

COUNTY OF SAN DIEGO

Zero Carbon Portfolio Plan

2024 Progress Report



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1 Executive Summary

Introduction

This document reports on the County of San Diego's past progress and future plans towards the achievement of its commitment to significantly reduce operational carbon emissions as laid out in the 2022 Zero Carbon Portfolio Plan (ZCPP) and its 2024 Amendment.

Summary

The 2024 amended ZCPP committed to a 2030 target of 80% operational carbon emissions reduction relative to a Fiscal Year 07-08 Baseline. This required a reduction of 67% from Fiscal Year 20-21 emissions as calculated in the initial ZCPP. Despite the methodology changes described below, the County remains on track to demonstrate an equivalent 67% percent reduction from the recalculated 2020 emissions milestone. This will be accomplished through ongoing actions and investments in all six (6) original ZCPP measures as described in this report.

Fiscal Year to Calendar Year Transition

This document transitions the reporting period from Fiscal Year (FY) to Calendar Year (CY) starting in 2021. This transition is intended to align annual progress reporting on the Zero Carbon plan with the County's other related activities, namely the annual GHG reporting and the related Climate Action Plan (CAP) progress reporting intervals. To that end, this document reports operational carbon emissions by Fiscal Year through FY 20-21 (which ends on June 30, 2021). This document then reports operational carbon emissions by Calendar Year starting January 1, 2021. There is a 6-month overlap between FY 20-21 numbers and CY 2021 numbers, but each data point consistently represents 12 full months of data.

Emission Factor Updates

This document also transitions to newly available emission factors for all electricity providers, including SDG&E, Direct Access through Calpine, and CCA-provided electricity through both California Energy Alliance (CEA) and San Diego Community Power (SDCP).

The original ZCPP utilized emissions factors documented in eGrid for the CAMX Subregion to calculate historical emissions starting in the FY 07-08 Baseline Year and assumed a consistent downward trajectory from 2021 through 2030. This was a simplification, but at the publishing date of the ZCPP, CAMX was deemed the most reliable and historically consistent source of emission factors data reaching back to 2007. Around 2020, the California Energy Commission began publishing annual Power Content Labels (PCLs) showing Greenhouse Gas Emissions Intensity (lbs CO₂e/MWh) for all applicable electricity providers. These CEC PCL values more accurately reflect the carbon intensity of chosen energy sources.

This document reports the historical operational emissions using the original eGrid (CAMX) factors through CY 2024, while simultaneously reporting both historical and future forecast operational emissions using the emission factors from the CEC PCLs starting in CY 2020. It is not possible to re-calculate portfolio-wide operational emissions backward to the FY 07-08 Baseline Year using CEC PCL factors because reliable and consistent information is not available back to that date. By showing emissions using both sets of factors for overlapping years, the past progress and future trajectory can be clearly shown.

See Appendix A for details on the assumptions used for CAMX from the original ZCPP as well as the newly available tariff-specific emission factors as published by the CEC since 2020.

Background

2017 ZPP

In 2017 the County's Energy & Sustainability Division (ESD) published the County's Zero Energy Portfolio Plan (ZPP) with the goal to cut non-renewable source energy use by 50% by 2030 relative to the FY 07-08 Baseline. The ZPP was the first-of-its-kind plan developed by a local government in California and laid out actions through which the County could cost-effectively cut its energy footprint in half by 2030 across more than 10 million square feet of real estate.

The ZPP identified six (6) Key Strategies to prioritize activities and meet the targeted reduction. The County has implemented projects in five (5) of the Key Strategies since publishing the ZPP. Measure 6 (Additional Renewable Energy) was considered a future measure.

From its inception through the end of FY 20-21, the strategies within the ZPP resulted in a 22% reduction in operational source energy consumption across the County's portfolio relative to the FY 07-08 Baseline.

2022 ZCPP

In early 2021 the County of San Diego Board of Supervisors voted unanimously to move San Diego to zero carbon emissions by 2035. In order to shift the measured metric from *source energy consumption* to *operational carbon emissions* to align with the 2021 Board of Supervisors guidance and State of California and related County of San Diego goals, the County transitioned the 2017 ZPP into a new Zero Carbon Portfolio Plan (ZCPP).

The County of San Diego originally published the Zero Carbon Portfolio Plan (ZCPP) in 2022. It included a plan based on six (6) specific measures that would result in an absolute reduction in operational carbon emissions of 90% by 2030, relative to the FY 07-08 Baseline. The ZCPP was based on data and funding expectations available at the time.

2024 ZCPP Amendment

In the original ZCPP the County was prepared to take a proactive approach to building electrification by replacing gas-fired equipment (boilers, water heaters, etc.) in an accelerated fashion, before typical end of life. These investments were included within ZCPP Measure 2 – Building Electrification. Due to the excessive costs and potential disruption of this Measure, the County adjusted the process for replacing gas-fired equipment by shifting to electrifying gas-fired equipment when it is scheduled in the Major Maintenance Improvement Plan (MMIP). This change to Measure 2 resulted in significantly less natural gas expected to be removed from the County's energy profile by end of year 2030.

In 2024, the County published a ZCPP Amendment to summarize the adjusted approach to Measure 2, which consequently affects the overall impact of Measure 1: Green Energy Supply. The combined impact across both Measure 1 and Measure 2 described in the Amendment caused the initial decarbonization target to be revised from 90% to 80% absolute reduction in operational carbon emissions by 2030, relative to the FY 07-08 Baseline.

2 Overview

The following chart demonstrates the historical measured operational carbon emissions, along with the expected future operational emissions, using the two sets of emission factors described in the Introduction (eGrid/CAMX and CEC PCL). See Appendix A for additional details regarding both sets of emission factors.

Black Lines: The solid black line in the chart shows a 45% reduction in emissions between FY 07-08 and CY 2024, using eGrid/CAMX emission factors. The dashed black line shows the predicted forward-looking emissions from the 2024 ZCPP Amendment towards the 2030 target of approximately 11,000 MT CO₂e/yr (equivalent to the 80% absolute operational emissions reduction target).

Blue Lines: The solid blue line in the chart shows calculated historical emissions from CY 2020 through CY 2024, using the CEC PCL emission factors. The dashed blue line shows the predicted forward-looking emissions using expected CEC PCL emission factors and based on the same Measures identified in the ZCPP Amendment. For specific updated details included within each Measure, reference Chapter 5.

Going forward, the ZCPP progress will be tracked using the CEC PCL emission factors and calendar year data. This will create consistency between the ZCPP, the GHG inventory, and the CAP reporting.

