MEMORANDUM

DATE March 11, 2022

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FROM Tammy L. Seale, PlaceWorks, Climate Action and Resilience Principal
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SUBJECT Attachment 2: Climate Action Plan Update – Draft Greenhouse Gas Forecast, Existing Reductions, and Target Setting

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Introduction

PlaceWorks is working with Contra Costa County (the County) to prepare the County's 2022 Climate Action Plan (2022 CAP) for the unincorporated county. The 2022 CAP is a plan to reduce greenhouse gas (GHG) emissions and improve community resilience to hazardous conditions associated with climate change. The 2022 CAP is an update to the County 2015 CAP, and it is part of the overarching Envision Contra Costa 2040 project, which is the County's General Plan update. Envision Contra Costa 2040 is the County's document to guide future growth and development in the unincorporated area, as well as County operations and decisions through 2040. As part of this work, PlaceWorks has been preparing an updated forecast of future GHG emissions, an assessment of existing and planned GHG reduction programs, and an analysis of potential GHG reduction targets for the unincorporated area. The GHG reduction strategies in the CAP will build on this projection of future emissions and reductions achieved by existing and planned programs, demonstrating a viable path for the County to achieve its GHG emission reduction targets. The proposed GHG emission reduction targets in this memo are recommendations, not final determinations. Staff will ask the Sustainability Committee of the Contra Costa County Board of Supervisors to consider and provide guidance on these recommended targets, including direction on opportunities to achieve further GHG emission reductions should the Sustainability Committee suggest targets that exceed State guidance.

Community-Wide GHG Emissions Forecast

The draft forecast of community-wide GHG emissions for the unincorporated area is based on the results of the 2019 community GHG emissions inventory. The project team combined these emissions with unincorporated Contra Costa County's 2019 demographics and projections of future demographics, developed as part of the Envision Contra Costa 2040 buildout calculations, to identify the expected future GHG emissions for the community. The project team forecasted GHG emissions for the calendar years 2030, 2040, and 2050 looking both at absolute (total) and per-capita (per-person) emissions for these years.

For many sectors, the draft GHG forecast assumes that each person in the unincorporated area will continue to contribute the same amount of GHG emissions as they did in 2019, so that the amount of GHG emissions increases proportionally to demographic growth. There are some sectors that are not projected this way:

- Transportation, which is projected using a regional traffic demand model based partially on demographics and partially on the location of various land uses.
- Agriculture, which is forecast using future land use projections for the amount of agricultural land in the unincorporated area.
- Land use and sequestration, which is forecast using future land use projections for developed land, forested land, and any agricultural and open space land that is developed.
- Within the off-road equipment sector, emissions from construction and mining equipment are projected using the rate of population and job growth, emissions from industrial equipment are projected using future land use projections for industrial land, and emissions from Transportation Refrigeration Units are projected using the proportion of county-wide road miles in the unincorporated area.

The forecast does not project any change in activity or GHG emissions for alternative home heating fuels (propane, kerosene, and wood), direct access electricity, cargo-handling equipment, or oil drilling equipment. Additionally, emissions for the two informational sectors (stationary sources and wildfires) are not forecasted, owing to their informational and substantial uncertainty in projecting future activities for these sectors. These GHG emissions do not have a demographic indicator that staff can use to reasonably project the volume of these emissions in the future, particularly given that they are informational items and not included in the total community-wide emissions. Table 1 shows the demographic projections and their sources for the unincorporated area.

Table 1: Demographic Projections, 2019 – 2050

Demographic	2019	2030	2040	2050	Percentage Change, 2019-2050	Source
Population	174,150	199,600	242,070	293,570	69%	ABAG/MTC, Envision Contra Costa 2040
Households	60,320	70,040	83,080	98,560	63%	ABAG/MTC, Envision Contra Costa 2040
Jobs	38,760	45,690	50,600	56,040	45%	US Census Bureau, Envision Contra Costa 2040
Service population *	212,910	245,290	292,670	349,610	64%	ABAG/MTC, US Census Bureau, Envision Contra Costa 2040

* Service population is the sum of population and jobs

All numbers are rounded to the nearest 10.

ABSOLUTE GHG EMISSIONS FORECAST

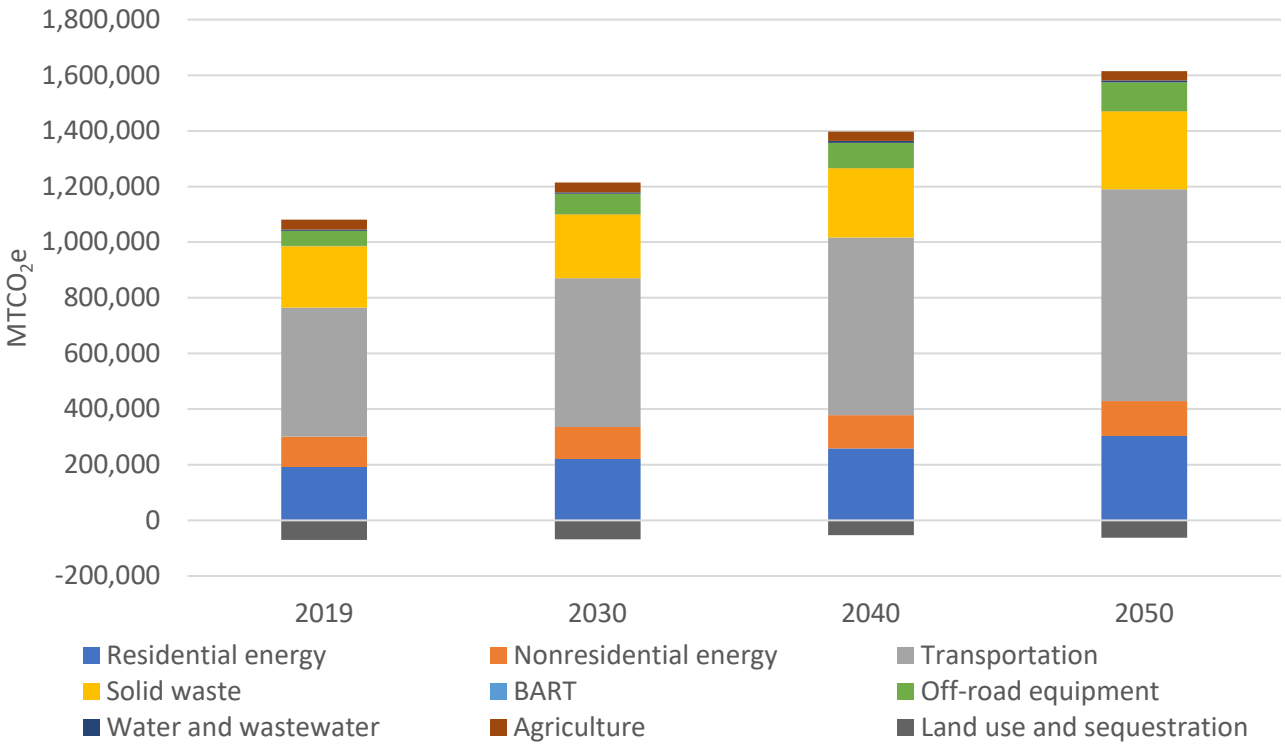
Table 2 and Figure 1 show unincorporated Contra Costa County's projected future GHG emissions relative to the 2019 inventory. Most sectors show an increase in GHG emissions due to the growing population. Agricultural emissions decrease because the amount of land use for agricultural purposes is projected to decline. Although the land use and sequestration sector is expected to remain a net carbon sink (negative emissions), the amount of emissions sequestered (removed from the atmosphere) by the activities in this sector are projected to decline. This is due to anticipated development of currently undeveloped land, removing the potential for this land to sequester carbon. Sequestration in forested and urbanized areas is projected to increase slightly.

