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2020 ANNUAL AFFORDABILITY REPORT

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California Public
Utilities Commission

2020 Annual Affordability Report

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Executive Summary

This 2020 Annual Affordability Report (2020 Report) presents the current state of affordability in California as measured by the metrics adopted in the California Public Utilities Commission's (CPUC) Affordability Rulemaking (R.)18-07-006 proceeding. Using the most recently available data, this analysis reflects historical results for electricity, natural gas, water, and communications¹ essential service² affordability for the year 2020, as well as forecasted electric affordability results through the year 2025.³

Essential electricity service is projected to grow less affordable for vulnerable Californians. Figure ES-1 below shows the projected affordability ratio (AR) values through year 2025 for households at the 20th percentile of the local income distribution (referred to as the AR₂₀) for each electric climate zone of the three large electric IOUs. Higher AR values correspond to utility bills that are less affordable. While the historical analysis presented in this report shows little overall change in utility affordability between 2019 and 2020, Figure ES-1 shows that AR values are projected to increase through 2025, meaning that utility bills are expected to be less affordable by 2025 according to this metric.

Hotter regions in California continue to face greater burdens in affording essential utility services. As shown in Figure ES-1, AR values are expected to increase particularly in the hotter climate zones over the next few years. For PG&E customers, AR₂₀ is expected to grow almost 40 percent in climate zone R, from 11.6 percent in 2020 to 16.2 percent in 2025. Similarly, with an expected rapid growth in rates and bills, AR values are expected to increase for SDG&E customers through 2025. Across SDG&E's four climate zones, AR₂₀ values are expected to increase by about 55 percent in 2025 compared to 2020, rising from an average of 6.4 percent to 9.9 percent. For SCE climate zone 15, which is a hot climate zone that lies along the California border with Nevada and Arizona, AR₂₀ is expected to increase by 27 percent, from 10.3 percent in 2020 to 13.1 percent in 2025 with a peak value of 13.5 percent. The increase in AR₂₀ across all climate zones by 2025 indicates that expected increases in essential usage bills (EUB) for electricity will likely outpace increases in household incomes once housing costs and other essential service bills (ESB) are taken into account.

¹ The Commission sets rates for the electric, natural gas, and water utilities under its jurisdiction. The Commission does not set rates for communications providers or municipally-owned providers of electricity, gas, or water service.

² Decision (D.) 20-07-032 adopts the term essential service to represent the minimum amount of utility service necessary for household consumption.

³ Forecasted values for electricity affordability metrics reflect forecasted cumulative year-end rates based on revenue requirement projections embedded in the most recently available Cost and Rate Tracker (CRT) for each IOU, as modified by Energy Division staff. These forecasted cumulative year-end rates are also available as part of the [2022 Senate Bill \(SB\) 695 Report](#) (Table 24). All other inputs for the forecasted metric calculations were developed by assuming inflation-based escalation.

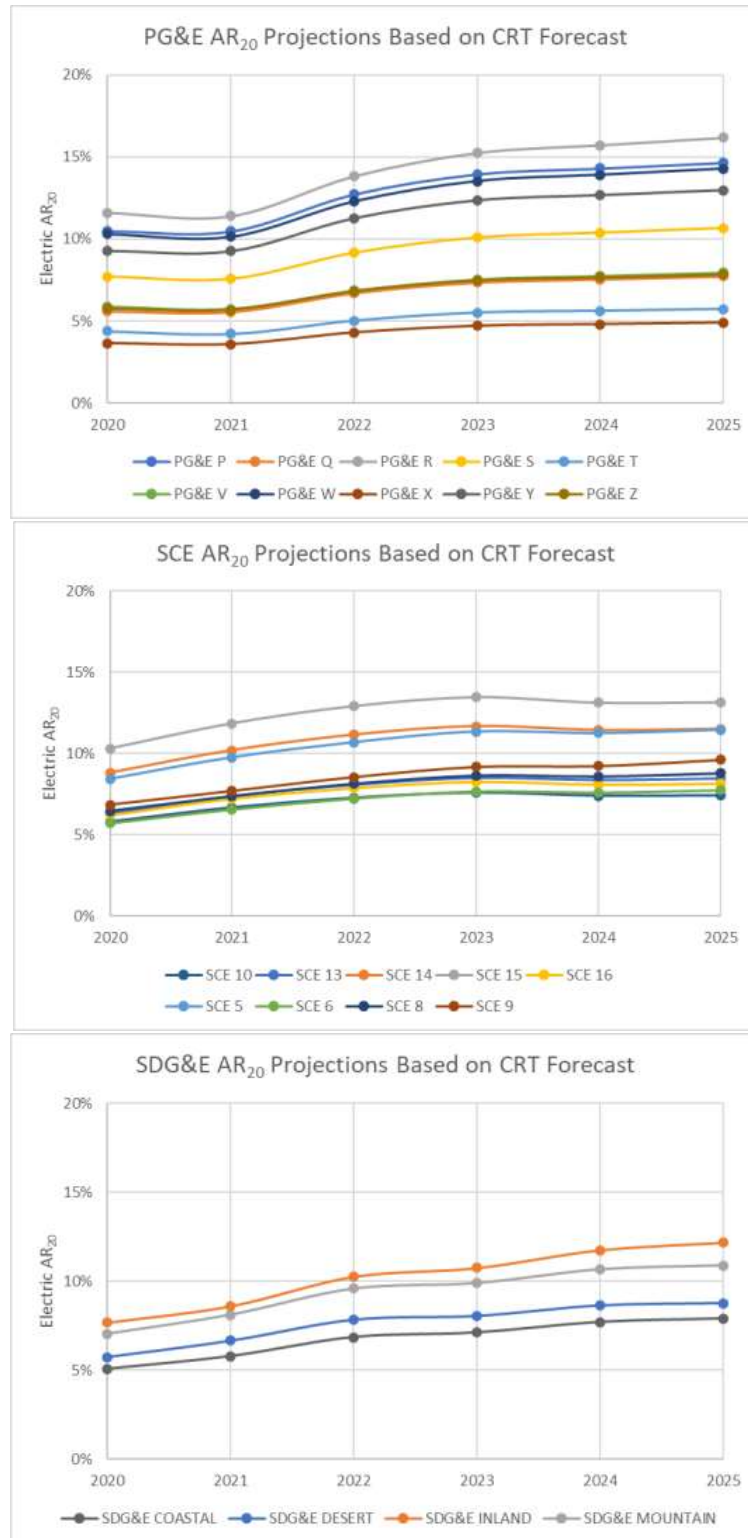
Figure ES-1: Forecasted AR₂₀ Values by Electricity Climate Zone for the Three Large IOUs



Figure ES-2: Bundled Statewide AR₂₀ Values by PUMA (2020)⁴

The 2020 historical affordability analysis produced similar results to what was observed in the 2019 Annual Affordability Report (the 2019 Report). The map in Figure ES-2 shows that there is a wide range of AR₂₀ values for all four essential services (electricity, gas, water, and communications) bundled together. This map shows that affordability of essential services varies widely across different parts of California, even for households at a common point of the income distribution for their area. Many parts of Los Angeles continue to reflect high AR values (on the map, these areas are warmer colors such as red), indicating that essential services are relatively expensive for low-income households in these areas once budgets are adjusted to reflect housing costs. Additionally, select areas in the San Francisco Bay Area, San Diego, and the Central Valley also display high AR values. This trend is mirrored in the CalEnviroScreen (CES) scores and hours at minimum wage (HM) values that were also calculated to measure affordability for all four essential services combined.

Income, more than housing costs, continues to drive whether essential utility services are affordable for families and individuals. The 2020 Report includes an update to the affordability analysis for each of the four essential services individually that was presented in the 2019 Report. This year's analysis shows similar patterns in terms of where affordability challenges are most severe. The comparison between 2019 and 2020 also highlighted that changes in income levels and housing costs were not evenly experienced across the income distribution: before accounting for any changes in EUBs/ESBs, lower-

⁴ PUMAs, or Public Use Microdata Areas, are “non-overlapping, statistical geographic areas that partition each state or equivalent entity into geographic areas containing no fewer than 100,000 people each.” There are currently 265 PUMAs in the state of California. By looking at a common income percentile across the different PUMAs in California, the AR metric characterizes the relative wealth of each PUMA to the others. More information on PUMAs can be found on the Census Bureau’s website: <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/pumas.html>

income households' available budgets for essential services slightly shrank between 2019 and 2020 whereas median-income households' budgets increased.

Industry-specific differences present opportunities for targeted policymaking.

A comparison of the 2020 analysis with the 2019 affordability results produces several industry-specific observations:

- Electricity:
 - On an aggregate level, there was no significant change in electricity affordability in 2020 compared to 2019, though the forecasted analysis indicates that electric bills started becoming much less affordable in 2022 and will continue on that trend until at least 2025.
 - The most serious affordability concerns continue to be in particularly low-income parts of major metro areas, as well as in the Central Valley.
 - Some parts of the state showed significant increases in lower-income households' income levels and attendant drop in AR values, though it is unclear whether this is due to real changes in low-income household earnings (due to expansion of social safety net during COVID-19 pandemic) or measurement error due to data collection difficulties during the pandemic.
 - Improvements in EUB data for some utilities led to more accurate measurements of affordability, which is reflected in the updated 2019 analysis presented in this report.
- Natural Gas:
 - On an aggregate level, there was no significant change in natural gas affordability in 2020 compared to 2019, though the current trend in natural gas commodity prices suggests that gas bills have likely started becoming less affordable.
 - Similar to electricity affordability analysis, some improvements in EUB data led to more accurate measurements of affordability for historical year 2019, which is reflected in the updated analysis presented in this report.
- Water:
 - There was no significant change in water affordability compared to 2019.
 - Similar to the 2019 report, small Commission-regulated systems have the highest AR₂₀ and HM results. This is due to the systems' locations in rural areas with high costs of service resulting in high water rates and consisting of low 20th percentile incomes.
- Communications:
 - A decrease in communication bill values led to statewide improvements in communications AR values in 2020 compared to 2019, though this may be due to more accurate data rather than actual decreases in communication bills.
 - At a more granular level, select census tracts across the state still contain communities that face affordability challenges due to low income, high cost of service, or both.

Based on the 2020 AR results for each industry, the 2020 Report maintains the affordability demarcations that were established in the November 2021 Implementation Staff Proposal.⁵ Using these affordability demarcations, areas of affordability concern are identified for each industry in Figure ES-3 and overlaid with California Environmental Protection Agency's (CalEPA) most recent definition of disadvantaged communities (DACs).

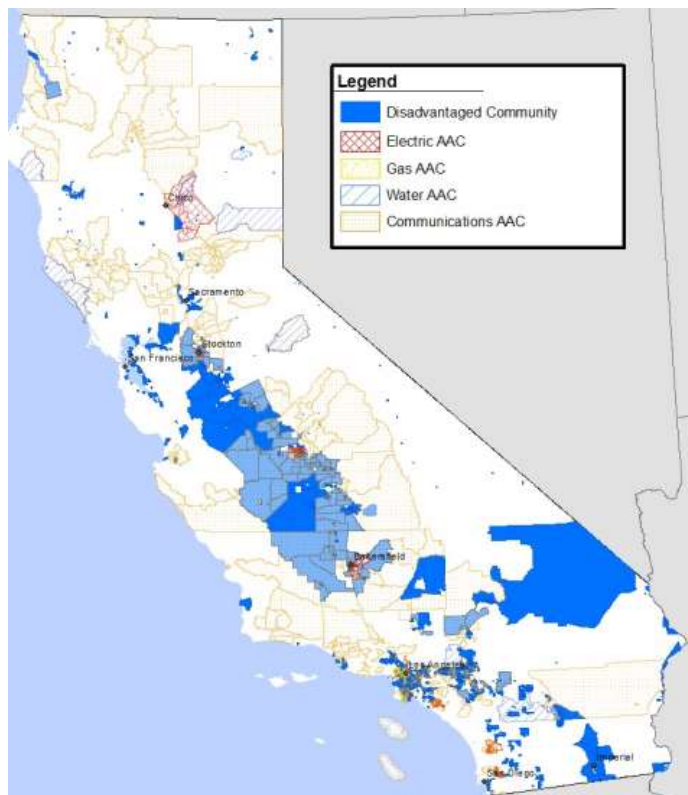


Figure ES-3: Disadvantaged Communities Overlaid with Areas of Affordability Concern

Bill assistance programs help and utilities must seek continuous improvement in outreach and enrollment. With the 2020 Report, staff also introduces an analysis of key assistance programs and their impact on affordability for low-income families. Specifically, this report looks at the impact of the California Alternate Rates for Energy (CARE) program for electricity and natural gas, the Customer Assistance Program (CAP) for water, and the Family Electric Rate Assistance (FERA) program for electricity on utility affordability in California.

The analysis shows that the CARE and CAP programs (which have the same income eligibility requirements) provide a sizable improvement in utility affordability in the most vulnerable areas. The drop in AR value is larger in the areas where essential services are relatively unaffordable, showing that the CARE program is generally more effective where electric and natural gas affordability concerns are most serious, since this is where the discount represents the biggest proportion of a household's budget after taking into account non-discretionary expenses such as housing costs. However, there are several electric and gas climate zone/PUMAs for which high AR₂₀ values persist even with the CARE/CAP-

⁵ See [R.18-07-006 Affordability Metrics Implementation Staff Proposal issued November 5, 2021](#) (Implementation Staff Proposal).

reduced EUBs, indicating that EUBs for customers in these areas may be difficult to afford whether they receive low-income program relief or not. The analysis of the FERA program showed similar impacts, though on a smaller scale due to the lower level discount.⁶

Alongside the affordability ratio impact of the CARE, CAP, and FERA programs, this report provides a summary of CARE and FERA enrollment rates⁷ in order to provide a sense for whether there is an opportunity to improve utility affordability through expanded outreach to customers eligible for, but not yet enrolled in, these assistance programs. While the official CARE reports for 2020 indicated greater than 100 percent enrollment across all four of the large electric and natural gas investor-owned utilities (IOUs) as a result of temporary COVID-19 protections, the IOU-provided geographically granular estimates of CARE enrollment suggest that there may be an opportunity to refine the IOUs' methodology for identifying who is eligible for CARE. If the IOUs refined their modeling and were able to identify where there are unenrolled customers who are eligible for CARE, outreach to those customers could improve energy affordability as well as water affordability, since CAP income thresholds are identical to the CARE thresholds and CAP eligibility is often determined through CARE enrollment.

⁶ CARE provides a discount of 30-35 percent on electric bills and a 20 percent discount on natural gas, while FERA only offers an 18 percent discount on electric bills.

⁷ Enrollment rate refers to the percent of eligible customers enrolled in the program.

1. Introduction

This report presents the current state of affordability in California as measured by the metrics adopted in the Affordability Rulemaking (R.)18-07-006 proceeding. Using the most recently available data, this analysis reflects historical results for electricity, natural gas, water, and communications⁸ essential service⁹ affordability for the year 2020, as well as forecasted affordability results for electricity through the year 2025.¹⁰ With this second Annual Affordability Report for the year 2020 (the 2020 Report), California Public Utilities Commission (Commission, or CPUC) staff also begin the process of tracking changes in affordability over time by comparing the 2020 results to the 2019 results that were presented in the 2019 Report.¹¹

The 2020 Report also introduces an analysis of key assistance programs and their impact on affordability for low-income families. Specifically, this report looks at the impact of the California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance (FERA) programs on electricity and natural gas affordability, as well as the Customer Assistance Program (CAP) on water affordability.

Alongside the report itself, Commission staff provides updated tools so that interested parties can assess the affordability impact of proposals that are under consideration. An updated Affordability Ratio Calculator (AR Calculator), which was used to develop much of the analysis presented in this report, is available through the Commission's website.¹² Staff also provides detailed tables with affordability results at geographically granular levels for the various essential services, as well as lists of census tracts that are located in vulnerable communities, in the appendices of this report (See Appendix A).

a. Background on Metrics and Definitions of Vulnerable Communities

The analysis presented in this report relies on the metrics that were adopted in the Phase 1 decision of the Affordability Rulemaking proceeding¹³ (the Phase 1 Decision), with the exception of a change in the metric used to measure vulnerability at the community level. Relevant information on the metrics is provided here, but for additional details on the definitions of and calculation methodologies for these metrics, please refer to the Phase 1 Decision.

⁸ The Commission sets rates for the electric, natural gas, and water utilities under its jurisdiction. The Commission does not set rates for communications providers or municipally-owned providers of electricity, gas, or water service.

⁹ Decision (D.) 20-07-032 adopts the term essential service to represent the minimum amount of utility service necessary for household consumption.

¹⁰ Forecasted values for electricity affordability metrics reflect forecasted cumulative year-end rates based on revenue requirement projections embedded in the most recently available Cost and Rate Tracker (CRT) for each IOU, as modified by Energy Division staff. These forecasted cumulative year-end rates are also available as part of the [2022 Senate Bill \(SB\) 695 Report](#) (Table 24). All other inputs for the forecasted metric calculations were developed by assuming inflation-based escalation.

¹¹ See [2019 Annual Affordability Report](#).

¹² 2020 AR Calculator: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/arc_2020_final.xlsx. Note that this is a large file. It is highly recommended that you save this file to your hard drive (right-click and save) and open it from there.

¹³ See [D.20-07-032](#).

The affordability ratio (AR) metric quantifies the percent of a household's income used to pay for an essential utility service after non-discretionary expenses, such as housing and other essential utility services, are removed from the household's income. The higher an AR, the less affordable the utility service. AR may be calculated for any income level in a given area, with AR₂₀ (the AR for a household at the 20th percentile income level) and AR₅₀ (the AR for a household at the 50th percentile of income) chosen by staff as the standard representations.¹⁴ The AR metric is calculated for a representative household at a given point in the income distribution for a geographic area known as a Public Use Microdata Area (PUMA).¹⁵ This distribution of incomes is particular to each PUMA and is measured in the Census Bureau's American Community Survey (ACS). The AR metric is sensitive to geographic variations in cost-of-living, which can impact the amount of income available to pay for essential utility services. This metric can show the affordability for specific essential services by industry (in which case the other essential services are treated as non-discretionary expenses and deducted from the household's gross income), or can be used to measure the affordability for all four essential services combined, which is referred to as the bundled AR.

The hours at minimum wage (HM) metric allows stakeholders to conceive of essential utility bills in terms of something most people can relate to – hours of labor. The use of minimum wage in the HM metric accounts for the lowest wages legally available in a given location, and as a result implicitly considers the impact of utility bills on lower-income customers regardless of the affluence of the community as a whole.

The socioeconomic vulnerability index (SEVI) metric allows for an affordability assessment that is independent of essential utility service charges. The SEVI metric describes the relative socioeconomic characteristics of census tracts, referred to as communities, in terms of poverty, unemployment, educational attainment, linguistic isolation, and percent of income spent on housing.¹⁶ The goal of the SEVI metric in this context is to highlight those communities where uniform changes in rates may have a disproportionate impact on affordability. Thus, the SEVI metric allows for an affordability assessment that is independent of the absolute value of essential utility service charges.

While D.20-07-032 adopted SEVI as the third metric, this report will instead focus on a similar metric produced by California Office of Environmental Health Hazard Assessment (OEHHA) called CalEnviroScreen (CES).¹⁷ The SEVI metric is actually derived from CES by using the socioeconomic-specific components used to calculate CES scores (poverty, unemployment, educational attainment, linguistic isolation, and percent of income spent on housing) to generate a similar index. Consistent with the reasoning presented in the Phase 2 decision of the Affordability Rulemaking proceeding (the Phase 2

¹⁴ The 20th percentile was selected because it represents households that are low-income but may not necessarily qualify for an assistance program such as California Alternate Rates for Energy (CARE).

¹⁵ PUMAs are "non-overlapping, statistical geographic areas that partition each state or equivalent entity into geographic areas containing no fewer than 100,000 people each." There are currently 265 PUMAs in the state of California. By looking at a common income percentile across the different PUMAs in California, the AR metric characterizes the relative wealth of each PUMA to the others. More information on PUMAs can be found on the Census Bureau's website: <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/pumas.html>

¹⁶ The socioeconomic indicators are those used by the California Office of Environmental Health Hazard Assessment in developing its CalEnviroScreen (CES) score.

¹⁷ CalEPA CalEnviroScreen website: <https://oehha.ca.gov/calenviroscreen>.

Decision),¹⁸ CES results will be presented in this report because it provides a more comprehensive analysis of how vulnerable a community is to utility bill increases. Moreover, the CES is an established metric that is already widely used and understood.

In addition to using these metrics, this report uses two definitions of vulnerable communities to identify where affordability concerns are particularly severe: areas of affordability concern (AAC) and disadvantaged communities (DAC). The former was developed in the implementation staff proposal¹⁹ to give context to the AR metric and to identify specific areas in California where lower-income households have particular difficulty affording each essential service compared to the rest of the state. The latter is a definition of vulnerable community developed by California Environmental Protection Agency (CalEPA) and is primarily based on CES scores.

Until recently, DACs were identified based on CalEPA's CES 3.0. This version of CES designated DACs as census tracts with the highest 25 percent of CES scores and tracts with missing population characteristics data that are in the top 5 percent of pollution burden score. On May 3, 2022, CalEPA released CES 4.0 with an updated definition. The new definition of DACs include: 1) census tracts with the highest 25 percent of CES 4.0 scores and tracts that are missing population characteristics data, but in the top 5 percent of pollution burden score; 2) census tracts identified as a DAC in CES 3.0; and 3) all lands under the control of federally recognized Tribes in California.

