



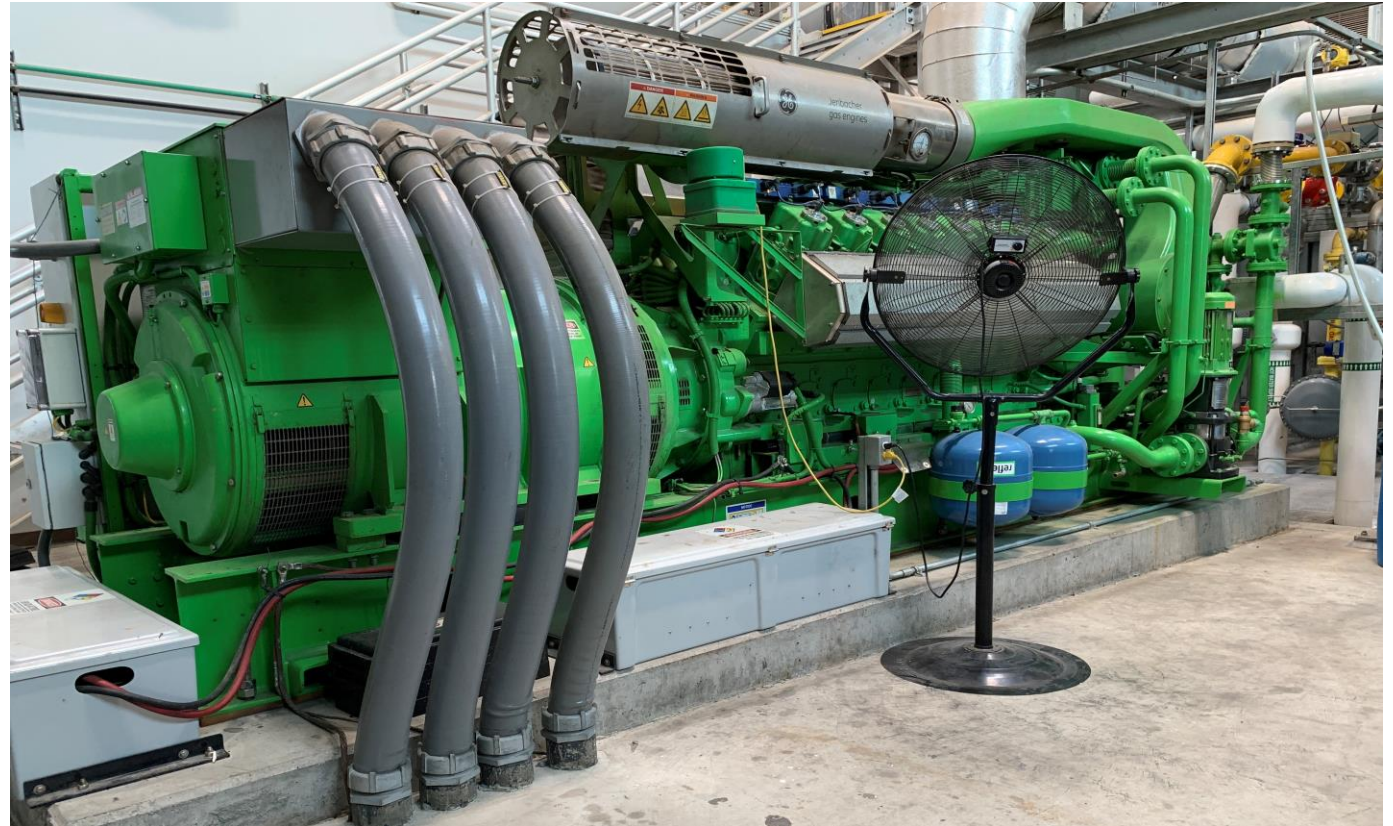
Council Sustainability Committee

Five-Year Performance of Cogeneration Engine at the Water Pollution Control Facility

September 14, 2020

Cogeneration Facility

- Commissioned in 2014
- Produces 8.9 mWhr/year
- Exports 1.1 mWhr/year
- Plant Demand 8.3 mWhr/year
- 97% of total plant demand satisfied by green power sources



Solar Phase 1 – One Megawatt

- Completed in 2010
- Produces 2.4 mWhr/year with 0.7 mWhr/year exported to grid.
- After Cogen Facility came online, solar exports increased to 2.0 mWhr/year.



