Regional Climate Protection Authority

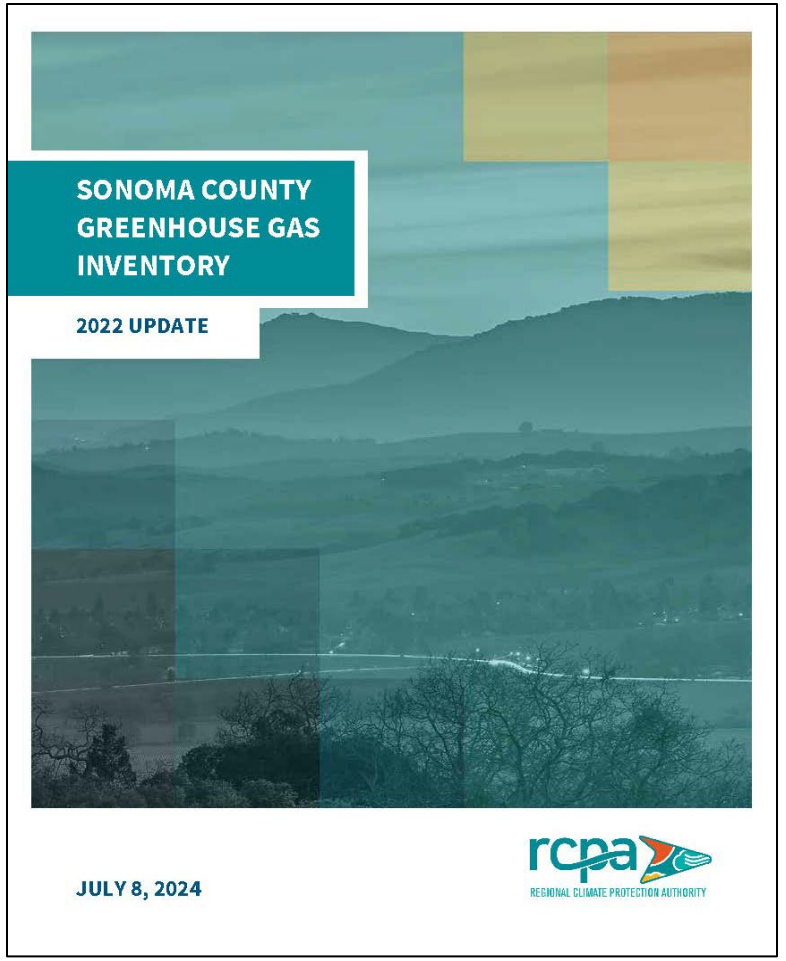
Greenhouse Gas Inventory - 2022 Update

SCTA/RCPA Board of Directors
July 8, 2024

BC Capps, Climate Programs Manager
Sonoma County Regional Climate Protection Authority

GHG Inventory Overview – 2022 Update

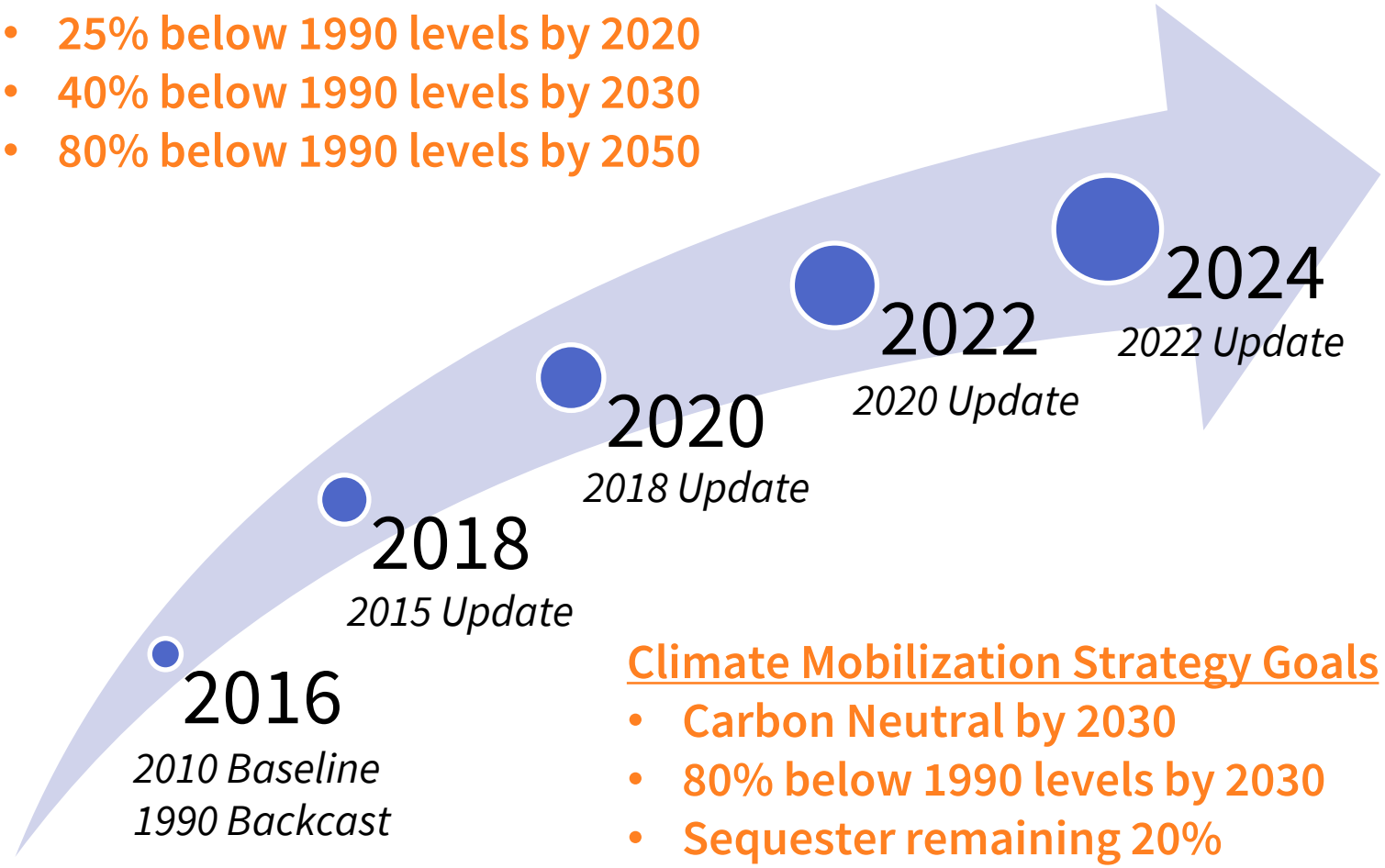
- Inventory Overview
- Emissions Sectors
  - Building Energy
  - Transportation
  - Solid Waste
  - Water-Related
  - Agriculture
- Local Jurisdictions



