



CITY OF CARMEL-BY-THE-SEA

Greenhouse Gas Emissions: Inventories, Forecasts, and Reduction Targets

LSA

Climate Committee Meeting

January 20, 2021



Inventory Issues and Solutions

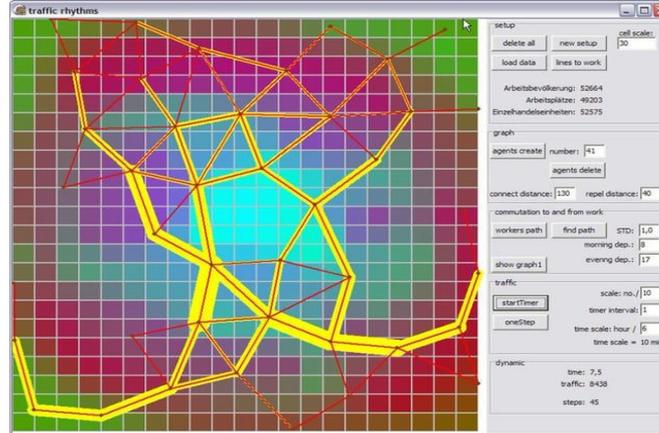
Recap from last meeting: Issue with On Road Transportation

- AMBAG uses boundary method of developing VMT rather than origin/destination.
- Future AMBAG transportation modeling will include Countywide origin/destination VMT but not down to the City level.
- **Solution:** Estimate the trip types within the AMBAG VMT
 - For commuter trips and visitor trips determine origin/destination and apply fair share portion of VMT to the City.