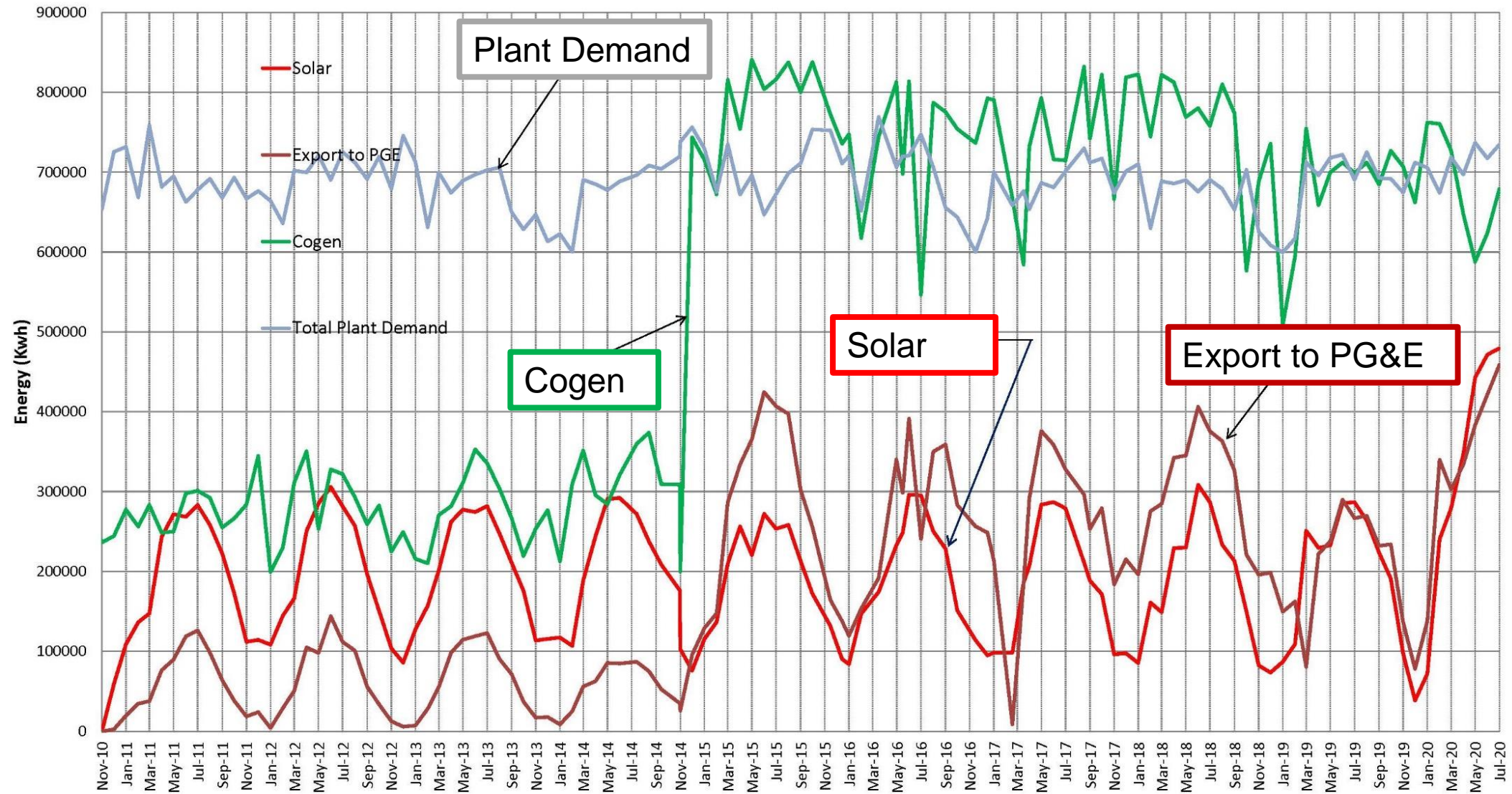
Solar Phase 2A – 600 kW

- Completed in February 2020
- Produces 1.4 mWhr/year all of which is available for use under RESBCT
- Total Solar Exports to Grid: 3.4 mWhr/year
- Total Exports to Grid including Solar & Cogen: 4.5 mWhr/year



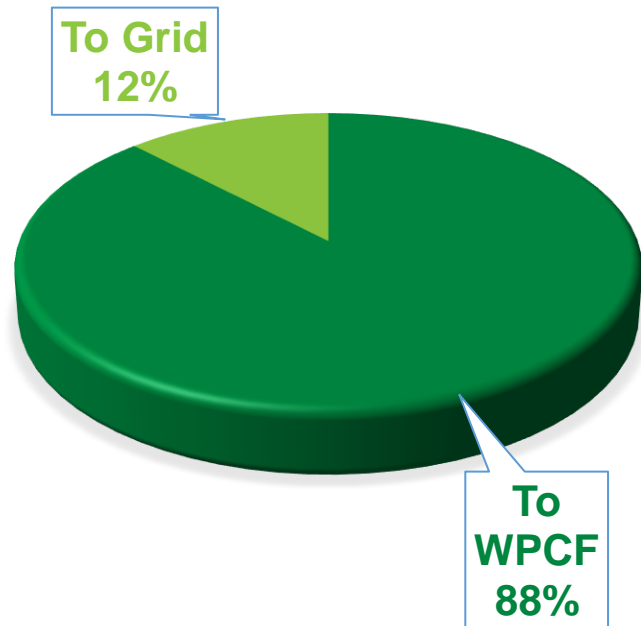
Plant Demand & Energy Sources

November 2010 through July 2020

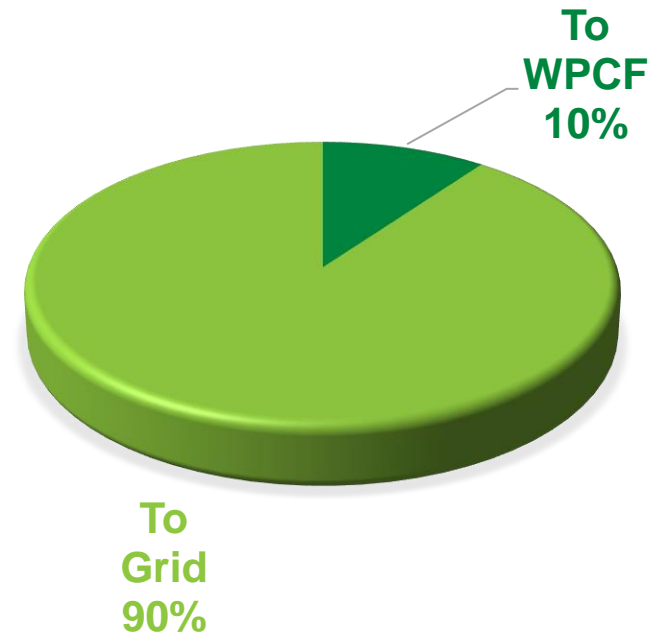


Annual Average Summary (2015 – 2019)