GHG Inventory Overview – Current Efforts

Climate Action 2020 Goals

- 25% below 1990 levels by 2020
- 40% below 1990 levels by 2030
- 80% below 1990 levels by 2050



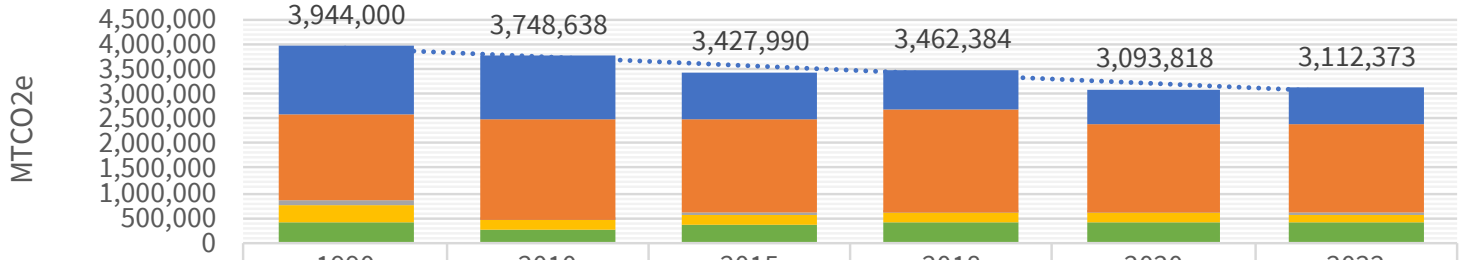
Climate Mobilization Strategy Goals

- Carbon Neutral by 2030
- 80% below 1990 levels by 2030
- Sequester remaining 20%

2022 Inventory Update

- Data collection and report compilation
- Preliminary results presented to RCPA Members and Partners, Climate Action Advisory Committee, and Planning Advisory Committee
- 2022 results added to online GHG Dashboard

GHG Inventory Results – Emission Trends by Year



	1990	2010	2015	2018	2020	2022
Buildings	1,343,391	1,258,634	923,096	778,558	725,440	732,091
Transportation	1,770,119	2,014,737	1,909,232	2,067,918	1,769,911	1,794,818
Water	52,739	16,511	17,125	16,578	16,392	16,402
Solid Waste	383,300	193,223	218,855	207,240	189,735	176,877
Agriculture	394,451	265,533	359,682	392,090	392,340	392,185
Total	3,944,000	3,748,638	3,427,990	3,462,384	3,093,818	3,112,373