AACs are census tracts that lie in geographic areas where AR₂₀ values are greater than the affordability demarcation for a particular essential service. The affordability demarcations are defined as the point of inflection in each industry's AR₂₀ distribution of values, based on the observed data in the most recently available Affordability Report.²⁰ The inflection point represents the point in the distribution of AR₂₀ values that serves as a boundary of sorts: a small percentage of households are located in areas where the AR₂₀ is significantly higher than the inflection point (ie, the area to the left of the inflection point on the distribution plot) while the majority of households are located in areas where the AR₂₀ is below the inflection point (ie, the area to the right of the inflection point). This inflection point is determined by visual inspection. As an example, the distribution of electric AR₂₀ values from the 2019 Report is presented in Figure 1. This graph shows that the majority of households in the state are located in areas where AR₂₀ values are relatively low. However, there are a number of households located in areas where the affordability ratio for families at the 20th percentile of the income distribution is significantly higher than the rest of the state. This inflection in the graph is at around an electric AR₂₀ value of 15 percent, which was determined by CPUC staff to be the affordability demarcation for electricity.

¹⁸ See [D.22-08-023](#).

¹⁹ See [R.18-07-006 Affordability Metrics Implementation Staff Proposal issued November 5, 2021](#) (Implementation Staff Proposal).

²⁰ For the electricity, gas, and water demarcations, inflection points were identified based on the distribution of AR₂₀ results in CPUC-jurisdictional service territories only.

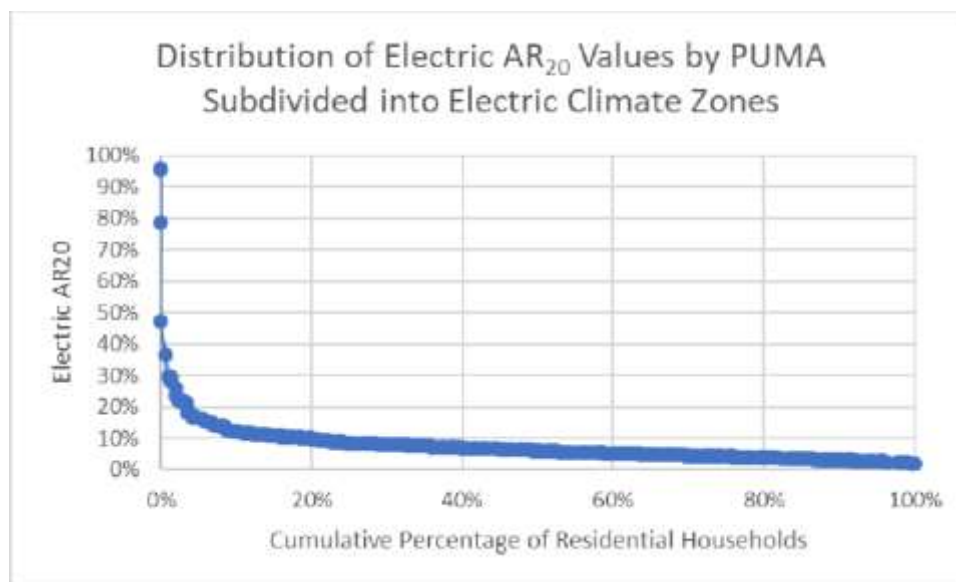


Figure 1: Distribution of Electric AR₂₀ Values by Percent of Residential Households (2019)

Similar affordability demarcations were presented in the Implementation Staff Proposal based on the 2019 Report analysis for this and the other industries. The affordability demarcations that were presented in the Implementation Staff Proposal, which are based on the inflection point of each industry's distribution of AR₂₀ values, are shown in Table 1. These inflection points represent the minimum AR₂₀ values for areas where affordability concerns are more severe than most of the rest of the state. In other words, when the AR₂₀ for a given industry in a given area is above the demarcation value, affordability concerns for that area are more serious than they are for most of the rest of the state.

The next chapter of this report compares the 2020 distribution of AR₂₀ values for each industry to the 2019 distribution of values to assess whether any changes in the affordability demarcations are justified.

Industry	Inflection Point %
Electric	15%
Gas	10%
Water	10%
Communications	15%

Table 1: Affordability Demarcations – AR₂₀ Distribution Inflection Points by Industry (2019)

b. Organization of Report

The remainder of this report presents a summary of the affordability metrics based on an analysis of data for the year 2020 (Chapter 2), a comparison with the 2019 results to identify trends in affordability (Chapter 3), an analysis of the impact of assistance programs (Chapter 4), a projection of electric AR in future years based on the most recently available cost and rate data (Chapter 5), a review of how the metrics have been used in Commission proceedings over the past year (Chapter 6), and a summary on the timeline and process for future annual affordability reports (Chapter 7).

2. Summary of 2020 Results and Affordability Demarcations

This chapter summarizes the 2020 affordability analysis for all essential services combined as a bundle, as well as for each individual service separately.²¹ Affordability is measured using the affordability ratio (AR), hours at minimum wage (HM), and CalEnviroScreen (CES) metrics, and vulnerable communities are identified using the disadvantaged communities (DAC) and areas of affordability concern (AAC) definitions. The results show similar patterns across the four industries, particularly the geographic location of vulnerable communities.

a. Bundled Affordability Ratio, CalEnviroScreen Results, and Hours at Minimum Wage

Before looking at the more detailed industry-specific affordability ratio results, this section presents the bundled AR values (representing affordability of all essential services combined) across different parts of the state as well as the CES and HM results.

Bundled 2020 AR₂₀ values are presented as weighted averages by PUMA in Figure 2, with lower AR₂₀ values (representing areas where utility services are more affordable) shaded green and higher AR₂₀ values shaded warmer colors. The legend for this map is such that any AR₂₀ value above 35 percent is top coded as red.²² The detailed AR results for bundled service as well as industry-specific AR values, and for households at the 20th and 50th income percentiles at various levels of geographic specificity, are available in the updated AR Calculator tool that is available on the CPUC website.²³ An interactive version of Figure 2, which allows the user to see granular details of densely populated urban areas, is available on the CPUC's website.²⁴

²¹ Bundled AR and HM values reflect that some areas in California are served by a mix of CPUC-jurisdictional and non-jurisdictional utilities (for instance, a non-jurisdictional water provider serving an area that is part of a CPUC-jurisdictional electric utility's service territory). Individual energy and water industry AR and HM values focus exclusively on CPUC-jurisdictional provider territories.

²² A top value of 35 percent for the legend was selected because prior analysis in the 2019 Report indicated that this was the approximate inflection point in the distribution of bundled AR values.

²³ 2020 AR Calculator: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/arc_2020_final.xlsx. Note that this is a large file. It is highly recommended that you save this file to your hard drive (right-click and save) and open it from there.

²⁴ <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/affordability/2020-annual-affordability-report>



Figure 2: Bundled Statewide AR₂₀ Values by PUMA (2020)

Similar to the results presented in the 2019 Report,²⁵ the map in Figure 2 shows that there is a wide range of AR values for households at the 20th percentile of the local income distribution. Many parts of Los Angeles continue to reflect high AR values. Additionally, select areas in San Francisco Bay Area, San Diego, and the Central Valley also display high values.

This trend is mirrored in the CES scores presented at census tract level, as shown in Figure 3. This map shows the highest CES scores in the Central Valley and major urban areas, with much lower scores in wealthier communities particularly along the coast.

²⁵ See [2019 Annual Affordability Report](#).

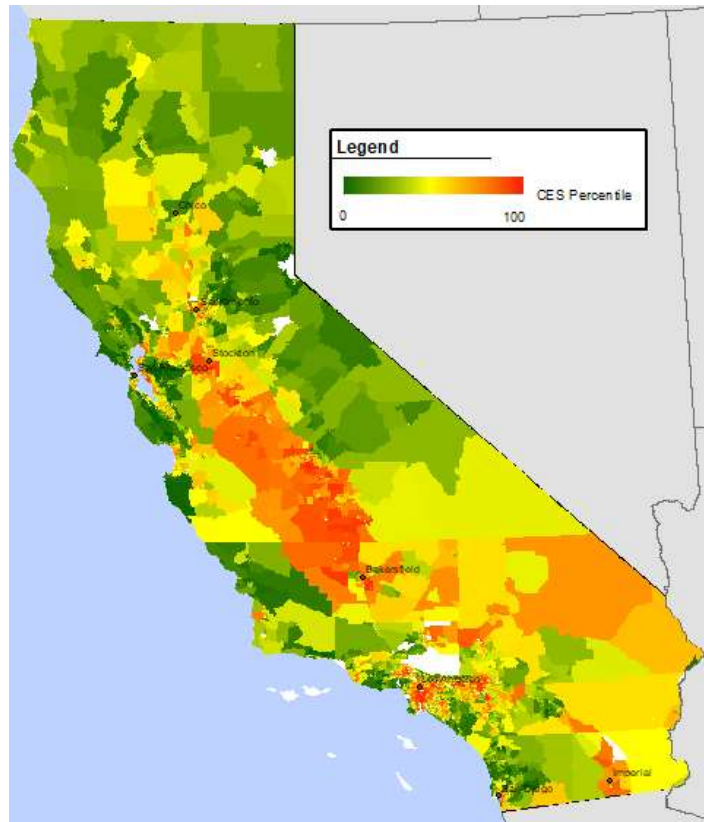


Figure 3: CalEnviroScreen 4.0 Scores by Census Tract

These patterns are also reflected in the bundled HM map in Figure 4, which shows where minimum wage earners are least able to afford essential usage bills (EUB) or essential service bills (ESB).²⁶ All three metrics consistently identify the same communities as being the most vulnerable, suggesting that poverty, pollution burdens, and high non-discretionary expenses share a common footprint. More detailed, interactive versions of the CES and HM maps are also available on the CPUC's website.²⁷ Bundled AR, CES, and HM results are also available in tabular form on the CPUC's website.²⁸ The minimum wage data associated with the HM calculations are also available on the CPUC's website.²⁹

²⁶ D. 20-07-032, COL 6 used "essential utility service charge" to refer to the bill a customer pays for essential usage or essential service. The Phase 2 PD further clarifies that for energy and water, this bill is known as the essential usage bill (EUB) and for communications it is known as the essential service bill (ESB). EUBs/ESBs are obtained by data request.

²⁷ <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/affordability/2020-annual-affordability-report>

²⁸ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/tabular-ar-ces-and-hm-results.xlsx>

²⁹ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/tabular-2020-minimum-wage-data.xlsx>

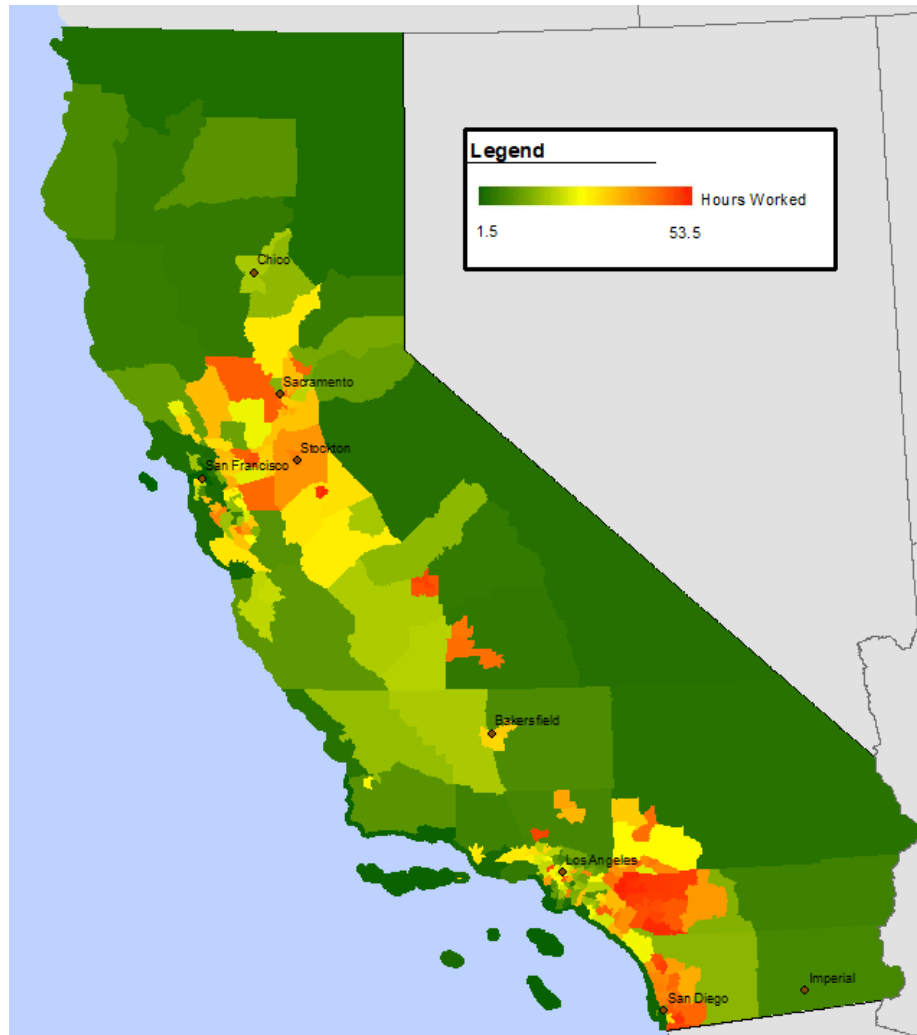


Figure 4: Bundled Statewide HM Values by PUMA (2020)

b. Summary of 2020 AR Values, HM Values, Affordability Demarcations, and AAC, by Industry

This section presents the industry-specific affordability results for 2020 as measured by the AR and HM metrics for each essential service. The distributions of industry-specific AR₂₀ values are also compared to the distributions from 2019 to assess whether the affordability demarcations that were presented in the Implementation Staff Proposal³⁰ are still reasonable. Using these affordability demarcations, the AAC census tracts for each industry are also discussed.

i. Electric

The 2020 electric AR₂₀ results for CPUC-jurisdictional areas are presented in Figure 5 below. The legend for this map is scaled so that any area where the AR₂₀ value is over the affordability demarcation of 15 percent is shaded red, with values presented on a spectrum from green (lower AR₂₀ values, which

³⁰ See [Implementation Staff Proposal](#).

translates to more affordable electric service) to red (higher AR_{20} values). Similar to the bundled results presented in Figure 2, most of the areas with extremely high AR values are in lower income areas such as the Central Valley, as well as the lower income parts of major metro areas. Because this map only shows CPUC-jurisdictional areas, some parts of the LA metro area that showed high bundled AR_{20} values in Figure 2 are not displayed on this map. They are located in LA Department of Water and Power's (LADWP) service territory.

While the results presented here focus on the AR_{20} analysis, AR values for median households (i.e., AR_{50} values) are available on the CPUC's website.³¹

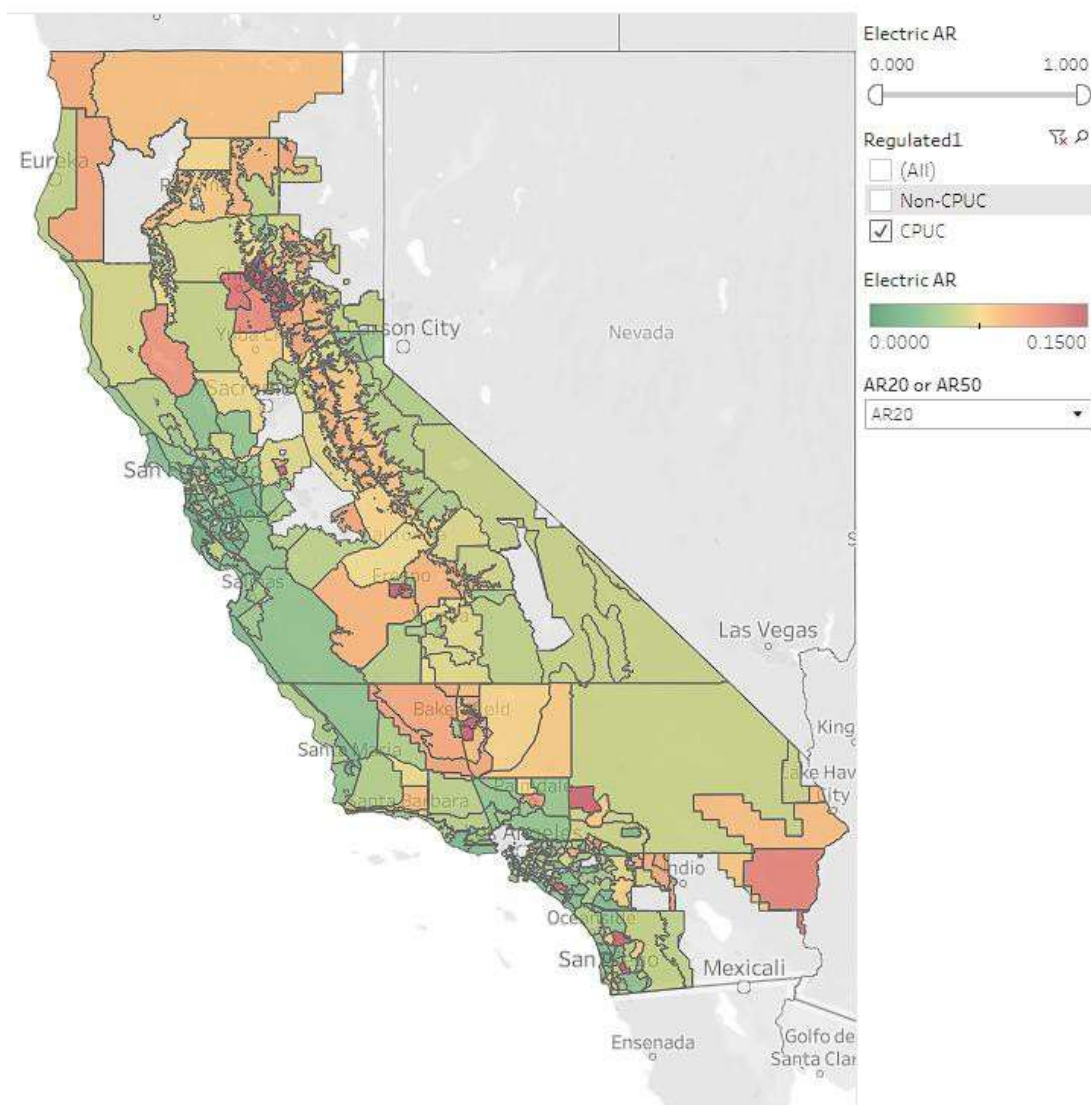


Figure 5: Electric AR_{20} Values for CPUC-Jurisdictional Areas (2020)

³¹ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/tabular-ar-ces-and-hm-results.xlsx>

The distribution of electric AR₂₀ values for 2020 and 2019 are shown in Figure 6, with the x-axis showing the percent of households in California that live in areas where the AR₂₀ value is at or above a given value. The data is presented this way to identify which AR₂₀ values are significantly higher than the rest of the state, relatively speaking. The distribution of electric AR₂₀ values from the 2019 analysis was used to select an affordability demarcation of 15 percent, which is the approximate inflection point of the 2019 distribution. The 2020 distribution is fairly similar, indicating that the 15 percent affordability demarcation is still reasonable for electric service.

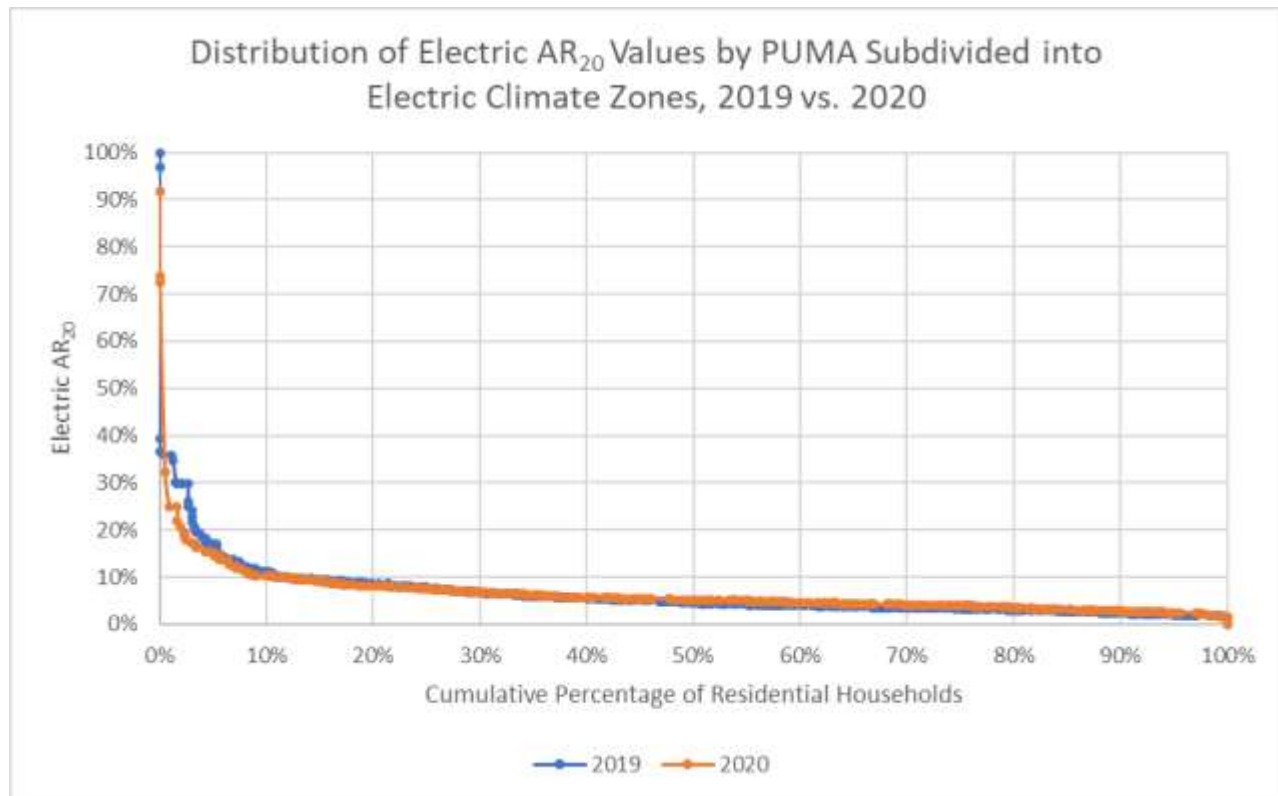


Figure 6: Distribution of Electric AR₂₀ Values by PUMA Subdivided into Climate Zones (CPUC-Jurisdictional Utilities), 2019 vs. 2020

Using a 15 percent affordability demarcation for electricity, AACs were identified. Figure 7 shows the CPUC-jurisdictional AAC census tracts for electric service and Table 2 lists the PUMA/climate zone³² areas with the ten highest electric AR₂₀ values. Four out of ten of these areas are among the top ten PUMA/climate zone areas with the highest electric AR₂₀ results in both the 2019 and 2020 Reports.³³ The

³² Climate zones are drawn in each IOU's service territory based on climactic variation and are also known as baseline territories as defined by each IOU in its Preliminary Statements. This table presents the AR results for climate zones subdivided into constituent PUMAs, along with the household income and housing cost data for the associated PUMAs.