COGEN
(8,863,000 KWH)



SOLAR
(2,270,000 KWH)



EPA Green Power Partnership

Green Power Partnership Top 30 On-Site Generation List

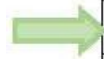
Released on January 27, 2020



The Top 30 On-site Generation list represents those partners generating and consuming the most green power on-site within the Green Power Partnership. The combined on-site green power consumption of these organizations amounts to more than 1.8 billion kilowatt-hours of green power annually, which is equivalent to the electricity use of more than 147,000 average

American homes each year.

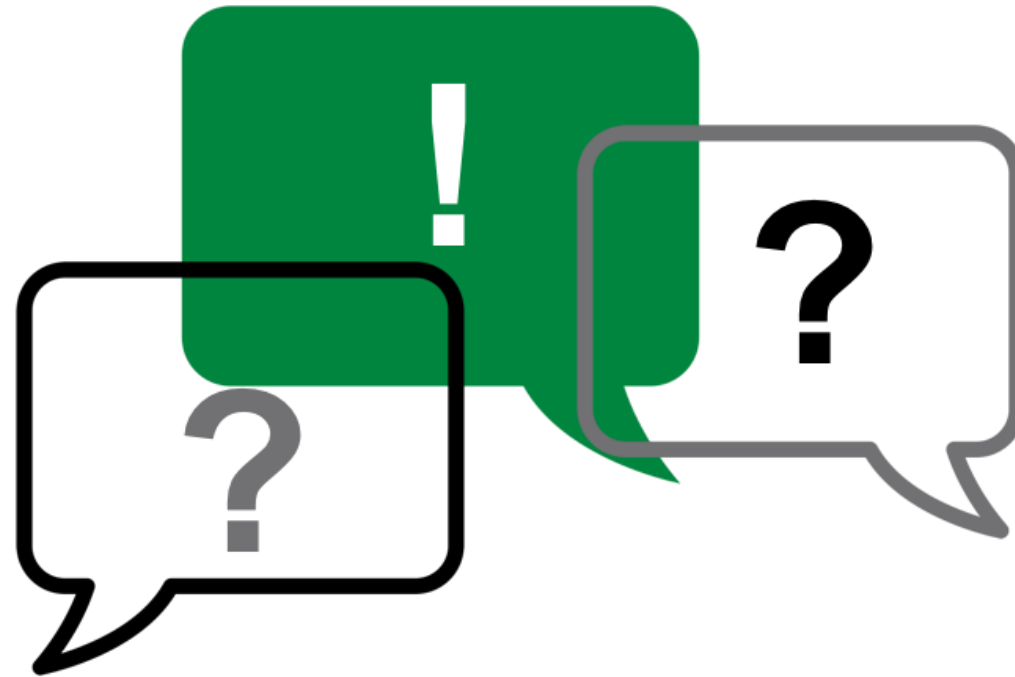
| Partner Name | Annual On-site Green Power Usage (kWh) | On-site % of Total Electricity Use* | On-site Resources | Purchased Green Power (kWh) |
|--|--|-------------------------------------|----------------------------|-----------------------------|
| 1. Apple Inc. | 532,750,885 | 29% | Biogas, Small-hydro, Solar | 1,837,004,495 |
| 2. Procter & Gamble | 208,441,010 | 7% | Biomass, Solar | 794,183,870 |
| 3. Walmart Inc. | 184,669,184 | 1% | Solar, Wind | 1,037,330,534 |
| 4. State of California | 88,899,994 | 7% | Solar | 232,580,402 |
| 5. University of California | 87,158,856 | 8% | Biogas, Solar | 273,347,222 |
| 6. General Motors, LLC | 75,215,623 | 2% | Biogas | 429,726,581 |
| 25. Gwinnett County, GA / F. Wayne Hill Water Resources Center | 12,693,297 | 20% | Biogas | 12,693,297 |
| 26. Yolo County, CA | 12,628,926 | 106% | Solar | 12,628,926 |
| 27. Volkswagen Group of America Chattanooga Operations, LLC | 11,629,620 | 10% | Solar | 11,629,620 |
| 28. City of Hayward, CA | 11,294,253 | 54% | Biogas, Solar | 11,294,253 |
| 29. City of Portland, OR | 11,064,486 | 9% | Biogas, Small-hydro | 106,682,319 |
| 30. Albertson's Inc. / Select Locations | 10,828,361 | 17% | Solar, Wind | 10,828,361 |



Fiscal Impact

| Approximate Annual Costs/Savings | |
|--|-------------|
| 2019 Spending on Electricity for Municipal Accounts (Includes \$346,000 savings in RES-BCT Credits) | \$2,059,000 |
| Estimated 2019 Charges w/o Cogen or Solar | \$3,448,000 |
| Estimated 2019 Savings | \$1,389,000 |