2022 Total Emissions: 3,112,373 MTCO2e

21.09% reduction from 1990 GHG Baseline

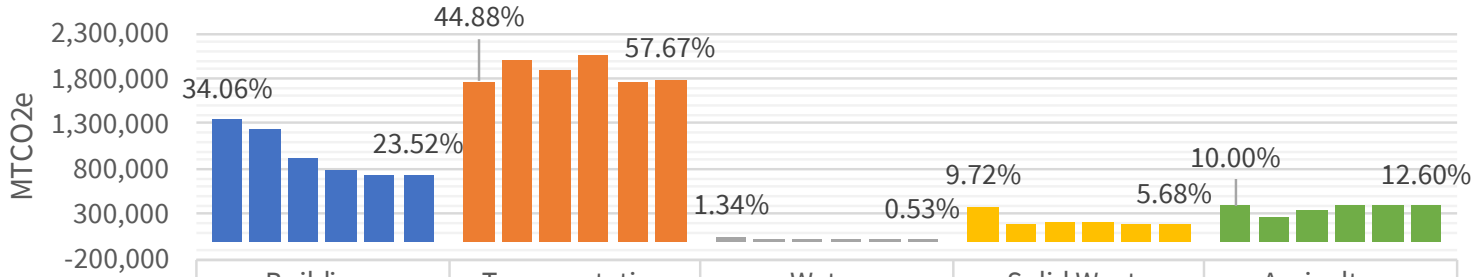
GHG Emission Sectors in Order of Magnitude

- Transportation 57.7%
- Buildings 23.5%
- Agriculture 12.6%
- Solid Waste 5.7%
- Water 0.5%

Continued Area of Focus:

- Transportation and Buildings 81.2%

GHG Inventory Results – Emission Trends by Sector



	Buildings	Transportation	Water	Solid Waste	Agriculture
1990	1,343,391	1,770,119	52,739	383,300	394,451
2010	1,258,634	2,014,737	16,511	193,223	265,533
2015	923,096	1,909,232	17,125	218,855	359,682
2018	778,558	2,067,918	16,578	207,240	392,090
2020	725,440	1,769,911	16,392	189,735	392,340
2022	732,091	1,794,818	16,402	176,877	392,185

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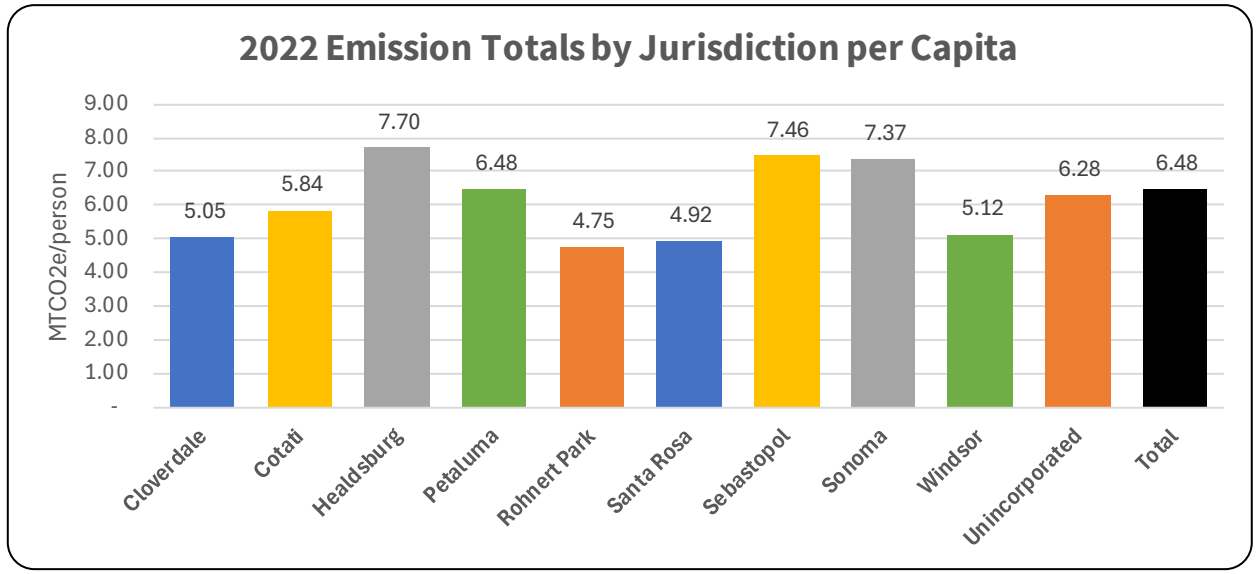
GHG Inventory Results – Emission Percent Share

1990-2022 Emission Percent Share by Sector (%)						
Sector	**1990**	**2010**	**2015**	**2018**	**2020**	**2022**
Buildings	34.06%	33.58%	26.93%	22.49%	23.45%	23.52%
Transportation	44.88%	53.75%	55.70%	59.73%	57.21%	57.67%
Water	1.34%	0.44%	0.50%	0.48%	0.53%	0.53%
Solid Waste	9.72%	5.15%	6.38%	5.99%	6.13%	5.68%
Agriculture	10.00%	7.08%	10.49%	11.32%	12.68%	12.60%
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

1990-2022 Emission Percent Change from 1990 by Sector (%)						
Sector	**1990**	**2010**	**2015**	**2018**	**2020**	**2022**
Buildings	0.00%	-6.31%	-31.29%	-42.05%	-46.00%	-45.50%
Transportation	0.00%	13.82%	7.86%	16.82%	-0.01%	1.40%
Water	0.00%	-68.69%	-67.53%	-68.57%	-68.92%	-68.90%
Solid Waste	0.00%	-49.59%	-42.90%	-45.93%	-50.50%	-53.85%
Agriculture	0.00%	-32.68%	-8.81%	-0.60%	-0.54%	-0.57%
Total	**0.00%**	**-4.95%**	**-13.08%**	**-12.21%**	**-21.56%**	**-21.09%**