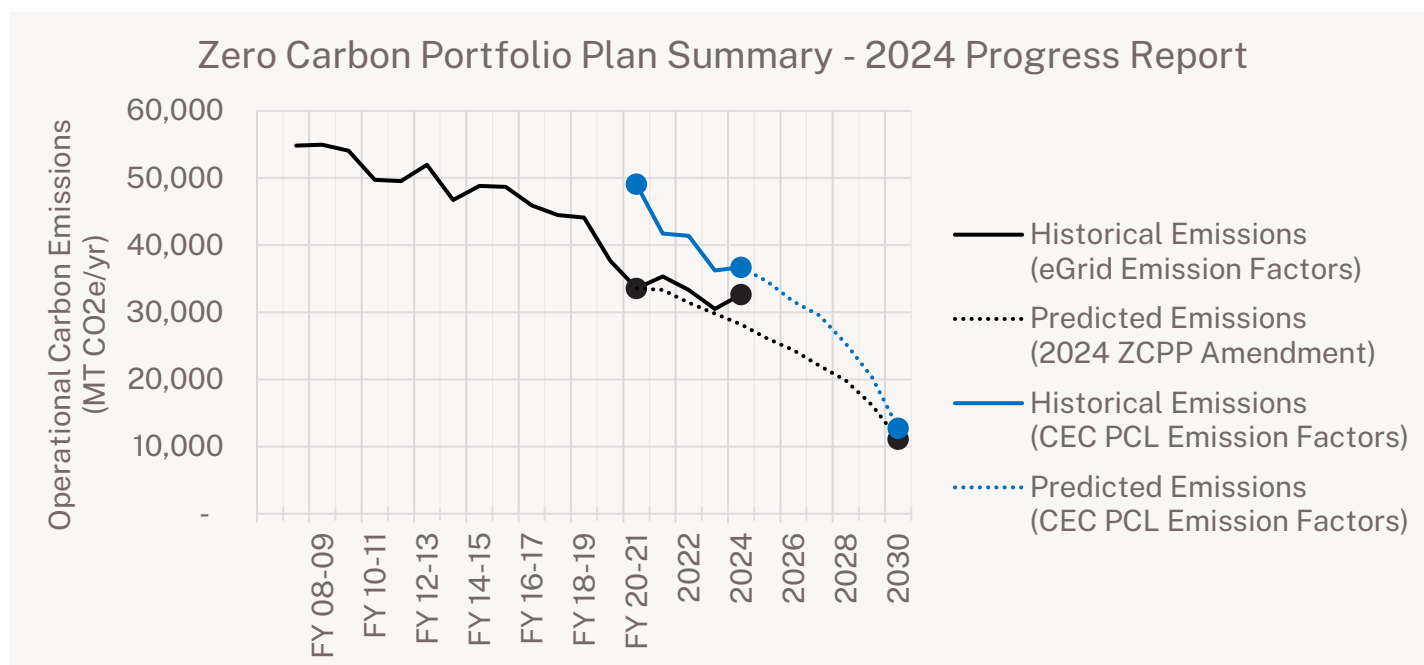


Figure 1: Zero Carbon Portfolio Plan Summary –2024 Progress Report. Going forward, emissions will be tracked and managed using the CEC PCL emission factors.

Note that 2023 and 2024 emissions are calculated using 2022 and 2023 emission factors, respectively (for both eGrid/CAMX and CEC PCL data sets), as those years were the most recent set of factors available at the time the annual GHG inventory is published. Going forward, it is expected that all annual calculations will use the prior year’s published emission factors –assuming that they are the most recent available –which is consistent with the calculation methodology described in the GHG Protocol (<https://ghgprotocol.org/standards-guidance>).

3 Target Realignment

As described in the previous chapters, this 2024 Progress Report includes significant changes in the application of emission factors - from a generalized eGrid factor to more specific and well-documented tariff-specific factors that more accurately reflect the carbon intensity of the chosen energy sources.

With the application of a new set of emission factors, it is appropriate to realign the 2030 target. It is not possible to re-calculate emissions back to the original FY 07-08 Baseline year since tariff-specific data is not readily available. Instead, the approach used in this realignment is to reference 2020 as a new interim year and set a target that will result in an equivalent percent reduction in emissions by 2030 relative to that interim year (2020) when applying the new emission factor data.

The 2024 ZCPP Amendment committed to an 80% reduction from FY 07-08, which required a 67% reduction from 2020 using the generalized eGrid emission factors. The updated target will be based on the same 67% reduction relative to 2020 emissions when calculated using the CEC PCL emission factors. This is demonstrated in the chart below. It is important to note that the ambition level of the County's decarbonization plan has not changed with this target realignment.

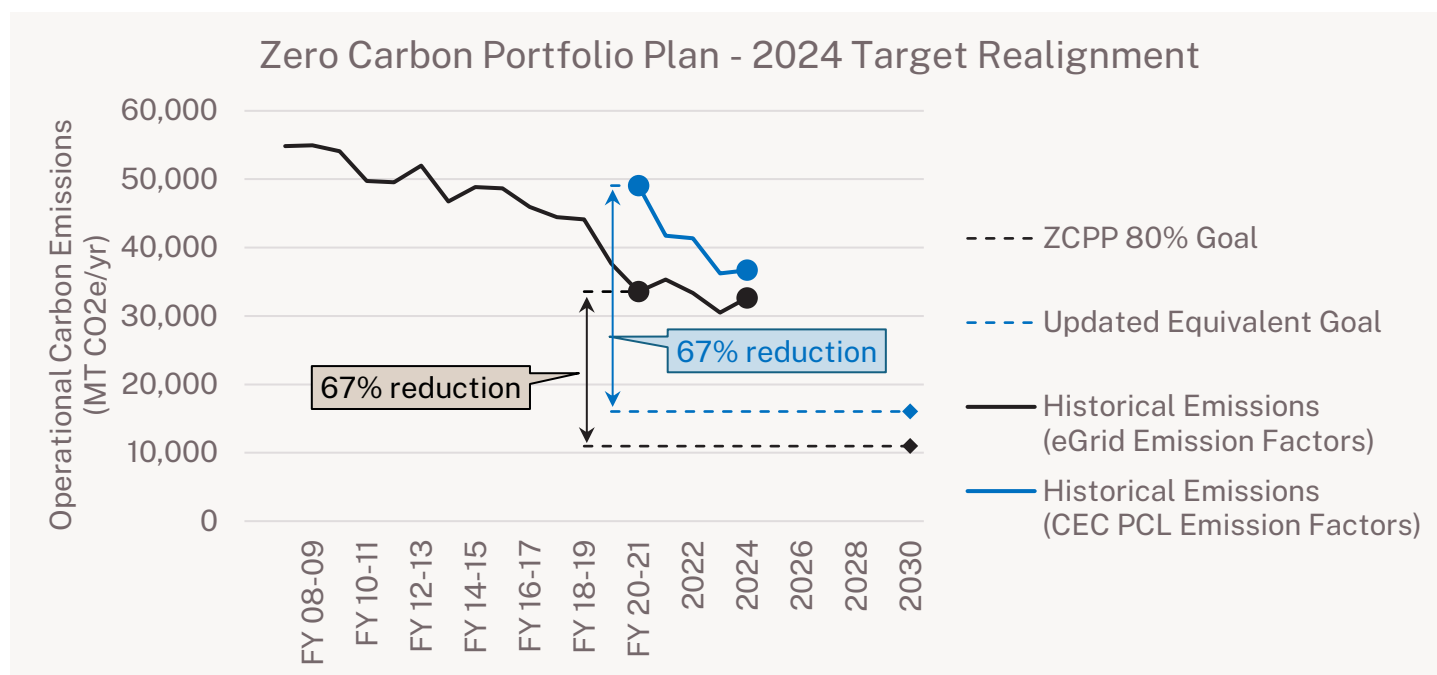


Figure 2: Zero Carbon Portfolio Plan –2024 Target Realignment. This graphic demonstrates that the ambition level of the County's decarbonization plan has not changed with this target realignment.