Table 2: Absolute GHG Emissions Forecast, 2019 – 2050

Sector	2019	2030	2040	2050	Percentage Change, 2019-2050
Transportation	464,040	534,610	637,880	761,980	64%
Residential energy	191,780	220,130	258,150	303,300	58%
Nonresidential energy	109,370	115,670	120,130	125,080	14%
Solid waste	220,760	229,820	249,820	280,640	27%
Agriculture	36,130	34,770	33,410	33,410	-8%
Off-road equipment	54,010	73,260	90,420	102,530	90%
Water and wastewater	4,870	5,610	6,700	7,990	64%
BART	190	220	260	310	63%
Land use and sequestration	-70,860	-67,580	-52,970	-62,330	-12%
Total Annual $MTCO_2e$	**1,010,290**	**1,146,510**	**1,343,800**	**1,552,910**	**54%**

All numbers are rounded to the nearest 10. Due to rounding, totals may not equal the sum of the individual values.

Figure 1: Absolute GHG Emissions Forecast, 2019 – 2050



PER-CAPITA GHG EMISSIONS FORECAST

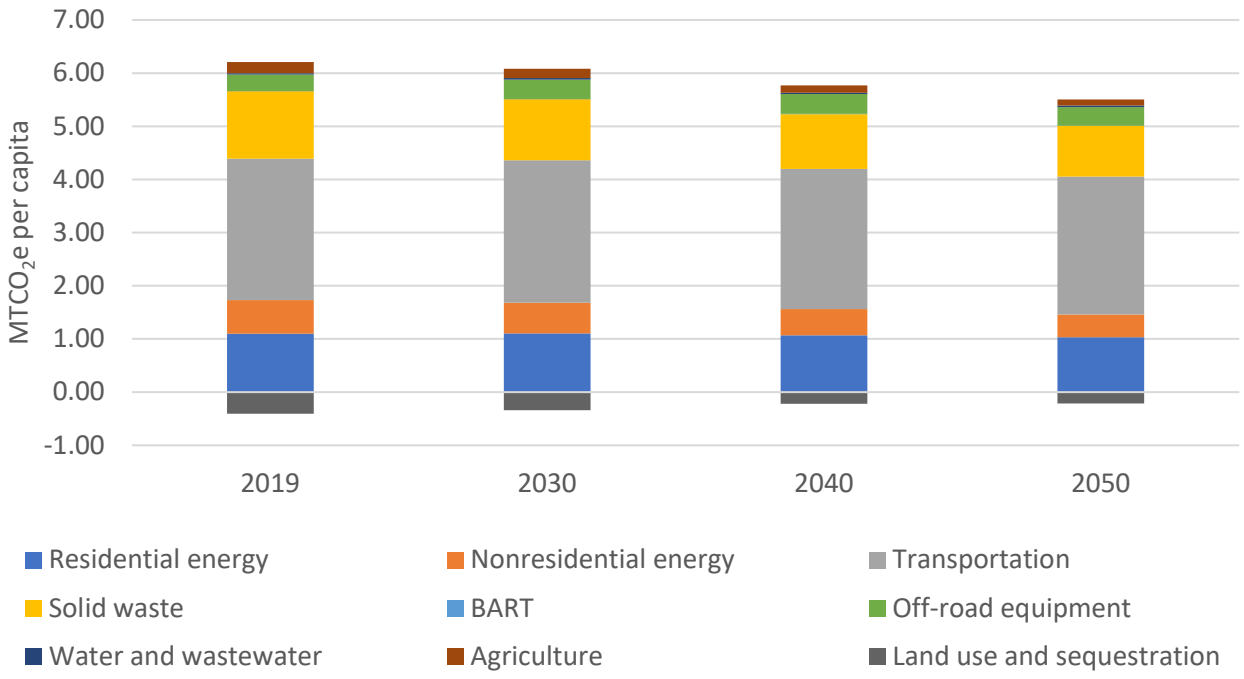
In addition to the absolute emissions discussed in the previous section, the forecast also assessed per-capita (per-person) emissions. These emissions are per-resident population, as projected by Envision Contra Costa 2040, as shown in **Table 1**. **Table 3** and **Figure 2** show projected per-capita GHG emissions for unincorporated Contra Costa County.

Table 3: Per-Capita GHG Emissions Forecast, 2019 – 2050

Sector	2019	2030	2040	2050	Percentage Change, 2019-2050
Transportation	2.66	2.68	2.64	2.60	-3%
Residential energy	1.10	1.10	1.07	1.03	-6%
Nonresidential energy	0.63	0.58	0.50	0.43	-32%
Solid waste	1.27	1.15	1.03	0.96	-25%
Agriculture	0.21	0.17	0.14	0.11	-45%
Off-road equipment	0.31	0.37	0.37	0.35	13%
Water and wastewater	0.03	0.03	0.03	0.03	-3%
BART	Less than 0.01	Less than 0.01	Less than 0.01	Less than 0.01	-3%
Land use and sequestration	-0.41	-0.34	-0.22	-0.21	-48%
Total Annual Per-Capita $MTCO_2e$	**5.80**	**5.74**	**5.55**	**5.29**	**-9%**

Due to rounding, totals may not equal the sum of the individual values.