Updated On-Road Transportation

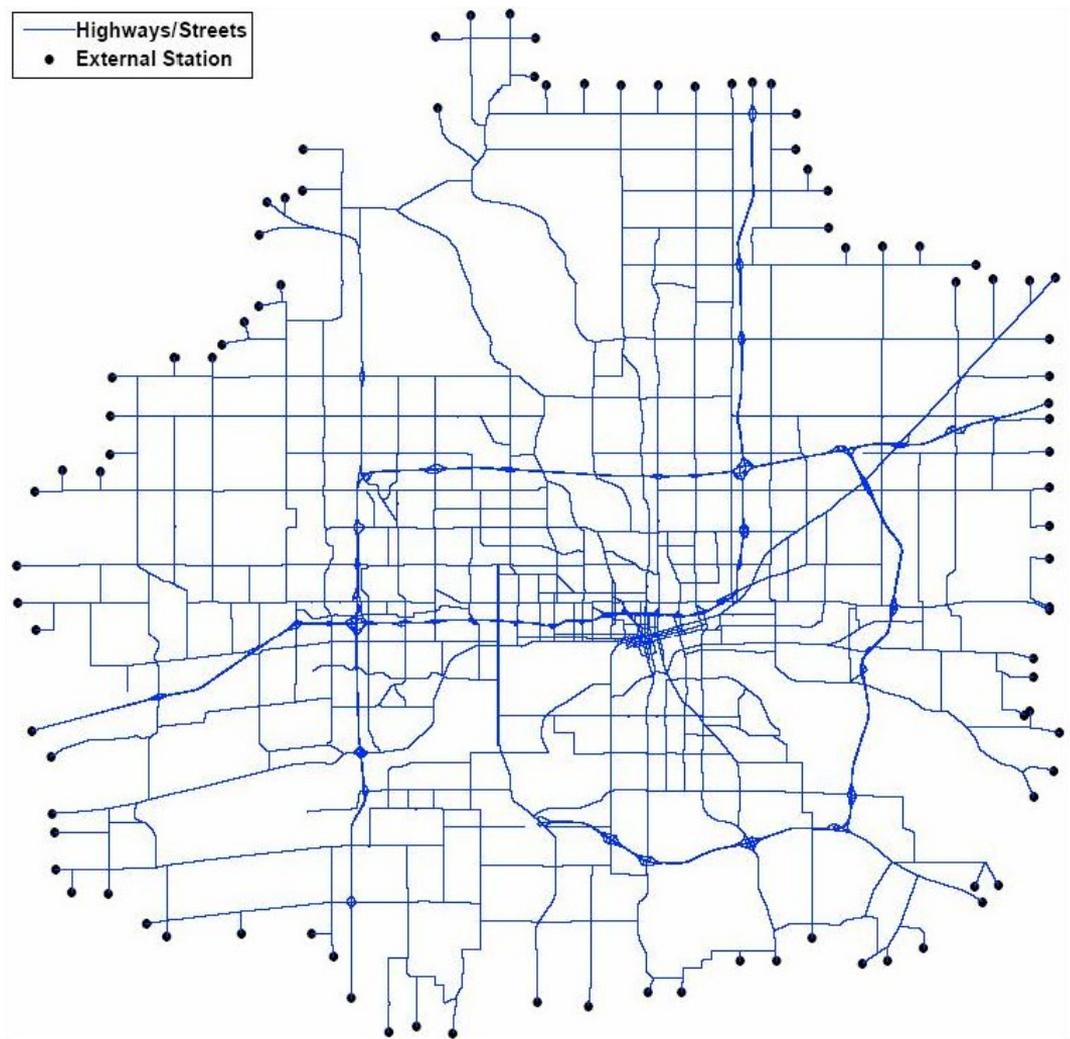
Origin Destination Traffic Modeling

- Uses land use types to develop TAZs used as nodes within the model.
- Limits of a regional origin/destination model for Carmel-By-The-Sea is the County limits.



Updated On-Road Transportation

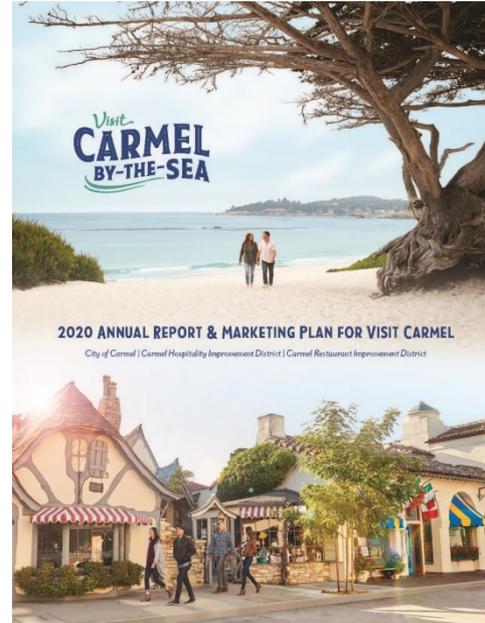
- Limits of a regional origin/destination model for Carmel-By-The-Sea is the County limits.



Carmel-By-The-Sea Vehicle Trip Types

Tourism Based Trips (Visitors)

- Sources of information:
 - Carmel Chamber of Commerce
 - Monterey County Visitors Bureau
 - Carmel Visitors Center
 - Visit Carmel



Carmel-By-The-Sea Vehicle Trip Types

Tourism Based Trips (Visitors)

- Domestic visitors trip origins:
 - San Francisco Bay Area (42%)
 - Salinas (40%)
 - Los Angeles/Orange Counties (9%)
 - Sacramento/Yolo Counties (5%)
 - Fresno (2%)
 - New York/New Jersey (2%)
- International visitors trip origins:
 - China (38%)
 - Canada (26%)
 - Brazil (9%)
 - United Kingdom (16%)
 - France (6%)
 - Australia (5%)