The key data and updated target are summarized in the table below

Projection	FY 07-08 Emissions (MT CO ₂ e/yr)	2020 Emissions (MT CO ₂ e/yr)	2030 Target (MT CO ₂ e/yr)
eGrid Emission Factors	54,843	33,565	10,969 (80% reduction vs 2007) (67% reduction vs 2020)
CEC PCL Emission Factors	N/A	49,065	16,033 (67% reduction vs 2020)

4 Business As Usual

For this 2024 Progress Report, a new go-forward Business As Usual (BAU) projection has been established. This projection is referred to as “BAU 2025 Forward” and represents the portfolio carbon emission trajectory between 2025 and 2030 if no further intentional decarbonization actions are taken. Consistent with the initial ZCPP, this BAU 2025 Forward projection is calculated with the following inputs:

- 1) Establish expectations for future changes to the County’s real estate footprint, including new developments, replacement facilities, and planned dispositions / demolitions (see table below)
- 2) Based on historical trends and industry research, add 0.3% per year for energy drift for both electricity and natural gas consumption
- 3) Based on historical trends and industry research, de-rate existing PV system production by 0.5% per year for typical losses over time

Project Name	Description	Year
COC Public Health Lab	New facility	2025
East County Crisis Stabilization Unit (CSU)	New facility	2025
Central Animal Shelter	Replace existing facility with new	2025
Bonsall Community Park	New facility	2026
Casa De Oro Library	Replace existing facility with new	2026
Health Services Complex	Planned demolition, no plans to rebuild	2026
Jacumba Fire Station	Replace existing facility with new	2027
Ramona Sheriff Station	Replace existing facility with new	2028

Annual forward-looking energy estimates are created using these inputs. Associated BAU operational carbon emissions are calculated by applying adjusted Carbon Risk Real Estate Monitor (CRREM) forecasts for grid cleaning. See chart below for BAU grid cleaning assumptions, using available 2023 emission factors as the baseline year.

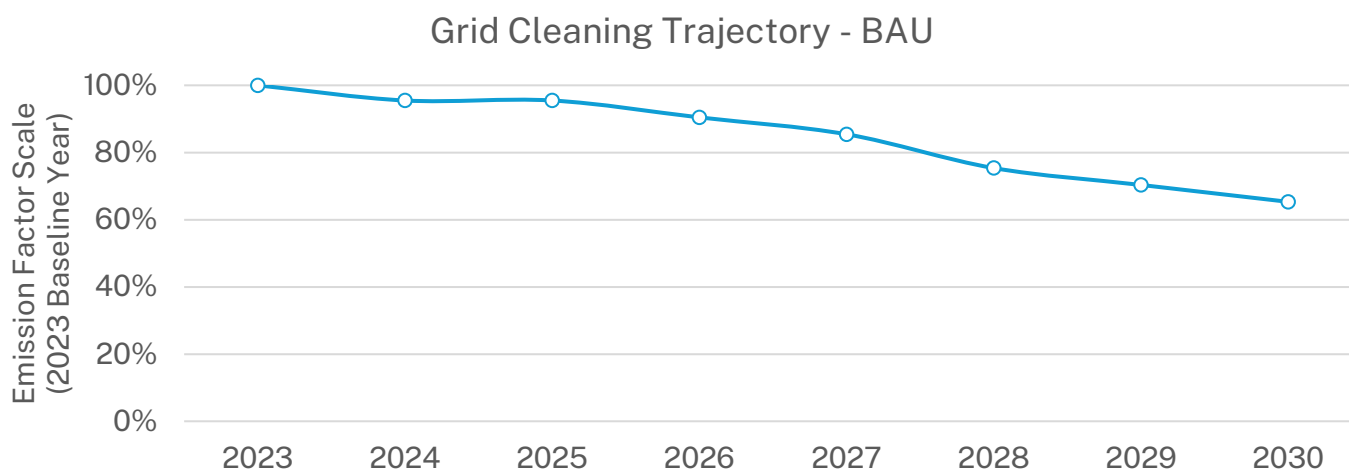


Figure 3: Grid Cleaning Trajectory –BAU. Adjusted Carbon Risk Real Estate Monitor (CRREM) forecasts for grid cleaning are shown relative to 2023 values.

5 Summary of Measures

This chapter provides a summary of key investments and actions — both completed and underway — within each Measure since the original publication of the ZCPP in 2022. It also outlines assumptions for future actions in support of the ZCPP target, along with updated estimates of carbon reductions by Measure based on the revised forward-looking plan.



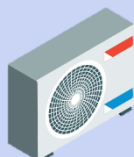
Measure 1: Green Energy Supply

Commit to purchasing increasingly renewable-sourced electricity from Community Choice Aggregation (CCA) programs and Direct Access (DA) agreements.



Measure 2: Building Electrification

Eliminate on-site combustion of fossil fuel by replacing fossil fuel burning equipment in existing buildings with electric equipment.



Measure 3: Energy Efficiency Projects

Reduce energy consumption at existing County-owned and occupied facilities through implementation of energy efficiency measures (EEMs).



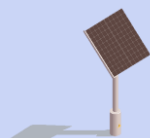
Measure 4: Proactive Energy Management

Reduce energy consumption by implementing ongoing monitoring of energy performance at all existing County facilities.



Measure 5: Zero Net Energy New Construction

Require all-electric, Zero Net Energy for all new construction capital projects.



Measure 6: Renewable Energy

Install photovoltaic (PV) systems and Battery Energy Storage Systems (BESS) on existing County properties.

Updated 2025-2030 Plan Summary

The six (6) measures being tracked and managed as part of the Zero Carbon Portfolio Plan were initially identified in response to:

- The additional focus on carbon emissions reduction for the portfolio.
- The recognition that although the electricity provided by the grid is getting cleaner, there are opportunities to go beyond that trajectory and accelerate the transition to clean electricity.
- The recognition that energy efficiency projects will remain important until the cleaner fuel mix of the future grid allows for significant reduction in emissions, amplified by electrification projects.

The table and chart below summarize updated estimates for measure-by-measure reductions between 2025 and 2030. These forward-looking reduction estimates have been updated since the initial ZCPP as documented in this 2024 Progress Report.