Figure 2: Per-Capita GHG Emissions Forecast, 2019 – 2050



Although overall emissions are expected to increase, per-capita emissions are expected to decline slightly from 2019 to 2050. This is because the number of residents is expected to increase faster than other demographic metrics used in the forecast (households, jobs, and service population). Additionally, since some sectors and subsectors assume no change in emissions or only minor changes based on land use patterns, this translates to a decrease in per-capita emissions for those sectors.

State and Regional GHG Emission Reductions

California has adopted and committed to implementing policies to decrease GHG emission levels statewide, including from several of the major GHG emission sources present in the unincorporated areas of Contra Costa County. Many of these policies are identified in California's Climate Change Scoping Plan (Scoping Plan), which was originally adopted in 2008 in response to the California Global Warming Solutions Act (Assembly Bill, or AB, 32). The Scoping Plan outlines several regulations and market-based solutions to achieving California's GHG emission reduction goals. Successive updates to the Scoping Plan in 2014 and 2017 revised these state-level actions and identified additional opportunities for GHG emission reductions, as applicable. [1]

While the Scoping Plan and related documents lay out several state-led policies to reduce GHG emissions, the 2022 CAP will include those policies that have a direct and apparent GHG emission reduction benefit to unincorporated Contra Costa County. The project team has assessed community-wide GHG emission reduction benefits from four state-level efforts:

1. The Renewables Portfolio Standard (RPS) requires increases in renewable and carbon-free electricity supplies.
2. The Clean Car Standards require increased fuel efficiency of on-road vehicles and decreased carbon intensity of vehicle fuels.
3. The updated Title 24 building energy efficiency standards require new buildings to achieve increased energy-efficiency targets. The latest version of these standards is set to go into effect January 1, 2023.
4. The Low Carbon Fuel Standard (LCFS) mandates reduced carbon intensity of fuels used in off-road equipment.

In addition to the state actions, the County's default electricity provider, MCE, has also taken action to reduce the GHG emissions from the electricity it supplies to Contra Costa community members, beyond the minimum required by RPS. In 2019, MCE electricity was approximately 60-percent renewable and 90-percent carbon-free. In future years, MCE is working toward sourcing 95 percent of their electricity from carbon-free sources.

Table 4 shows the GHG reduction potential from the four state-level efforts and MCE's energy procurement plans. Table 5 and Figure 3 show future GHG emissions in unincorporated Contra Costa County with these efforts in place.

[1] At time of writing, the California Air Resources Board is working on a third update to the Scoping Plan, in response to the adoption of Senate Bill 32 in 2016 and the Governor's 2018 goal of achieving statewide carbon neutrality by 2045. The updated Scoping Plan is set to be adopted sometime in late 2022.

Table 4: Absolute GHG Emission Reductions from Existing and Planned State and Regional Actions, 2019 – 2050

	2019	2030	2040	2050	Percentage Change, 2019-2050
Forecasted emissions without state and regional actions	**1,010,290**	**1,146,510**	**1,343,800**	**1,552,910**	**54%**
Reductions from RPS	-	-24,730	-55,990	-122,760	-
Reductions from Clean Car standards	-	-108,740	-194,500	-251,160	-
Reductions from Title 24	-	-11,020	-37,170	-70,170	-
Reductions from LCFS (off-road only) *	-	-3,590	680	6,270	-
Reductions from MCE clean energy procurement	-	-1,270	-990	-	-
Reductions from all 5 actions	**-**	**-149,350**	**-287,970**	**-437,820**	**-**
Emissions with state and regional actions	**1,010,290**	**997,170**	**1,055,820**	**1,115,090**	**10%**

* Due to the methods used in the forecast and assessment of state GHG reduction potential, future projections for off-road equipment GHG emissions are higher than forecasted above.

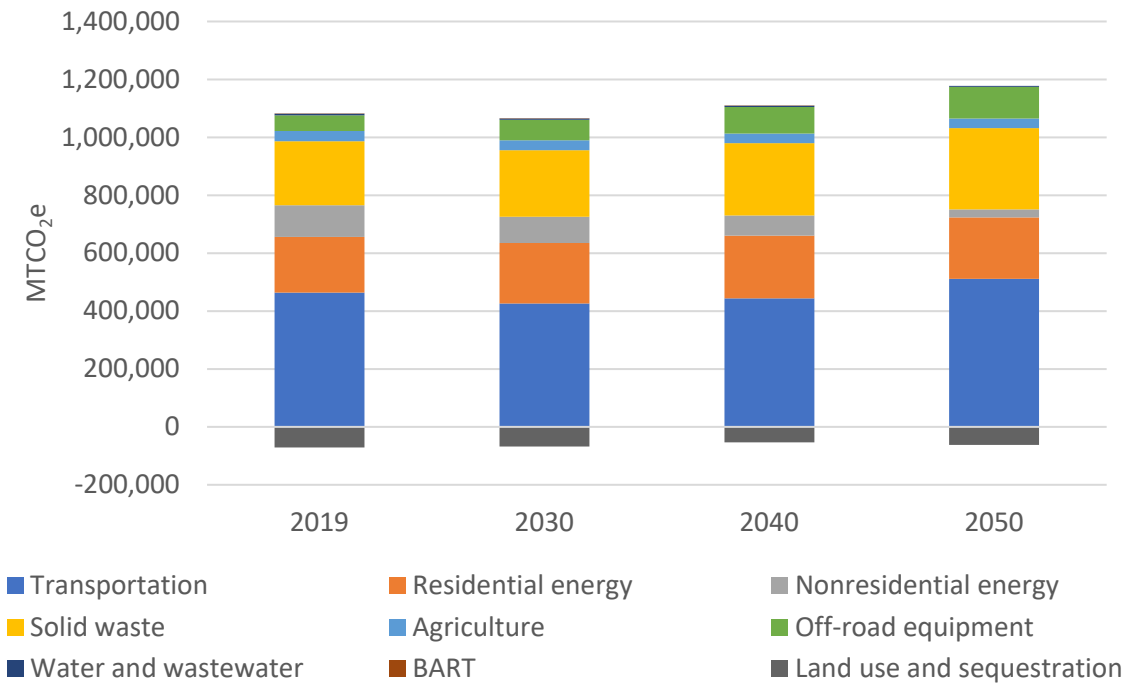
All numbers are rounded to the nearest 10. Due to rounding, totals may not equal the sum of the individual values.