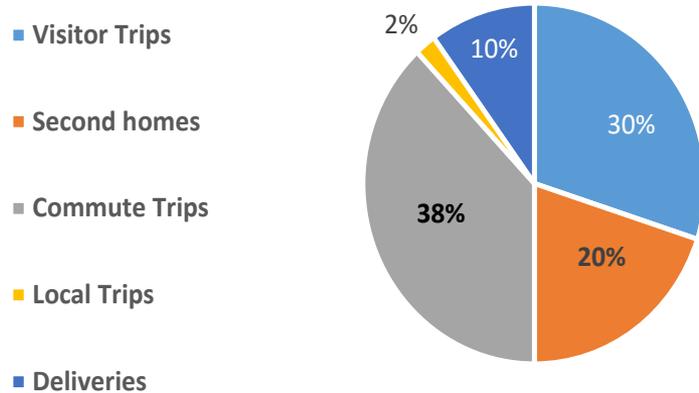
Carmel-By-The-Sea Vehicle Trip Types

Other Trip Types

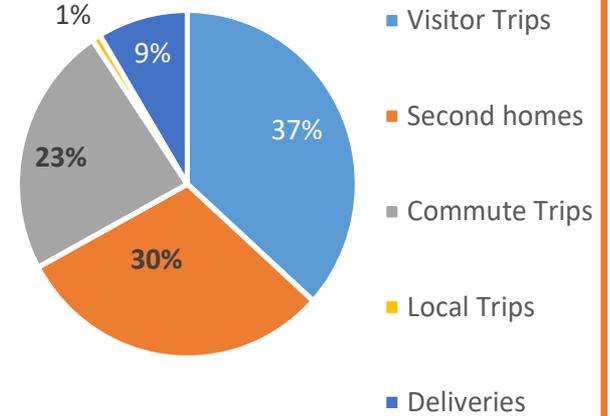
- Trips associated with second Homes (Carmel Real Estate Brokers)
- Commuter Trips (AMBAG)
- Deliveries (AMBAG)
- Local Trips (AMBAG)

Updated On-Road Transportation (Trip Type, VMT)

City of Carmel On-Road Sector Trip Type

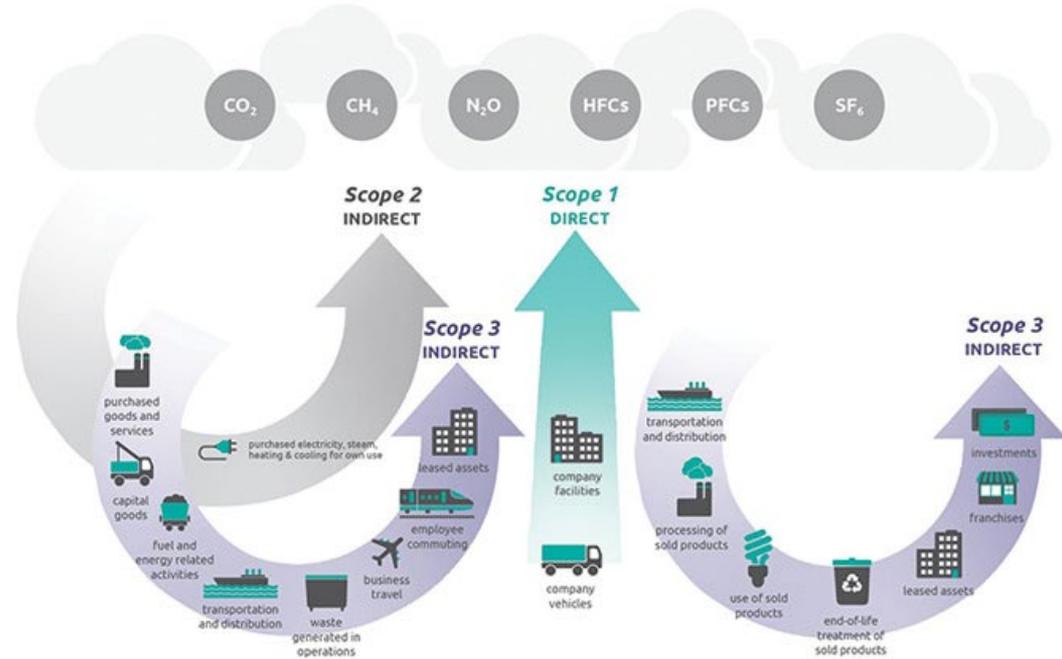


Percentage VMT



Allocating VMT to the City Using the Protocols

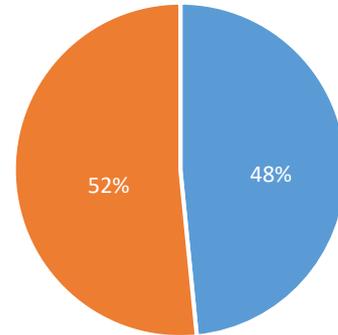
- Scope 1: Direct (required)
- Scope 2: Indirect (required)
- Scope 3: Voluntary Indirect



Allocating VMT to the City Using the Protocols

- Scope 1: Direct (required)
- Scope 2: Indirect (required)
- Scope 3: Voluntary Indirect