³³ These four PUMAs are: 03731 West Hollywood and Beverly Hills, 07702 Stockton (South), 01904 Fresno (Southwest), and 01903 Fresno (East Central).

complete list of CPUC-jurisdictional PUMA/climate zones for electric service that are AACs and the census tracts associated with these areas are provided on the CPUC website.³⁴

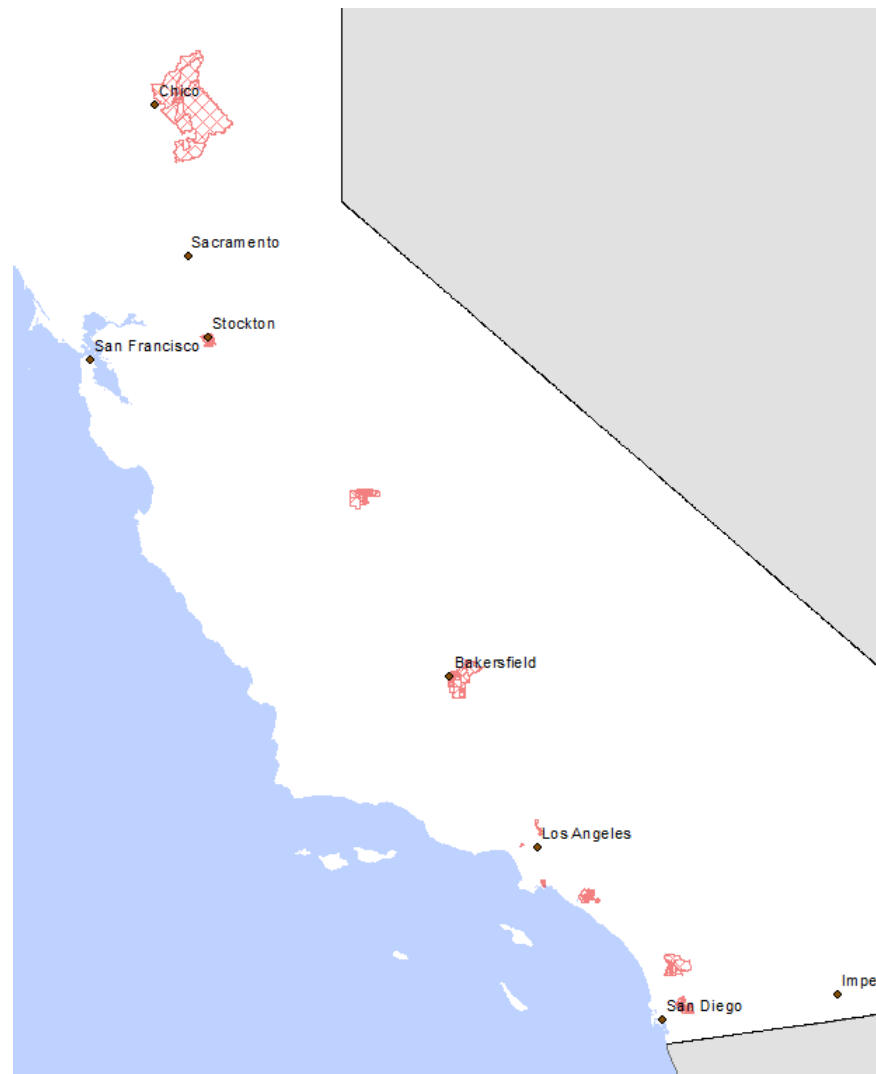


Figure 7: Electric Areas of Affordability Concern (2020, CPUC-Jurisdictional)

³⁴ https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/aac-tables_2020_06032022.xlsx

PUMA	County/City	Electric Climate Zone	Electric AR ₂₀	20th Percentile Income (\$/yr)	20th Income Percentile Housing Cost (\$/yr)
03751	Los Angeles County (South Central)--LA City (South Central/Watts)	SCE 8	91.7%	\$ 15,000	\$ 12,275
03730	Los Angeles County (West Central)--LA City (Central/Hancock Park & Mid-Wilshire)	SCE 9	73.9%	\$ 22,000	\$ 18,640
03744	Los Angeles County (Central)--LA City (East Central/Central City & Boyle Heights)	SCE 9	72.5%	\$ 13,300	\$ 10,018
03731	Los Angeles County (Central)--West Hollywood & Beverly Hills Cities	SCE 9	32.3%	\$ 30,000	\$ 24,152
07702	San Joaquin County (Central)--Stockton City (South)	PG&E S	25.1%	\$ 17,000	\$ 10,269
01904	Fresno County (Central)--Fresno City (Southwest)	PG&E R	24.9%	\$ 16,000	\$ 8,868
07306	San Diego County (Northwest)--Escondido City (East)	SDG&E MOUNTAIN	22.0%	\$ 25,500	\$ 17,433
02904	Kern County (Central)--Bakersfield City (Southeast)	PG&E W	20.5%	\$ 15,000	\$ 7,411
01903	Fresno County (Central)--Fresno City (East Central)	PG&E R	19.4%	\$ 17,400	\$ 8,716
03767	Los Angeles County (South)--LA City (South/San Pedro)	SCE 6	19.0%	\$ 19,000	\$ 12,588

Table 2: PUMA/Climate Zone Areas with Ten Highest Electric AR₂₀ Values (2020, CPUC-Jurisdictional)

Table 3 presents the ten highest electric HM values in CPUC-jurisdictional areas. This shows where a household earning minimum wage would need to work the most hours in a month to pay for an essential level of electric service. These areas are unsurprisingly all relatively hot climate zones, where essential electric service quantities are high in summer months.

Electric Climate Zone	Hours of Minimum Wage
SCE 15	11.65
SCE 5	9.56
SDG&E MOUNTAIN	9.11
SDG&E DESERT	8.98
PG&E W	8.57
PG&E R	8.47
PacCorp DEL NORTE	8.35
SCE 13	8.30
PG&E P	7.84
PG&E S	7.81

Table 3: Electric Climate Zones with the Ten Highest Electric HM Values (2020, CPUC-Jurisdictional)

ii. Natural Gas

The 2020 gas AR₂₀ results for CPUC-jurisdictional areas are presented in Figure 8 below. The legend for this map is scaled so that any area where the AR₂₀ value is over the affordability demarcation of 10 percent is shaded red, with values presented on a spectrum from green (lower AR₂₀ values, which translates to more affordable gas service) to red (higher AR₂₀ values). Similar to the bundled and electric AR results, most of the areas with extremely high gas AR values are in lower income areas such as the Central Valley, as well as the lower income parts of metro areas. As with the electric AR map presented in Figure 5, this map only shows areas that are CPUC-jurisdictional.

While the results presented here focus on the AR₂₀ analysis, AR values for median households (i.e., AR₅₀ values) are available on the CPUC website.³⁵

³⁵ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/tabular-ar-ces-and-hm-results.xlsx>

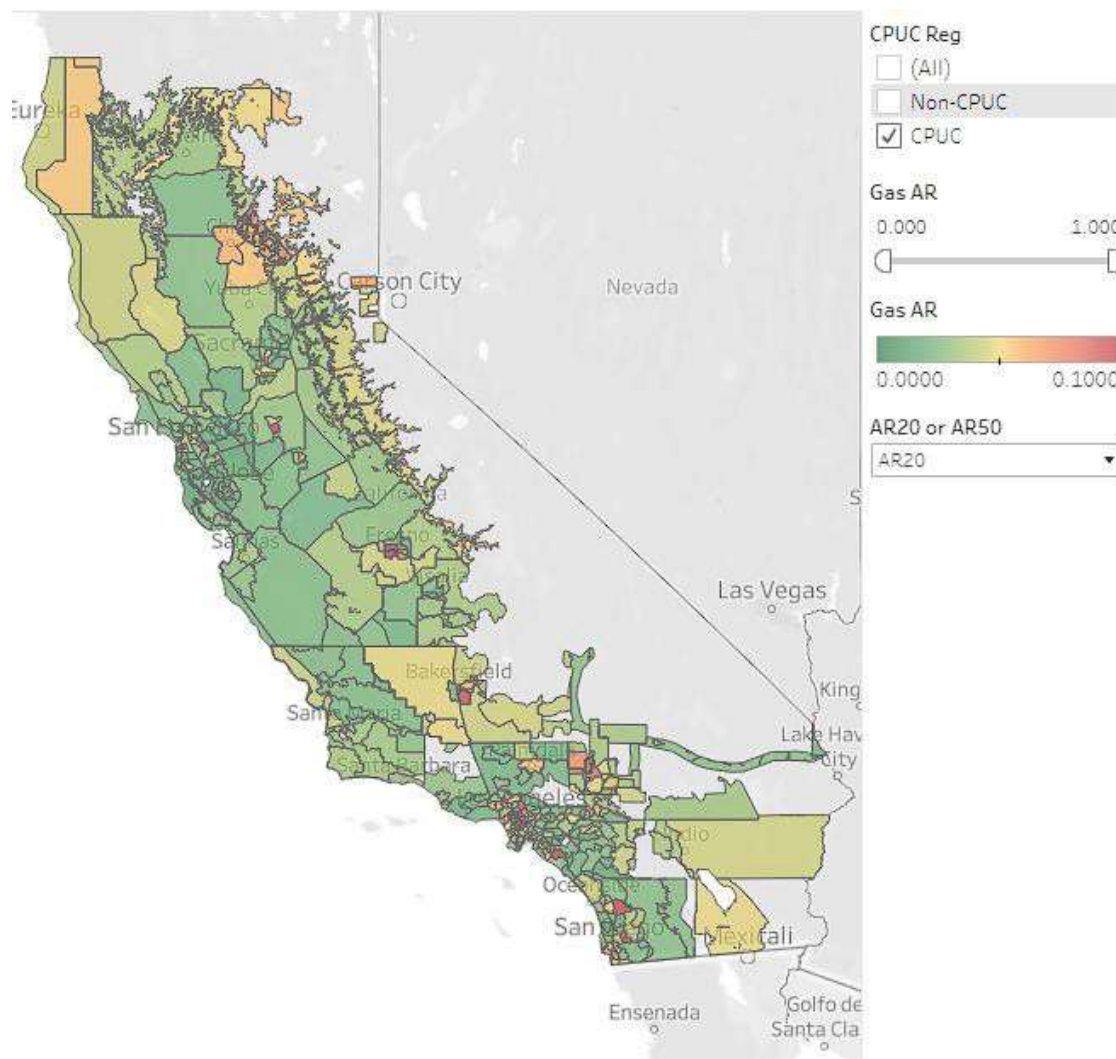


Figure 8: Gas AR₂₀ Values for CPUC-Jurisdictional Areas (2020)

As with the electric AR₂₀ values, the distribution of gas AR₂₀ values is presented in Figure 9 for 2019 and 2020. This plot allows for an assessment of the 10 percent affordability demarcation for gas service that was established based on the 2019 analysis. The distribution of gas AR₂₀ for 2020 is quite similar to what was seen in the 2019 analysis, indicating that the 10 percent affordability demarcation is still a reasonable method for identifying where gas service is substantially less affordable for lower income households compared to the rest of the state.

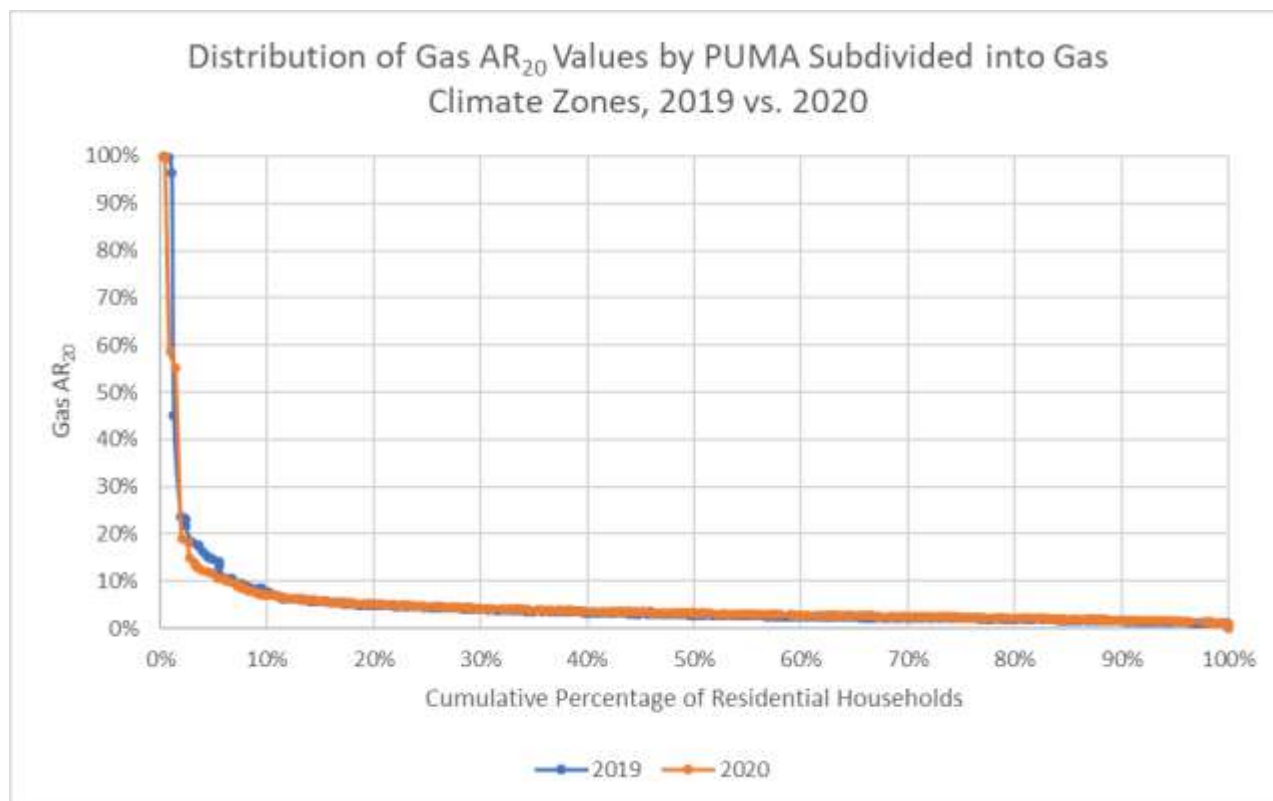


Figure 9: Distribution of Gas AR₂₀ Values by PUMA Subdivided into Climate Zones (CPUC-Jurisdictional Utilities), 2019 vs. 2020

Using this 10 percent demarcation, the CPUC-jurisdictional AACs for gas service were identified, as shown in Figure 10, and the ten highest PUMA/climate zone areas with gas AR₂₀ values greater than 10 percent are listed in Table 4.³⁶ Five out of ten of these areas are among the top ten PUMA/climate zone areas with the highest gas AR₂₀ in both the 2019 and 2020 analysis.³⁷ The complete list of CPUC-jurisdictional PUMA/climate zones for gas service that are AACs and the census tracts associated with these areas are available on the CPUC's website.³⁸

³⁶ As with the electric results, this table presents the AR results for climate zones subdivided into constituent PUMAs, along with the household income and housing cost data for the associated PUMAs.

³⁷ These five PUMAs are: 03746 Los Angeles (Central/University of So. Calif./Exposition Park), 03751 Los Angeles (South Central/Watts), 03744 Los Angeles (East Central/Central/Boyle Heights), 03734 Los Angeles (East Central/Silver Lake/Echo Park/Westlake), and 03745 Los Angeles (Southeast/East Vernon).

³⁸ https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/aac-tables_2020_06032022.xlsx



Figure 10: Gas Areas of Affordability Concern (2020, CPUC-Jurisdictional)

PUMA	County/City	Gas Climate Zone	Gas AR20	20th Percentile Income (\$/yr)	20th Income Percentile Housing Cost (\$/yr)
03746	Los Angeles County--LA City (Central/Univ. of Southern California & Exposition Park)	SCG 1	100.0%	\$ 12,000	\$ 13,777
03751	Los Angeles County (South Central)--LA City (South Central/Watts)	SCG 1	99.7%	\$ 15,000	\$ 12,275
03744	Los Angeles County (Central)--LA City (East Central/Central City & Boyle Heights)	SCG 1	58.6%	\$ 13,300	\$ 10,018
03730	Los Angeles County (West Central)--LA City (Central/Hancock Park & Mid-Wilshire)	SCG 1	55.3%	\$ 22,000	\$ 18,640
03731	Los Angeles County (Central)--West Hollywood & Beverly Hills Cities	SCG 1	19.1%	\$ 30,000	\$ 24,152
03734	Los Angeles County--LA City (East Central/Silver Lake, Echo Park & Westlake)	SCG 1	18.1%	\$ 18,600	\$ 13,216
03745	Los Angeles County (Central)--LA City (Southeast/East Vernon)	SCG 1	14.9%	\$ 20,400	\$ 14,220
03767	Los Angeles County (South)--LA City (South/San Pedro)	SCG 1	13.8%	\$ 19,000	\$ 12,588
01904	Fresno County (Central)--Fresno City (Southwest)	SCG 2	13.1%	\$ 16,000	\$ 8,868
03733	Los Angeles County (Central)--LA City (Central/Koreatown)	SCG 1	12.7%	\$ 22,000	\$ 15,313

Table 4: PUMA/Climate Zone Areas with Ten Highest Gas AR₂₀ Values (2020, CPUC-Jurisdictional)

Table 5 presents the ten highest natural gas HM values in CPUC-jurisdictional areas. This shows where a household earning minimum wage would need to work the most hours in a month to pay for an essential level of natural gas service.

Gas Climate Zone	Hours of Minimum Wage
SWG_Truckee	6.854
SWG_NLT	6.704
SCG 3	5.834
SWG_Big_Bear	5.403
PG&E Y	5.355
SWG_SLT	5.259
SDG&E COASTAL	4.490
SDG&E MOUNTAIN	4.490
SDG&E DESERT	4.490
SDG&E INLAND	4.490

Table 5: Gas Climate Zones with the Ten Highest Gas HM Values (2020, CPUC-Jurisdictional)

iii. Water

The 2020 water AR₂₀ results for CPUC-jurisdictional areas are presented in Figure 11 and Figure 12 below. The legend for these maps are scaled so that any area where the AR₂₀ value is over the affordability demarcation of 10 percent is shaded red, with values presented on a spectrum from green (lower AR₂₀ values, which translates to more affordable water service) to red (higher AR₂₀ values). Similar to the bundled results presented in Figure 2, most of the areas with extremely high AR values are in lower income areas such as parts of the LA metro area.