Table 5: Absolute GHG Emissions with Existing and Planned State and Regional Actions, 2019 – 2050

Sector	2019	2030	2040	2050	Percentage Change, 2019-2050
Transportation	464,040	425,870	443,380	510,820	10%
Residential energy	191,780	208,720	217,410	212,560	11%
Nonresidential energy	109,370	91,120	69,040	27,660	-75%
Solid waste	220,760	229,820	249,820	280,640	27%
Agriculture	36,130	34,770	33,410	33,410	-8%
Off-road equipment	54,010	69,670	91,100	108,800	101%
Water and wastewater	4,870	4,640	4,550	3,530	-28%
BART	190	140	80	0	-100%
Land use and sequestration	-70,860	-67,580	-52,970	-62,330	-12%
Total Annual $MTCO_2e$	**1,010,290**	**997,170**	**1,055,820**	**1,115,090**	**10%**

All numbers are rounded to the nearest 10. Due to rounding, totals may not equal the sum of the individual values.

Figure 3: Absolute GHG Emissions with Existing and Planned Actions, 2019 – 2050



With state and regional existing and planned actions factored in, most GHG sources are expected to either see a decrease in emissions or a much smaller increase in emissions than the level forecasted in Table 2. Emissions from solid waste, agriculture, and land use and sequestration remain unchanged, as no existing or planned state or regional policies are expected to influence these emissions. Emissions from off-road equipment are expected to rise slightly compared to the forecast, but this is an artificial rise caused by the emissions in the forecast being less than those assumed by state modeling efforts.

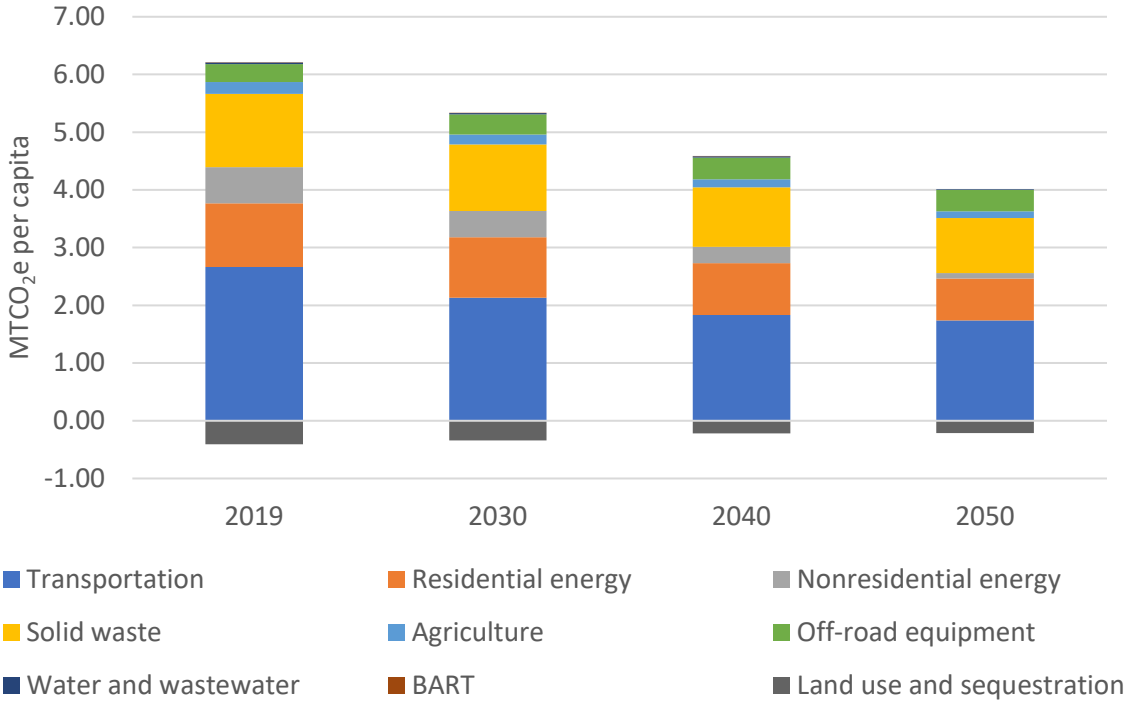
Table 6 and Figure 4 show the per-capita GHG emissions with existing and planned actions for unincorporated Contra Costa County. With existing and planned actions factored in, per-capita GHG emissions decrease in almost all sectors, with overall per-capita GHG emissions falling 35 percent from 2019 to 2050. The one sector with an increase in per-capita emissions is off-road equipment, as the growth in unincorporated Contra Costa County's population is not large enough to overcome the substantial increase in total off-road equipment GHG emissions.

Table 6: Per-Capita GHG Emissions with Existing and Planned Actions, 2019 – 2050

Sector	2019	2030	2040	2050	Percentage Change, 2019-2050
Transportation	2.66	2.13	1.83	1.74	-35%
Residential energy	1.10	1.05	0.90	0.72	-34%
Nonresidential energy	0.63	0.46	0.29	0.09	-85%
Solid waste	1.27	1.15	1.03	0.96	-25%
Agriculture	0.21	0.17	0.14	0.11	-45%
Off-road equipment	0.31	0.35	0.38	0.37	19%
Water and wastewater	0.03	0.02	0.02	0.01	-57%
BART	Less than 0.01	Less than 0.01	Less than 0.01	0.00	-100%
Land use and sequestration	-0.41	-0.34	-0.22	-0.21	-48%
Total Annual Per-Capita $MTCO_2e$	**5.80**	**5.00**	**4.36**	**3.80**	**-35%**

Due to rounding, totals may not equal the sum of the individual values.

Figure 4: Per-Capita GHG Emissions with Existing and Planned Actions, 2019 – 2050



Emission Reduction Targets

A key part of any CAP is one or more targets, which are the levels to which the community agrees to reduce GHG emissions. The 2022 CAP for unincorporated Contra Costa County will include GHG emission reduction targets for 2030, 2040, and 2050. Targets may be "firm" levels of GHG emission reductions supported by State regulations and local commitments (also called regulatory targets), or aspirational targets that go beyond adopted minimums and represent a higher level of GHG emission reductions that the community can strive toward (also called goals).

TYPES OF TARGETS

There are usually three types of targets: absolute targets, per-capita targets, and carbon-neutral targets. The County may choose to adopt GHG reduction targets of any and all types.

Absolute targets

An absolute target is a specific, fixed level of GHG emissions that the community intends to reduce GHG emissions to (or below) by a given milestone year. Such targets may be expressed as a specific amount of GHG emissions (e.g., 750,000 metric tons of carbon dioxide equivalent [$MTCO_2e$]), but more often are expressed as reducing GHG emissions to a percent below a particular baseline (e.g., 15 percent below 2005 GHG emission levels by 2020).