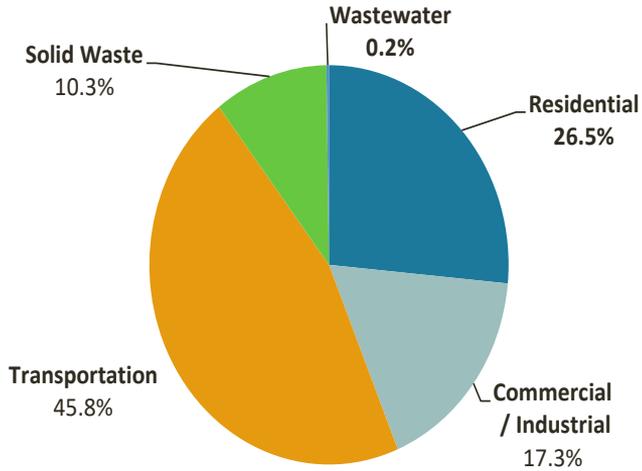
OnRoad Sector Emissions By Scope Allocation



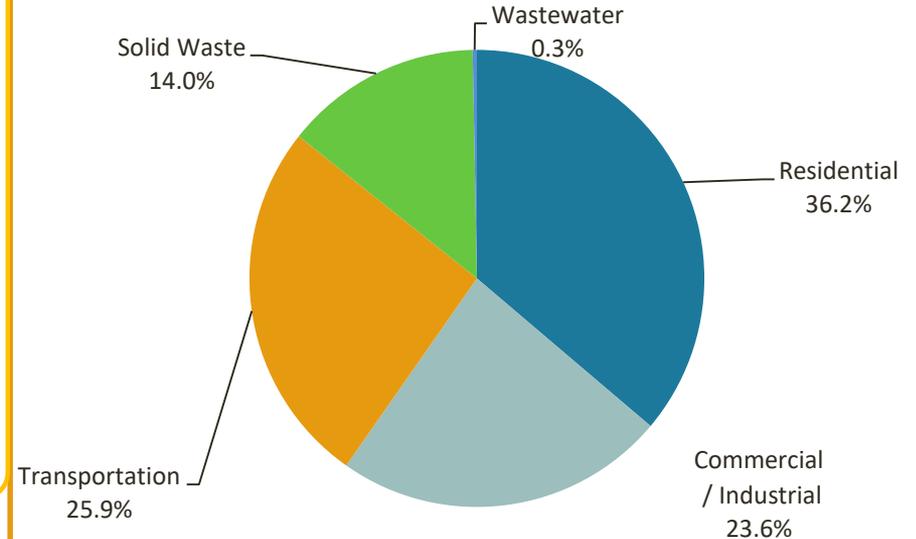
■ Scope 1 VMT: ■ Scope 3 VMT:

Revised Inventory (Scope 1 and 2) with Updated VMT

City of Carmel 2019 GHG Emissions by Sector



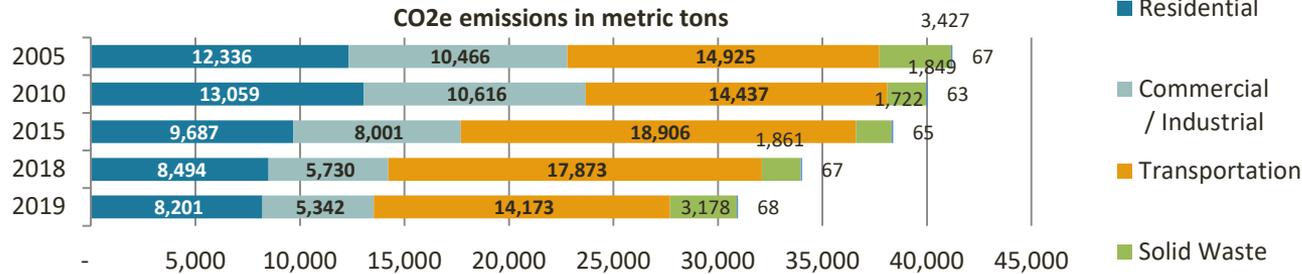
City of Carmel 2019 GHG Emissions by Sector



Inventory by AMBAG

Revised Inventories (Scope 1 and 2)