While the results presented here focus on the AR₂₀ analysis, AR values for median households (i.e., AR₅₀ values) are available on the CPUC's website.³⁹

³⁹ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/tabular-ar-ces-and-hm-results.xlsx>

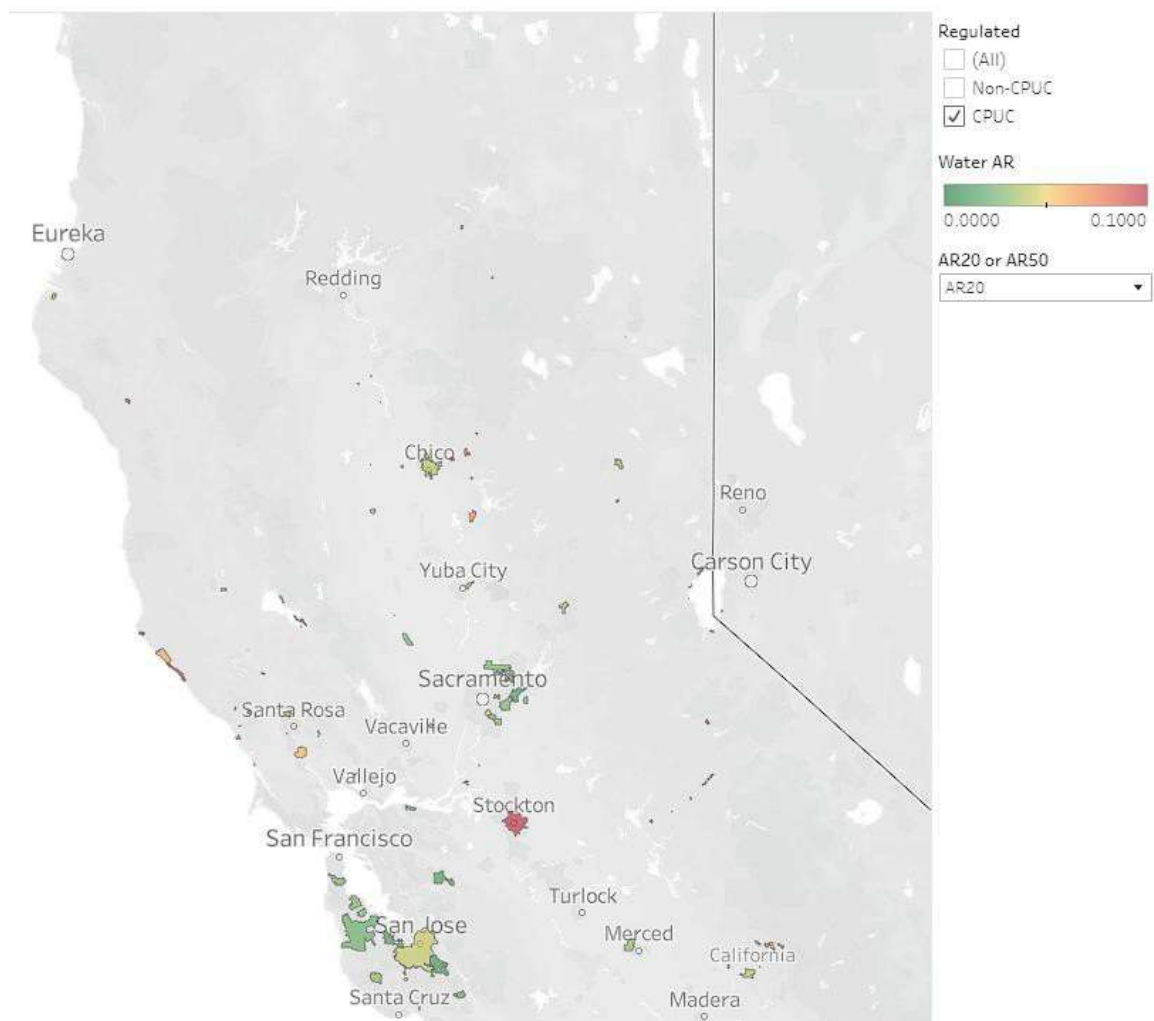


Figure 11: Northern California Water AR₂₀ Values for CPUC-Jurisdictional Areas (2020)⁴⁰

⁴⁰ Visit the 2020 Annual Affordability Refresh webpage to use an interactive map:
<https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/affordability/2020-annual-affordability-report>



Figure 12: Southern California Water AR₂₀ Values for CPUC-Jurisdictional Areas (2020)

As with the electric AR₂₀ values, the distribution of water AR₂₀ values is presented in Figure 13 below for 2019 and 2020. This plot allows for an assessment of the 10 percent affordability demarcation for water service that was established based on the 2019 analysis. The distribution of water AR₂₀ for 2020 is quite similar to what was seen in the 2019 analysis, indicating that the 10 percent affordability demarcation is still a reasonable method for identifying where water service is substantially less affordable for lower income households compared to the rest of the state.

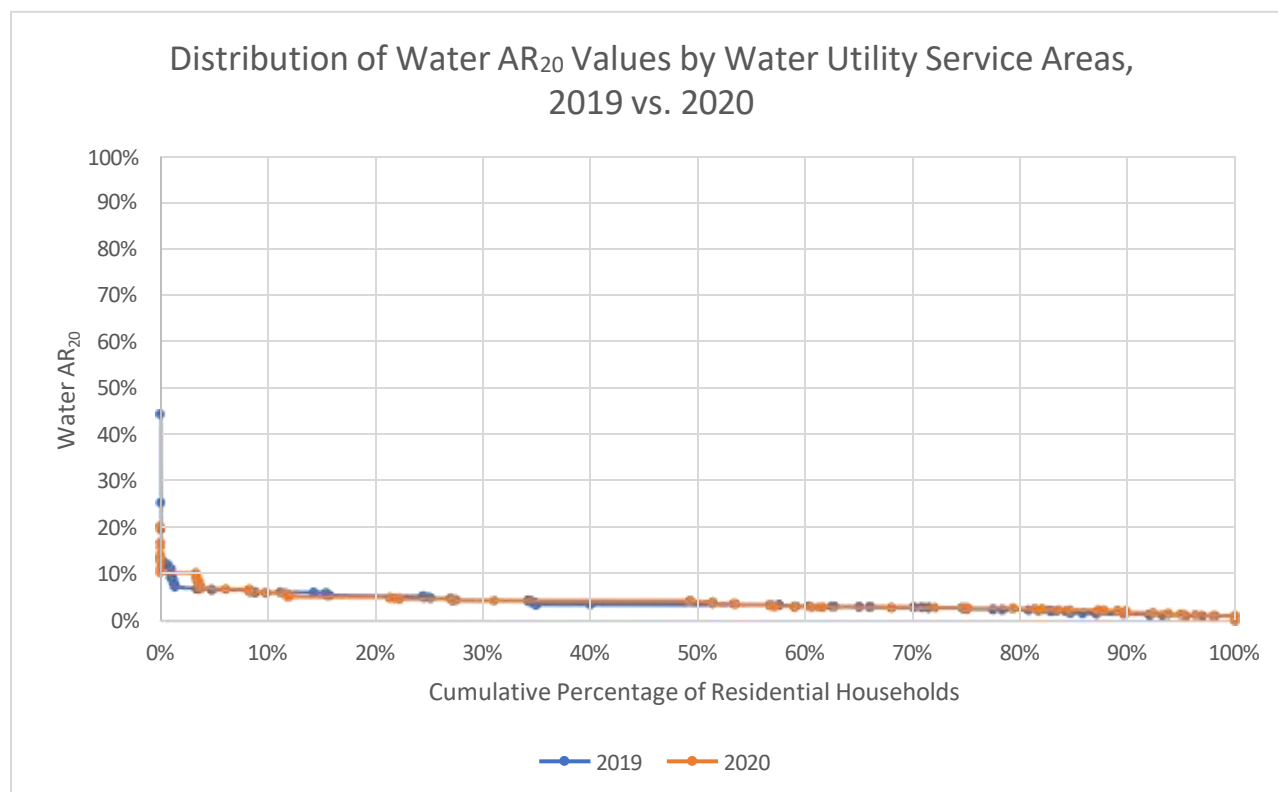


Figure 13: Distribution of Water AR₂₀ Values by Water Utility Service Areas (CPUC-Jurisdictional Utilities), 2019 vs. 2020

Using this 10 percent demarcation, the CPUC-jurisdictional AACs for water service were identified, as shown in Figure 14, below. The ten highest water utility districts or customer service areas based on water AR₂₀ values are listed in Table 6. This table identifies utilities with the highest AR₂₀ values, and also includes the 20th percentile incomes and associated housing costs for the PUMAs in which each utility is located.⁴¹ Four out of ten regulated water utilities were among the top ten water utilities with the highest AR₂₀ results in both the 2019 and 2020 Reports.⁴² The complete list of CPUC-jurisdictional water utilities that are AACs and the census tracts associated with these areas are available on the CPUC website.⁴³

⁴¹ Unlike energy, for which IOU climate zones may be divided into PUMAs, water ratemaking areas are typically smaller in size and fully contained within PUMAs.

⁴² These water ratemaking areas are served by: Sea Ranch Water Company, Del Oro Water Company – Strawberry Div., Del Oro Water Company – Buzztail Dist., and Point Arena Water Works.

⁴³ https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/aac-tables_2020_06032022.xlsx



Figure 14: Water CPUC-Jurisdictional Areas of Affordability Concern (2020)

PUMA	City/County	Water Provider Name	Water AR20	20th Percentile Income (\$/yr)	20th Income Percentile Housing Cost (\$/yr)
02300	Humboldt County	BENBOW-DEL ORO W.C.	20.3%	\$ 27,100	\$ 10,964
09701	Sonoma County (North)--Windsor Town, Healdsburg & Sonoma Cities	SEA RANCH WATER COMPANY, THE (PUC)	16.8%	\$ 36,000	\$ 17,482
01904	Fresno County (Central)--Fresno City (Southwest)	DEL ORO WATER CO - METROPOLITAN DISTRICT	16.0%	\$ 16,000	\$ 8,868
00300	Alpine, Amador, Calaveras, Inyo, Mariposa, Mono & Tuolumne Counties	DEL ORO WATER COMPANY - STRAWBERRY DIV.	14.2%	\$ 28,100	\$ 9,343
00701	Butte County (Northwest)--Chico City	DEL ORO WATER COMPANY - BUZZTAIL DIST.	13.8%	\$ 22,300	\$ 11,673
03300	Lake & Mendocino Counties	POINT ARENA WATER WORKS	13.5%	\$ 22,900	\$ 7,423
07104	San Bernardino County (Southwest)--Phelan, Lake Arrowhead & Big Bear City	LYTLE SPRINGS WC	13.2%	\$ 31,200	\$ 11,977
06502	Riverside County (Central)--Cathedral City, Palm Springs & Rancho Mirage Cities	ALPINE VILLAGE	12.8%	\$ 29,200	\$ 11,619
02904	Kern County (Central)--Bakersfield City (Southeast)	DEL ORO WC - COUNTRY ESTATES DIST	11.1%	\$ 15,000	\$ 7,411
05700	Nevada & Sierra Counties	R.R. LEWIS SMALL WC	10.4%	\$ 30,000	\$ 12,628

Table 6: Water Utility Service Areas with Ten Highest AR₂₀ Values (2020, CPUC-Jurisdictional)⁴⁴

Table 7 provides a list of the water utilities with the ten highest HM results. The results show where a household earning minimum wage would need to work the most hours in a month to pay for water

⁴⁴ See <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/tabular-ar-ces-and-hm-results.xlsx> for the complete list of AR₂₀ results.

service at the essential level. Much of California’s minimum wage follows the state’s minimum wage, with a few exceptions in the Bay Area, Los Angeles, and San Diego.

Name	Hours of Minimum Wage
SEA RANCH WATER COMPANY	19.09
DEL ORO WATER COMPANY - BENBOW	18.09
LYTLE SPRINGS WC	16.00
DEL ORO WATER COMPANY - STRAWBERRY DIV.	15.52
ALPINE VILLAGE	14.13
CANADA WOODS WC	13.17
POINT ARENA WATER WORKS	12.04
LAKE ALPINE WATER COMPANY	11.27
SO. CAL. EDISON CO.-SANTA CATALINA	10.73
HAVASU WC	10.44

Table 7: Water Ratemaking Areas with the Ten Highest Water HM Values (2020, CPUC-Jurisdictional)⁴⁵

iv. Communications

The 2020 communications AR₂₀ results are presented in Figure 15 below. The legend for this map is scaled so that any area where the AR₂₀ value is over the affordability demarcation of 15 percent is shaded red, with values presented on a spectrum from green (lower AR₂₀ values, which translates to more affordable communications service) to red (higher AR₂₀ values). While a large portion of the state is shaded green, there is a noticeable amount of red shaded areas scattered all over the state.

⁴⁵ See <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/tabular-ar-ces-and-hm-results.xlsx> for the complete list of HM results

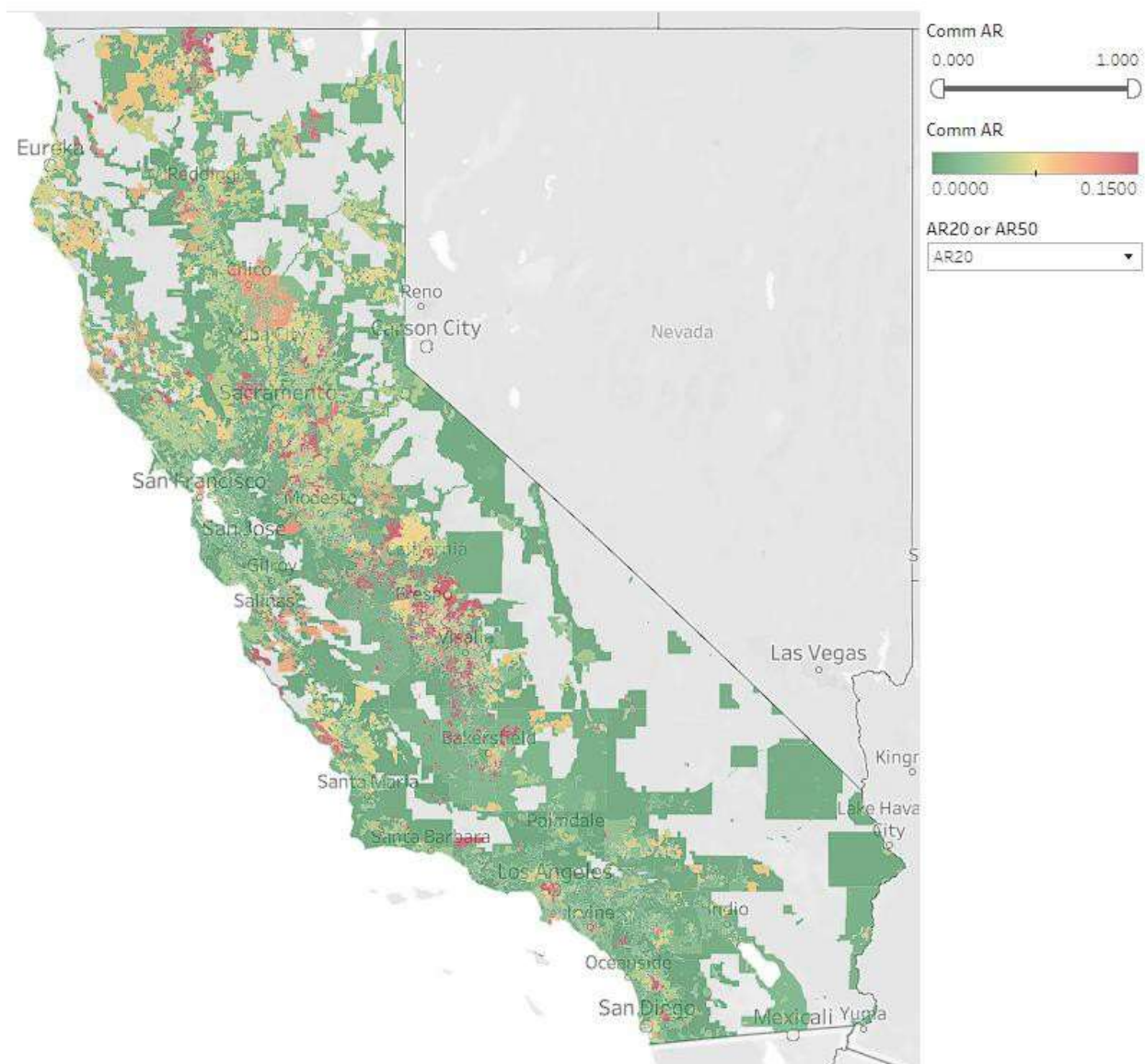


Figure 15: Communications AR₂₀ Values (2020)

In Figure 16 below, the communications AR₂₀ values show an overall decrease between 2019 and 2020,⁴⁶ as evident by the 2020 values concentrated to the left of the 2019 values as opposed to a direct overlay. This 2020 trend, which can be attributed to an overall reduction in costs for essential communications services, is a welcoming sign. Despite the overall shift in AR₂₀ values from 2019 to 2020,

⁴⁶ The 2020 Report employs the same data collection and shapefile aggregation methodologies as the 2019 Report where basic service for voice and the lowest rate for essential broadband service at or close to 25/3 are captured in each area. The data in the 2020 Report captures updated rates from the 2020 tariff filings and the 2020 annual broadband data request in conjunction with the same shapefiles from the 2019 Report that capture all service territories and their respective intersects.

the y-axis value of the inflect points for both years remain consistent. Based on this observation, the AR₂₀ demarcation value for 2020 shall remain the same as 2019 at 15 percent.

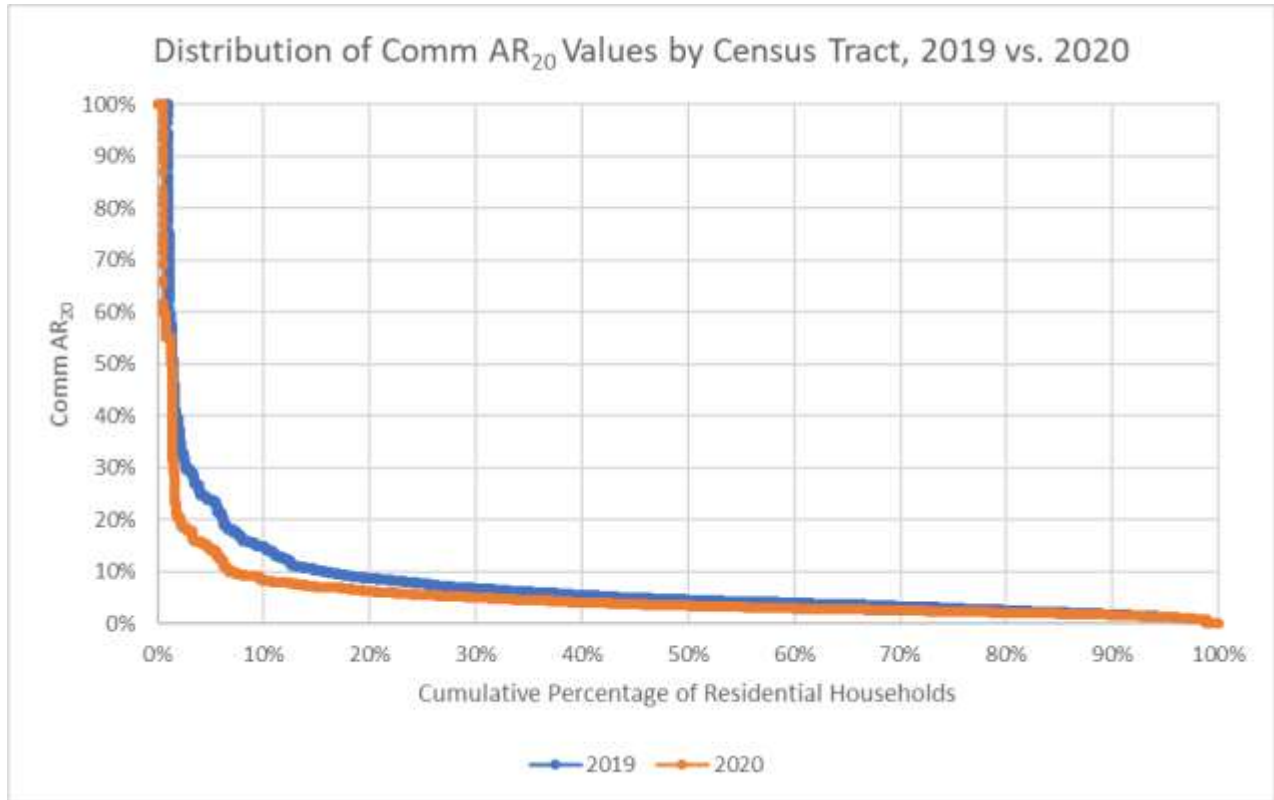


Figure 16: Distribution of Communication AR₂₀ Values by Census Tract, 2019 vs. 2020

In the 2020 data set, the 1,028 census tracts that contain housing units with Communications AR₂₀ values above the 15 percent demarcation have been designated as AACs. A given census tract may be served by several combinations of communications service providers.⁴⁷ As long as one of those combinations within a census tract yields an AR₂₀ value greater than the 15 percent demarcation, then that census tract is designated as an AAC. See Figure 17 below for a map of where these AACs are located across the state. For a complete list of communications service provider combinations (17,971) by census tract, please refer to CPUC Website.⁴⁸

The geographical depiction indicates that AACs are spread out across the entire state. However, the San Francisco Bay Area region stands out among all others, as it contains only three census tracts in Alameda County with AR₂₀ values hovering just above the 15 percent demarcation at 16.2 percent, 15.2 percent, and 15.2 percent respectively. Other neighboring counties in the region, such as San Francisco County, San Mateo County, Santa Clara County, and Contra Costa County, do not have a single census tract

⁴⁷ Communications services, in particular broadband services, do not have mutually exclusive service territories like energy and water services.

⁴⁸ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/tabular-ar-ces-and-hm-results.xlsx>

designated as an AAC. For the complete list of these 1,028 communications AACs, please refer to the CPUC Website.⁴⁹



Figure 17: 2020 Communications Areas of Affordability Concern

The concept of AAC had not been developed at the time of the 2019 Report was published. At that time, most analyses were assessed at the PUMA geography. The PUMA geography, being situated between county and census tract, strikes a balance between geographical familiarity and socioeconomic granularity, making it optimal for comparison. By aggregating AACs in their respective PUMAs using 2020 data, it enables a PUMA-level analysis against 2019 results. For a complete list of PUMAs that contain one or more AACs, please refer to CPUC Website.⁵⁰

In 2020 the ten PUMAs with the highest communications AR₂₀ values greater than 15 percent are shown in Table 8. In total, these ten PUMAs account for 339 of the 1028 AACs spread out across 145 PUMAs. Of

⁴⁹ https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/aac-tables_2020_06032022.xlsx

⁵⁰ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/puma-level-summary-of-communications-aacs.xlsx>

the 145 PUMAs on the list, only 10 of them yield a weighted communications AR₂₀ value⁵¹ of greater than 15 percent. This is an indication that for those remaining 135 PUMAs, a majority of the households, or close to a majority, incur AR₂₀ values less than the 15 percent demarcation.

Five of the 2020 top ten PUMAs with the highest communications AR₂₀ values were holdovers from 2019.⁵² In contrast, one PUMA ranked in the ten highest PUMAs in 2019 – 07503 San Francisco County (Central)--South of Market & Potrero – was removed as an AAC in 2020. This change can be attributed to the 20th percentile income increasing from \$17,986 to \$30,000 per year, representing a 67 percent increase.