Discussion





Council Sustainability Committee

CY 2018

Greenhouse Gas Emission Inventory

September 14, 2020

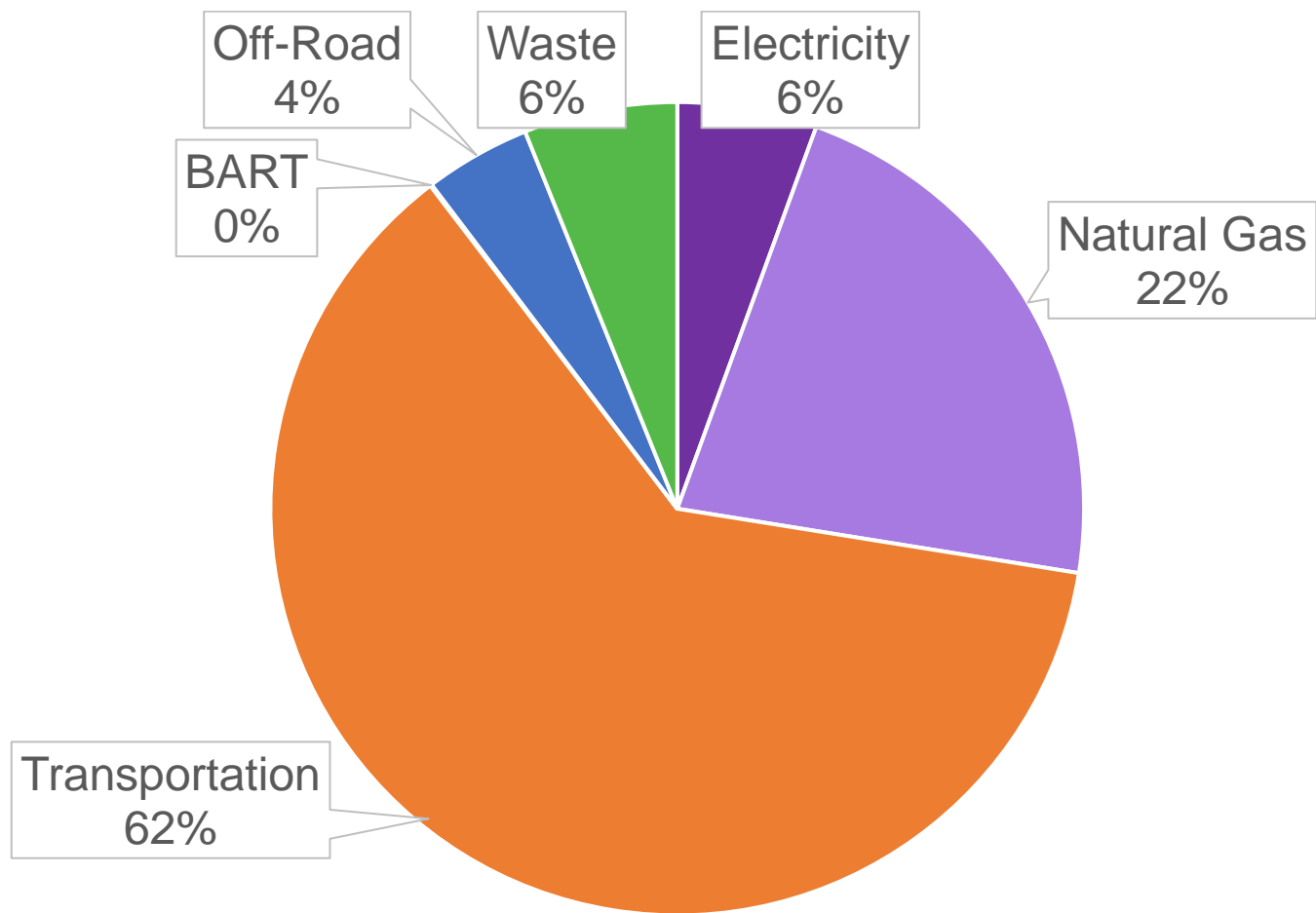
Hayward's GHG Emission Inventory Data

GHG Emissions by Sector (MTC02e)

| | 2005 | 2010 | 2015 | 2017 | 2018 | % Change from 2005 | 2019* | % Change from 2005 |
|--|------------------|------------------|------------------|----------------|----------------|-----------------------|----------------|-----------------------|
| Electricity | 185,890 | 165,304 | 141,854 | 75,118 | 47,531 | -74.4% | 11,013 | -94.1% |
| Natural Gas | 189,995 | 191,526 | 176,803 | 186,110 | 187,991 | -1.1% | 176,649 | -7.0% |
| Transportation | 636,581 | 580,238 | 571,556 | 553,298 | 531,104 | -16.5% | 522,897 | -17.9% |
| BART | 3,440 | 3,425 | 4,276 | 3,994 | 556 | -83.5% | 547 | -84.1% |
| Off-Road Vehicles | 24,345 | 37,630 | 71,034 | 69,279 | 36,064 | +48.1% | 51,392 | +111.1% |
| Waste | 50,924 | 38,338 | 38,148 | 47,555 | 52,209 | +2.5% | 52,209 | +2.5% |
| Total | 1,091,174 | 1,016,461 | 1,003,670 | 935,354 | 855,465 | -21.6% | 814,707 | -25.3% |
| Hayward Population | 140,530 | 143,921 | 155,753 | 159,623 | 159,603 | | 160,197 | |
| Total Emissions/ Capita | 5.2 | 4.8 | 4.4 | 4.1 | 3.7 | -28.9% | 3.5 | -32.5% |

