

Preliminary Estimates of California’s 2021 and 2022 Greenhouse Gas Emissions for Budget Item 3900-001-3237

Pursuant to California State Budget Item 3900-001-3237, for three years, beginning in 2022, on or before April 1 of each year, the California Air Resources Board (CARB) shall post publicly on its website and report to the relevant policy and fiscal committees of the Legislature a preliminary estimate of the prior-year GHG emissions based on current and historical data and an update to any prior estimates previously provided for any calendar year that is not included in the most recently published GHG emissions inventory report required pursuant to Health and Safety Code Section 39607.4. CARB shall also provide preliminary estimates of the prior-year GHG emissions for the following sectors: transportation; electric power; industrial; commercial and residential; agriculture; high global warming potential (GWP); and recycling and solid waste.

Estimates are provided in response to the Budget Item only and should not be used for any policy making decisions or regulatory compliance, nor cited for any purpose. California’s official AB 32 GHG Inventory is published annually and available at: <https://ww2.arb.ca.gov/ghg-inventory-data>.

Results

Table 1 provides preliminary estimates of California’s 2022 GHG emissions for each Scoping Plan sector in units of million metric tons of carbon dioxide equivalent (MMTCO_{2e}).

Table 1. Estimated 2021 and 2022 California GHG Emissions by Sector

Sector	2020 GHG Inventory (MMTCO _{2e})	Ratio of MRR Emissions (2021/2020)	Estimated 2021 Emissions (MMTCO _{2e})	Estimated 2022 Emissions (MMTCO _{2e})
Transportation	136	1.0913	148	148.8 ±13.3
Electric Power	60	1.0345	62	60.4 ±1
Industrial	73	1.0186	75	76.1 ±3.8
Residential & Commercial	39	0.9998	39	39.3 ±1
Agriculture	32	N/A	32	31.6 ±0.2
High GWP	21	N/A	21	20.9 ±0.3
Recycling & Waste	9	N/A	9	8.8 ±0.1
Total	369		384	386 ±17.7

Methods

GHG emissions data reported under the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (MRR)¹ have not yet been completely reported for the 2022 emissions year so is not a viable source of 2022 data. Additionally, other 2022 data sources are not available or incomplete for the timeframe necessary for publishing this document. Therefore, methods employing the best available data have been used.

The 2022 statewide GHG emissions for all sectors were estimated by averaging the 2019 and 2020 sector emissions data from CARB's statewide GHG Emissions Inventory (GHG Inventory)² and the estimated 2021 GHG emissions for each sector. Details on how the 2021 GHG emissions were estimated for each sector are described in detail below.

The 2021 statewide GHG emissions were estimated for the four largest sectors (Transportation, Electric Power, Industrial, Residential and Commercial) using GHG emissions data reported under MRR, and sector emissions data calculated for CARB's statewide GHG Inventory. Statewide GHG emissions are calculated for the GHG Inventory using several data sources. One data source is from reports submitted to CARB pursuant to MRR. MRR requires facilities and fuel suppliers with more than 10,000 MTCO_{2e} per year of combustion and process emissions, all facilities belonging to certain industries, and all electricity importers to submit an annual GHG emissions data report directly to CARB. Reports from entities that emit more than 25,000 metric tons of CO_{2e} per year are verified by a CARB-accredited third-party verification body. The GHG Inventory, required by AB 32³, is the state's record of California's annual GHG emissions and captures the vast majority of statewide GHG emission sources.

MRR 2021 GHG emissions data was used to create preliminary estimates of the 2021 statewide GHG emissions for each of the four largest sectors (Transportation, Electric Power, Industrial, Residential and Commercial) by multiplying the 2020 GHG Inventory emissions for each sector by the ratio of 2021 MRR emissions to 2020 MRR emission for each sector. MRR transportation sector emissions were calculated using the published⁴ total transportation fuel supplier category emissions. MRR electric power sector emissions were calculated using the sum of published cogeneration, electricity importer, and in-state electricity generation category emissions. MRR industrial sector emissions were calculated using the sum of published cement, oil & gas production, refinery and hydrogen plant, other combustion source, and natural gas, natural gas liquids, and liquefied petroleum gas supplier category emissions minus emissions from the residential and commercial sector, which overlap with natural gas supplier emissions. To calculate the MRR residential and commercial sector emissions, the total natural gas (MMBTU) delivered to residential and commercial end uses reported by natural gas suppliers was multiplied by natural gas default emissions factors.

¹ Mandatory GHG Reporting - Reported Emissions: <https://ww2.arb.ca.gov/mrr-data>

² GHG Inventory Program page: <https://ww2.arb.ca.gov/our-work/programs/ghg-inventory-program>. All data sources used to develop the GHG Emissions Inventory are listed in supporting documentation available at <https://ww2.arb.ca.gov/applications/california-ghg-inventory-documentation>.

³ https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200520060AB32

⁴ Mandatory GHG Reporting - Reported Emissions: <https://ww2.arb.ca.gov/mrr-data>

GHG Inventory sector emissions were taken from Figure 3 data in the GHG Inventory's publicly available [2000-2020 GHG Emissions Trends Report Data](#).

Preliminary 2021 GHG emissions estimates for the remaining sectors (Agriculture, High GWP, Recycling and Waste) were calculated using prior year GHG Inventory emissions data. For each sector, 2021 GHG emissions were estimated by averaging 2018 through 2020 GHG Inventory emissions.