PUMA	County/City	Number of AACs	Weighted Comm AR20	20th Percentile Income (\$/yr)	20th Income Percentile Housing Cost (\$/yr)
03746	Los Angeles County--LA City (Central/Univ. of Southern California & Exposition Park)	30	100.0%	\$ 12,000	\$ 13,777
03751	Los Angeles County (South Central)--LA City (South Central/Watts)	34	99.5%	\$ 15,000	\$ 12,275
03744	Los Angeles County (Central)--LA City (East Central/Central City & Boyle Heights)	47	55.8%	\$ 13,300	\$ 10,018
03730	Los Angeles County (West Central)--LA City (Central/Hancock Park & Mid-Wilshire)	45	54.5%	\$ 22,000	\$ 18,640
03731	Los Angeles County (Central)--West Hollywood & Beverly Hills Cities	27	18.6%	\$ 30,000	\$ 24,152
07702	San Joaquin County (Central)--Stockton City (South)	32	18.1%	\$ 17,000	\$ 10,269
01904	Fresno County (Central)--Fresno City (Southwest)	39	17.7%	\$ 16,000	\$ 8,868
03734	Los Angeles County--LA City (East Central/Silver Lake, Echo Park & Westlake)	57	17.4%	\$ 18,600	\$ 13,216
03745	Los Angeles County (Central)--LA City (Southeast/East Vernon)	5	17.2%	\$ 20,400	\$ 14,220
03767	Los Angeles County (South)--LA City (South/San Pedro)	23	17.0%	\$ 19,000	\$ 12,588

Table 8: PUMAs with Ten Highest Communications AR₂₀ Values (2020)

Table 9 below displays the ten communications service provider combinations that yield the top ten highest HM values. Since the minimum wage is uniform across the state with a few exceptions in certain municipalities, high HM values often result directly from high costs of services. These ten below are no exception, as their ESB ranges from \$334 to \$827 per month. The HM values are imputed from the ESBs of all communications service provider combinations. For a complete list of ESBs for all 17,971 combinations by census tracts, please refer to the CPUC Website.⁵³

⁵¹ Weighted communications AR₂₀ value for a given PUMA is imputed using the AR₂₀ scores for each service providers combination and the estimated number housing units they serve.

⁵² The 2019 Report lists the top seven PUMAs. The three other PUMAs the rounded out the top ten in 2019 are: 03732 Los Angeles County (Central)--LA City (East Central/Hollywood), 03734 Los Angeles County--LA City (East Central/Silver Lake, Echo Park & Westlake), and 03733 Los Angeles County (Central)--LA City (Central/Koreatown). The five PUMAs that remain in the top ten PUMAs across both 2019 and 2020 are: 03746 Los Angeles (Central/University of So. Calif./Exposition Park), 03751 Los Angeles (South Central/Watts), 03744 Los Angeles (East Central/Central/Boyle Heights), 03745 Los Angeles (Southeast/East Vernon), and 03734 Los Angeles County--LA City (East Central/Silver Lake, Echo Park & Westlake).

⁵³ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/tabular-ar-ces-and-hm-results.xlsx>

Communications Provider	Hours at Minimum Wage
AFES Network Services LLC, AT&T California	68.92
AFES Network Services LLC, Frontier - Citizens	68.75
AFES Network Services LLC, Frontier	68.52
AFES Network Services LLC	66.67
AVISP, AT&T California	48.08
AVISP	45.83
Applied Technology Group Inc, AT&T California	31.58
Applied Technology Group Inc, Frontier	31.19
Applied Technology Group Inc	29.33
GeoLinks, 70, AT&T California	27.82

Table 9: Communication Providers with the Ten Highest Communication HM Values

c. Vulnerable Communities: Disadvantaged Communities and Areas of Affordability Concern

Using CalEPA's updated definitions of CES and disadvantaged communities, the census tracts shown in Figure 18 are highlighted as DACs in this year's Affordability Report. These census tracts qualify as DACs based on OEHHA's definition: the top 25 percent scoring areas using the most recent version of CES, along with census tracts that scored in the highest 5 percent of CES's Pollution Burden indicator but did not have an overall CES score due to lack of sufficient population characteristics data.⁵⁴ These census tracts also include federally recognized tribal lands and census tracts that were in the top 25 percent of CES scores using CES 3.0 but not in the top 25 percent of CES 4.0.⁵⁵

Comparing the map in Figure 18 to the bundled AR values in Figure 2 shows that many of the DAC census tracts are in the same geographic regions where AR values are particularly high. This is further demonstrated by the overlay of AAC census tracts with DACs, as seen in Figure 19, which shows that many of the DACs are also AACs for one or more essential services. Given that the affordability concern for many of these areas is driven by relatively low income levels (which is incorporated in the AR calculation through the direct measurement of household income levels and in the CES metric through a community-level assessment of poverty), it makes sense that there is overlap between these different indicators of economic vulnerability. Details of the AAC census tracts is provided through interactive maps and in tabular form on the CPUC website.⁵⁶

The fact that there is overlap between DACs and AACs is important because it supports the idea that the AAC designation is a meaningful indicator of economic hardship. While the DAC designation is based on current and historical data points, it is not something that can be forecast based on expected future changes in EUBs or ESBs. However, AR (and by extension AACs) can be forecast for future years based on

⁵⁴ Designation of Disadvantaged Communities Pursuant to Senate Bill 535 (De Leon), April 2017

⁵⁵ Final Designation of Disadvantaged Communities Pursuant to Senate Bill 535, May 2022

⁵⁶ https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/aac-tables_2020_06032022.xlsx; Interactive maps available at <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/affordability/2020-annual-affordability-report>

expected changes in income, housing costs, and EUBs/ESBs. Therefore, it is possible to predict where AACs will materialize in future years based on future EUB and ESB values.



Figure 18: Disadvantaged Communities from CalEPA Report

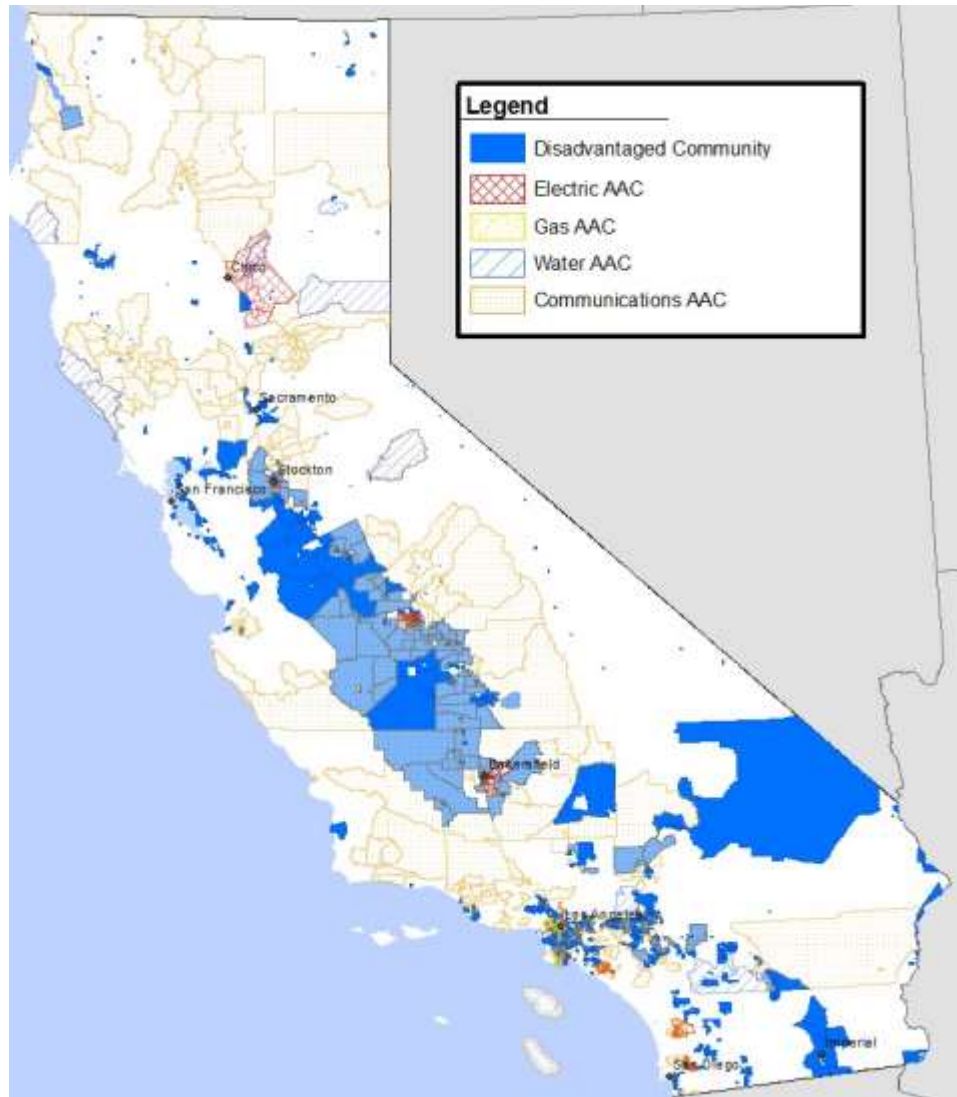


Figure 19: Disadvantaged Communities Overlaid with Areas of Affordability Concern⁵⁷

⁵⁷ Areas in light blue represent disadvantaged communities that are also areas of affordability concern.

3. Comparison Between 2019 and 2020 Results

This chapter compares the 2020 affordability analysis to the results presented in the 2019 Report. The inputs to the affordability analysis (household incomes, housing costs, and EUB/ESB data) are also compared between the two years in order to identify the drivers for any observed differences in results.

Based on the analysis presented here, affordability of essential services showed little change between 2019 and 2020 on average, though significant changes in affordability were observed in specific geographic areas where large changes in income were observed in the ACS data. On average, increases in EUBs/ESBs and housing costs were partially offset by increases in household income, particularly for median income households. Decreases in communications ESBs (as a result of more accurate data in the 2020 analysis compared to the 2019 analysis) also offset increases in housing costs and other essential services in many parts of the state.

a. Comparison Between 2019 and 2020 Incomes and Housing Costs

This year's analysis of income and housing cost data featured a slight change in methodology compared to the prior year's analysis, which will be described here before discussing the differences in results observed between 2019 and 2020.

The original methodology for estimating PUMA-level household income and housing costs for the AR metric began with an analysis of the American Community Survey (ACS) 5-year Public Use Microdata Sample (PUMS).⁵⁸ The analysis presented in the 2019 Annual Affordability Report used the most recently available 5-year ACS PUMS sample to estimate 2019 income and housing costs for the 20th and 50th income percentiles of each PUMA. The reason the 5-year sample was used rather than a single year sample was because it provided additional data points for estimation of income levels and for the housing cost regression analysis. Using the 5-year sample also reduced the risk of bias due to sampling error and would help smooth out any sharp transitory changes in income and housing costs that were not expected to continue in future years. This methodology was established at a time when socioeconomic changes were expected to happen gradually over multi-year timeframes.

Since this is the first annual report in which the impacts of the COVID-19 pandemic played a role in determining customers' ability to pay for essential services, it is important to accurately account for the sudden and severe changes in income and housing costs that resulted from the pandemic's economic disruptions. However, the use of the 5-year ACS PUMS sample obscures these changes because 2020 (i.e. pandemic-era) data make up only a fifth of the sample. Therefore, staff has decided to switch to the use of the one-year ACS PUMS samples going forward. Though this change introduces additional variability in income and housing cost estimates, the single year samples should still provide statistically sound estimates.

To provide an apples-to-apples comparison between 2019 and 2020, the 2019 affordability analysis presented in this report was redone using the single year 2019 ACS PUMS dataset. Overall results were

⁵⁸ More information on the American Community Survey and the Public Use Microdata Sample is available on the US Census Bureau website: <https://www.census.gov/programs-surveys/acs>

similar to what was presented in the 2019 Report, though specific income and housing cost values were different.

It is also worth pointing out one additional caveat that is associated with the 2020 ACS PUMS sample. The US Census Bureau experienced significant data collection difficulties in 2020 because of the pandemic, which forced the Bureau to employ experimental techniques to generate a viable dataset. While the Census Bureau adjusted the weighting factors to account for the ACS' significant non-response rate, they did caution that there is more uncertainty associated with this dataset compared to prior years.⁵⁹ This issue is expected to be limited to the 2020 dataset because of the survey response discrepancies that were much more pronounced after March 2020 compared to the data that was collected earlier in the year. To ensure comparability between the 2019 and 2020 ACS PUMS datasets, staff also applied a set of experimental weights to the 2019 PUMS data that was released by the Census Bureau in June 2022. This set of experimental weights was meant to address observed changes in population estimates between 2019 and 2020 that are attributable to the change in weighting methodology for the 2020 ACS PUMS dataset.⁶⁰

A summary of household incomes and housing costs, based on the 2020 and 2019 ACS 1-Year Public Use Microdata Samples, is presented in Table 10. This table provides the average household incomes across the 265 PUMAs in California for representative households at the 20th and 50th percentiles of the income distribution within each PUMA. Based on regression analysis of household-level housing costs from this same ACS PUMS samples, the estimated housing costs associated with those representative households was also averaged across the 265 PUMAs and included in this table.⁶¹

	Avg. 20th %tile Income (\$/year)	Avg. 20th %tile Housing Cost (\$/month)	Avg. 50th %tile Income (\$/year)	Avg. 50th %tile Housing Cost (\$/month)
2019	36,634	1,278	85,756	1,593
2020	37,572	1,368	89,148	1,674
Abs. Difference	938	90	3,393	80
% Difference	2.6%	7.0%	4.0%	5.0%

Table 10: Average Income and Housing Costs for 20th and 50th Percentile Households, 2019 vs. 2020

The data presented in this table shows that, between 2019 and 2020, households experienced income growth that partially offset the growth in housing costs, particularly for median income households. Median income households experienced a 4.0 percent increase in household income whereas housing costs grew by 5.0 percent. Lower income households saw growth in housing costs that was not matched by growth in income on a percentage basis (2.6 percent growth in income vs. 7.0 percent growth in housing costs). In absolute terms, 20th income percentile households' increase in average housing costs slightly outpaced the growth in average household income (\$960/year increase in housing costs vs.

⁵⁹ More information on the ACS 2020 1-year PUMS dataset's non-response issue and experimental weighting techniques can be found in the ReadMe documentation that accompanied the dataset's release:

https://www2.census.gov/programs-surveys/acs/experimental/2020/documentation/pums/ACS2020_PUMS_README.pdf

⁶⁰ More information on the 2019 1-year PUMS with experimental weights can be found on the Census Bureau website: <https://www.census.gov/programs-surveys/acs/technical-documentation/user-notes/2022-07.html>

⁶¹ For more information on the methodology for estimating household income and housing costs, please refer to D.20-07-032.

\$938/year increase in income), whereas median income households' income levels actually grew faster than the increase in their housing costs (\$1,080/year increase in housing costs vs. \$3,393/year increase in income). That means that, before accounting for any changes in EUBs/ESBs, lower-income households' available budget for essential services slightly shrank between 2019 and 2020 whereas median-income households' budgets increased.

It may seem surprising that the data shows any income growth between 2019 and 2020 among lower income households given that the COVID-19 pandemic severely disrupted the economy in 2020 and particularly service sector jobs. However, the household income that is measured by the ACS includes transfer payments from assistance programs⁶² which may explain the overall growth in 20th percentile income levels. While California's economy was severely impacted in 2020 by COVID-19 and the accompanying restrictions on travel and businesses, there was also a significant growth in assistance program payments.⁶³

b. Comparison Between 2019 and 2020 EUBs and ESBs

The tables below present summaries of the changes in EUBs for the energy and water industries and ESBs for the communications industry broken down into relevant categories of service providers and customer type. These tables compare the EUBs/ESBs that were used in the 2019 Report to those used in the current analysis, with some corrections to the 2019 EUB data. In preparing this year's report, some data quality issues were identified with the 2019 EUBs for some providers. These will be highlighted in this section and discussed further in this chapter's comparison of 2019 and 2020 affordability results.

Staff recognizes that these sorts of gaps in data quality are inevitable with such a novel approach to measuring affordability on such a granular level. These issues have been corrected in this year's report and will be maintained going forward, allowing for an improved ability to track changes in affordability over time.

⁶² More information on the income questions as they appear on the ACS can be found here:

<https://www.census.gov/acs/www/about/why-we-ask-each-question/income/>

⁶³ <https://www.ppic.org/blog/how-did-the-pandemic-transform-californias-safety-net/>

		2019	2020	Change	% Change
Electric	PG&E - Basic	\$73.54	\$80.84	\$7.31	
	SCE - Basic	\$82.95	\$94.47	\$11	
	SDG&E - Basic	\$90.44	\$93.77		
	PG&E - All-Electric	\$123.75	\$138		
	SCE - All-Electric	\$103.21			
	SDG&E - All-Electric	\$107.55			
	SMJUs	\$			
	LADWP				
	SMUD				
	Other Mun				
Gas	PG&E				

Table 11: Electric and Gas Average Essential Usage Bills Across Climate Zones by Utility Type, 2019 vs. 2020

Table 11 presents the average 2019 and 2020 monthly EUBs for electric and gas service for each of the large Investor-Owned Utilities (IOU)⁶⁴, with basic and all-electric service broken out separately, as well as the average EUBs for small and multi-jurisdictional utilities (SMJU)⁶⁵, Los Angeles Department of Water and Power (LADWP), Sacramento Municipal Utility District (SMUD), and the rest of the municipal utilities collectively. The 2019 EUB data presented for electric and gas service are identical to what was included in the 2019 Report, with the exceptions of the LADWP electric EUB, the SDG&E natural gas EUB, and the SoCalGas natural gas EUB. These 2019 values were adjusted in this analysis compared to what was presented in the 2019 Report to correct for errors that were identified during the preparation of this year's report.^{66, 67}

⁶⁴ The large energy IOUs are: Pacific Gas & Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas).

⁶⁵ The SMJUs are PacifiCorp, Liberty Utilities ((Liberty), Bear Valley Electric Service (BVES) and Southwest Gas Corporation (Southwest Gas).

⁶⁶ SoCalGas and SDG&E gas EUBs were lower than they should have been in 2019 by about 40 percent and 30 percent, respectively, because core procurement charges were inadvertently left out.

⁶⁷ The LADWP EUB was higher than it should have been in 2019 by about 40 percent because of double-counted rate adjustment factors.

Water Utilities	2019	2020	Change	% Change
California American Water	\$48.31	\$53.87	\$5.56	12%
California Water Service	\$46.56	\$47.84	\$1.28	3%
Great Oaks Water Company	\$51.00	\$52.00	\$1.00	2%
Golden State Water Company	\$53.38	\$57.46	\$4.08	8%
Liberty Utilities	\$53.82	\$53.57	-\$0.24	0%
Suburban Water System	\$38.50	\$42.73	\$4.24	11%
San Jose Water Company	\$66.44	\$68.79	\$2.35	4%
San Gabriel Valley Water System	\$42.39	\$45.01	\$2.61	6%
Class BCD	\$66.71	\$78.34	\$11.63	17%
Other	\$72.43	\$66.79	-\$5.64	-8%

Table 12: Water Average Essential Usage Bills, 2019 vs 2020⁶⁸

Table 12 above highlights an increase in majority of Class A EUBs between 2019 and 2020. An average of Class B, C, and D water utility EUBs increased by 17 percent and non-regulated utilities saw a reduction in their EUBs.

Metropolitan Statistical Area	# of Census Tracts	2020 Housing Unit Count	2019 ESB (\$/month)	2020 ESB (\$/month)	Change
Los Angeles	2,882	5,143,159	\$ 73.99	\$ 44.58	\$ (29.41)
Riverside	817	2,312,692	\$ 69.23	\$ 41.88	\$ (27.35)
San Diego	620	1,404,822	\$ 70.35	\$ 58.63	\$ (11.72)
San Francisco	967	2,022,503	\$ 70.09	\$ 69.16	\$ (0.93)
No MSA	2,664	5,346,341	\$ 79.46	\$ 65.17	\$ (14.28)

Table 13: Weighted Average Communications Essential Service Bills by MSA, 2019 vs. 2020

Table 13 above highlights the weighted ESB across metropolitan statistical areas (MSA)⁶⁹ between 2019 and 2020. From 2019 to 2020, the ESBs incurred noticeable decreases across all MSAs. The lone exception is the San Francisco MSA, which incurred only a slight decrease in ESB.

⁶⁸ The term "other" refers to non-CPUC jurisdictional water utilities

⁶⁹ A metropolitan statistical area (MSA) is a collection of counties that consist of an urbanized area and the surrounding counties and are determined by the Office of Management and Budget (OMB). For more information, please refer to <https://www.census.gov/programs-surveys/metro-micro/about.html>.

When assessing communications ESBs at the statewide or regional levels such as MSA, the results often appear favorable. At broader geographic levels, weighted average ESB values appear reasonable because lower priced providers balance out the much higher priced areas, making it difficult to appreciate how high communications bills can be in particular areas. However, at geographically more granular levels, many communities still incur high ESBs from their respective services providers. For more detailed ESB data, please refer to the detailed data available on the CPUC website.⁷⁰

c. Bundled AR Comparison, 2019 vs. 2020

A comparison of the distribution of 2019 and 2020 bundled AR₂₀ values at the PUMA level is presented in Figure 20. This graph shows that, while the affordability of all utility services combined was fairly similar for most households across the state, many of the PUMAs with the highest bundled affordability ratios saw some relief in 2020. This can be explained by a combination of growing household incomes relative to nondiscretionary expenses in a few specific geographic areas with relatively low income levels and lower EUBs/ESBs. In particular, communications ESBs were lower in 2020 for many parts of the state.

