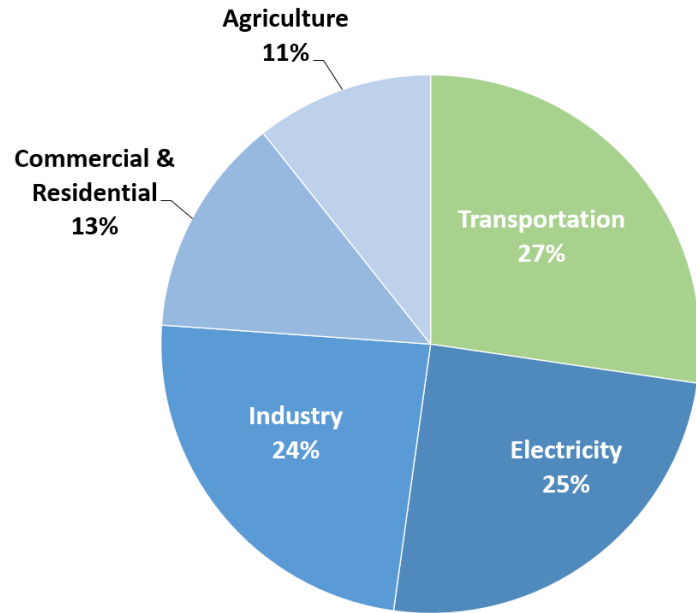


# Electric Vehicle Charging Infrastructure: Case Studies in Major Cities

Kerry Abernethy-Cannella

August 4, 2022

## Total U.S. Greenhouse Gas Emissions by Economic Sector in 2020

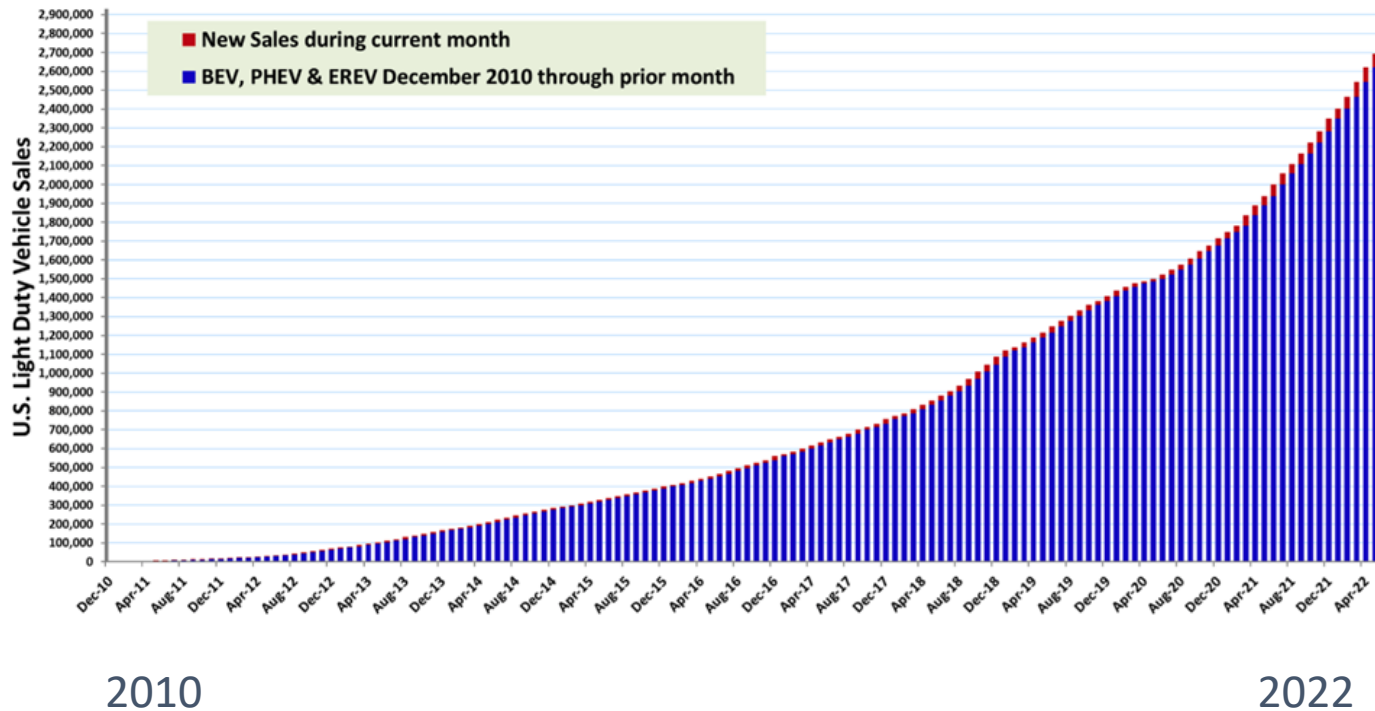


# Introduction

- Decarbonization Efforts
- Transportation Electrification
- Charging Infrastructure
- Private Investment