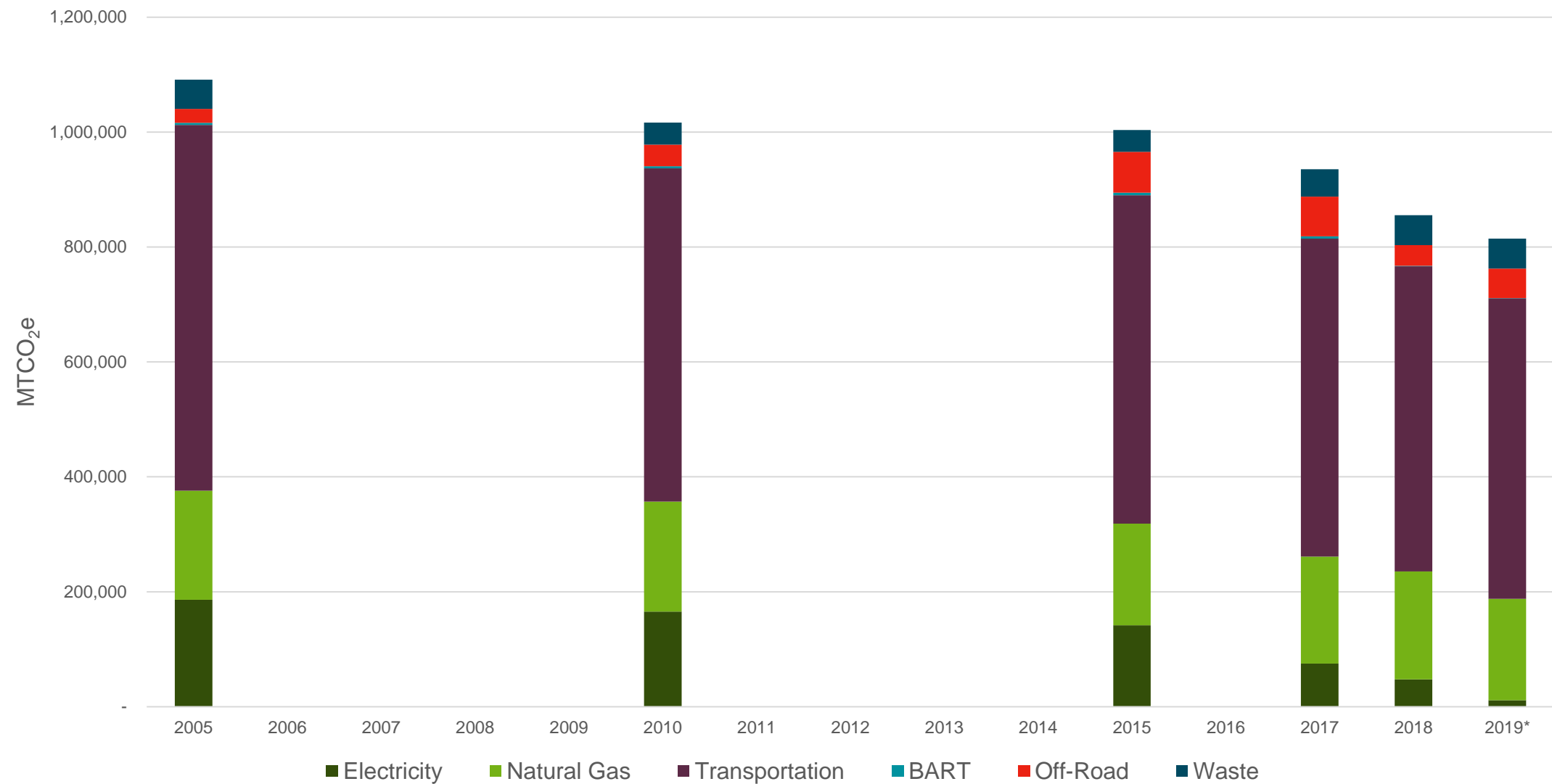
*Electricity and waste sectors are estimated data in 2019

Relative Contributions to Hayward's GHG Emissions (2018)