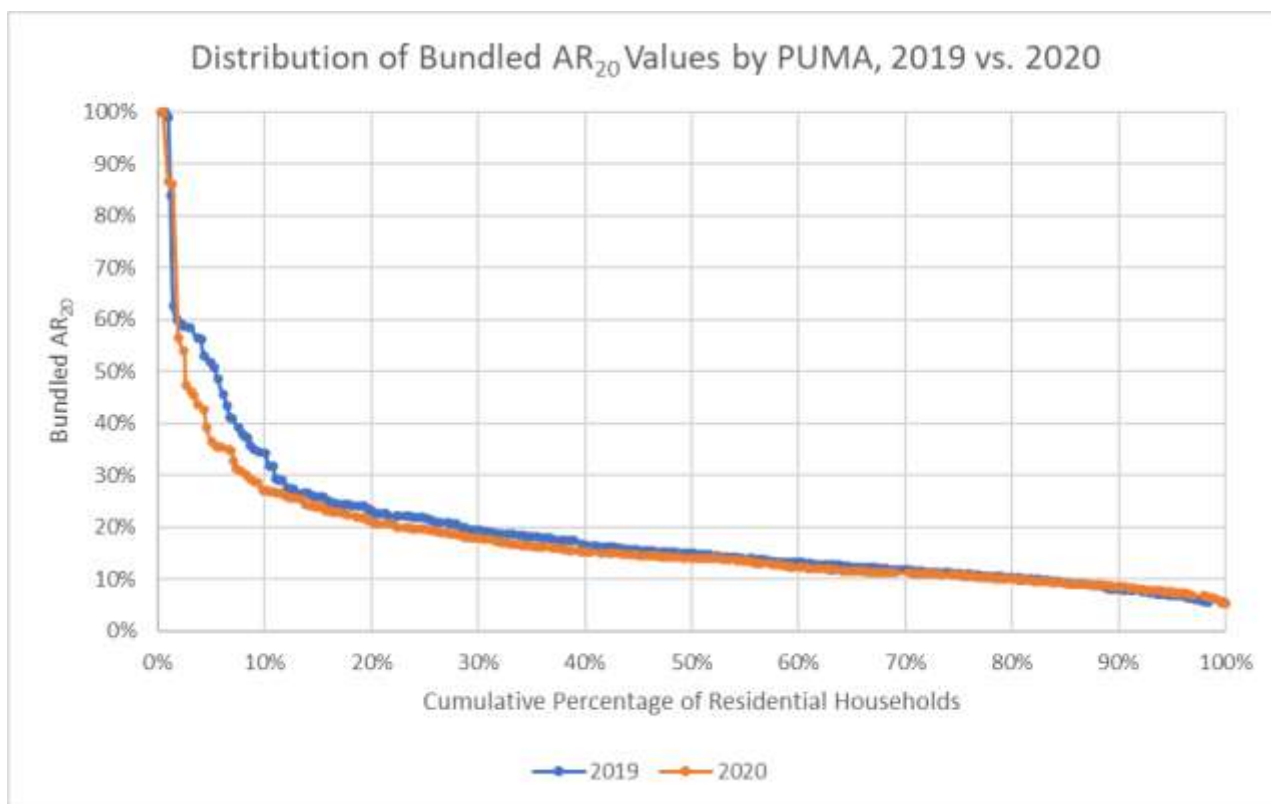


Figure 20: Distribution of Bundled AR₂₀ Values by PUMA, 2019 vs. 2020

The change in AR₂₀ values for the PUMAs with the greatest affordability concerns is presented in Table 14, which shows that there was significant variation in the changes in affordability ratio for these most

⁷⁰ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/tabular-ar-ces-and-hm-results.xlsx>

vulnerable areas. This volatility can be attributed to observed changes in income levels, which changed significantly compared to 2019 levels in several PUMAs, with some areas seeing significant increases in income levels while others experienced decreases in income. In these low-income areas, even modest drops in household income can result in large increases in AR since households in these areas have relatively small budgets available for essential services to begin with. There were also significant changes in EUBs/ESBs for several of these PUMAs, as was discussed earlier.

While the income changes in particular play a large role in driving these bundled AR₂₀ changes, it is difficult to parse the real changes to household budgets (loss of labor income offset by greatly expanded transfer payments) from the estimation uncertainty that was specific to the 2020 ACS data. The 2021 ACS data will likely shed more light on this issue when it becomes available. For now, this year's report focuses on the general affordability trends suggested by the currently available data, while noting the deficiencies in the 2020 data. The full set of changes in bundled AR values at the PUMA level is available on the CPUC website.⁷¹

Table 14: Percentage Point Change in Bundled AR₂₀ and AR₅₀ Values for PUMAs with 20 Highest AR₂₀ Values, 2019 vs. 2020

d. Industry-Specific AR Comparisons, 2019 vs. 2020

Table 15 below shows the weighted average changes in AR₂₀ and AR₅₀ values for each industry, broken down by relevant categories of essential service providers. On average, affordability of each essential service changed only modestly when analyzed at these coarse geographic scales.

⁷¹ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/changes-in-ar-values-2019-vs-2020.xlsx>

Table 15: Percentage Point Change in Weighted Average AR₂₀ and AR₅₀ Values by Industry and Provider Type, 2019 vs. 2020⁷²

While these values mostly showed relatively small changes when aggregated to these broad geographic areas, more detailed analysis of specific areas shows more significant changes in affordability for certain parts of the state. This more detailed analysis for each industry is provided in the subsequent sections of this chapter.

i. Electricity

Table 16 below shows a detailed set of 2019 and 2020 electric AR₂₀ and AR₅₀ results for each of the IOUs' climate zones, as well as for the service territories of the two largest municipal electric utilities (LADWP and SMUD) and a weighted average for all the other municipal utilities.

⁷² *Ibid* (n.68)

Electric Climate Zone	2019 AR ₂₀	2020 AR ₂₀	2019 AR ₅₀	2020 AR ₅₀	Change in AR ₂₀	Change in AR ₅₀
PG&E P	9.8%	10.5%	3.1%	3.1%	0.6	
PG&E Q	5.6%	5.6%	1.6%	1.8%	0.0	
PG&E R	12.6%	11.6%	2.9%	2.8%		
PG&E S	6.8%	7.7%	1.9%	2.1%		
PG&E T	5.5%	4.4%	1.0%	1.0%		
PG&E V	35.8%	5.9%	2.8%	1.6		
PG&E W	8.8%	10.3%	2.8%			
PG&E X	3.2%	3.6%	1.0%			
PG&E Y	11.3%	9.3%	2.2%			
PG&E Z	5.4%	5.7%	1			
SCE 10	5.4%	5.8%				
SCE 13	7.6%	6.3%				
SCE 14	7.9%	8.8				
SCE 15	15.0%					
SCE 16	6.2%					
SCE 5	8.7%					
SCE 6						
SCE 8						
SCE 9						
SDG&E COASTAL						
SDG&E DESERT						
SDG&E INLAND						
SDG&E MOUNTAIN						
BVES 16						
Liberty 16						
PacCorp DEL NO						
PacCorp NO						
Los Ange						
Sacra						
A						

Table 16: Percentage Point Change in Electric AR₂₀ and AR₅₀ Values by Climate Zone, 2019 vs. 2020

Most of the changes in electric AR values were relatively small, with most climate zones showing a modest decrease in AR₂₀ value as a result of household incomes partially offsetting increases in nondiscretionary expenses. A few areas saw substantial drops in electric AR values that can be explained by significant drops in one of the other essential service bills (such as the drop in electric AR values in SCE climate zone 15, which is located in the Riverside MSA where communications ESBs dropped 39.5 percent between 2019 and 2020, as shown in Table 13).

The major exception was the steep drop in electric AR₂₀ for PG&E climate zone V. This is a coastal climate zone that is located almost entirely in Humboldt County. There is a single PUMA that covers the entirety of Humboldt County (PUMA #02300), meaning that income and housing costs used in the AR calculations for PG&E climate zone V are entirely derived from the ACS sample for this single PUMA, whereas most other climate zones include multiple PUMAs. The 2020 ACS results indicated that the 20th percentile income in Humboldt County grew from \$13,400/year in 2019 to \$27,100 in 2020, which

would explain why the electric AR₂₀ value dropped by 29.9 percentage points. There are two factors that could explain the apparent 102 percent increase in 20th percentile income levels in Humboldt County.

As mentioned earlier, there was a significant increase in federal and state assistance payments, particularly to lower income households, at the start of the pandemic. This led to a drop in poverty in California from 16.2 percent in 2019 to 12.3 percent in 2020.⁷³ Prior to the pandemic, Humboldt County was on the higher end of poverty rates compared to other California counties (18.9 percent in 2019, according to a 2019 report from the Public Policy Institute of California).⁷⁴ It is reasonable to surmise that the expansion of various assistance programs had a significant impact in Humboldt County.

The other factor that could partially explain this significant change in 20th percentile income levels is the data collection difficulty that the Census Bureau experienced in 2020 as a result of the pandemic. It is possible that the growth in lower-income households' incomes in Humboldt County was overstated in the 2020 ACS due to these difficulties, even after researchers attempted to correct for it through the sample weights. This concern is particularly relevant for PG&E climate zone V because it is almost entirely contained within a single PUMA, whereas the presence of multiple PUMAs in other climate zones mitigates any systematic bias in income estimation that may have resulted from the non-response issue. In all likelihood, next year's ACS data will not suffer from the same high non-response rates observed in 2020, allowing for next year's Affordability Report to provide more certainty in the affordability trend for Humboldt County, PG&E climate zone V, and California in general.

ii. Natural Gas

Table 17 below shows the 2019 and 2020 gas AR₂₀ and AR₅₀ results for each of the IOUs' climate zones, as well as a weighted average for all of the municipal utilities. Similar to what was observed from the detailed electric AR results in Table 16, most of the climate zones show relatively modest drops in AR value, suggesting that income growth and changes in other EUBs/ESBs is more or less keeping up with increases in natural gas EUBs, leading to affordability slightly improving in 2020 compared to 2019 for many climate zones.

There were also relatively large drops in AR values in PG&E climate zones V and Y. This was driven by the same large income gains observed in Humboldt County that was discussed in the prior section (PG&E natural gas climate zone V is also located almost exclusively in Humboldt County, while 18.2 percent of the estimated 72,500 households located in PG&E natural gas climate zone Y are in Humboldt County). As explained in the previous section on electricity affordability changes, it is unclear whether this improvement in affordability in these two climate zones is a result of significant growth in lower-income households' income levels (due largely to enhanced federal and state assistance programs) or due to measurement error in the 2020 ACS survey. Next year's affordability analysis may shed more light on this.

⁷³ <https://www.ppic.org/blog/pandemic-aid-helped-lower-poverty-in-california/>

⁷⁴ <https://inequality.stanford.edu/sites/default/files/PovertyinCA19.pdf>

Gas Climate Zone	2019 AR ₂₀	2020 AR ₂₀	2019 AR ₅₀	2020 AR ₅₀	Change in AR ₂₀	Change in AR ₅₀
PG&E P	4.0%	4.1%	1.2%	1.1%	0.1	
PG&E Q	2.6%	2.7%	0.7%	0.8%	0	
PG&E R	4.8%	4.3%	1.1%	1.0%		
PG&E S	3.1%	3.3%	0.9%	0.9%		
PG&E T	4.4%	3.3%	0.7%	0.		
PG&E V	23.7%	4.2%	1.6%			
PG&E W	4.9%	6.5%	1.4%			
PG&E X	2.0%	2.2%	0.			
PG&E Y	8.3%	4.8%				
SCG 1	6.6%	6.5%				
SCG 2	4.4%	3.				
SCG 3	4.5%					
SDG&E COASTAL	3.4%					
SDG&E DESERT	2.					
SDG&E INLAND						
SDG&E MOUNTAIN						
SWG_Barstow						
SWG_Big_Bear						
SWG_Needles						
SWG_NLT						
SWG_SLT						
SWG_Truc						
SWG						
A						

Table 17: Percentage Point Change in Gas AR₂₀ and AR₅₀ Values by Climate Zone, 2019 vs. 2020

iii. Water

The changes in AR₂₀ between 2019 and 2020 are small with less than a one percentage point change for Class A utilities, approximately a one percent decrease for small water utilities, and a 1.5 percentage point decrease for other water utilities, which represents a 20 percent drop compared to the 2019

baseline value. Overall, the changes in AR_{20} were small on a percentage point basis due to a decrease in communications prices which allowed for higher “income after expenses.”

Table 18: Percentage Point Change in Water AR_{20} and AR_{50} Values, 2019 vs. 2020⁷⁵

iv. Communications

As Table 15 indicates, the statewide weighted average AR_{20} and AR_{50} values decreased by 3.1 and 1.1 percentage points from 2019 to 2020, respectively. Such an improvement in AR values, especially in AR_{20} , can be attributed to the overall decrease in ESBs. This decrease can be attributed to the combination of the following factors: increased number of service providers that offer broadband services at or near essential service level,⁷⁶ improved overall service level,⁷⁷ and possibly expanded service territories of service providers that offer lowest costs than their competitors.⁷⁸

In Table 19 below, the AR values are displayed by MSAs. Again, the data indicates a decrease in AR_{20} values in all MSAs, with the Los Angeles MSA incurring the most significant decrease of 4.0 percentage points.

⁷⁵ *Ibid* (n.68)

⁷⁶ Based on the broadband data collection for the 2019 and 2020 Reports, the number of unique service providers that offer broadband service at or near 25 Megabits per second (Mbps) downstream / 3 Mbps upstream (25/3) increased from 109 in 2019 to 114 in 2020

⁷⁷ Based on the number of unique entries collected from service providers offering broadband services at or near 25/3 and not accounting for the number of households served per entry, the average downstream speed improved from 46 Mbps in 2019 to 73 Mbps in 2020.

⁷⁸ Communications service territories are not mutually exclusive. For any given geography, there can be multiple service providers. The calculation of the affordability metrics captures only lowest ESB in any given geography that has two or more service providers offering broadband services at or near 25/3.

Metropolitan Statistical Area	# of Census Tracts	2020 Housing Unit Count	2019 AR ₂₀	2020 AR ₂₀	2019 AR ₅₀	2020 AR ₅₀	Change in AR ₂₀	Change in AR ₅₀
Los Angeles	2,882	5,143,159	11.8%	7.8%	1.7%	0.9%	-4.0	-0.8
Riverside	817	2,312,692	5.4%	3.1%	1.6%	0.9%	-2.3	-0.6
San Diego	620	1,404,822	5.7%	5.1%	1.4%	1.1%	-0.7	-0.3
San Francisco	967	2,022,503	4.9%	3.8%	1.0%	0.9%	-1.1	-0.1
No MSA	2,664	5,346,341	6.3%	4.8%	1.8%	1.3%	-1.5	-0.4

Table 19: Percentage Point Change in Communication AR₂₀ and AR₅₀ Values by Metropolitan Statistical Areas, 2019 vs. 2020

As mentioned earlier, when results are reported at statewide or MSA levels, the results may obscure the underlying communities that are facing affordability challenges. There are still many communities that face challenges in affording the essential communications services that are available to them. Hence, this report aims to encourage stakeholders to analyze affordability in a more granular geographical scale, such as census tract or service territories within a census tract. For more details, please refer to the Summary of 2020 Results and Affordability Demarcations section.

4. Impacts of CARE, CAP, and FERA

This chapter explores the impact of the California Alternate Rates for Energy (CARE) program, the Customer Assistance Program (CAP), and the Family Electric Rate Assistance (FERA) program on utility affordability in California. The CARE program provides discounts on electricity and natural gas bills for households with income below 200 percent of the Federal Poverty Guideline (FPG) income level, while the FERA program provides electric bill discounts to customers who earn too much to qualify for CARE but still earn less than 250 percent of the FPG income level.⁷⁹ The CAP program offers discounts to low-income customers on their water bills, and its income thresholds are aligned with the CARE program.

Because eligibility for the CARE and CAP programs are the same (and, in fact, CAP eligibility is often verified through CARE enrollment), this chapter will look at the affordability impacts of the CARE and CAP programs combined, while the FERA analysis is presented separately.

Because income thresholds for these programs are dependent on household size, whereas the affordability metrics are meant to characterize utility affordability for households of all sizes, it is not possible to incorporate these discounts into the affordability metrics in a way that allows the results to be applicable to all low-income households, even when focusing on the results for representative households at a particular income percentile. For instance, there are several PUMAs in California where a household would qualify for the CARE program if it was earning the 20th percentile income level for that PUMA, but only if the household contained at least three people. Similarly, there are PUMAs where the 20th percentile income level would qualify a household for CARE if the household contained at least four or more people, but not fewer. In fact, there are fifteen PUMAs in California where a representative household would not qualify for CARE if it was earning the 20th percentile income level regardless of how many people live in that household. Yet there are likely still low-income customers who live in those PUMAs who are enrolled in CARE, demonstrating the difficulty in characterizing the affordability of utility services for all customers in a given area. A complete list of PUMAs, the estimated 20th and 50th percentile income levels for each PUMA, and a comparison with the 2020 CARE and FERA income thresholds for various size households is available on the CPUC website.⁸⁰

Conversely, while most customers who earn the median income for their PUMA would not qualify for these programs, there are some areas where the median income level does qualify a sufficiently small household for the discounts.

Instead of trying to present the impact of these programs on all customers, this chapter will discuss the affordability impacts on customers who are enrolled in the programs. Alongside this analysis, this chapter provides a snapshot of CARE and FERA enrollment rates⁸¹ so as to provide a reference for how many customers benefit from the programs, and whether there are specific areas where further outreach may result in additional CARE and FERA enrollment.

⁷⁹ <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-costs/care-fera-program>

⁸⁰ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/care-and-fera-income-thresholds-vs-2020-puma-income-estimates.xlsx>

⁸¹ Enrollment rate refers to the percent of eligible customers enrolled in the program.

a. CARE and CAP

i. AR Impact

Table 20, Table 21, and Table 22 show the impacts of the CARE and CAP discounts on electric, natural gas, and water AR values, respectively, for the areas with the highest AR₂₀ values under the base scenario (i.e., with no CARE or CAP discount included in the EUB). The electricity and natural gas results are presented at the geographic level of climate zone subdivided into constituent PUMAs for CPUC-jurisdictional areas, while the water results are presented for CPUC-jurisdictional utilities. The CARE/CAP scenario presented in this section presents the affordability metrics for representative households that are enrolled in both the CARE program and CAP where they are available.⁸² The discount was applied to electricity, natural gas, and water EUBs for customers at the 20th and 50th income percentiles in this analysis and does not attempt to make a determination whether customers at that income level necessarily qualify for the programs. Again, the goal of this analysis is not to determine where customers are or are not enrolled in the programs, but to present the impact of the discount if a representative household is enrolled. The CARE discount in this analysis was only applied to the electric and gas EUBs⁸³ for the large IOUs and the SMJUs.⁸⁴ CAP discounts for water utilities were applied in accordance with each utility's tariff.

Table 20 and Table 21 show a sizable improvement in utility affordability for customers who are enrolled in the programs in the most vulnerable areas. The drop in AR value is larger in the areas that have a higher AR value under the base scenario, showing that the CARE program is generally more effective where electric and natural gas affordability concerns are most serious, since this is where the discount represents a bigger proportion of a household's budget after taking into account non-discretionary expenses. However, there are several electric and gas climate zone/PUMAs for which high AR₂₀ values⁸⁵ persist even with the CARE/CAP-reduced EUBs, indicating that EUBs for customers in these areas may be difficult to afford whether they receive low-income program relief or not. The other exception to this is in the two natural gas climate zone/PUMAs with the highest base scenario natural gas AR₂₀ values, where 20th percentile income levels are so low that the CARE and CAP discounts still do not leave those representative households with enough budget to pay all of their non-discretionary bills, resulting in the natural gas AR₂₀ values being top coded at 100% for most census tracts within those areas.

There is also a significant gap in affordability between low-income and median income customers, even when accounting for the impact of the CARE and CAP discounts for low-income households. Compare the AR values for 20th percentile customers with the CARE and CAP discounts to AR values for median income customers without the discount (i.e., the Base AR₅₀ values). Low-income households spend a significantly higher percentage of their income after housing costs on essential levels of electricity,

⁸² Customer Assistance Programs (CAP) are offered to eligible customers of the Class A water companies. Each company administers its own CAP, so the benefits offered can vary. For all 9 Class As, the CAP eligibility limits match those of CARE.

⁸³ EUBs with the CARE discount applied were obtained by data request.

⁸⁴ The low-income assistance programs that are administered by the municipal utilities, if any, may be applied differently. For instance, SMUD's low-income assistance program applies a variable discount that is calculated based on a household's size and income level, making it difficult to include in this analysis. See <https://www.smud.org/en/Rate-Information/Low-income-and-nonprofits>.

⁸⁵ High AR₂₀ values correspond to Climate Zones/PUMAs with CARE/CAP-reduced electric AR₂₀ values greater than 15 percent and with CARE/CAP-reduced gas AR₂₀ values greater than 10 percent.

natural gas, water, and communications services in these areas, even when the CARE and CAP discounts are applied to their energy and water EUBs.