Image: U.S. EPA (2021), Sources of Greenhouse Gas Emissions

# Background



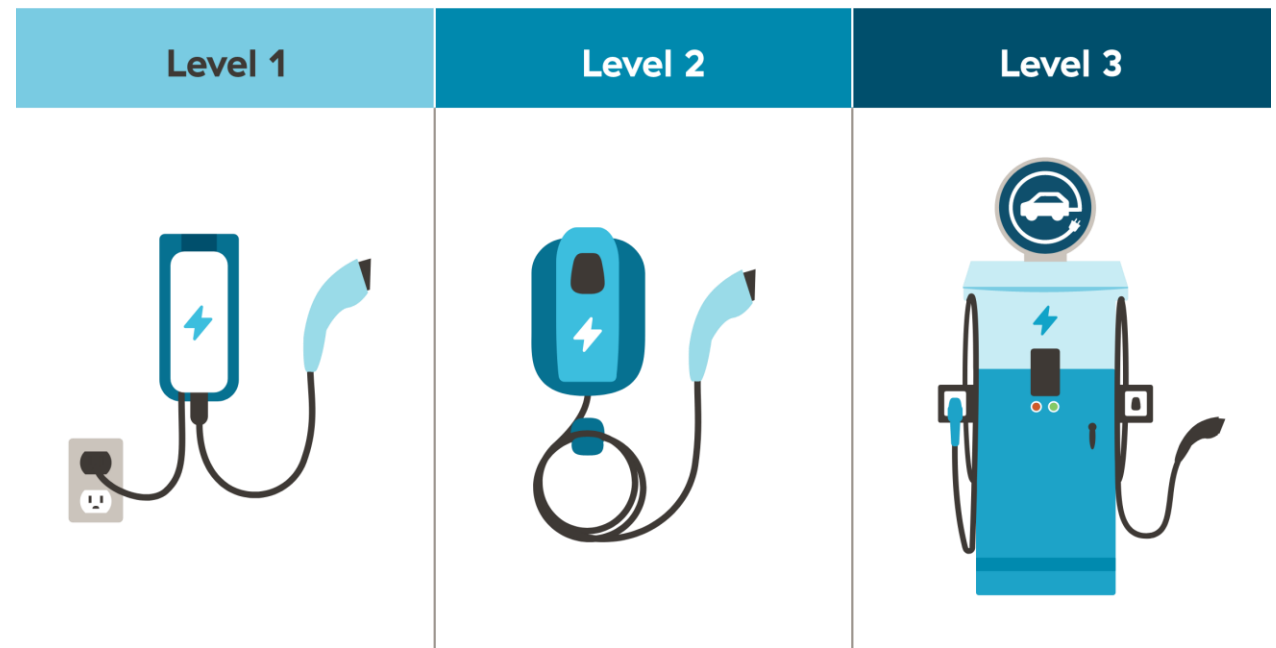
- Battery Electric Vehicle sales on the rise
- Increased demand for charging infrastructure
- Current charging distribution based on private investment

Image: Argonne National Laboratory (2022), Light Duty Electric Drive Vehicles Monthly Sales Updates

