation Rate Assumptions**

Year	Statewide Natural Gas Average Rate (%/year, real)	SCE Electric Average Rate (%/year, real)
2024	4.6%	1.6%
2025	4.6%	1.6%
2026	4.6%	1.6%
2027	4.6%	1.6%
2028	4.6%	1.6%
2029	4.6%	1.6%
2030	4.6%	1.6%
2031	2.0%	0.6%
2032	2.4%	0.6%
2033	2.1%	0.6%
2034	1.9%	0.6%
2035	1.9%	0.6%
2036	1.8%	0.6%
2037	1.7%	0.6%
2038	1.6%	0.6%
2039	2.1%	0.6%
2040	1.6%	0.6%
2041	2.2%	0.6%
2042	2.2%	0.6%
2043	2.3%	0.6%
2044	2.4%	0.6%
2045	2.5%	0.6%
2046	1.5%	0.6%
2047	1.3%	0.6%
2048	1.6%	0.6%
2049	1.3%	0.6%
2050	1.5%	0.6%
2051	1.8%	0.6%
2052	1.8%	0.6%
2053	1.8%	0.6%

<sup>3</sup> <https://www.energy.ca.gov/files/2025-energy-code-hourly-factors>. Actual escalation factors were provided by consultants E3.

### Get In Touch

The adoption of reach codes can differentiate jurisdictions as efficiency leaders and help accelerate the adoption of new equipment, technologies, code compliance, and energy savings strategies.

As part of the Statewide Codes & Standards Program, the Reach Codes Subprogram is a resource available to any local jurisdiction located throughout the state of California.

Our experts develop robust toolkits as well as provide specific technical assistance to local jurisdictions (cities and counties) considering adopting energy reach codes. These 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.

If you are interested in finding out more about local energy reach codes, the Reach Codes Team stands ready to assist jurisdictions at any stage of a reach code project.



Visit [LocalEnergyCodes.com](https://LocalEnergyCodes.com) to access our resources and sign up for newsletters.



Contact [info@localenergycodes.com](mailto:info@localenergycodes.com) for no-charge assistance from expert Reach Code advisors.



Follow us on [LinkedIn](#)