Per-capita targets

A per-capita target is a level of GHG emissions per person that the community plans to reduce GHG emission to or below by a specified year, such as 4 $MTCO_2e$ per person by 2030. Per-capita targets are usually per-resident population, consistent with State guidance in the Scoping Plan, but they may also be expressed as per-service population (residents plus jobs). Unlike absolute targets, the total level of GHG emission reductions specified by per-capita targets is dependent on changes to community growth, so a higher-than-expected population growth would allow for higher absolute GHG emissions even if the per-capita GHG emission levels are unchanged.

Carbon-neutral targets

A carbon-neutral target is a commitment that the community's net GHG emissions will be zero. Although in theory a carbon-neutral target could mean that the community eliminates all GHG emissions, in practice this is extremely difficult to do at the local level. More commonly, these targets call for communities to substantially reduce GHG emissions and then balance out the remaining GHG emissions through carbon sequestration, offsets, or similar carbon removal practices, so the community commits to net carbon neutrality. Such targets should be combined with an absolute or per-capita target, specifying that the community must reduce GHG emissions to a set level and then offset the remainder.

STATE GHG-REDUCTION TARGETS

California has committed to GHG emission reduction targets through legislative actions and executive orders. Legislative actions are binding targets that are codified in State law and may be thought of as "firm" or regulatory targets. Executive orders do not have the force of law, but they provide an indication of the State's goals and intentions and may be thought of as aspirational targets. Table 7 shows the State's GHG emission reduction targets.

Table 7: State GHG Emission reduction Targets

TARGET YEAR	TARGET	TYPE	ESTABLISHING ACT
2020	Reduce emissions to 1990 levels.	Regulatory target	Assembly Bill (AB) 32 (2006)
2030	Reduce emissions 40 percent below 1990 levels.	Regulatory target	Senate Bill (SB) 32 (2016)
2045	Carbon-neutral emissions.	Aspirational target	Executive Order (EO) B-55-18 (2018)
2050	Reduce emissions 80 percent below 1990 levels.	Aspirational target	Executive Order (EO) S-03-05 (2015)

GUIDANCE FOR LOCAL GOVERNMENTS

State Climate Change Scoping Plan

AB 32 codified into law California's target of reducing GHG emissions to 1990 levels by 2020. The law directed the California Air Resources Board (CARB) to oversee and plan the state's GHG reduction efforts. CARB released the first Climate Change Scoping Plan in 2008, laying out a framework for achieving California's GHG emission reduction targets. CARB has prepared updates to the Scoping Plan in 2014 and 2017.

The most recent version of the Scoping Plan from 2017 provides detailed options for local targets, including those for plan-level efforts, such as the 2022 CAP. The Scoping Plan indicates that per-capita targets of 6.0 $MTCO_2e$ per person by 2030 and 2.0 $MTCO_2e$ per person by 2050 are consistent with California's adopted regulatory target of reducing GHG emissions to 40 percent below 1990 levels by 2030 and the aspirational target of 80 percent below 1990 levels by 2050. At the time that staff prepared the 2015 CAP, State guidance did not propose per-capita targets, which is why the 2015 CAP does not consider or establish them.

California Environmental Quality Act Guidance

Under the California Environmental Quality Act (CEQA) Guidelines,[2] CAPs and other GHG-reduction plans can help to streamline the environmental review process for any development effort defined as a project under CEQA. Plans that can be used this way are called Qualified GHG Reduction Strategies and must satisfy six criteria, one of which is that they "establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions covered by the plan would not be cumulatively considerable." If the plan meets these criteria, as determined by the community, any project consistent with the plan's GHG emission reduction strategies can be determined to have a less-than-significant impact on GHG emissions, reducing the need for additional analyses and mitigation measures. Additionally, the plan must identify measures and performance standards that can be clearly shown to achieve this determination. As a result, a plan seeking to be a Qualified GHG Reduction Strategy must have a GHG emission reduction target or targets that not only substantially reduce GHG emissions, but that can also be feasibly achieved.

[2] The 2022 CEQA Guidelines are available at https://califaep.org/statute_and_guidelines.php

In February 2022, the Bay Area Air Quality Management District (BAAQMD) released a draft document titled "CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans." This document provides guidance to Bay Area communities, including Contra Costa County, for determining whether a proposed project will have a significant impact on climate change. In the document, BAAQMD recommends that to meet the criteria for a Qualified GHG Reduction Strategy, a local plan must meet one of two targets:

- Reduce emissions to 40 percent below 1990 levels by 2030 and achieve net carbon neutrality by 2045.
- Be consistent with the State guidance calling for targets to be "a level, based on substantial evidence, below which the contribution to greenhouse gas emissions covered by the plan would not be cumulatively considerable."

Note that this guidance is draft and may change in its final form.

TARGET OPTIONS FOR CONTRA COSTA COUNTY

Local governments have the flexibility to select their own GHG emission reduction targets that are different from the ones recommended by guidance documents. For a document that serves as a Qualified GHG Reduction Strategy, these targets should be consistent with or go beyond the recommendations in guidance documents, achieving a comparable or greater level of GHG emission reductions. PlaceWorks recommends that the 2022 CAP for Contra Costa County include GHG emission reduction targets that are, at minimum, consistent with the state's regulatory targets. Additionally, PlaceWorks recommends that the County adopt a net carbon neutral goal as an aspirational target.

Regulatory Targets

The County's GHG emission regulatory targets may be either absolute or per-capita. **Table 8** shows what these targets would be for unincorporated Contra Costa County as necessary to meet the State's guidance, although the County may choose to adopt regulatory targets that call for a greater level of reductions.

Table 8: Minimum Recommended Regulatory Targets

Target Year	Absolute Targets		Per-Capita Targets
	$MTCO_2E$	Description	$MTCO_2E$ per capita
2030	658,700	40% below 1990 levels	6.0
2040 *	439,140	60% below 1990 levels	4.0
2050	219,570	80% below 1990 levels	2.0

* State guidance does not establish 2040 targets. These targets are interpolations between the 2030 and 2050 targets. PlaceWorks recommends a 2040 target, in addition to 2030 and 2050 targets, for consistency with the horizon year of Envision Contra Costa 2040.