Measure	Estimated Carbon Reduction (Year 2030) (MT CO ₂ e/yr)	Cumulative Carbon Reduction (2025 through 2030) (MT CO ₂ e)
M1: Green Energy	12,500	23,450
M2: Electrification	450	1,900
M3: Energy Efficiency	750	3,200
M4: Proactive Energy Mgmt	1,000	4,400
M5: ZNE New Construction	200	950
M6: Renewable Energy	700	3,050
Total	15,600	36,950

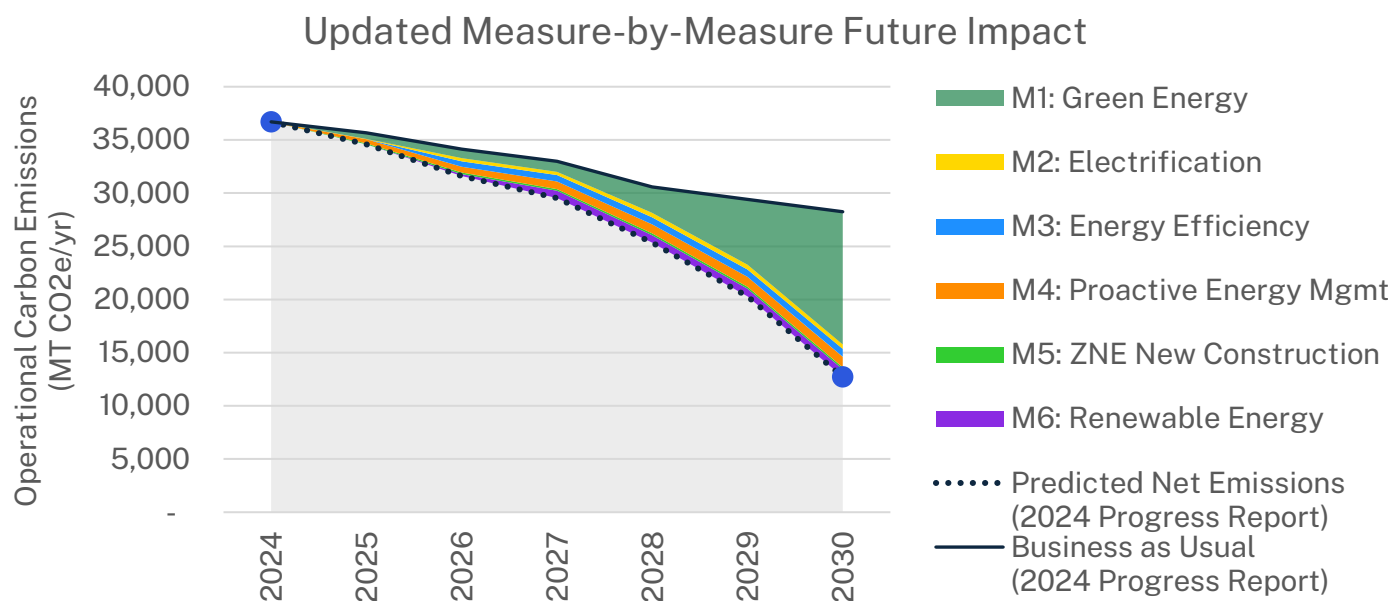


Figure 4: Updated Measure-by-Measure Future Impact. The expected contribution by Measure by year towards the overall targeted reduction in operational carbon footprint of the County's portfolio.

Measure 1: Green Energy Supply

Measure Summary: Commit to purchasing increasingly renewable-sourced electricity from Community Choice Aggregation (CCA) programs and Direct Access (DA) agreements.

Projects Completed (2022-2024)

The County has steadily increased the proportion of electricity procured through the two CCAs (CEA and SDCP), from 5% in 2022 to 17% in 2024. Each of the CCAs provides a default electricity tariff with a lower emission factor than either SDG&E or Calpine, and both offer 100% renewable tariffs.

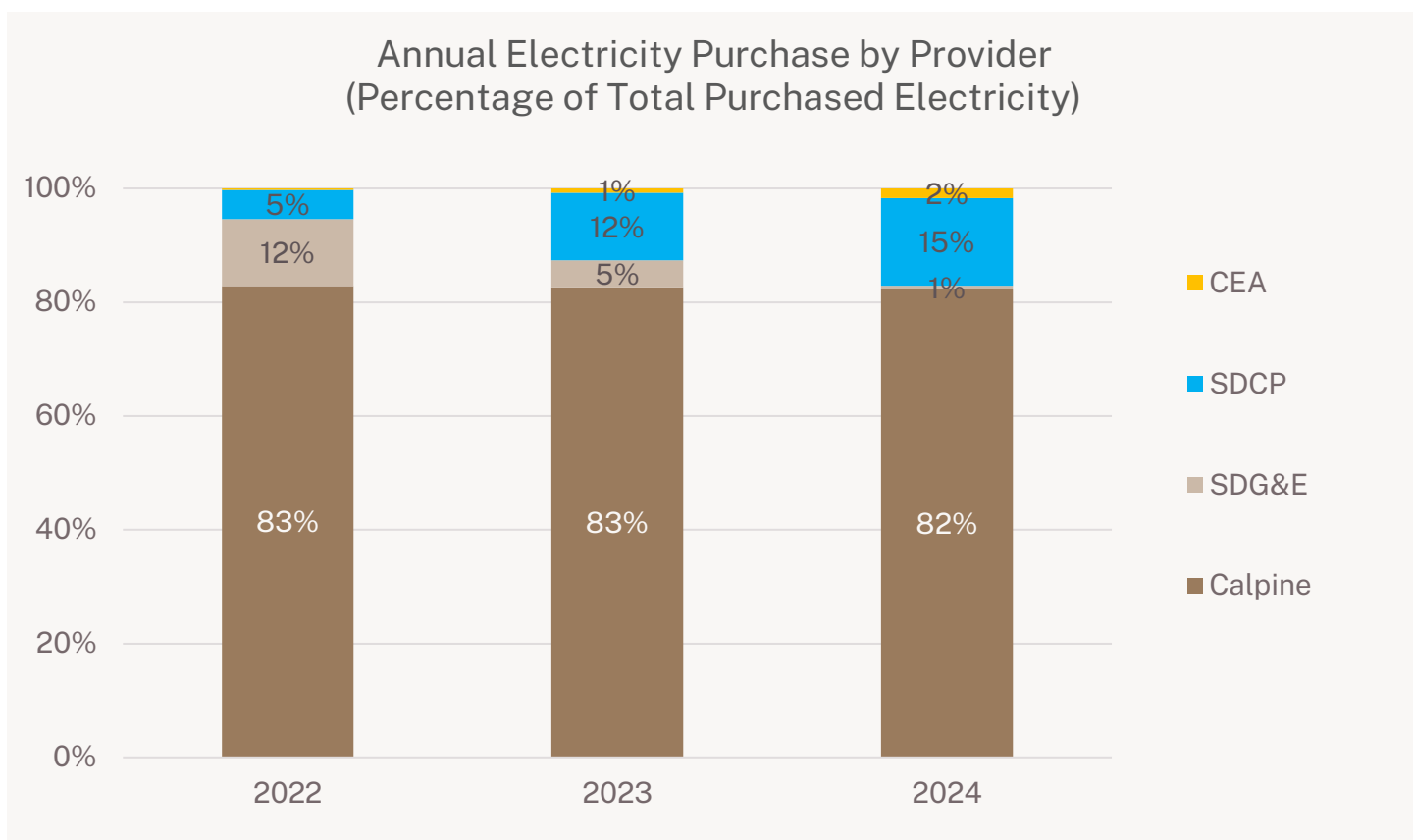


Figure 5: Annual Electricity Purchase by Provider. Includes only electricity purchased directly by the County for County-occupied spaces. Excludes estimated energy associated with leased spaces.

