



The role of the Electric Vehicle Working Group, established in 2015, is to advise the Mayor's Office on how to accelerate private vehicle electrification in San Francisco, while also helping the City lead by example.

The initial focus of the Electric Vehicle Working Group (EVWG) was electrifying the City's own fleet and increasing publicly available charging infrastructure in all new buildings. The City Administrator's Office crafted and implemented a path forward for electrifying the municipal non-revenue fleet, and SF Environment took lead on adoption of an ordinance requiring all new construction to include electrical infrastructure to support electric vehicle (EV) charging.

In 2017, the EVWG created the Electric Mobility Subcommittee to develop this EV Roadmap for accelerating electrification of private sector transportation. In 2017, San Francisco's transportation sector was responsible for **46% of all greenhouse gas (GHG) emissions** [Figure 1], with **71% of those emissions** coming from privately owned cars and trucks [Figure 2].

San Francisco, as a Transit First city, recognizes that to reduce emissions and congestion, sustainable modes of transportation, such as public transit, biking, and walking must be prioritized. In addition, to further reduce and eventually eliminate remaining transportation emissions to meet the City's goal of net zero emissions, all remaining forms of transportation must be electrified [Figure 3]. Two technical breakthroughs will make this possible:

1. EV technology is approaching a tipping point, as new models are better performing and more affordable.
2. The fuel for EVs, electricity, is getting cleaner through the transition toward renewable energy sources.

Figure 1, 2017 GHG Emissions by Sector

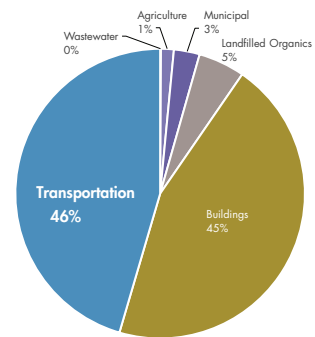


Figure 2, 2017 Transportation Sector GHG Emissions

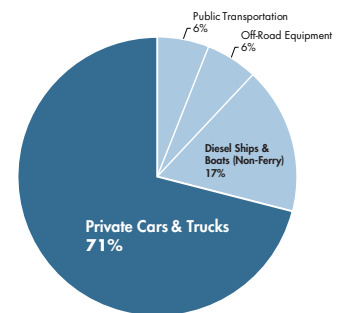
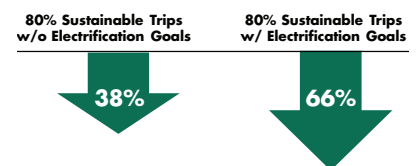


Figure 3, Projected Transportation Emissions Reductions by 2030



EV ROADMAP, continued →





San Francisco has a goal of **100% renewable energy by 2030**. When powered by renewable energy, EVs – including hydrogen fuel cell EVs – provide a pathway to eliminate virtually all GHG emissions from transportation, which will have a significant impact on improving local air quality.

The EVWG Electric Mobility Subcommittee is led by SF Environment and is co-chaired by the San Francisco Municipal Transportation Agency and the San Francisco Public Utilities Commission. Representatives from fifteen City departments and agencies joined stakeholders representing regional and state agencies, non-government organizations, and industry partners to develop the City’s EV Roadmap. Over the last year, the Subcommittee gathered nine times for workshop-style meetings, hosted two community listening sessions, and collaboratively designed strategies that will make emission-free transportation in San Francisco a reality. The EV Roadmap puts forward an accelerated path toward electrification of all forms of private transportation and proposes a bold vision for the future:

## Make all transportation in San Francisco emission-free by 2040

To inspire near term action and reduce emissions quickly, the EV Roadmap proposes interim targets for 2025 and 2030. The targets focus on reducing vehicle miles traveled and rapidly electrifying vehicles that remain on the road. Furthermore, the targets aim to reduce the sale of new gasoline and diesel vehicles, so that **all new cars sold in San Francisco are electric by 2030** [Figure 4].

To achieve these targets, the EV Roadmap proposes six strategies, each addressing a major barrier to EV adoption, and identifies key actions necessary to implement each strategy.