Note: Consistent with State guidance, 1990 GHG emission levels for unincorporated Contra Costa County is equal to 15 percent below 2005 levels. Unincorporated Contra Costa County GHG emissions in 2005 were 1,291,580 $MTCO_2e$, translating to a 1990 GHG emissions level of 1,097,840 $MTCO_2e$.

Absolute targets are rounded to the nearest tens.

Table 9, **Figure 5**, and **Figure 6** show these potential regulatory GHG emission targets relative to unincorporated Contra Costa County's GHG emissions after considering the effects of existing and planned efforts.

Table 9: GHG Emission Reduction Levels

	2030	2040	2050
Absolute emissions			
Emissions with existing and planned state and regional actions ($MTCO_2e$)	997,170	1,055,820	1,115,090
Target emissions	658,700	439,140	219,570
Gap to target	338,470	616,680	895,520
Per-capita emissions			
Emissions with existing and planned state and regional actions ($MTCO_2e$)	5.00 $MTCO_2e$ per person	4.36 $MTCO_2e$ per person	3.80 $MTCO_2e$ per person
Target emissions *	6.0 $MTCO_2e$ per person (1,197,600 $MTCO_2e$)	4.0 $MTCO_2e$ per person (968,280 $MTCO_2e$)	2.0 $MTCO_2e$ per person (587,140 $MTCO_2e$)
Gap to target *	-1.00 $MTCO_2e$ per person (-200,430 $MTCO_2e$) †	0.36 $MTCO_2e$ per person (87,540 $MTCO_2e$)	1.80 $MTCO_2e$ per person (527,950 $MTCO_2e$)

* Although these proposed targets and gaps are for per-capita emissions, they are also shown as absolute targets for a point of comparison.

† Negative values mean that actions with existing and planned efforts exceed the proposed target.

Due to rounding, totals may not equal the sum of the individual values.

Figure 5: Absolute GHG Emission Levels and Reduction Targets

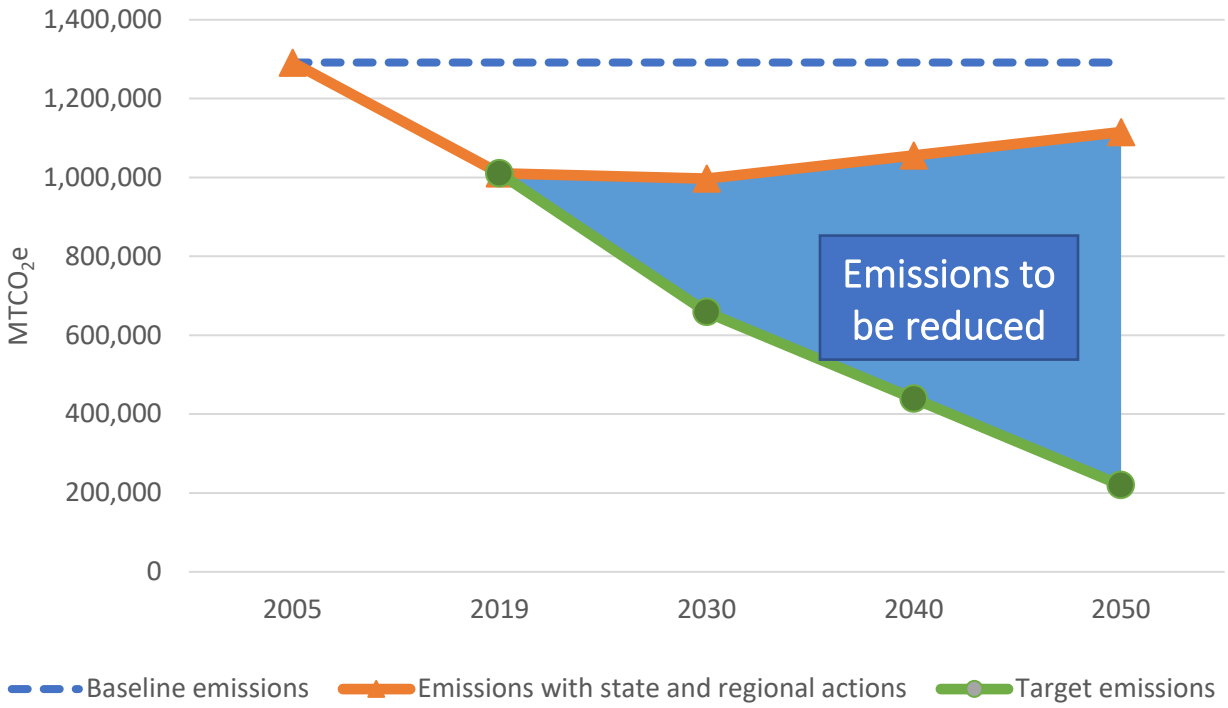
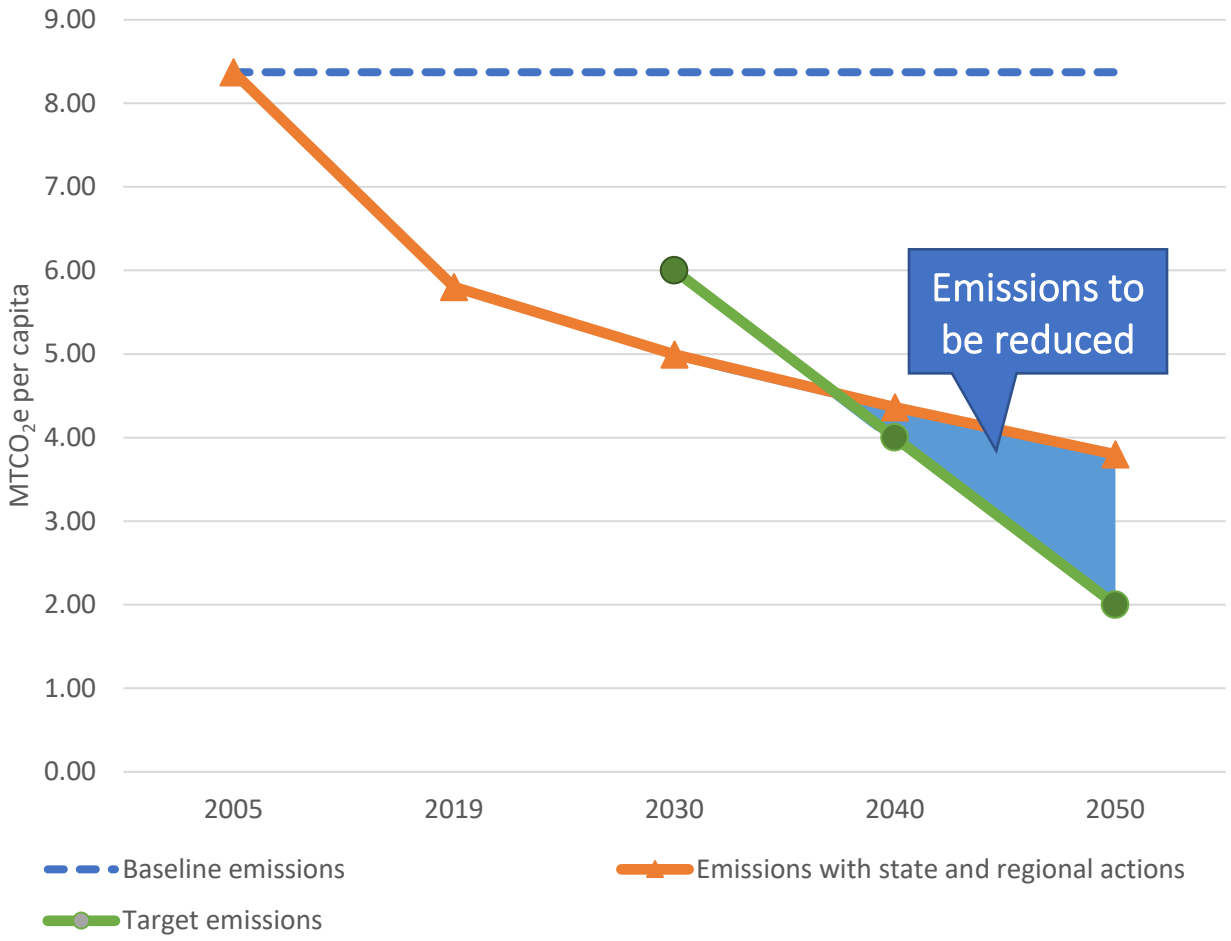