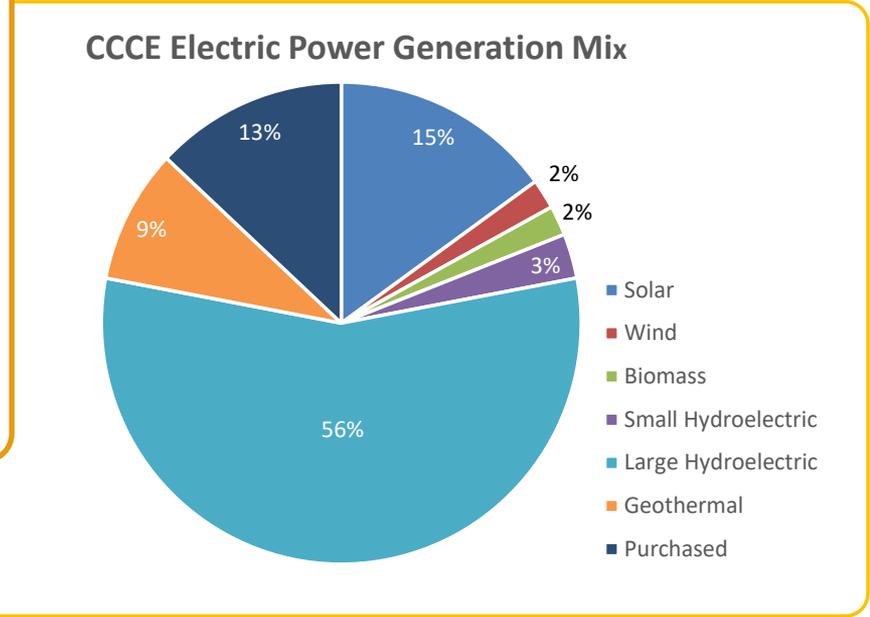
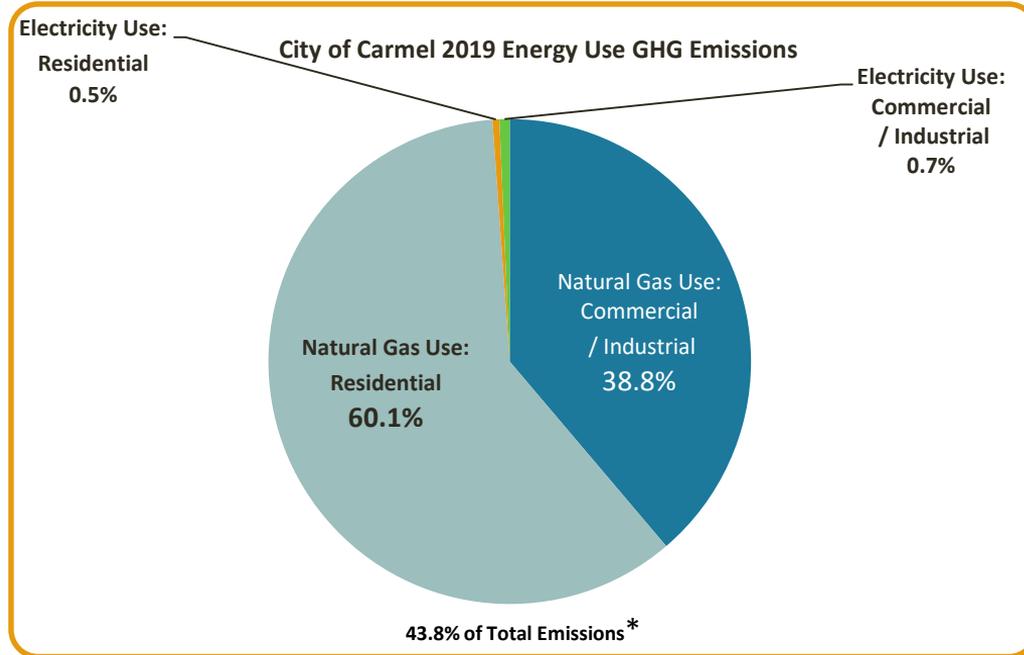
City of Carmel 2005 to 2019 GHG Emissions by Sector