PUMA	County/City	Electric Climate Zone	Base AR ₂₀	CARE/CAP AR ₂₀	Base AR ₅₀	CARE/CAP AR ₅₀	Change in AR ₂₀	Change in AR ₅₀
03751	Los Angeles County (South Central)--LA City (South Central/Watts) PUMA	SCE 8	91.7%	51.8%	2.5%	1.7%	39.9	0.8
03730	Los Angeles County (West Central)--LA City (Central/Hancock Park & Mid-Wilshire) PUMA	SCE 9	73.9%	55.0%	2.1%	1.4%	18.9	0.7
03744	Los Angeles County (Central)--LA City (East Central/Central City & Boyle Heights) PUMA	SCE 9	72.5%	40.2%	3.1%	2.1%	32.3	1.0
03731	Los Angeles County (Central)--West Hollywood & Beverly Hills Cities PUMA	SCE 9	32.3%	20.8%	2.4%	1.6%	11.5	0.8
07702	San Joaquin County (Central)--Stockton City (South) PUMA	PG&E S	25.1%	15.6%	3.3%	2.2%	9.5	1.2
01904	Fresno County (Central)--Fresno City (Southwest) PUMA	PG&E R	24.9%	15.9%	3.9%	2.5%	9.1	1.4
07306	San Diego County (Northwest)--Escondido City (East) PUMA	SDG&E MOUNTAIN	22.0%	13.9%	2.7%	1.8%	8.1	1.0
02904	Kern County (Central)--Bakersfield City (Southeast) PUMA	PG&E W	20.5%	12.9%	4.3%	2.8%	7.6	1.5
01903	Fresno County (Central)--Fresno City (East Central) PUMA	PG&E R	19.4%	12.4%	4.0%	2.6%	7.0	1.4
03767	Los Angeles County (South)--LA City (South/San Pedro) PUMA	SCE 6	19.0%	12.4%	2.0%	1.3%	6.6	0.7
03719	Los Angeles County (Central)--Glendale City PUMA	SCE 9	18.8%	12.4%	2.2%	1.5%	6.4	0.7
00701	Butte County (Northwest)--Chico City PUMA	PG&E P	17.8%	11.5%	3.5%	2.3%	6.3	1.2
07313	San Diego County (Central)--El Cajon & Santee Cities PUMA	SDG&E INLAND	17.3%	10.9%	1.8%	1.1%	6.4	0.6
07306	San Diego County (Northwest)--Escondido City (East) PUMA	SDG&E INLAND	17.1%	10.8%	1.8%	1.2%	6.3	0.6
00702	Butte County (Southeast)--Oroville City & Paradise Town PUMA	PG&E P	16.8%	10.8%	4.2%	2.7%	6.0	1.5
02903	Kern County (Central)--Bakersfield City (Northeast) PUMA	PG&E R	16.6%	10.6%	3.6%	2.3%	6.0	1.3
03732	Los Angeles County (Central)--LA City (East Central/Hollywood) PUMA	SCE 9	16.4%	10.8%	2.6%	1.7%	5.6	0.8
00701	Butte County (Northwest)--Chico City PUMA	PG&E Y	16.2%	10.3%	3.2%	2.1%	5.9	1.1
05904	Orange County (Central)--Irvine City (Central) PUMA	SCE 8	15.5%	10.3%	1.2%	0.8%	5.2	0.4
05904	Orange County (Central)--Irvine City (Central) PUMA	SCE 6	15.5%	10.2%	1.2%	0.8%	5.3	0.4

Table 20: Percentage Point Change in Electric AR₂₀ and AR₅₀ Values by Climate Zone Subdivided into PUMAs Based on Impact of CARE and CAP for CPUC-Jurisdictional Areas with Twenty Highest Electric AR₂₀ Values⁸⁶

PUMA	County/City	Gas Climate Zone	Base AR ₂₀	CARE/CAP AR ₂₀	Base AR ₅₀	CARE/CAP AR ₅₀	Change in AR ₂₀	Change in AR ₅₀
3746	Los Angeles County--LA City (Central/Univ. of Southern California & Exposition Park) PUMA	SCG 1	100.0%	100.0%	2.6%	1.9%	0.0	0.7
3751	Los Angeles County (South Central)--LA City (South Central/Watts) PUMA	SCG 1	99.7%	97.6%	1.6%	1.2%	2.1	0.5
3744	Los Angeles County (Central)--LA City (East Central/Central City & Boyle Heights) PUMA	SCG 1	58.6%	43.2%	1.7%	1.2%	15.5	0.5
3730	Los Angeles County (West Central)--LA City (Central/Hancock Park & Mid-Wilshire) PUMA	SCG 1	55.3%	40.1%	1.1%	0.8%	15.2	0.3
3731	Los Angeles County (Central)--West Hollywood & Beverly Hills Cities PUMA	SCG 1	19.1%	12.6%	1.3%	0.9%	6.5	0.4
3734	Los Angeles County--LA City (East Central/Silver Lake, Echo Park & Westlake) PUMA	SCG 1	18.1%	13.2%	1.6%	1.2%	5.0	0.4
3745	Los Angeles County (Central)--LA City (Southeast/East Vernon) PUMA	SCG 1	14.9%	10.9%	1.9%	1.4%	3.9	0.5
3767	Los Angeles County (South)--LA City (South/San Pedro) PUMA	SCG 1	13.8%	10.0%	1.3%	0.9%	3.8	0.4
1904	Fresno County (Central)--Fresno City (Southwest) PUMA	SCG 2	13.1%	8.5%	1.7%	1.2%	4.6	0.5
3733	Los Angeles County (Central)--LA City (Central/Koreatown) PUMA	SCG 1	12.7%	9.2%	2.1%	1.5%	3.5	0.6
7702	San Joaquin County (Central)--Stockton City (South) PUMA	PG&E S	12.3%	8.6%	1.4%	1.1%	3.7	0.3
7313	San Diego County (Central)--El Cajon & Santee Cities PUMA	SDG&E INLAND	11.9%	8.8%	1.1%	0.9%	3.1	0.3
7306	San Diego County (Northwest)--Escondido City (East) PUMA	SDG&E INLAND	11.7%	8.7%	1.2%	0.9%	3.0	0.2
5904	Orange County (Central)--Irvine City (Central) PUMA	SCG 1	10.7%	7.3%	0.8%	0.5%	3.4	0.2
3766	Los Angeles County (South)--Long Beach City (Southwest & Port) PUMA	SCG 1	10.6%	7.3%	1.5%	1.1%	3.3	0.4
7306	San Diego County (Northwest)--Escondido City (East) PUMA	SDG&E MOUNTAIN	10.6%	7.7%	1.2%	0.9%	2.9	0.3
1904	Fresno County (Central)--Fresno City (Southwest) PUMA	PG&E R	10.5%	7.5%	1.4%	1.1%	3.0	0.3
2904	Kern County (Central)--Bakersfield City (Southeast) PUMA	SCG 1	10.1%	6.7%	1.9%	1.4%	3.4	0.5
3719	Los Angeles County (Central)--Glendale City PUMA	SCG 1	9.8%	7.1%	1.2%	0.8%	2.7	0.3
3732	Los Angeles County (Central)--LA City (East Central/Hollywood) PUMA	SCG 1	9.4%	6.8%	1.4%	1.0%	2.6	0.4

Table 21: Percentage Point Change in Natural Gas AR₂₀ and AR₅₀ Values by Climate Zone Subdivided into PUMAs Based on Impact of CARE and CAP for CPUC-Jurisdictional Areas with Twenty Highest Natural Gas AR₂₀ Values⁸⁷

Table 22 shows the impacts of the CARE and CAP discounts on water AR values, respectively, for the water ratemaking areas with the twenty highest water AR₂₀ results under the base scenario. Similar to electric and natural gas industries, the CAP program is most effective in areas where water AR₂₀ results are highest. In addition, there is a greater benefit for low-income households than median income households due to low-income households spending more of their income after housing costs on essential utility bills.

⁸⁶ For full set of CARE/CAP impacts on AR values, see <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/ar-changes-care-cap-and-fera-vs-base.xlsx>

⁸⁷Ibid

Water Ratemaking Area	Base AR ₂₀	CARE/CAP AR ₂₀	Base AR ₅₀	CARE/CAP AR ₅₀	Change in AR ₂₀	Change in AR ₅₀
California Water Service - Stockton	10.3%	6.8%	1.3%	1.0%	-3	
Golden State - Clearlake	9.6%	6.4%	3.0%	2.1%		
California Water Service - Kern Valley	9.5%	6.6%	3.1%	2.2%		
Golden State - Los Osos	8.4%	5.8%	2.0%			
California Water Service - Oroville	7.1%	4.4%	1.7%			
California American Water - Monterey	6.9%	5.0%	2			
California Water Service - East LA	6.8%	3.5%				
California American Water - Hillview	6.7%	4.6				
Liberty Utilities - Apple Valley	6.1%					
Liberty Utilities - Park	6.0%					
California American Water - Larkfield						
Golden State - Region 2						
California American Water - Fruitridge						
California American Water - Baldw						
California Water Service - Ba						
San Gabriel Valley - LA						
San Jose Water						
California W						
Californ						
Ca						

Table 22: Percentage Point Change in Water AR₂₀ and AR₅₀ Values by Ratemaking Area Based on Impact of CARE and CAP for Water Ratemaking Areas with the Highest Water AR₂₀ Values⁸⁸

The impact of the CARE and CAP programs for all geographically granular areas across the state can be measured by comparing the detailed AR results in the 2020 AR Calculator for the “Base” and “CARE/CAP” scenarios.⁸⁹ This information is too detailed to present in this report but can provide valuable insights into where the CAP and CARE programs provide an especially large impact on energy and water affordability to low-income customers.

ii. CARE Enrollment

The AR results presented in this chapter demonstrate the impact of the CARE and CAP programs for customers who are enrolled in them. To provide a point of reference for how many customers are impacted by these programs, this section presents CARE enrollment rate⁹⁰ data from the utilities' 2020

⁸⁸ Ibid (n.86)

⁸⁹ 2020 AR Calculator: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/arc_2020_final.xlsm. Note that this is a large file. It is highly recommended that you save this file to your hard drive (right-click and save) and open it from there.

⁹⁰ Enrollment rate refers to the percent of eligible customers enrolled in the program.

annual reports on the low-income assistance programs,^{91,92,93,94} as well as more granular enrollment data that was provided by the electric and natural gas IOUs in response to a data request.

Table 23 shows a summary for each large IOUs' service territory of the estimated percentage of eligible customers who were enrolled in CARE by end of year 2020. CARE enrollment was over 100% for all of the large IOUs due to the increased eligibility of households, a suspension of customer removal from the program, and a very aggressive outreach effort, all in response to the economic impacts of the COVID-19 pandemic.

Utility	Year End 2020 CARE Enrollment %
PG&E	108%
SCE	107%
SDG&E	112%
SoCalGas	105%

Table 23: Year End 2020 CARE Enrollment Percentages by Utility

The IOUs provided CARE enrollment and eligibility estimates at the PUMA level, which allows for a geographically granular assessment of CARE enrollment within each IOU's service territory. These granular estimates of CARE enrollment differ significantly from the service territory-wide results presented in Table 23 because they rely on different methodologies for estimation of the number of eligible CARE customers. The IOUs' annual reports use eligibility estimates from a third party, whereas their more granular estimates of CARE eligibility at the PUMA level are based on their own propensity models. The PUMA-level CARE enrollment presented in this report is not meant to conflict with or take precedence over the numbers presented by the IOUs in their annual reports. Instead, they are presented here to illustrate opportunities to improve CARE enrollment within each IOUs' service territory.

Table 24 shows the PUMAs within each utility service territory where CARE enrollment was less than 50 percent, based on the IOUs' estimates of the number of eligible customers within each PUMA. By taking a look at the CARE enrollment and eligibility data at this level of detail, it is possible to identify specific areas where more aggressive, pinpointed customer outreach efforts could lead to greater CARE enrollment.

The complete PUMA-level data response from the IOUs is available on the CPUC website.⁹⁵ That data shows that in addition to the areas with relatively low CARE enrollment identified in Table 24, there are

⁹¹ PG&E 2020 Energy Savings Assistance Program and CARE Annual Report:
<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M382/K426/382426780.PDF>

⁹² SoCalGas 2020 Energy Savings Assistance Program and CARE Annual Report:
<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M384/K265/384265624.PDF>

⁹³ SDG&E 2020 Annual Report on Low Income Assistance Programs:
<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M382/K851/382851926.PDF>

⁹⁴ SCE 2020 Low Income Annual Report:
<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M382/K617/382617712.PDF>

⁹⁵ <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/2020-care-fera-enrollment-all-iou- final.xlsx>

a number of PUMAs where CARE enrollment is over 100 percent of eligible customers. This indicates that the datasets and models that the IOUs use to estimate CARE eligibility at a geographically granular scale may require refinement. Improvements to their eligibility models could lead to more targeted recruitment efforts.⁹⁶ Furthermore, because CAP eligibility is often determined by CARE enrollment, it could improve water affordability for these customers as well.

Utility	PUMA	City/County	CARE Estimated Eligible	CARE Enrolled	CARE Enrollment %
PG&E	08503	Santa Clara County (Northwest)--San Jose (Northwest) & Santa Clara Cities	7,561	3,158	41.8%
	08507	Santa Clara County (Southwest)--Cupertino, Saratoga Cities & Los Gatos Town	5,209	2,514	48.3%
	06707	Sacramento County (West)--Sacramento City (Central/Downtown & Midtown)	11,190	5,454	48.7%
	06101	Placer County (Southwest)--Roseville City	10,745	5,323	49.5%
	00101	Alameda County (North)--Berkeley & Albany Cities	13,319	6,643	49.9%
SCE	03728	Los Angeles County (Southwest)--Santa Monica City	12,048	5,757	47.8%
	03767	Los Angeles County (South)--LA City (South/San Pedro)	317	152	48.0%
SDG&E	07311	San Diego County (West Central)--San Diego City (Northwest/Del Mar Mesa)	4,258	374	8.8%
	07309	San Diego County (West)--San Diego (Northwest/San Dieguito) & Encinitas Cities	9,372	891	9.5%
	07310	San Diego County (West)--San Diego City (Southwest/Central Coastal)	11,323	1,124	9.9%
	05903	Orange County (West Central)--Newport Beach, Aliso Viejo & Laguna Hills Cities	1,134	119	10.5%
	05901	Orange County (Southwest)--San Clemente, Laguna Niguel & San Juan Capistrano Cities	10,890	1,210	11.1%
	07304	San Diego County (Northwest)--Carlsbad City	9,134	1,059	11.6%
	05915	Orange County (Southeast)--Rancho Santa Margarita City (East) & Ladera Ranch	1,442	176	12.2%
	07316	San Diego County (South Central)--San Diego City (Central/Centre City & Balboa Park)	22,444	2,799	12.5%
	07314	San Diego County (Central)--San Diego (East Central/Navajo) & La Mesa Cities	13,362	1,740	13.0%
	07317	San Diego County (South Central)--San Diego City (Central/Mid-City)	26,758	3,739	14.0%
	07312	San Diego County (Central)--San Diego City (Central/Mira Mesa & University Heights)	8,763	1,302	14.9%
	05902	Orange County (South Central)--Mission Viejo & Rancho Santa Margarita (West) Cities	1,417	217	15.3%
	07301	San Diego County (Northwest)--Oceanside City & Camp Pendleton	18,164	3,058	16.8%
	07308	San Diego County (Central)--San Diego (Northeast/Rancho Bernardo) & Poway Cities	5,515	977	17.7%
	07315	San Diego County (West Central)--San Diego City (Central/Clairemont & Kearny Mesa)	11,941	2,125	17.8%
	07306	San Diego County (Northwest)--Escondido City (East)	14,644	2,643	18.0%
	07318	San Diego County (South)--San Diego City (Southeast/Encanto & Skyline)	16,296	3,012	18.5%
	07320	San Diego County (Southwest)--Sweetwater Region--Chula Vista City (East)	6,020	1,126	18.7%
	07322	San Diego County (South)--San Diego City (South/Otay Mesa & South Bay)	14,831	3,027	20.4%
	07305	San Diego County (Northwest)--San Marcos & Escondido (West) Cities	15,184	3,109	20.5%
	07302	San Diego County (North & East)--Fallbrook, Alpine & Valley Center	10,885	2,471	22.7%
	07319	San Diego County (South Central)--Lemon Grove City, La Presa & Spring Valley	9,415	2,218	23.6%
	07303	San Diego County (Northwest)--Vista City	8,600	2,051	23.8%
	07313	San Diego County (Central)--El Cajon & Santee Cities	20,147	5,628	27.9%
	07321	San Diego County (Southwest)--Chula Vista (West) & National City Cities	22,525	6,321	28.1%
	07307	San Diego County (Central)--Lakeside, Winter Gardens & Ramona	7,752	2,416	31.2%
SoCalGas	03727	Los Angeles County (Central)--LA City (Central/Pacific Palisades)	10,615	3,746	35.3%
	03729	Los Angeles County (West Central)--LA City (West Central/Westwood & West Los Angeles)	15,616	6,380	40.9%
	03728	Los Angeles County (Southwest)--Santa Monica City	11,079	4,927	44.5%
	03731	Los Angeles County (Central)--West Hollywood & Beverly Hills Cities	12,721	5,994	47.1%
	03760	Los Angeles County--Redondo Beach, Manhattan Beach & Hermosa Beach Cities	5,673	2,789	49.2%
Liberty	06103	Placer County (East/High Country Region)--Auburn & Colfax Cities	1,198	565	47.1%
Southwest Gas	06103	Placer County (East/High Country Region)--Auburn & Colfax Cities	2,035	391	19.2%
	05700	Nevada & Sierra Counties	1,285	331	25.7%
	07104	San Bernardino County (Southwest)--Phelan, Lake Arrowhead & Big Bear City	7,041	2,650	37.6%
	01700	El Dorado County--El Dorado Hills	4,113	2,058	50.0%

Table 24: PUMAs with Less than or Equal to 50% CARE Enrollment, Based on IOU Estimates of CARE-Eligible Customers

⁹⁶ D.21-06-015 authorized the IOUs to update their CARE propensity and probability models. The IOUs may update these models without having to request authorization from the Commission, as long as these updates do not require budget expenditures beyond what is already approved in this decision. When such updates are made, the IOUs shall report the changes in the monthly and annual CARE/FERA compliance reports.

b. FERA

i. AR Impact

The impact of the FERA discount on electric AR values at the climate zone level is shown in Table 25. As with the CARE analysis, these results present the AR values for representative households at the same income levels within each area with and without the discount. It makes no determination as to whether customers at that income level would necessarily qualify for the program. Similar to the CARE/CAP results that were presented previously, these results are only provided for the large electric IOUs.⁹⁷

Overall, the FERA discount has a more modest impact on AR values as compared to CARE and CAP, due to its relatively lower level discount: CARE provides a discount of 30-35 percent on electric bills and a 20 percent discount on natural gas, while FERA only offers an 18 percent discount on electric bills. This table shows a smaller but still significant impact on electric affordability, with the program providing a larger impact for lower-income households. As with the CARE affordability impacts, the drop in AR value is larger in areas where electric AR values are highest in the base scenario, showing that even a modest reduction in EUB can have a significant affordability impact for particularly low-income households.

The impact of the FERA program can be understood at a more granular geographic level by comparing the detailed AR results produced by the 2020 AR Calculator using the “Base” and “FERA” scenarios.⁹⁸

⁹⁷ Per Public Utilities Code § 739.12, only the three large electric IOUs are able to offer the FERA discount. EUBs with the FERA discount applied were obtained by data request.

⁹⁸ 2020 AR Calculator: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/arc_2020_final.xlsx. Note that this is a large file. It is highly recommended that you save this file to your hard drive (right-click and save) and open it from there.

Table 25: Percentage Point Change in Electric AR₂₀ and AR₅₀ Values by Climate Zone Based on Impact of FERA

ii. FERA Enrollment

The large electric IOUs' present FERA enrollment rates in their annual FERA report filings.^{99,100,101} These enrollment rates are summarized in Table 26. Overall, FERA enrollment is significantly lower across all of the IOUs compared to CARE enrollment rates.

Because FERA enrollment figures are much lower than CARE, and confidentiality requirements prevent disclosure of information for small groups of customers, the PUMA-level FERA enrollment data submitted by the IOUs was redacted in many PUMAs where there was low FERA enrollment and eligibility. This data, where it was available, is included at the PUMA level for each of the electric IOUs on the CPUC website.¹⁰²

⁹⁹ PG&E 2020 FERA Program Annual Report:

<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M381/K264/381264975.PDF>

¹⁰⁰ SCE 2020 Low Income Annual Report:

<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M382/K617/382617712.PDF>

¹⁰¹ SDG&E 2020 FERA Program Annual Report:

<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M382/K850/382850195.PDF>

¹⁰² <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/2020-care-fera-enrollment-all-iou- final.xlsx>

Utility	Year End 2020 FERA Enrollment %
PG&E	21.0%
SCE	13.6%
SDG&E	33.0%

Table 26: Year End 2020 FERA Enrollment Percentages by Utility

5. AR Forecasts Based on CRT Projections

This chapter presents forecasted values for the electricity AR₂₀ metric based on forecasted cumulative year-end rates derived from cumulative revenue requirement projections embedded in the most recently available Cost and Rate Tracker (CRT) for each IOU, as modified by Energy Division staff.¹⁰³

As part of the Phase 1 Decision in the Affordability Rulemaking proceeding, the CPUC ordered PG&E, SCE, and SDG&E to each submit a quarterly cost and rate tracking tool to Energy Division for evaluating the inputs of the affordability metrics developed as part of the rulemaking and for other ongoing support of the CPUC's work.¹⁰⁴ The CRTs may be used to produce bundled¹⁰⁵ residential EUBs as inputs to the AR affordability metric based on current rates in effect¹⁰⁶ and forecasted rates resulting from all pending applications.¹⁰⁷

To show overall rate trends, each IOU's CRT may be used to produce a short- to medium-term cumulative bundled residential rate forecast for the current year and three additional years.¹⁰⁸ Electric bundled residential average rate forecasts for PG&E, SCE, and SDG&E for the years 2022 – 2025¹⁰⁹ were presented in the Commission's *2022 Senate Bill 695 Report: Report to the Governor and Legislature on Actions to Limit Utility Cost and Rate Increases Pursuant to Public Utilities Code Section 913.1* (2022 SB 695 Report).¹¹⁰ The rates forecast in cents per kWh from the 2022 SB 695 Report is in Table 27.