Provider/Tariff Name	Electricity Purchased (MWh; 2024)	Emission Factor (lbs/MWh; 2023 Data)
Calpine	71,803	598
SDG&E	532	537
SDCP		
SDCP PowerOn	4,318	460
SDCP Power100	9,104	0 (100% Renewable)
CEA		
CEA Clean Impact Plus	610	215
CEA Green Impact	881	0 (100% Renewable)
Other		
Acquisition Leases (est)	19,893	537 (Assume SDG&E default)
Billed Revenue Leases (est)	(6,671)	537 (Assume SDG&E default)
EMJDF PV PPA (RECs not retained)	4,738	537 (Assume SDG&E default)
Total	105,207	

Future Plan (2025 – 2030)

Consistent with the initial ZCPP, this measure includes the following future actions to reduce the carbon emissions associated with electricity consumption.

- Calpine: As part of this Measure, the County is committed to **accelerating the percentage of renewable-sourced electricity and will procure 100% renewable-sourced electricity from Calpine by 2030**. Ramping to 100% renewable electricity can be accelerated if needed.
- SDG&E: As part of this measure, it is assumed that **all applicable electricity that is currently provided by SDG&E will be enrolled in CCAs by 2030 and the County will elect at that time to procure 100% renewable-sourced electricity** in alignment with the commitments for current CCA procurement. There may be electricity that is still procured from SDG&E in 2030, and in those cases, this plan assumes that emissions from SDG&E will follow the BAU trajectory based on adjusted CRREM pathways (see Chapter 4, Business As Usual)
- SDCP and CEA (and future CCAs if applicable): As part of this Measure, the County is committed to **transitioning to 100% renewable-sourced electricity by 2030 for all facilities on a CCA**. The County Board of Supervisors has provided direction to attain 100% renewable electricity by 2030 via CCA Guiding Principles.

As individual facilities may change utility providers over time, and as the utility-specific renewable strategy is not known in detail, a simplified approach to modeling this measure was applied for this plan. A curve was developed to represent the planned accelerating transition towards 100% renewable electricity by 2030. This graph shows the planned intentional expected reduction of emission factor by year starting with most current available data (2023 year).

The trajectory of the non-100%-renewable tariffs from CCAs can be accomplished by intentionally switching to those providers' 100% renewable tariffs. As of May 2024, all energy procured from SDCP has been switched to the 100% renewable Power100 plan. Accounts on CEA's Clean Impact tariff will be transitioned to the 100% renewable Green Impact tariff when possible.

The trajectory of Calpine-procured electricity should be negotiated with Calpine as contracts are renewed.

Any electricity still procured directly from SDG&E is assumed to follow the adjusted CRREM pathways and may not achieve 100% renewable by 2030 due to lack of options provided by the utility.

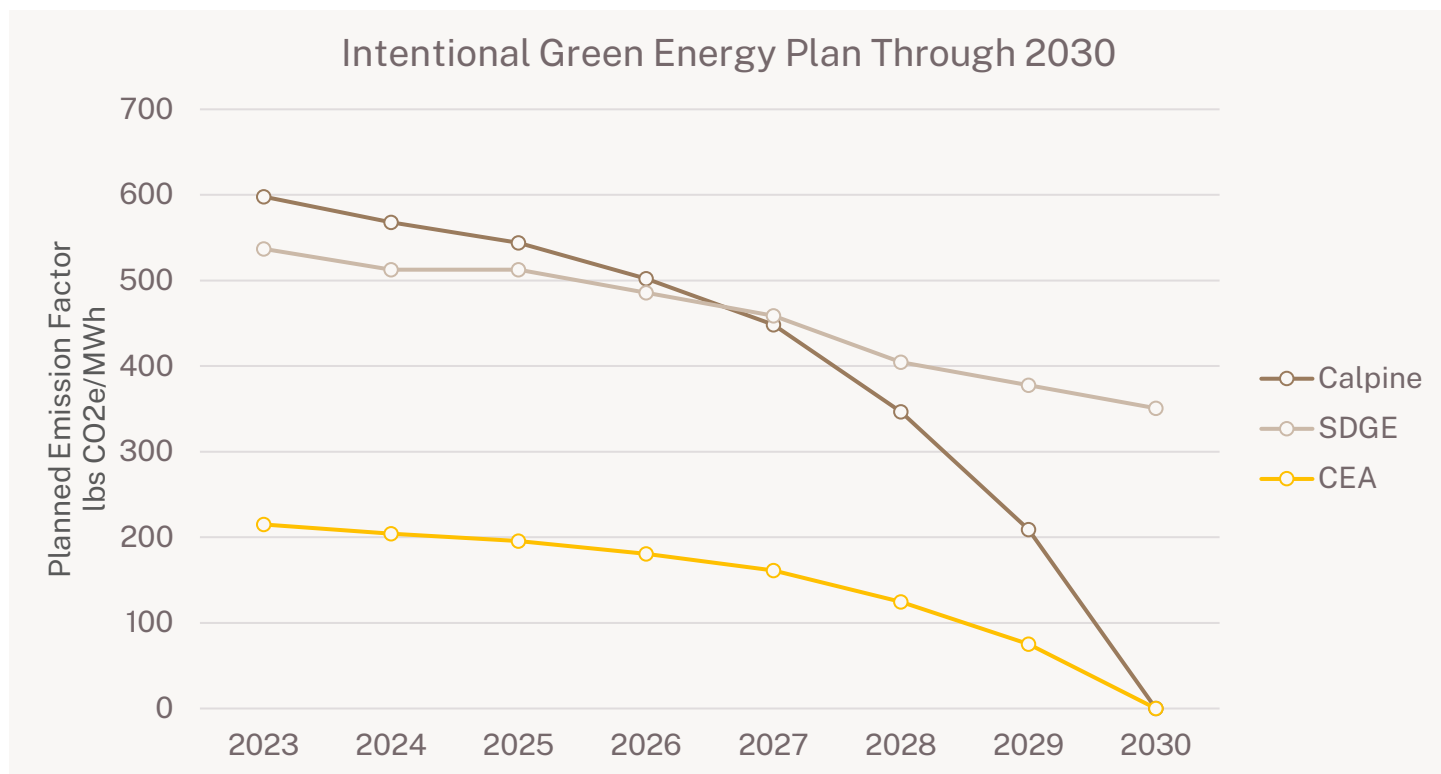


Figure 6: Intentional Green Energy Plan Through 2030. Electricity procured from Calpine and any CCA will be shifted towards 100% renewable tariffs by 2030. All electricity procured from SDCP was transitioned to 100% renewable energy by mid-2024.

Finally, since tariff-specific information is not readily available for energy consumption associated with acquisition leases, the GHG inventory and this Progress Report calculate emissions using the default SDG&E emission factors. The County will explore options to improve data quality, efficiency, electrification, and renewable energy content at these sites.

Measure 2: Building Electrification

Measure Summary: Eliminate on-site combustion of fossil fuel by replacing fossil fuel burning equipment in existing buildings with electric equipment.