Small increase from 2020 (COVID), but still on overall downward trend from 1990

GHG Inventory Results – Emissions per Capita



- California state average per capita: 9.7 MTCO2e per person (2021)
- United States national average: 14.44 MTCO2e per person (2022)

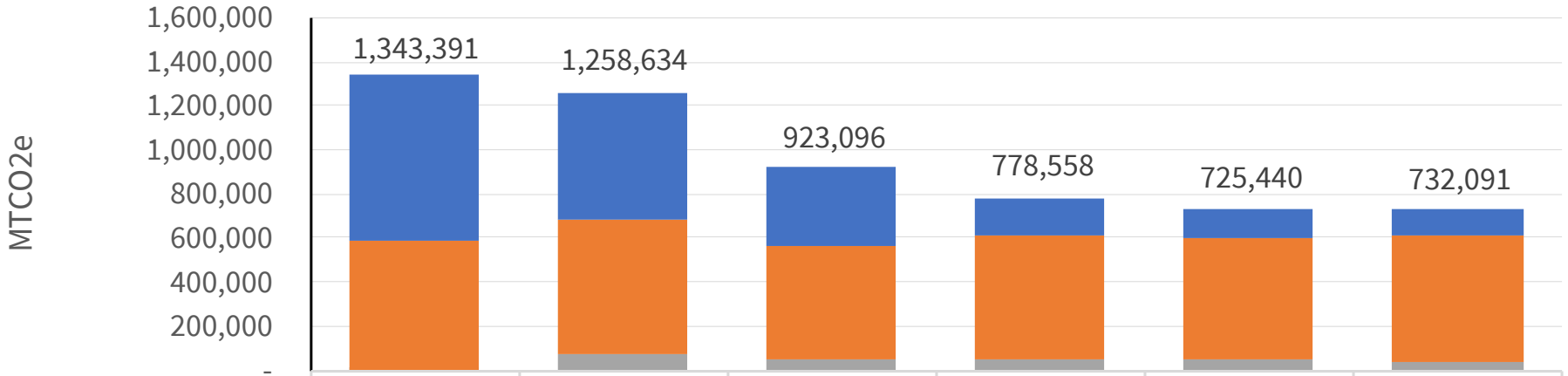
Population (2022)		
Cloverdale	8,869	1.8%
Cotati	7,410	1.5%
Healdsburg	10,993	2.3%
Petaluma	58,552	12.2%
Rohnert Park	43,701	9.1%
Santa Rosa	175,351	36.5%
Sebastopol	7,433	1.5%
Sonoma	10,804	2.2%
Windsor	25,836	5.4%
Unincorporated	131,674	27.4%
Total	**480,623**	**100.0%**

GHG Inventory Sources – Building Energy Emissions

- Electricity Sub-Sector
  - kWh Consumption from Pacific Gas and Electric Company (PG&E), Sonoma Clean Power (SCP), and Healdsburg Electric
- Natural Gas Sub-Sector
  - Therms Consumed from PG&E Data Request
- Stationary Source Sub-Sector
  - Propane Use Average from Census Data
  - Kerosene Use Average from Census Data
  - Wood Use Average from Census Data

GHG Inventory Results – Building Energy Emissions

1990-2022 Building Energy Emission Trends



	1990	2010	2015	2018	2020	2022
Electricity	759,711	575,546	364,226	162,586	128,367	123,931
Natural Gas	577,548	614,248	511,736	565,552	551,074	565,264
Stationary Sources	6,133	68,840	47,134	50,420	45,999	42,896
Total	1,343,391	1,258,634	923,096	778,558	725,440	732,091

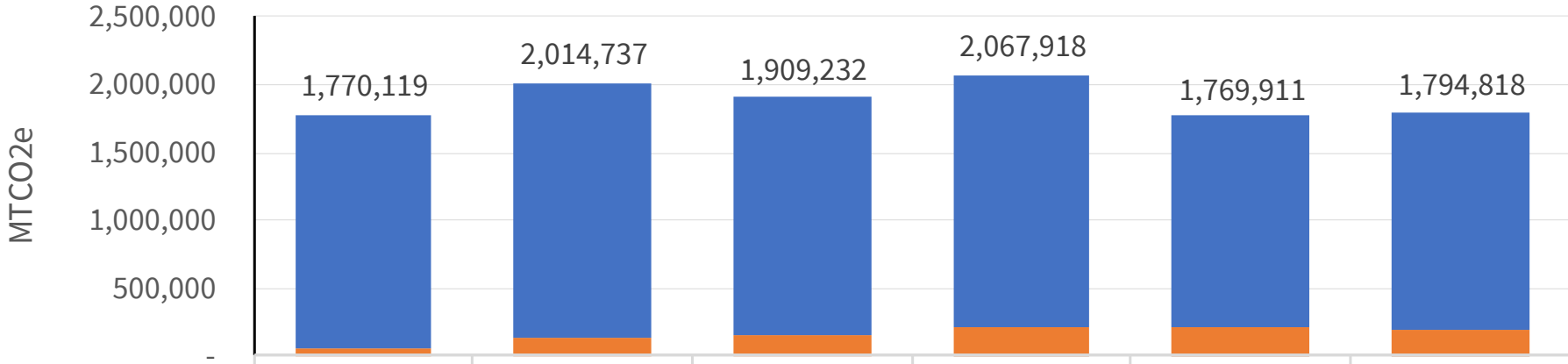
Sub-Sectors:

- Electricity
- Natural Gas
- Stationary Sources (Propane, Kerosene, Wood)

GHG Inventory Sources – Transportation Emissions

- On-Road Sub-Sector
  - VMT by Jurisdiction from SCTA Travel Model
  - Countywide Emissions from California Air Resources Board (CARB) Emissions Factor (EMFAC) Database
- Off-Road Sub-Sector
  - Countywide Emissions from CARB EMFAC
  - Apportionment by Population, Housing, Jobs
- Passenger Railway Sub-Sector
  - Diesel Use by Sonoma-Marin Area Rail Transit (SMART) Locomotives
  - Rail Miles within Sonoma County
  - Classified as “Countywide Emissions”

GHG Inventory Results – Transportation Emissions



	1990	2010	2015	2018	2020	2022
On-Road	1,712,963	1,872,003	1,755,467	1,855,630	1,554,202	1,604,280
Off-Road	57,156	142,735	153,765	210,308	214,617	187,532
Passenger Rail	-	-	-	1,979	1,092	3,006
Total	1,770,119	2,014,737	1,909,232	2,067,918	1,769,911	1,794,818

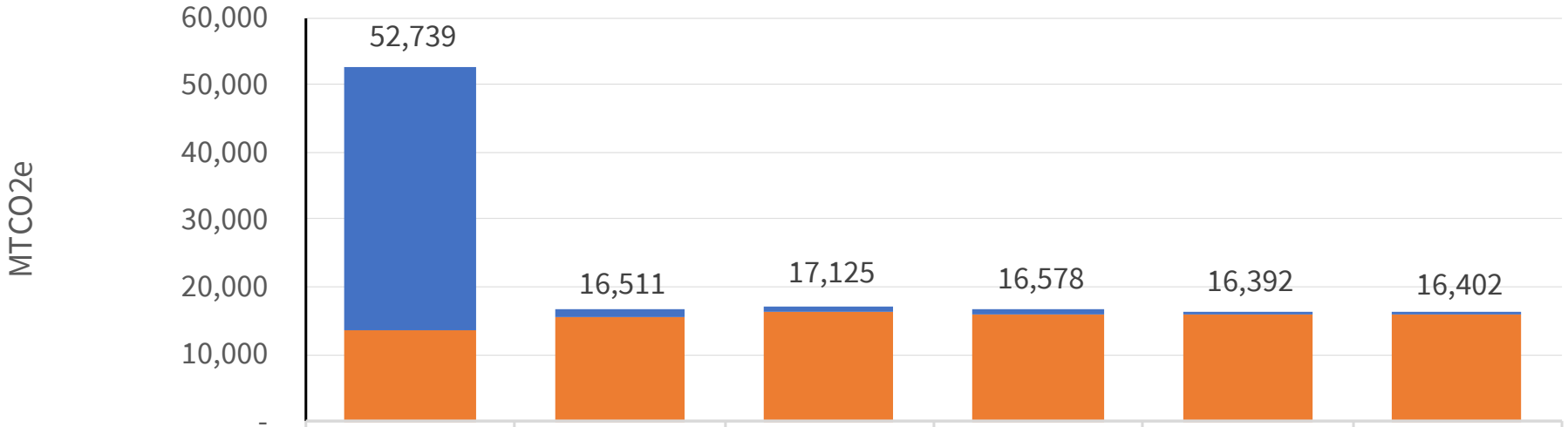
Sub-Sectors:

- On-Road Emissions
- Off-Road Emissions
- Passenger Railway

GHG Inventory Sources – Water-Related Emissions

- Water Conveyance Sub-Sector
  - Water Use from Urban Water Management Plans (UWMPs)
- Wastewater Processing Sub-Sector
  - Treatment and Processing

GHG Inventory Results – Water-Related Emissions



	1990	2010	2015	2018	2020	2022
Water Conveyance	39,188	977	820	713	647	711
Wastewater	13,551	15,534	16,304	15,866	15,745	15,691
Total	52,739	16,511	17,125	16,578	16,392	16,402