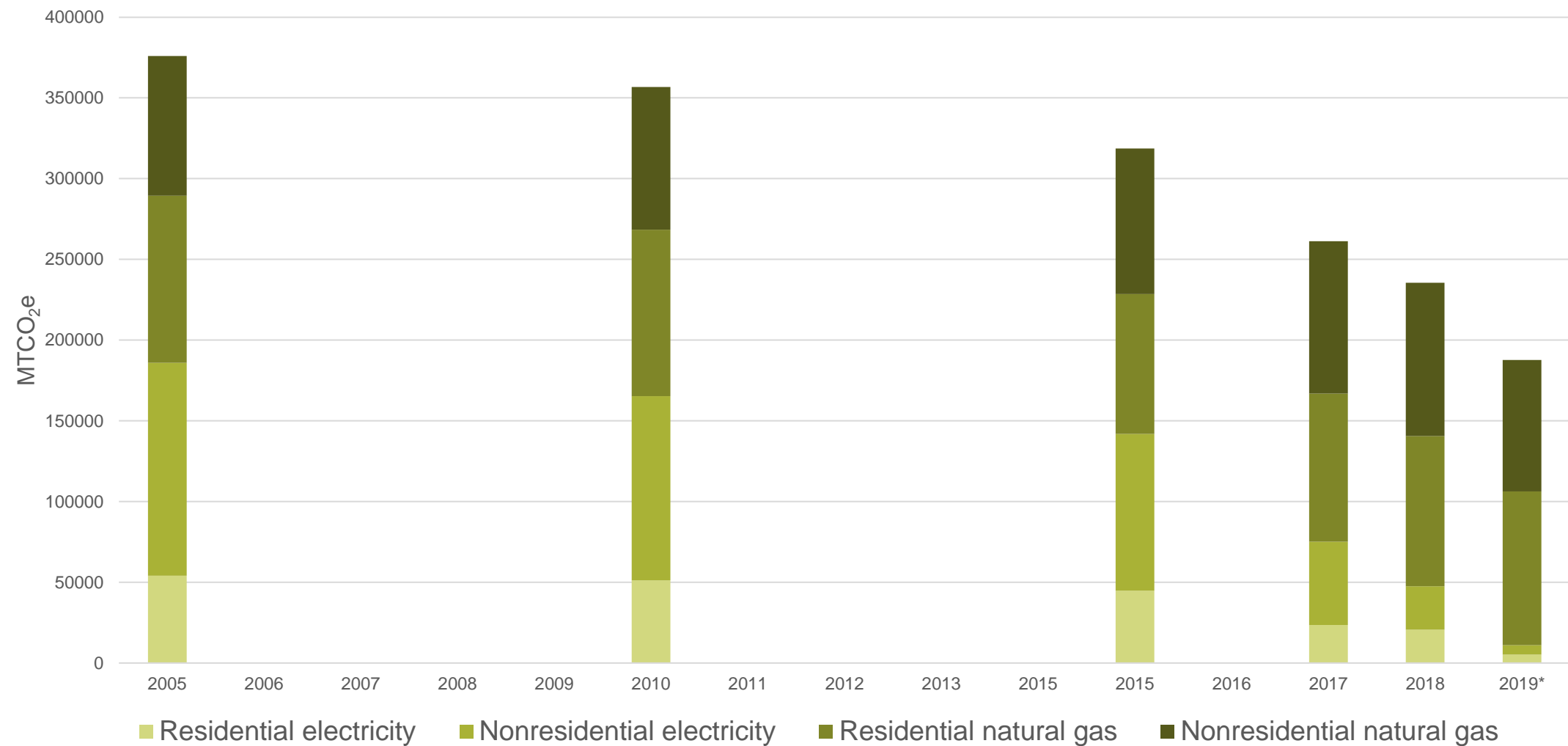
■ Electricity ■ Natural Gas ■ Transportation ■ BART ■ Off-Road ■ Waste

Hayward's GHG Emissions by Subsector



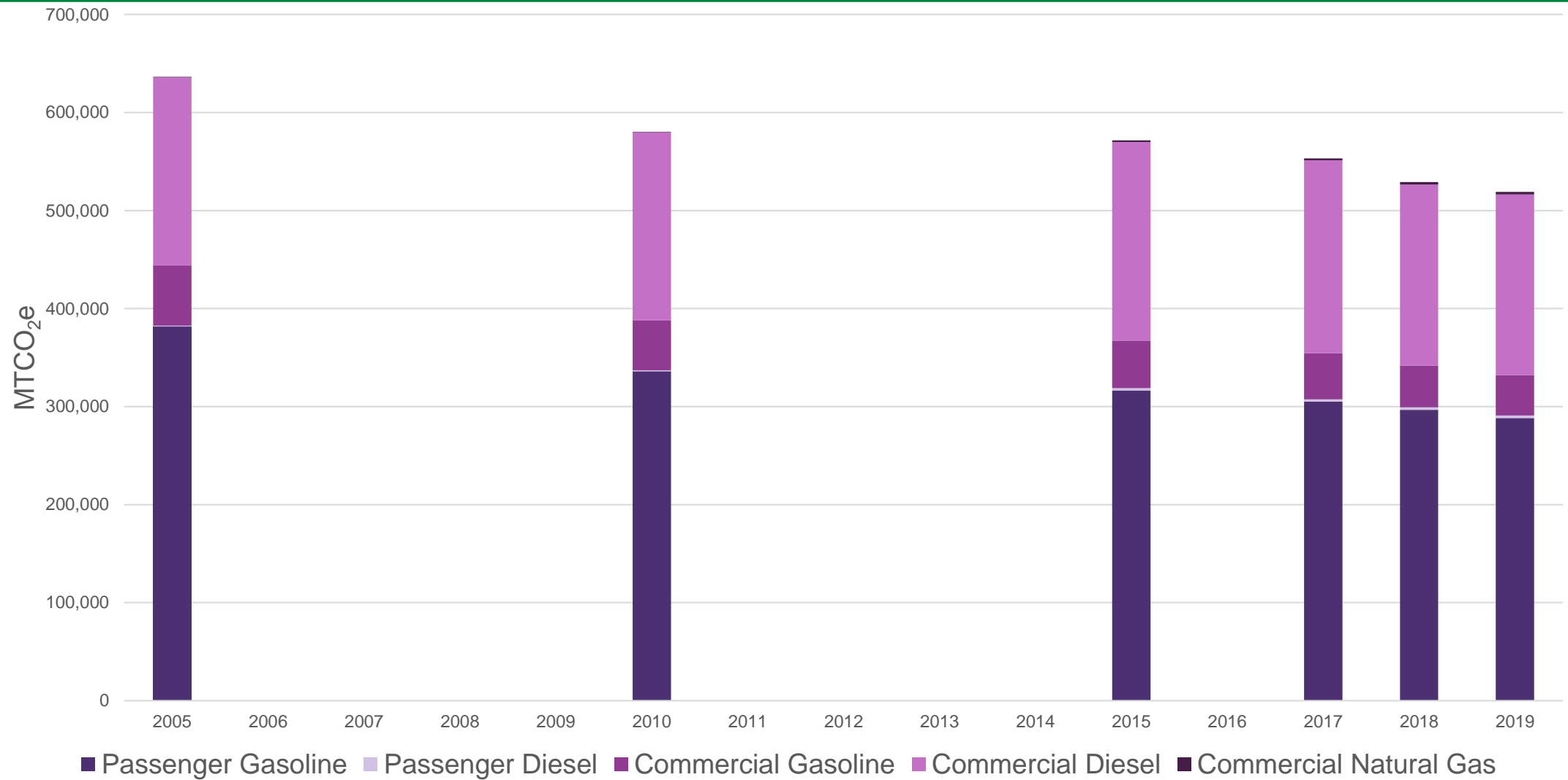
*Electricity and waste sectors are estimated data in 2019