Projects Completed (2022 – 2024)

Building Name	Project Description	Year Completed
COC Campus- NW Tower	Electrification feasibility study	2023
Fallbrook Library	Electrification feasibility study	2023
SBRC	Electrification feasibility study	2023
SBRC Chula Vista Court Jail	Electrification feasibility study	2023
COC Campus- Registrar of Voters	Electrification feasibility study	2023
HHSA Ruffin Road	Electrification feasibility study	2023
COC Campus- Medical Examiner	Electrification feasibility study	2023
Spring Valley Park Comm Center	Electrification feasibility study	2023
East Mesa Juvenile Detention (EMJDF)	Electrification feasibility study	2023
Cardiff by the Sea Library	Electrification feasibility study	2022
COC Campus- Bldg 207 (Commons)	Electrification feasibility study	2023
COC Campus- Bldg 300 (Shop)	Electrification feasibility study	2023
COC Campus- Fleet Facility	Electrification feasibility study	2023
Edgemoor Hospital & Skilled Nursing	Electrification feasibility study	2023
North County Animal Shelter	Electrification feasibility study	2023
Polinsky Children's Center	Electrification feasibility study	2023
San Marcos Road Maintenance Station (RMS)	Electrification feasibility study	2023
East Mesa Detention Facility & Plant (EMDF)	Electrification feasibility study	2024
Hall of Justice	Electrification feasibility study	2024
North County Regional Center	Electrification feasibility study	2024
Rancho SD Sheriff Station	Electrification feasibility study	2024
San Diego Law Library	Electrification feasibility study	2024
County Admin Center	Electrification feasibility study	2024

Projects In Progress

Building Name	Project Description	Estimated Natural Gas Savings (therms/yr)	Estimated New Electricity (kWh/yr)	Completion Planned
Julian Library	Replace rooftop units	(4,750)	71,250	2025
North County Animal Shelter	Replace 4 packaged RTUs	(9,500)	142,500	2025

Future Plan (2025 – 2030)

Building Name	Project Description	Estimated Natural Gas Savings (therms/yr)	Estimated New Electricity (kWh/yr)	Completion Planned
North County Animal Shelter	Replace (3) packaged RTUs	(7,000)	105,000	2026
HHSA Ruffin Road	DHW heater electrification scope only	(1,700)	25,500	2026
North Coastal Sheriff Station	DHW heater electrification scope only	(3,200)	48,000	2026
North County Regional Center	Phase 1: replace (1) gas boiler with electric resistance Phase 2: DHRC	(138,000)	2,070,000	2026
South Bay Regional Center	Pilot for in-line gas boiler load reduction strategy, or DHRC	(40,000)	600,000	2028
Gillespie Field Airport	DHW heater electrification scope only	(200)	3,000	2028

Measure 3: Energy Efficiency Projects

Measure Summary: Reduce energy consumption at existing County-owned and occupied facilities through implementation of energy efficiency measures (EEMs). Increasing efficiency of existing building stock will be critical to meeting overall GHG reduction targets.

Projects Completed (2022-2024)

Building Name	Project Description	Year Completed
Hazard Way Buildings	LED lighting retrofit projects	FY 21-22
Spring Valley Gym/Teen Ctr	Portfolio audit measures – lighting project	FY 21-22
Julian Library	Portfolio audit measures – lighting project	FY 21-22
Alpine Sheriff Station	Portfolio audit measures – lighting project	FY 21-22
ASTREA	Portfolio audit measures – lighting project	FY 21-22
El Cajon FRC	Portfolio audit measures – lighting project	FY 21-22
Law Library	MMIP – Lighting project	FY 21-22
COC Buildings 201-204	LED lighting retrofit projects	FY 21-22
NCRC	MMIP – Lighting project	FY 23-24
LCDRF	MMIP – Lighting project	FY 23-24
Lakeside Community Center	Portfolio audit measures – lighting project	FY 23-24
Borrego Valley Airport	Portfolio audit measures – lighting project	FY 23-24
Gillespie Field Airport	Portfolio audit measures – lighting project	FY 23-24
Palomar Airport	Portfolio audit measures – lighting project	FY 23-24
Ramona Airport	Portfolio audit measures – lighting project	FY 23-24
Polinsky Children’s Center	LED lighting retrofit projects	FY 24-25

Projects In Progress

Building Name	Project Description	Estimated Electricity Savings (kWh/yr)	Estimated Natural Gas Savings (therms/yr)	Completion Planned
Hall of Justice	Major systems renovation project (assume 20% energy savings)	(1,000,000)	(16,000)	2025
CAC	Major systems renovation project (assume 20% energy savings)	(580,000)	(13,000)	2026

Future Plan (2025 – 2030)

The County will continue this successful measure to decrease energy consumption in existing facilities. This measure will be implemented by completing initial investigations/audits to determine the most cost-effective opportunities.

Examples of energy reduction measures include upgrading existing lighting to LED, adding smart lighting controls, upgrading HVAC equipment to more efficient systems, demand response, etc.

Based on reduced opportunities for major projects in the future, planned future savings are assumed to be limited and decreasing over time.

Planned future savings are based on initial estimates in the original 2022 ZCPP.

Building Name	Project Description	Estimated Electricity Savings (kWh/yr)	Estimated Natural Gas Savings (therms/yr)	Completion Planned
2027 project site(s) TBD	Energy Efficiency	(280,000)	(7,000)	2027
2028 project site(s) TBD	Energy Efficiency	(240,000)	(6,000)	2028
2029 project site(s) TBD	Energy Efficiency	(200,000)	(5,000)	2029
2030 project site(s) TBD	Energy Efficiency	(160,000)	(4,000)	2030

Case Study: CAC Major Systems Renovation Project



Image: County Administration Center

The County Administration Center (CAC) Major Systems Renovation Project began in 2019 and is being carried out in phases to minimize impact to operations. The renovation consists of the replacement of life safety, mechanical, electrical, plumbing, and architectural items to ensure current safety standards. The project also includes the complete remodel of the Board Chamber with state-of-the-art audio-visual system (now complete), restoration of historic windows, preservation of historic significant features, updated fire alarm system, fire sprinklers throughout, new LED interior lighting, ceilings, exterior painting of the building, rooftop fall restraint systems, new roofing, new emergency generator, new security system, renovation of elevators, and building wide seismic retrofit.

Location: 1600 Pacific Hwy, San Diego, CA 92101

Completion Expected: 2025-2026

Services

- Birth and Death Certificates
- Marriage
- Passports
- Recording and Property Records
- Taxes
- Waterfront Park

Sustainability

- Extend the useful life of the CAC
- Avoid potential failures that would impact the community should this building be taken out of service
- Ensure the safety and integrity of this National Register of Historic Places (NRHP) building
- Full system replacements and upgrades to meet State of California Title 24 energy standards

Measure 4: Proactive Energy Management

Measure Summary: Reduce energy consumption by implementing ongoing monitoring of energy performance at all existing County facilities.