Figure 4, Proposed Targets

### By 2025 EVs will be:

50% of new passenger vehicle registrations with no increase in total vehicle registrations per household

50% of emerging mobility vehicle miles traveled

2,000 medium- and heavy-duty commercial vehicles registered in the city

1/3 of incoming commuter vehicles

### By 2030 EVs will be:

100% of new passenger vehicle registrations with no increase in total vehicle registrations per household

100% of emerging mobility vehicle miles traveled

10,000 medium- and heavy-duty commercial vehicles registered in the city

2/3 of incoming commuter vehicles

### 2040 Vision

All trips originating in, ending in, or passing through San Francisco will be emission-free

EV ROADMAP, continued →





## STRATEGIES



### Public Awareness

*Achieve broad public awareness, understanding, and consideration of the options and benefits of electric mobility.*

Target outcome: by 2020, drivers and the general public will be fully informed on key EV benefits, and that electric options are always considered when mobility investments and choices are made.

- Develop and fund a City public awareness campaign
- Develop and fund a City EV Help Desk
- Evaluate options to offer community groups/neighborhoods extended test rides in EVs
- Explore opportunities to align the transportation demand management program and policies with electrification goals
- Develop branding and signage standards for EV charging infrastructure



### Incentives

*Create a preference for electric mobility over gasoline and diesel vehicles.*

Target outcome: by 2020, clear price signals and other incentives will be in place to encourage electric mobility over gasoline and diesel.

- Evaluate options for a City EV purchase and/or lease incentive
- Collaborate regionally to evaluate EV lane access policies on managed lanes
- Evaluate incentives for EVs on airport roadways, in queues, and in parking facilities
- Develop recommendations to use garage parking policy to create incentives for EVs
- Develop recommendations for EV street parking policies and pricing
- Develop recommendations for low-emission or EV-only parking and/or driving zones
- Evaluate transportation pricing strategies that base fee structure on the emission factors of vehicles



### Charging Infrastructure

*Ensure that charging infrastructure for EVs is available and convenient for all residents, businesses, and visitors.*

Target outcome: by 2022 there will be an effective and scalable range of charging options for all residents, fleets, and visitors across the city supporting full electrification.

- Evaluate options for broad deployment of charging infrastructure in multi-unit dwellings
- Develop a home and/or workplace smart charging program
- Develop a Direct Current Fast Charger (DCFC) Masterplan
- Install/expand publicly accessible charging infrastructure at City-owned parking facilities
- Accelerate deployment of charging stations in privately owned, publicly accessible garages and lots
- Study curbside charging options
- Develop a workforce training program to support charging infrastructure installation
- Make the charging experience more seamless and investments future proof





### Grid

*Integrate EV charging with the electrical grid to maximize the benefits of charging infrastructure and support the transition to a renewable energy future.*

Target outcome: by 2025, most EVs will be powered by GHG-free electricity, and all have access to electricity rates that make EVs an economical alternative to gasoline- and diesel-powered transportation.

- Convene City agencies and local utility to identify solutions to electrical infrastructure limitations to supply EV charging infrastructure
- Evaluate pricing to customers for public and residential Level 2 and DCFC, and identify options to make charging more affordable
- Study options to incentivize DCFC providers to invest in on-site “stationary battery storage”
- Require charging network providers operating on public property to use 100% renewable or GHG-free power where feasible



### Medium- and Heavy-Duty

*Lead the way in medium- and heavy-duty electrification.*

Target outcome: from 2020 to 2025, the City establishes lighthouse projects of early adoption of EV technology for all major categories of medium- and heavy-duty transportation.

- Identify, catalog, and support pilots in medium- and heavy-duty fleets
- Work with the School District to support electric transportation for students
- Work with Recology to expand pilots for electric trucks for waste operations
- Develop recommendations for incentives and/or regulations for electrification of medium- and heavy-duty fleets
- Evaluate options to install charging infrastructure for trucks parked at Port property



### Emerging Mobility

*Advocate for and encourage emerging mobility options to be emission-free.*

Target outcome: by 2020, emerging mobility fleets commit to a clear path to full electrification before 2025, and any new forms of mobility are fully electric from the start.

- Develop recommendations to electrify transportation network companies and similar light-duty passenger fleets
- Evaluate options to electrify vehicle sharing
- Evaluate options to electrify taxi fleet
- Pilot electric car rentals at San Francisco International Airport
- Set expectation and encourage private and fleet autonomous vehicles to be electric