Energy Sector



*Electricity and waste sectors are estimated data in 2019

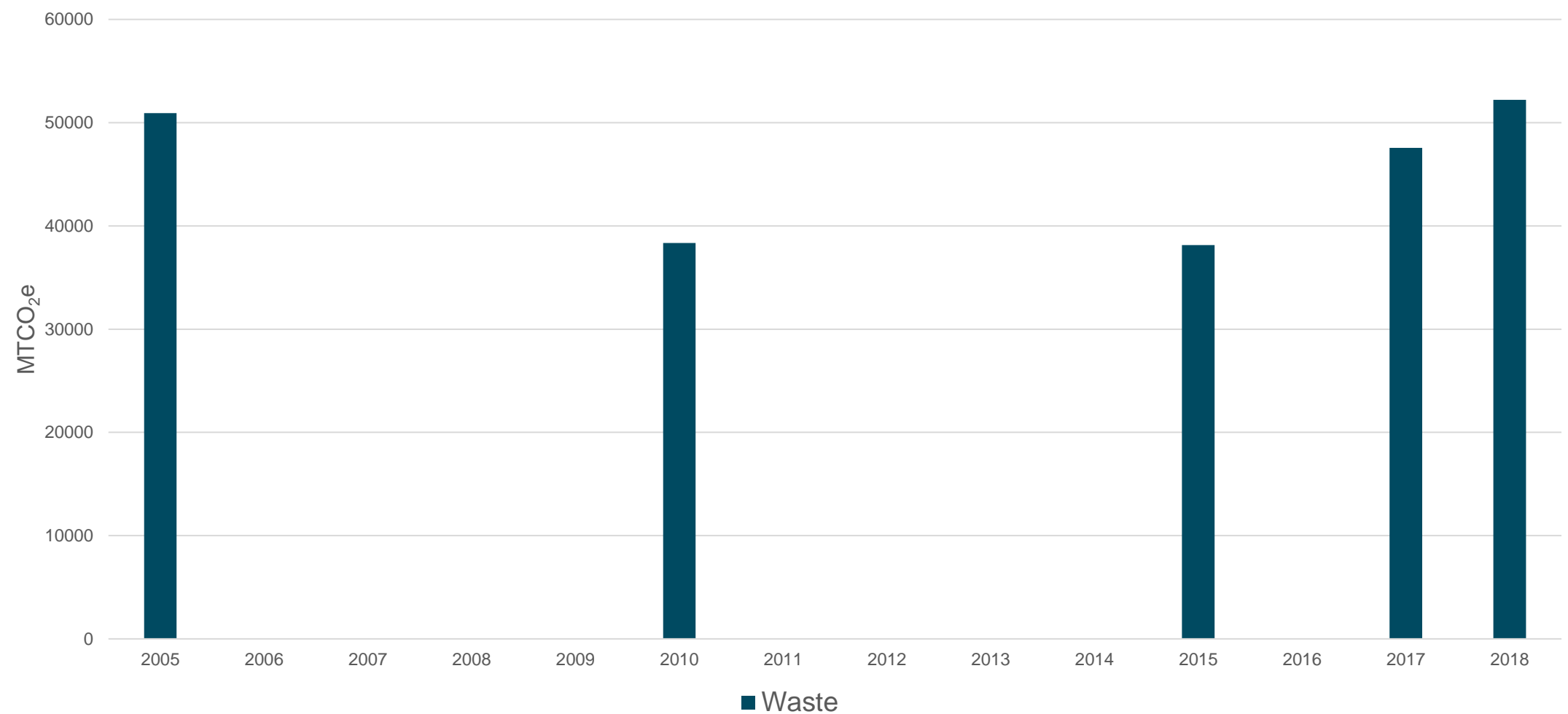
Transportation Sector



Off-road Vehicles Sector

| | 2005 | 2010 | 2015 | 2017 | 2018 | % Change from 2005 | 2019 | % Change from 2005 |
|--------------------------------------|---------------|---------------|---------------|---------------|---------------|-----------------------|---------------|-----------------------|
| Agricultural Equipment | 0 | 0 | 0 | 0 | 0 | | 0 | |
| Airport Ground Support Equipment | 0 | 0 | 0 | 0 | 0 | | 0 | |
| Construction and Mining Equipment | 0 | 11,478 | 40,143 | 37,833 | 5,696 | -50%* | 20,447 | +78%* |
| Dredging | 0 | 0 | 0 | 0 | 0 | | 0 | |
| Entertainment Equipment | 83 | 83 | 83 | 85 | 83 | +1% | 83 | 0% |
| Industrial Equipment | 12,564 | 13,030 | 14,007 | 14,350 | 14,522 | +16% | 14,697 | +17% |
| Lawn and Garden Equipment | 2,470 | 2,460 | 2,562 | 2,664 | 2,640 | +7% | 2,653 | +7% |
| Light Commercial Equipment | 4,958 | 5,009 | 5,046 | 5,141 | 5,185 | +5% | 5,230 | +5% |
| Logging Equipment | 0 | 0 | 0 | 0 | 0 | | 0 | |
| Military Tactical Supp. Equip. | 0 | 0 | 0 | 0 | 0 | | 0 | |
| Oil Drilling | 0 | 0 | 0 | 0 | 0 | | 0 | |
| Pleasure Craft | 1,531 | 1,751 | 2,036 | 2,218 | 2,247 | +47% | 2,311 | +51% |
| Recreational Equipment | 379 | 455 | 544 | 597 | 608 | +60% | 628 | +66% |
| Transport Refrigeration Units | 2,359 | 3,000 | 3,832 | 4,461 | 5,083 | +115% | 5,342 | +126% |
| Total GHG Emissions | 24,345 | 37,265 | 68,251 | 67,348 | 36,064 | +48% | 51,392 | +111% |