Projects Completed (2022-2024)

Building Name	Project Description	Year Completed
Palomar Airport	RCx Project	FY 23-24
East Mesa Re-entry Facility (Housing Unit 1 & 2)	RCx Project	FY 23-24
NCRC	RCx Project (Reduced Scope)	FY 23-24
El Cajon FRC	RCx Project	FY 24-25

Projects In Progress

Building Name	Project Description	Estimated Electricity Savings (kWh/yr)	Estimated Natural Gas Savings (therms/yr)	Completion Planned
South Bay Regional Center	RCx Project	(150,000)	(10,000)	2025
Lakeside Community Center	RCx Project	(7,500)	-	2025
Las Colinas	RCx Project	(700,000)	(24,500)	2025

Future Plan (2025 – 2030)

The County will continue this successful measure to monitor ongoing energy performance through submeter and equipment data that is trended in the central Building Automation System (BAS). Access to that data in the BAS and in the Atrius dashboard allows the County to implement RCx and MBCx activities for all buildings that are connected to the system.

Planned future savings are based on initial estimates in the original 2022 ZCPP, reduced by 50% as a conservative estimate.

Building Name	Project Description	Estimated Electricity Savings (kWh/yr)	Estimated Natural Gas Savings (therms/yr)	Completion Planned
2026 project site(s) TBD	MBCx/RCx	(420,000)	(14,250)	2026
2027 project site(s) TBD	MBCx/RCx	(410,000)	(14,000)	2027
2028 project site(s) TBD	MBCx/RCx	(400,000)	(13,750)	2028
2029 project site(s) TBD	MBCx/RCx	(390,000)	(13,500)	2029
2030 project site(s) TBD	MBCx/RCx	(380,000)	(13,250)	2030

Measure 5: Zero Net Energy New Construction

Measure Summary: Require all-electric, Zero Net Energy (ZNE) for all new construction capital projects.

Projects Completed (2022 – 2024)

The following projects were designed as all-electric and Zero Net Energy. Not all buildings listed have historically operated at ZNE.

Building Name	Project Description	PV System Size (kW DC)	Year Completed
Ohio Street Community Support Facility	Replace existing facility with new	85	2022
Youth Transition Center Ph 1	Replace existing facilities with new	653	2023
Lakeside Library	Replace existing facility with new	82	2023
Southeastern Live Well Center	Replace existing facility with new	465	2023
East Otay Mesa Fire Station	Replace existing facility with new	92	2023
Youth Transition Center Ph 2	Replace existing facilities with new	291	2024
Ramona Community Resource Center	Replace existing facilities with new	58	2024
COC Parking Structure B2	Addition to existing Fleet Facility. PV production allocated to Public Health Lab	561	2024

Projects In Progress

Building Name	Project Description	Estimated PV System Size (kW DC)	Completion Planned
COC Public Health Lab	New facility	138	2025
East County Crisis Stabilization Unit (CSU)	New facility	52	2025
Central Animal Shelter	Replace existing facility with new	204	2025
Casa De Oro Library	Replace existing facility with new	65	2026
Jacumba Fire Station	Replace existing facility with new	96	2027
Ramona Sheriff Station	Replace existing facility with new	171	2028

Case Study: Jacumba Fire Station 43



Image: Rendering of Jacumba Fire Station 43

The County of San Diego is currently in the design phase of a new 7,800 square foot fire station, located in the Jacumba community. The new state-of-the-art Jacumba Fire Station (FS) will serve as a vital civic resource for fire and life safety. It will provide essential emergency response services, ensuring rapid and efficient handling of fire incidents and medical emergencies.

This facility will support the diverse needs of Jacumba's residents by offering reliable protection and peace of mind. The fire station's presence will contribute to the overall safety and resilience of the area, reinforcing Jacumba's vision of a community that balances growth with the preservation of its rural, small-town character and natural environment.

The Jacumba FS will include 2 apparatus bays (double deep), a lobby, an office, 6 dormitory rooms, restrooms, a kitchen, a dining room, a day room, a gym, a solar photovoltaic panel energy collection system and battery storage system, and parking spaces, among other ancillary improvements.

Location: 44850 Old Highway 80, Jacumba, CA 91934

Expected Completion: 2027

Services

- Provide medical aid, hazardous material spills, swift water rescues, and search and rescue missions
- Support during civil disturbances, train wrecks, floods, earthquakes, and more
- Safe surrender site
- Fire rescue

Sustainability

- The project will attain Leadership in Energy and Environmental Design Gold certification, LEED Gold.
- The building will be Zero Net Energy, which means the building will create as much energy as it consumes each year.
- The project will be designed with 30% of embodied carbon reduction, which means reducing the carbon footprint associated with the materials used in construction.

Measure 6: Renewable Energy

Measure Summary: Install photovoltaic (PV) systems and Battery Energy Storage Systems (BESS) on existing County properties.

PV systems associated with the development of new net zero buildings are captured in Measure 5, above.

Projects In Progress

Building Name	Project Description	Estimated PV System Size (kW DC)	Completion Planned
Fallbrook Library	Replace green roof with PV & add parking lot PV	233	2026

Future Plan (2025 – 2030)

Building Name	Project Description	Estimated PV System Size (kW DC)	Completion Planned
COC Parking Structure A	Purchase existing hosted SDG&E-owned system or replace	425	2026
Las Colinas	Power Purchase Agreement (PPA) for PV + 979 kW battery storage	1,900	2027



Image: PV system located at COC Parking Structure A

The chart below shows the growing percentage of total electricity consumption provided either directly by on-site renewable energy (PV systems) or from grid-provided renewable energy. In 2024, renewable sources provide approximately 58% of total electricity consumed across the portfolio.

The renewable fraction of grid-supplied electricity is based on the eligible renewable percentages documented on the Power Content Labels (PCL) published annually by the California Energy Commission (CEC), not the Renewable Portfolio Standard (RPS). Each year shown uses the prior year's PCL data.

As described by the [City of Roseville, CA](#), the PCL and the RPS requirements “are both tools that inform and drive clean energy usage in California. However, they differ in purpose, scope, and how they assess energy sources for utilities, including municipal utilities.

PCL Reporting: The Power Content Label shows the energy sources used to meet demand and it is designed to give consumers a transparent view of the actual energy mix that a utility provides over a specific reporting year. It breaks down sources by category.

RPS Compliance: The RPS, in contrast, is a regulatory mandate requiring a specified percentage of a utility's electricity to come from renewable resources. RPS focuses specifically on renewable resources that qualify under California law (e.g., solar, wind, biomass). RPS compliance also allows for “banking” credits or using renewable energy certificates (RECs) to meet targets.

Therefore the renewable percentage on the PCL can be different from the RPS-compliant percentage, as the PCL is based on the utility's actual power mix that reaches customers.”

For the purposes of trending renewable electricity sources across the County portfolio over time in this report, the renewable percentage on the PCL was used because it provides consistent easily accessible tariff-specific data for all County electricity providers over several years.

Note: The dip in grid-supplied renewable energy in 2023 is due to a decrease in the eligible renewable percentage documented by Calpine in the 2022 PCL.