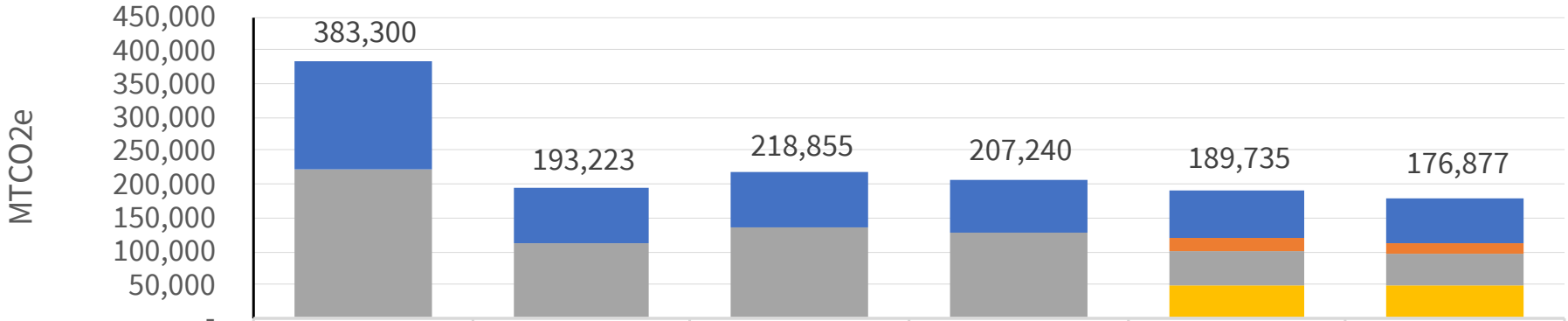
Sub-Sectors:

- Water Conveyance
- Wastewater Treatment

GHG Inventory Sources – Solid Waste Emissions

- Residential Single Family
- Residential Multifamily
- Commercial
- Self Haul
  - Zero Waste Sonoma Annual Reporting Data
  - Waste Characterization Study 2022

GHG Inventory Results – Solid Waste Emissions



	1990	2010	2015	2018	2020	2022
Residential SF	160,474	80,359	84,012	79,382	69,070	64,390
Residential MF	-	-	-	-	18,721	17,452
Commercial	222,826	112,864	134,843	127,858	51,460	47,973
Self Haul	-	-	-	-	50,484	47,062
Total	383,300	193,223	218,855	207,240	189,735	176,877

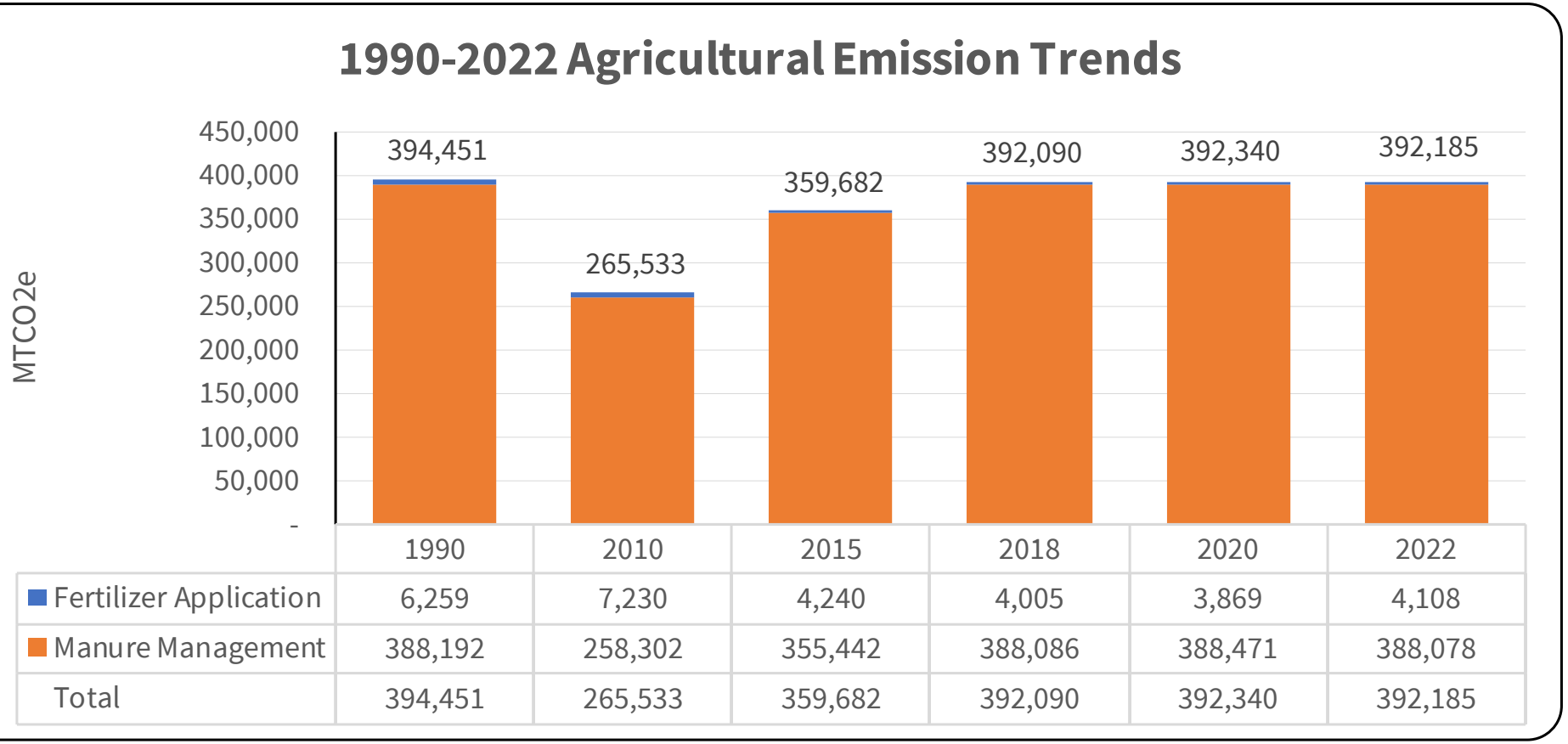
Sources:

- Zero Waste Sonoma Annual Reporting Data
- ZWS Waste Study

GHG Inventory Sources – Agriculture Emissions

- Fertilizer Application
  - Crop Acres from Sonoma County Crop Report
- Manure Management
  - Livestock Counts from County Crop Report

GHG Inventory Results – Agriculture Emissions



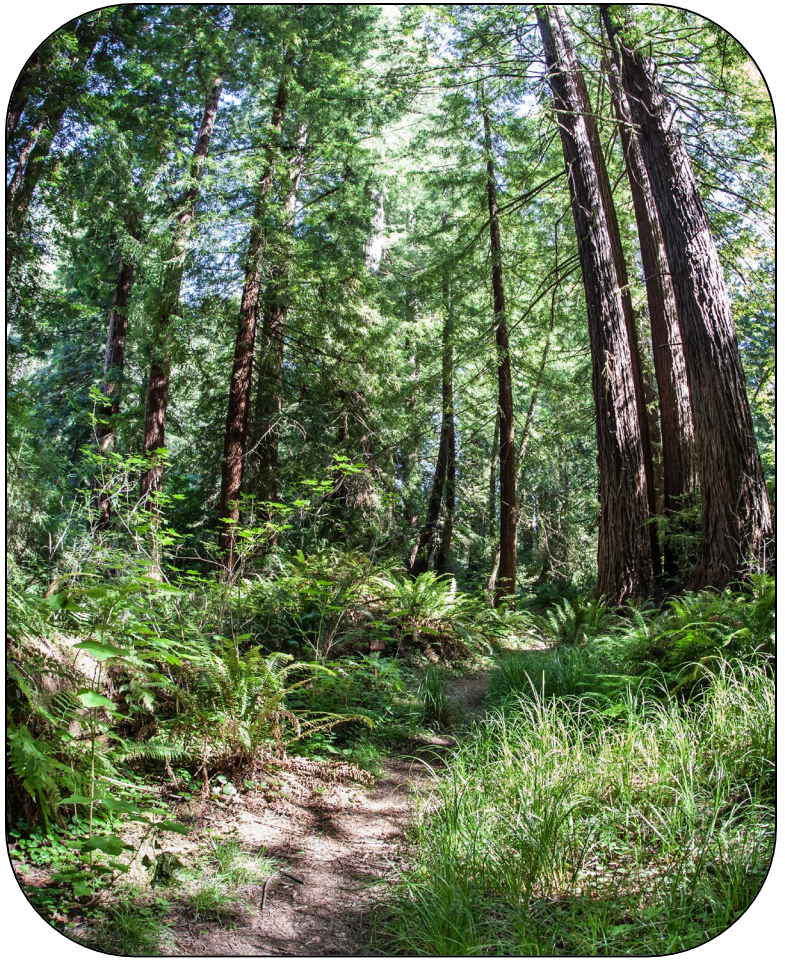
	1990	2010	2015	2018	2020	2022
Fertilizer Application	6,259	7,230	4,240	4,005	3,869	4,108
Manure Management	388,192	258,302	355,442	388,086	388,471	388,078
Total	394,451	265,533	359,682	392,090	392,340	392,185

Sub-Sectors:

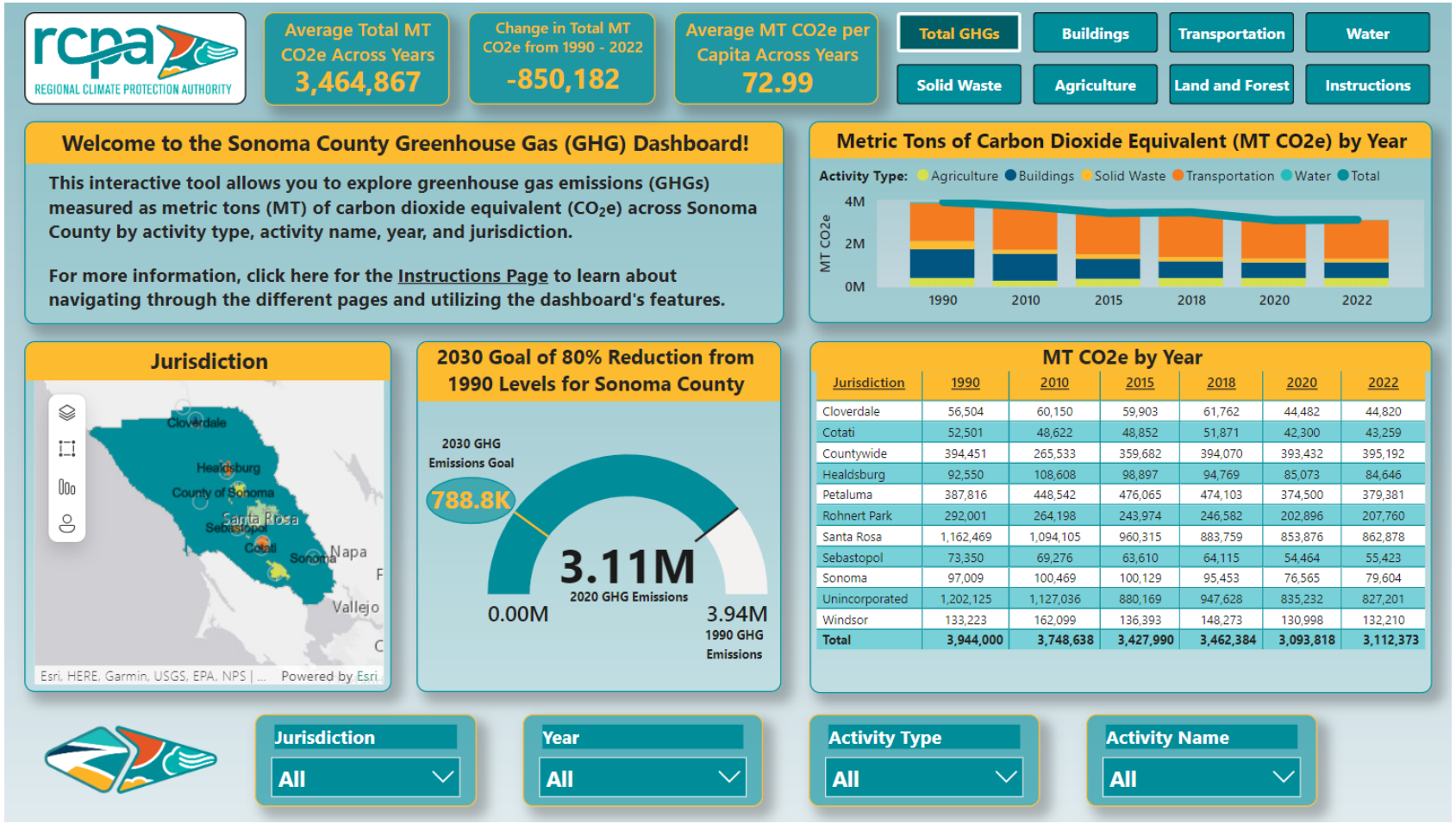
- Fertilizer Application
- Manure Management

GHG Inventory Overview – Forest Land and Trees

- New section to be added to this year's report based on two reports from County of Sonoma:
  - Sonoma County Climate Resilient Lands Strategy (August 2022)
  - Carbon Inventory and Sequestration Potential Study (October 2023)
- Expanded section in future to track countywide carbon sequestration efforts, such as:
  - Sonoma County Compost Application Project
  - Sonoma-Marin Ag and County Climate Coalition (SMACCC) – 5 Year USDA Grant



GHG Inventory Overview – Online Dashboard



Available online:

- https://rcpa.ca.gov/what-we-do/countywide-ghg-inventory/ghg-dashboard/
- Updated with 2022 data
- Detailed tabs for each greenhouse gas sector
- Includes land cover data from 2013 and 2022 for evaluation of sequestration potential
- Expanded dashboard expected to launch by end of year with additional features

GHG Inventory Overview – Key Findings

- GHG emissions have decreased 21% from 1990, but have risen just slightly above 2020 values
- 2020 emission values appear to be artificially low due to impacts of COVID-19 economic slowdown
- Transportation continues to be the largest source of emissions for the county at nearly 58% of total
- Building energy emissions have decreased 45% between 1990 and 2022
- Solid waste emissions have decreased 54% between 1990 and 2022
- Dramatic decreases in emissions and large-scale increases in carbon sequestration are both needed to meet RCPA's carbon neutrality goals for 2030

Upcoming GHG Reduction Projects

- Building Energy
  - Countywide Equitable Building Electrification Action Plan – Expected Late 2024
  - Bay Area Regional Energy Network (BayREN) Program Implementation – CURRENT
- Transportation
  - Countywide Action Transportation Plan to support walking, biking, and mobility devices – CURRENT
    - Includes updates to local plans for Cloverdale, Cotati, Healdsburg, Rohnert Park, Sebastopol, Sonoma, and Unincorporated County
  - Comprehensive Transportation Plan Update – Expected Late 2025

Thank You!

Questions?

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