Figure 6: Per-Capita GHG Emission Levels and Reduction Targets



PlaceWorks recommends that the net carbon neutral target apply for either 2040 to match the horizon year of Envision Contra Costa 2040, or for 2045 to match the goal put forward in EO S-03-05. To be consistent with the recommended regulatory targets, if the County chooses 2045 for the net carbon neutral goal, PlaceWorks recommends an additional regulatory target of at least 70 percent below 1990 levels or 3.0 $MTCO_2e$ per person by 2045.

GHG Reduction Potential of 2022 CAP Strategies

PlaceWorks has worked with County staff to develop a set of GHG emission reduction strategies and to assess the GHG emission reduction potential of these strategies, given the project team's reasonable understanding of available resources and what seemed appropriate for the unincorporated area. Attachment 4 provides detailed information about the GHG emission reduction potential of these strategies.

These GHG emission reduction potentials are intended to be a starting point. They are based on best available information and known resources and capabilities. It is possible to achieve greater reductions if there is increased confidence in higher levels of participation or development of additional programs. Through

discussions with County staff and members of the Board of Supervisors, PlaceWorks anticipates that these reductions will be revised to better reflect County and community priorities and to achieve the County's preferred targets. Table 10 shows the absolute expected GHG emission levels with these strategies enacted, while Table 11 shows these reductions from a per-capita perspective.

Table 10: Absolute GHG Emissions with 2022 CAP Reduction Strategies

Sector	2019	2030	2040	2050	Percentage Change, 2019-2050
Transportation	464,040	315,100	246,450	127,280	-73%
Residential energy	191,780	153,210	116,900	58,790	-69%
Nonresidential energy	109,370	79,860	52,490	13,500	-88%
Solid waste	220,760	226,570	243,650	270,670	23%
Agriculture	36,130	34,770	33,410	33,410	-8%
Off-road equipment	54,010	69,670	91,100	108,800	101%
Water and wastewater	4,870	3,670	3,240	2,050	-58%
BART	190	150	90	0	-100%
Land use and sequestration	-70,860	-73,530	-61,970	-74,370	5%
Total Annual $MTCO_2e$	**1,010,290**	**809,450**	**725,340**	**540,120**	**-47%**

All numbers are rounded to the nearest 10. Due to rounding, totals may not equal the sum of the individual values.

Table 11: Per-Capita GHG Emissions with 2022 CAP Reduction Strategies

Sector	2019	2030	2040	2050	Percentage Change, 2019-2050
Transportation	2.66	1.58	1.02	0.43	-84%
Residential energy	1.10	0.77	0.48	0.20	-82%
Nonresidential energy	0.63	0.40	0.22	0.05	-93%
Solid waste	1.27	1.14	1.01	0.92	-27%
Agriculture	0.21	0.17	0.14	0.11	-45%
Off-road equipment	0.31	0.35	0.38	0.37	19%
Water and wastewater	0.03	0.02	0.01	0.01	-75%
BART	Less than 0.01	Less than 0.01	Less than 0.010	0.00	-100%
Land use and sequestration	-0.41	-0.37	-0.26	-0.25	-38%
Total Annual Per-Capita $MTCO_2e$	**5.80**	**4.06**	**3.00**	**1.84**	**-68%**

Due to rounding, totals may not equal the sum of the individual values.

With the reductions currently projected from the 2022 CAP strategies, GHG emissions for the unincorporated Contra Costa County are expected to fall 47 percent relative to 2019 levels by 2050, or for per-capita emissions to decrease by 68 percent. These reductions occur in most GHG emission sectors. As noted previously, there is the potential for these strategies to yield additional GHG emission-reduction potentials through discussions with County staff and decision makers.

With these reductions as currently assessed, unincorporated Contra Costa County achieves the proposed per-capita targets for all years, and in 2030 and 2040 substantially exceeds, although it does not achieve the proposed absolute targets. Table 12, Figure 7, and Figure 8 show these reductions relative potential regulatory GHG emission-reduction targets.

Table 12: 2022 CAP GHG Emission Reductions and Proposed Regulatory Targets

	2030	2040	2050
Absolute emissions			
Regulatory target	658,700	439,140	219,570
Emissions with strategies	809,450	725,340	540,120
Gap to target *	150,750	286,200	320,550
Per-capita emissions			
Regulatory target	6.00	4.00	2.00
Emissions with strategies	4.06	3.00	1.84
Gap to target *	-1.94	-1.00	-0.16

* Negative values mean that the GHG emission levels with the strategies as currently assessed exceed the proposed target.
Due to rounding, totals may not equal the sum of the individual values.