	2022 - Act	2022	2023	2024	2025
PG&E Nominal Rate	\$ 0.292	\$ 0.306	\$ 0.340	\$ 0.353	\$ 0.367
SCE Nominal Rate	\$ 0.256	\$ 0.262	\$ 0.284	\$ 0.284	\$ 0.296
SDG&E Nominal Rate	\$ 0.345	\$ 0.356	\$ 0.373	\$ 0.412	\$ 0.428

Table 27: PG&E, SCE, and SDG&E Forecasted Bundled Residential Average Rates (nominal \$/kWh)

¹⁰³ The cumulative total of forecasted revenue for each year reflect revenues that are: (1) recently implemented, (2) approved but not yet implemented, as well as (3) not yet approved.

¹⁰⁴ See [D.20-07-032](#), Ordering Paragraph (OP) 1, p. 99.

¹⁰⁵ Bundled, used here with respect to customer rates and bills, refers to customers who get all of their services - generation, transmission, and distribution services - from the IOUs.

¹⁰⁶ Current rates in effect are intrinsically a cumulative representation of all authorized revenue requirements currently implemented in rates.

¹⁰⁷ A pending application is one that has been filed and for which a decision by the Commission is pending. Grouping all pending applications produces a projected cumulative rate.

¹⁰⁸ A rate forecast takes the indication of what rate impacts may be from the CRT and adds user-defined assumptions. For example, Energy Division staff may modify the CRT results to reflect estimates for cost recovery applications not yet filed.

¹⁰⁹ The forecasted simple volumetric rates include assumptions related to those forecasts and are subject to material change as assumptions change. Further, forecasts are based on forward-looking estimates that are not historical facts.

¹¹⁰ See [2022 Senate Bill \(SB\) 695 Report](#). General drivers of expected rate growth can be found in the report.

These cumulative forecasted rates¹¹¹ (light-blue shaded area of Table 27) were used to calculate electric EUBs¹¹² for climate zones in each of the three IOUs service territories, which were input in the 2020 AR Calculator so that electric AR₂₀ values could be forecast for the years 2022 – 2025.¹¹³ The purple-shaded area of Table 27 shows current rates in effect,¹¹⁴ which are used to produce the forecasted rates. However, a different set of rates are used to calculate electric EUBs for input in the 2020 AR Calculator, including those shown in Table 11¹¹⁵ as well as the rates in effect at 2021 year-end.¹¹⁶ The EUBs/ESBs for all other essential services are based on inflation-based projections using the 2020 historical EUBs/ESBs as a starting point. All EUBs/ESBs are combined with income and housing cost projections embedded in the 2020 AR Calculator to produce the AR₂₀ projections shown in Figure 21 to Figure 23.

PG&E's AR₂₀ forecast shows that affordability of electric service is expected to worsen during the forecast period of 2022 – 2025 relative to the 2020 baseline. This indicates that the current outlook for rate increases will lead to EUB growth that will outpace the expected growth in household incomes. This is expected to be particularly true in PG&E climate zone R, a hotter region that includes Merced and Fresno. The weighted average electric AR₂₀ for this climate zone is expected to grow almost 40 percent between 2020 and 2025, from 11.6 percent to 16.2 percent, with much of that increase expected to happen in 2022 when the AR₂₀ will increase 2.4 percentage points from 11.4 percent to 13.8 percent. While PG&E climate zone R is expected to have the worst AR values, several other PG&E climate zones are also expected to have significant increases in AR₂₀ during the forecast period due to the large forecasted increases in PG&E's electric rates. The 2022 SB 695 Report estimated for PG&E an annual average rate growth through 2025 of about 7 percent, with a corresponding increase of about 7 percent in bills for customers in climate zone R. This implies that these households' electric bills will become less affordable if household incomes track the assumed inflation rate of 2.9 percent.¹¹⁷

¹¹¹ For the forecast period of 2022 through 2025, cumulative year-end rates are based on revenue requirement projections embedded in the most recently available CRT for each IOU, as modified by Energy Division staff.

¹¹² The cumulative forecasted rate EUBs are available as a scenario in the 2020 AR Calculator: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/arc_2020_final.xlsx. Note that this is a large file. It is highly recommended that you save this file to your hard drive (right-click and save) and open it from there.

¹¹³ For the forecasted cumulative revenue, rate, and bill values associated with the forecasted affordability metrics, see <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/2020/ces2022/2020-aar--forecasted-rev-rates-eubs.xlsx>

¹¹⁴ 3/1/22 for PG&E and SCE and 1/1/22 for SDG&E. These were the current rates in effect in the most recently available CRT (first quarter of 2022) for each IOU at the time the 2022 SB 596 Report was prepared.

¹¹⁵ Bundled weighted-average residential average rates 2020 (\$/kWh): PG&E 0.241; SCE 0.206; SDG&E 0.273.

¹¹⁶ Bundled residential average rates in effect at year-end 2021 (\$/kWh): PG&E 0.248; SCE 0.244; SDG&E 0.321.

¹¹⁷ For 2021 through 2025, 2.9 percent is the predicted annual average inflation rate used in the 2020 AR Calculator, however, it is highly likely that this prediction will be revised upward in the 2021 AR Calculator.

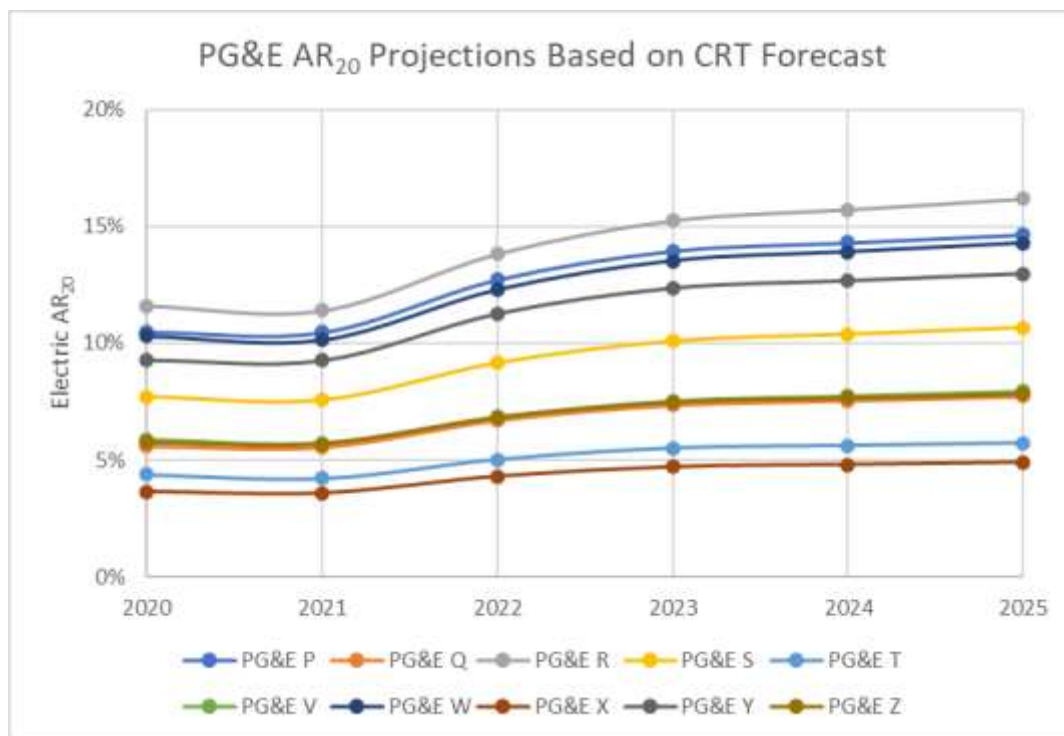


Figure 21: PG&E Electric AR₂₀ Forecast Based on 2022 CRT Projections by Climate Zone

The SCE AR₂₀ forecast presented in Figure 22 shows a steady increase in AR values across all climate zones between 2020 and 2023, with electric affordability remaining steady and slightly improving in 2024 and 2025, as measured by this metric. Since SCE's rates are expected to remain unchanged in 2024 and only slightly increase in 2025 on a nominal basis, household incomes are expected to keep pace with electric rates after 2023. SCE climate zone 15 is a hotter region that lies along the California border with Nevada and Arizona, and has the highest AR₂₀ values. In this climate zone, AR₂₀ is expected to increase by 27 percent between 2020 and 2025, from 10.3 percent to 13.1 percent, with a peak value of 13.5 percent. The 2022 SB 695 Report estimated for SCE an annual average rate growth through 2025 of about 4 percent, with a corresponding increase of about 3 percent in bills for customers in climate zone 15.

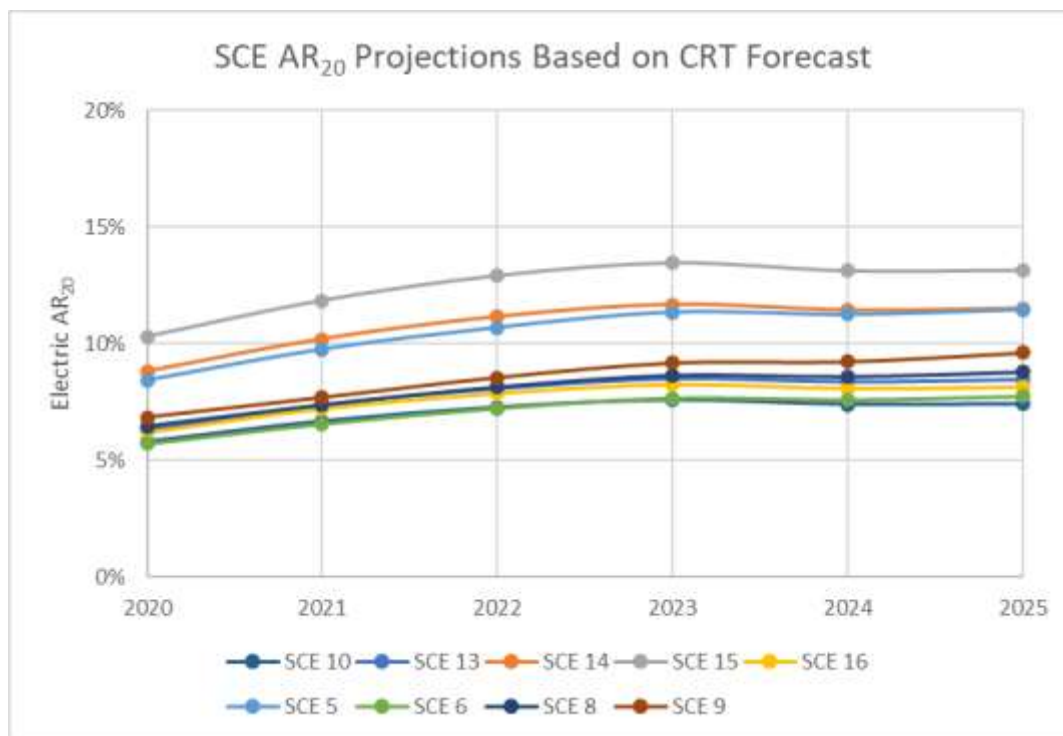


Figure 22: SCE Electric AR₂₀ Forecast Based on 2022 CRT Projections by Climate Zone

The SDG&E AR₂₀ forecast is presented in Figure 23, and shows a steady increase in AR value over the forecast period. Across the four climate zones, AR₂₀ values are expected to increase by about 55 percent compared to the 2020 baseline. For instance, in SDG&E's Inland climate zone, AR₂₀ is expected to grow from a 2020 value of 7.7 percent to a 2025 value of 12.2 percent, a 58 percent increase. Part of the reason for SDG&E's particularly large percentage growth in AR value is because 2020 AR₂₀ values are low compared to the other two large electric IOUs. Even though SDG&E's volumetric rates are much higher than the rates of the other two IOUs, the more temperate weather (and thus, lower AC-driven electricity usage) and more affluent service territory have kept their EUBs more affordable. However, with an expected rapid growth in rates and bills over the forecast period, SDG&E customers will see a decline in electricity affordability over the next few years. The 2022 SB 695 Report estimated for SDG&E an annual average rate growth through 2025 of about 6 percent, with a corresponding increase of about 7 percent in bills for customers in the Inland climate zone. As with PG&E, this implies that these households' electric bills will become less affordable if household incomes track the assumed inflation rate of 2.9 percent.

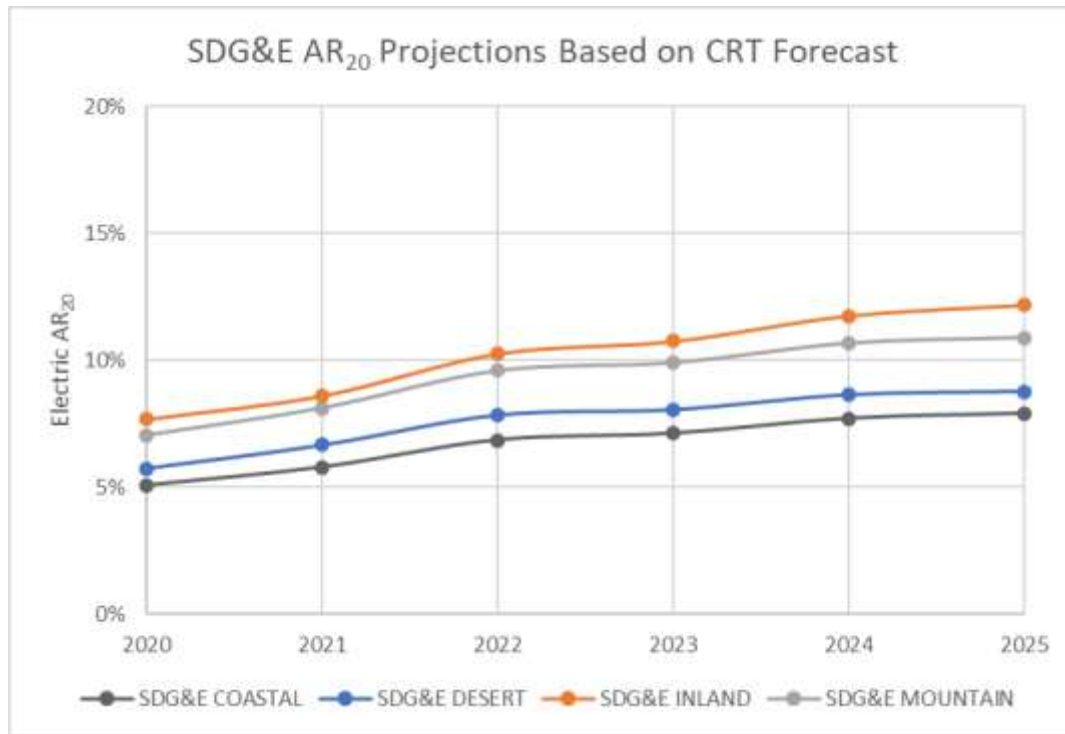


Figure 23: SDG&E Electric AR₂₀ Forecast Based on 2022 CRT Projections by Climate Zone

For a more detailed AR outlook based on these EUB projections, the 2020 AR Calculator’s “2022 CRT Forecast” scenario provides a detailed projection of AR₂₀ and AR₅₀ values for each of the climate zones discussed in this report, as well as a more geographically granular set of results for these climate zones broken down into constituent PUMAs.¹¹⁸

¹¹⁸ 2020 AR Calculator: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/affordability-proceeding/arc_2020_final.xlsx. Note that this is a large file. It is highly recommended that you save this file to your hard drive (right-click and save) and open it from there.

6. Use of Affordability Metrics in Proceedings

This chapter offers a brief look at implementation of the metrics in past proceedings or final decisions as well as in ongoing, current proceedings. In the Phase 1 Decision, the Commission concluded that ratesetting proceedings generally should incorporate the adopted affordability metrics even while development and refinement was ongoing.¹¹⁹ Since the issuance in November 2021 of the Implementation Staff Proposal, which includes detailed provisions for the hands-on application of the metrics, there have been several energy proceedings¹²⁰ in which the affordability metrics have been referenced. Going forward, the Phase 2 Decision directs energy and water utilities to include the metrics, based on currently effective as well as proposed rates, for all applications requesting a revenue requirement increase of more than 1 percent. A summary is presented below of how the metrics have been used in these Commission proceedings.

a. Closed Proceedings

i. Energy COVID Arrears Rulemaking

D.22-04-037 in the Energy COVID Arrears Rulemaking proceeding¹²¹ ordered the creation of a working group to consider the parameters of a Community Based Organization Arrears Case Management Pilot Program as part of finalizing a proposal for the pilot program. The parameters should (emphasis added) include the following:

[L]everage the Commission's affordability metrics which provide a readily available, reasonable method to narrow E[nvironmental and] S[ocial] J[ustice] communities to those likely to have become most vulnerable to disconnection of essential electric and gas service during the COVID-19 pandemic.

The decision provides in an appendix an example of utilizing the affordability metrics to target communities for this effort. The proposal was filed in the docket of the Disconnection Rulemaking proceeding¹²² on August 29, 2022.

b. Open Proceedings

i. PG&E 2023 General Rate Case (GRC)

PG&E's 2023 GRC¹²³ is the first GRC in which a utility has been directed to compute the affordability metrics.¹²⁴ PG&E's affordability metrics report includes base 2021 values for the metrics as well as

¹¹⁹ D.20-07-032, Conclusions of Law 29 and 30.

¹²⁰ There are no current or past water or communications proceedings or public purpose programs in which the affordability metrics are used.

¹²¹ See [docket for R.21-02-014](#).

¹²² See [docket for R.18-07-005](#).

¹²³ See [docket for A.21-06-021](#).

¹²⁴ The Assigned Commission's Scoping Memo and Ruling dated October 1, 2021 directed PG&E to prepare a supplemental affordability analysis using the AR and HM metrics developed in the Affordability Rulemaking proceeding.

projections of AR and HM metrics through 2026 broken out by climate zone.¹²⁵ In its report, PG&E states that the CPUC guidelines for calculating the AR and HM metrics apply only to non-CARE rates. However, PG&E indicates that since over 20 percent of its residential customers at any point in time are on its electric and gas CARE rates, a supplemental calculation of its metrics using CARE rates is reported as well. High 2021 – 2026 electric AR₂₀ data from this report for PG&E climate zone R, a hot climate zone that includes Fresno and Bakersfield, is presented in the 2022 SB 695 Report.¹²⁶ The data indicates that affordability concerns are intensified for customers in certain PUMAs within climate zone R and other climate zones, including for those who receive a reduced bill under the CARE program.

A decision in the proceeding is expected in the third quarter of 2023.

ii. PG&E, SCE, SDG&E, and SoCalGas (Joint Utilities) 2021 – 2026 Low-Income Programs Consolidated Proceeding (Re-Opened)¹²⁷

D.21-06-015 in the Energy 2021 – 2026 low-income programs consolidated proceeding¹²⁸ ordered the large electric and gas IOUs to prioritize customer segments for Energy Savings Assistance (ESA) program treatment, outreach, and education. AR₂₀ and SEVI, among other designations, are to be considered when defining specific customer segments, to be proposed in a joint IOU advice letter (AL) filing. The Joint Utilities filed the AL¹²⁹ with the AR₂₀ and SEVI definitions¹³⁰ but noted that at the time of the AL filing, the utilities do not currently track or report this data and thus there is no methodology for identifying this segment.

The AL in which the AR₂₀ and SEVI definitions appear was approved in December 2021.

¹²⁵ PG&E's affordability metrics report is not available in the docket for A.21-06-021, however, it is available on PG&E's website. See "PG&E Regulatory Case Documents, Supplemental Testimony" filed on February 23, 2022, in case "GRC 2023 Phase I" at: [Regulation \(pgera.azurewebsites.net\)](https://pgera.azurewebsites.net/).

¹²⁶ See Appendix C of the [2022 SB 695 Report](#).

¹²⁷ D.21-06-015 closed the proceeding, however, the proceeding was re-opened when a Petition for Modification of D.21-06-015 was filed in April 2022.

¹²⁸ Low-income programs include CARE, FERA, and Energy Savings Assistance (ESA) programs. The ESA program provides no-cost energy efficiency measures to income-qualified customers. See [docket for A.19-11-003 et al.](#)

¹²⁹ See [SDG&E et al. AL 3842-E/3012-G](#).

¹³⁰ These metrics were defined using definitions in the 2019 Annual Affordability Report.

7. Timeline for Future Annual Affordability Reports

The scope and structure of the annual affordability report has been refined over the course of these first two issuances of the report (the 2019 and 2020 Reports). With the format of the report and the accompanying outputs now established, a timeline is presented here for future iterations of the analysis. This proposed timeline is based on the availability of the datasets needed for calculation of the affordability metrics, as well as the anticipated time needed for CPUC staff to perform the analysis. This timeline will also give stakeholders an opportunity to provide feedback on the accuracy of the data used to perform the analysis.

The specific timeline presented here reflects the planned 2021 Annual Affordability Report (2021 Report), but the intent is to repeat this same process with an annual cadence for future iterations of the report.

- Q4 2022 – Service territory shapefiles and 2021 Census Bureau ACS PUMS data becomes available. CPUC staff begins analysis.
- Q1 2023 – Draft 2021 Affordability Ratio Calculator (ARC) release, including essential usage/service bill data, shapefiles, affordability metric calculations, and supporting data. Stakeholders asked to provide feedback on any identified data errors or methodological issues.
- 30 days after Draft ARC release – Informal feedback on data and methodological issues due.
- Late Q1/Early Q2 2023 – Final 2021 ARC release.
- Q2/Q3 2023 – 2021 Annual Affordability Report release.
- 60 days after 2021 Report release – Formal feedback on 2021 Report due.

(End of Attachment)