City of Carmel 2005-2019 Community-wide GHG emissions

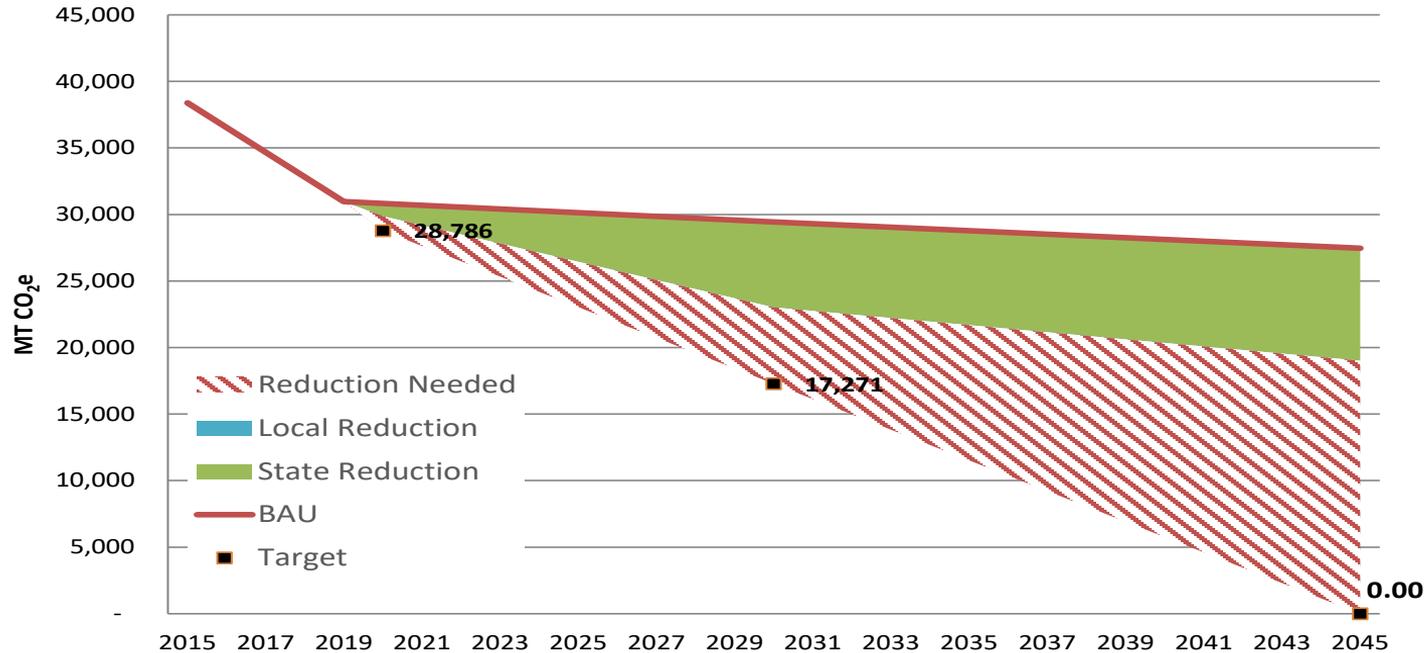
Community CO2e Emissions by Sector	Residential	Commercial / Industrial	Transportation	Solid Waste	Wastewater	Total
2005	12,336	10,466	14,925	3,427	67	41,221
2010	13,059	10,616	14,437	1,849	63	40,024
2015	9,687	8,001	18,906	1,722	65	38,381
2018	8,494	5,730	17,873	1,861	67	34,026
2019	8,201	5,342	14,173	3,178	68	30,962
% change 2005 - 2018	-34%	-49%	-5%	-7%	1%	-25%

Inventory: Energy Sector



Emission Forecasts and Recommended Targets

City of Carmel-By-The-Sea, 2015 - 2045



Conclusions

- **The analysis provides a solid baseline to develop strategic actions associated with the reduction of on-road transportation emissions.**
- **The analysis provides the technical information needed to develop a climate action plan.**
- **The analysis provides a sound methodology to use in updating the inventories in the future.**



Recommended Next Steps



Provide tourist based Reduction Measure Actions in the forthcoming CAP.

- Incentivize electric vehicles/buses by visitors.
- Provide carbon offsets and promote them with visitors to Carmel.
 - Carbon offsets for air-travel as well as land based travel.
- Develop a Green Visitor Program.

During the next major CAP Update (within 2-3 years) provide Origin/Destination Modeling

- Carmel focused regional modeling using the AMBAG model.
- Develop and conduct commuter survey within Carmel businesses.
- Update visitor analysis.