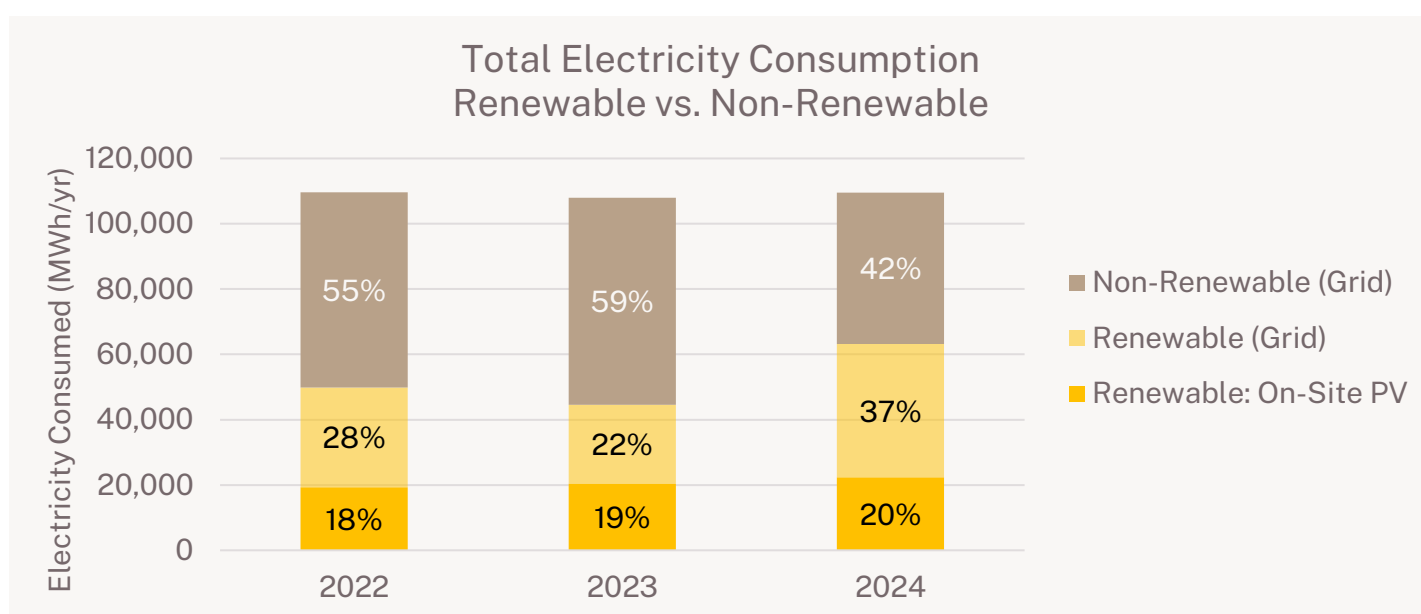


Figure 7: Total Electricity Consumption, Renewable vs. Non-Renewable. It is expected that future years will see increasing renewable-sourced electricity.

Appendix A: Emissions Factors

The original 2022 ZCPP, the 2024 ZCPP Amendment, and this 2024 Progress Report all use a market-based methodology to calculate operational emissions. This appendix summarizes the source and values of the emission factors used.

The chart below shows the emission factors for the two data sets referenced in this report. Going forward, for each year that emissions are calculated, the prior year's published factors will be applied to the current year's energy data. This is due to the delay in availability of published emission factors, and is consistent with the GHG Protocol.

- eGrid/CAMX: The solid black line shows the published CAMX emission factors dating back to 2007. These published factors (through 2019) were used in the original ZCPP. It was assumed that these trajectories would continue the downward trajectory as shown in the back dashed line. Instead, actual emission factors for CAMX increased for several years after 2019 and are only now coming down to 2019 levels.
- CEC PCL: The colored lines show the emission factors published in the Power Content Labels (PCL) by the California Energy Commission (CEC). These factors will be used for future ZCPP annual progress reports and are consistent with the County's annual GHG inventory. Not shown are the 100% renewable tariffs from the CCAs: SDCP Power100 and CEA Green Impact.

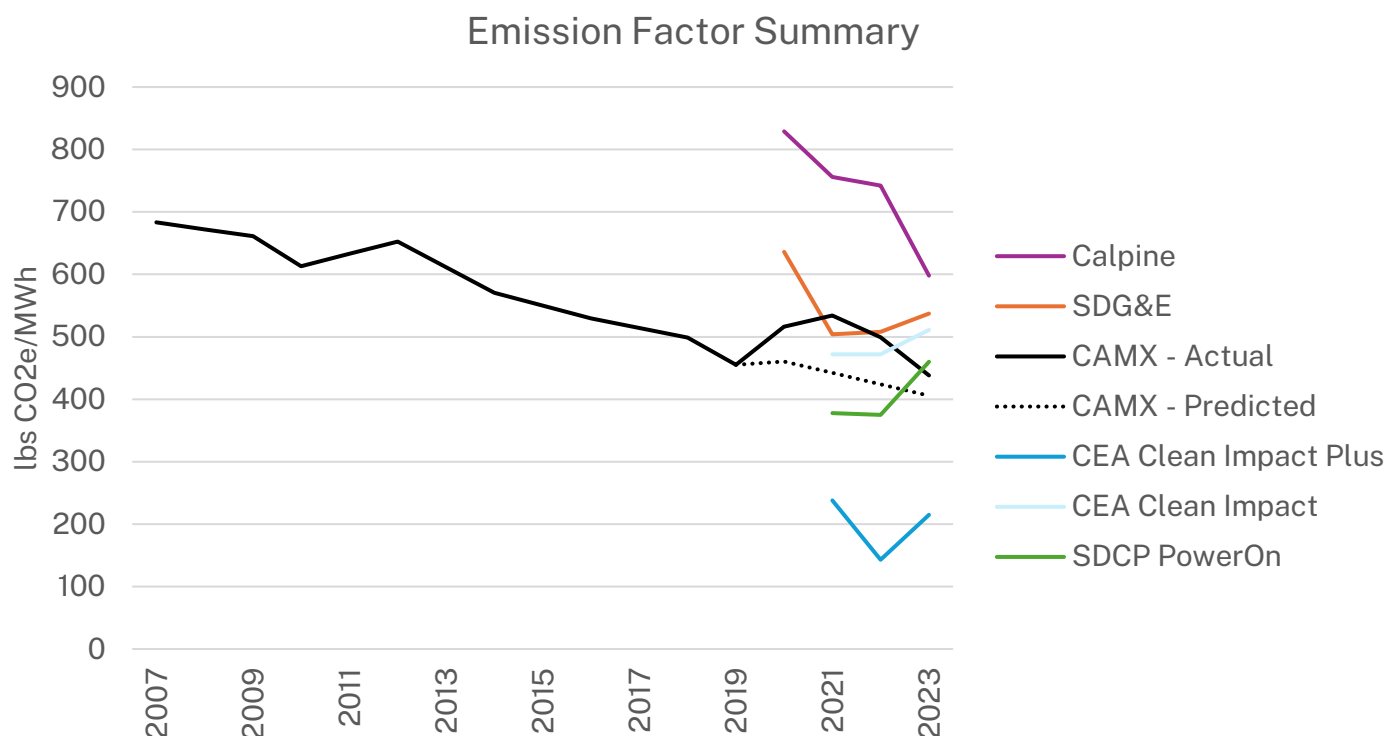


Figure 8: Emission Factor Summary. The CEC PCL values for Calpine, SDG&E, CEA, and SDCP more accurately reflect the carbon intensity of chosen energy sources.