Solid Waste Sector



Progress Toward 2020 Goal

2018 GHG Emission Reduction Predictions without EBCE's Brilliant 100 Product

| | 2005 | 2018 - Actual | <i>2018 - Scenario</i> |
|----------------------------------|-----------|---------------|------------------------|
| Electricity | 185,890 | 47,531 | 58,655 |
| Natural Gas | 189,995 | 187,991 | 187,991 |
| Transportation | 636,581 | 531,104 | 531,104 |
| BART | 3,440 | 566 | 566 |
| Off-Road | 24,345 | 36,064 | 36,064 |
| Waste | 50,924 | 52,209 | 52,209 |
| Total | 1,091,174 | 855,465 | 866,589 |
| Percent Change from 2005 to 2018 | | 21.6% | 20.6% |

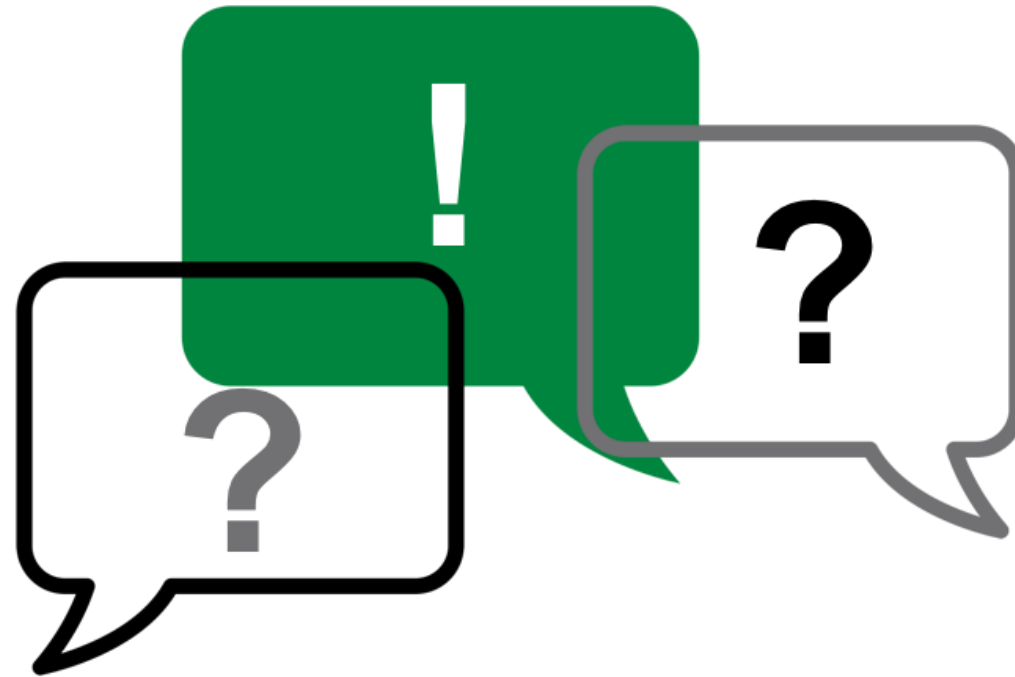
Limitations of the Inventory

- **Inventory is not a complete carbon footprint.**
- **Emissions associated with food and other products/services purchased are not included.**

Next Steps

- 
- **Continue to work with regional agencies on inventories to increase frequency**
 - **Develop a roadmap to meet the 2030 target**

Questions





Council Sustainability Committee

Proposed 2020 Agenda Planning Calendar

September 14, 2020

Proposed 2020 Agenda Planning Calendar

Special Meeting: Thursday, October 15, 2020

[Default Electricity Product from East Bay Community Energy](#)

Monday, November 9, 2020

Limiting the Number of Service Stations Selling Fossil Fuel

[Proposed Updates to Strategic Roadmap Priority: Combat Climate Change](#)

Proposed 2020 Agenda Planning Calendar

| Unscheduled Items |
|--|
| Sustainable Groundwater Plan |
| Long Term Water Conservation Framework |
| Low Carbon Concrete |
| Roadmap to Meet 2030 GHG Target |
| Pilot Program for Reusable Dishware |
| Advanced Metering Infrastructure (AMI) Customer Portal Pilot Program Update |
| EV Charging Requirements for Existing Multifamily Properties |
| Ending Natural Gas Use by 2045 |
| <u>Implementation of Reach Code</u> |
| <u>Implementation of Strategic Roadmap (Combat Climate Change projects)</u> |
| <u>Draft Revisions to the Municipal Regional Stormwater Permit (MRP 3.0)</u> |
| |

Next Meetings

Thursday, October 15, 2020

Monday, November 9, 2020