Figure 7: Absolute GHG Emission Levels and Reduction Targets with 2022 CAP

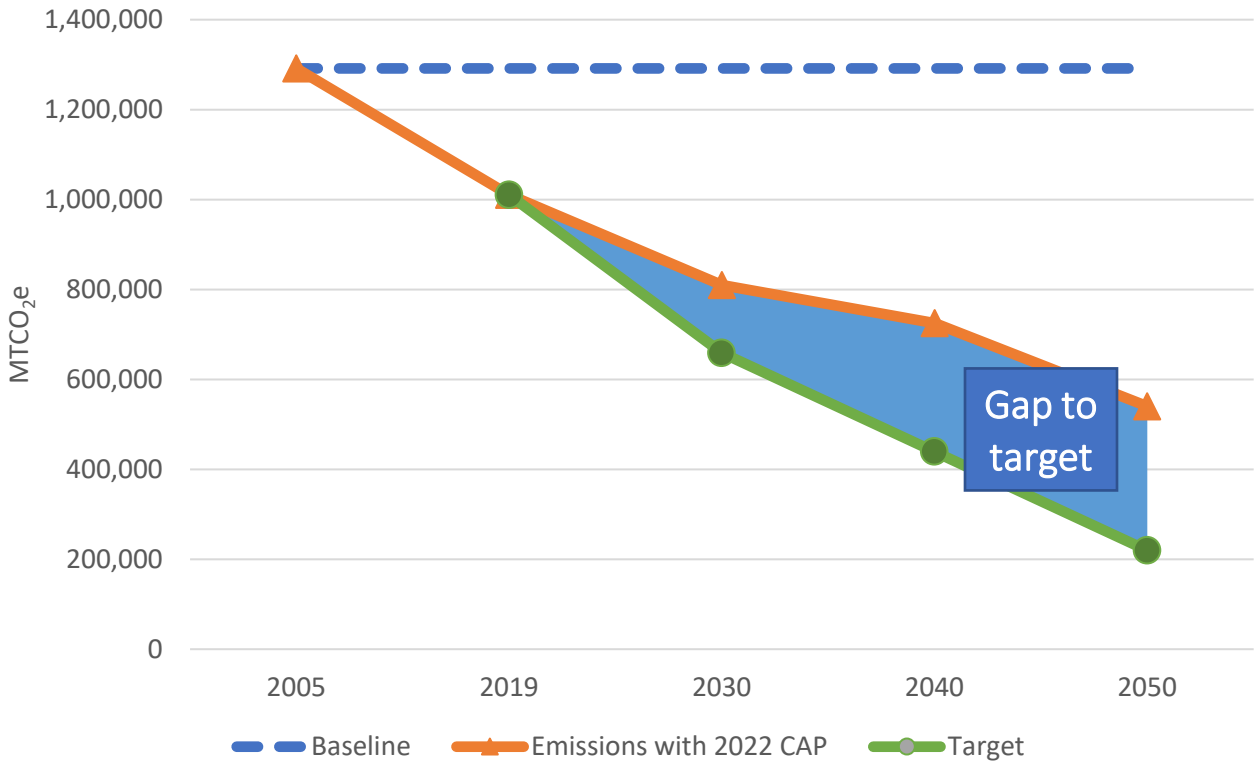
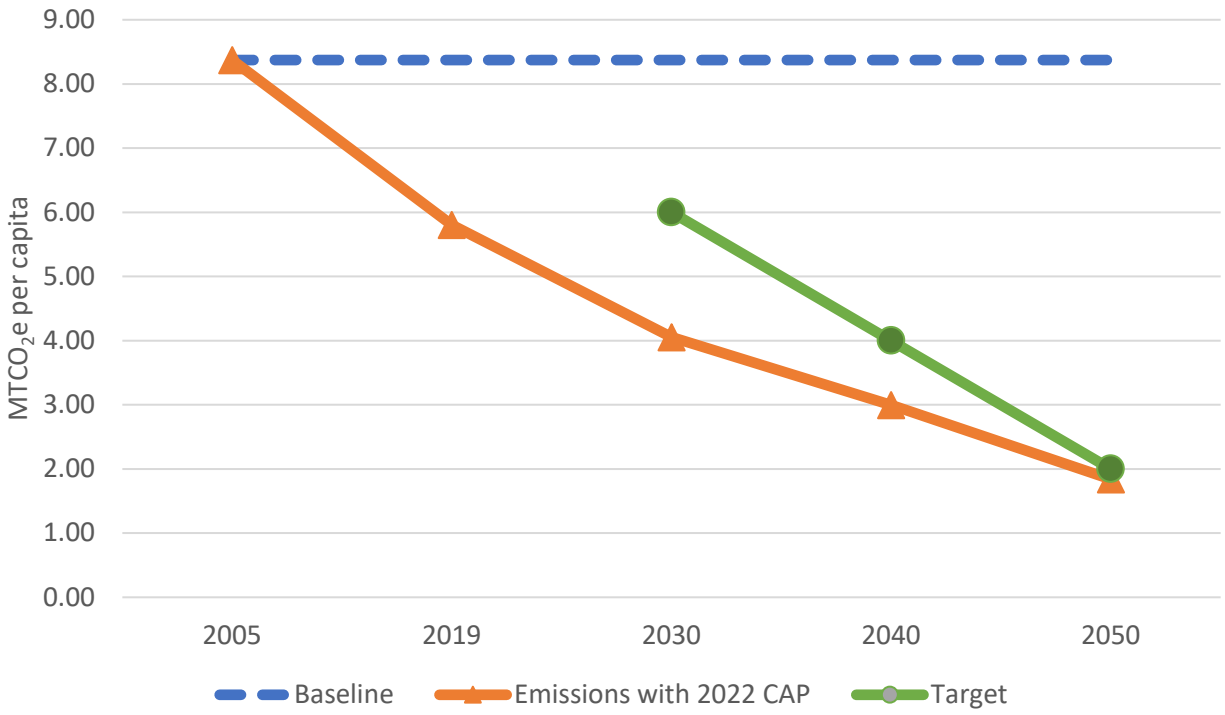


Figure 8: Per-Capita Emission Levels and Reduction Targets with 2022 CAP



Next Steps

If the County has any revisions to the forecast and existing and planned actions discussions of this memo, PlaceWorks will work with County staff to make these changes. PlaceWorks will discuss these potential GHG-reduction targets and the reductions achieved by the GHG-reduction strategies with County staff and decision makers. We will then work to revise the assumptions underlying these GHG emission reductions to adjust the level of reduction potential so it is consistent with County expectations and community values.