# Background

- L1: Standard outlet, 3-5 miles of range per hour
- L2: Installation, 12-80 miles of range per hour
- L3: Installation, 3-20 miles of range *per minute*

Image: BC Hydro (2022), Options for Charging my EV



# Case Studies

- 3 Major Cities
- Charging Infrastructure Plans
- Diversity of climate, topology, and political structures



# New York City

- 80% Reduction in GHGs by 2050
- 100% Bus electrification by 2035
- 20% of all new vehicles to be electric by 2025
- 80 L3 chargers by 2025
- 40% of all parking spaces to have L2 charging by 2030

Image: NYC Office of Sustainability (2016), Roadmap to 80 x 50



# New York City

- Electrifying food trucks
- Parking Garage Ordinances
- SmartCharge Data Sharing (Consolidated Edison)



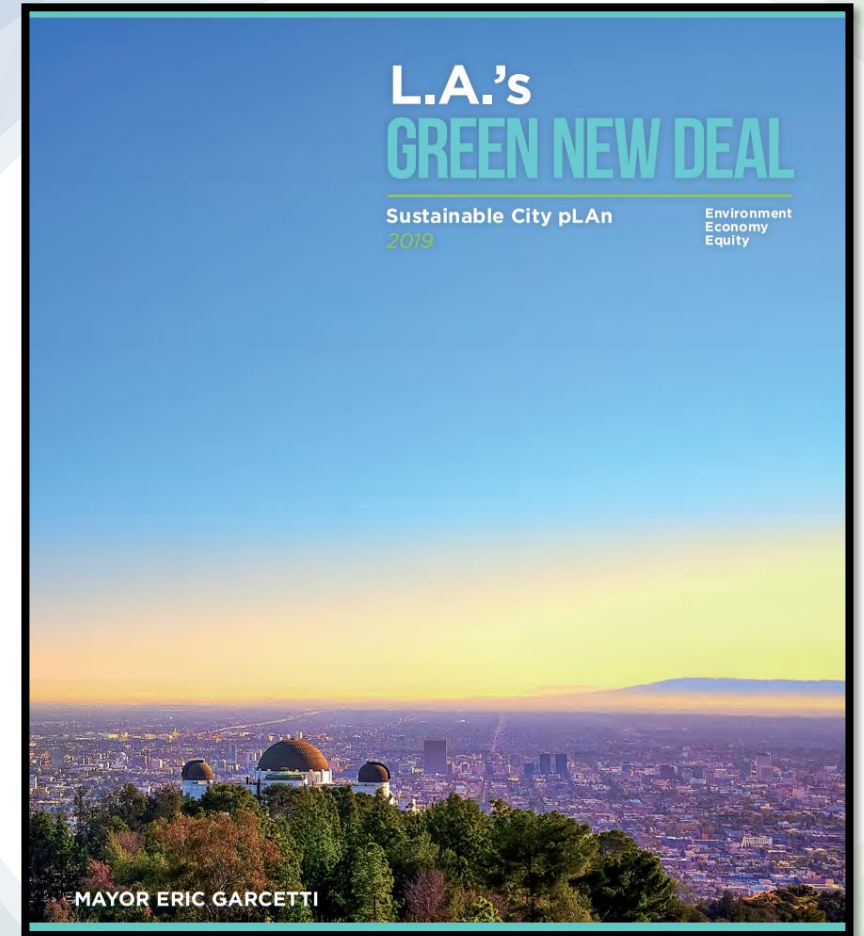
Image: NYC Department of Transportation (2022), Electrifying New York



# Los Angeles

- 100% bus electrification by 2035
- 100% zero-emission urban delivery vehicles by 2025
- 100% zero-emission trash and recycling vehicles by 2028

Image: LA Office of the Mayor (2019), Sustainable City pLAn





# Los Angeles



- Oversaturating the charging market
- EV Charging Infrastructure Fund
- Transformative Climate Communities Grants
  - Watts Rising
  - Green Together: Northeast Valley

Image: LADOT (2021), LADOT Electric DASH Bus

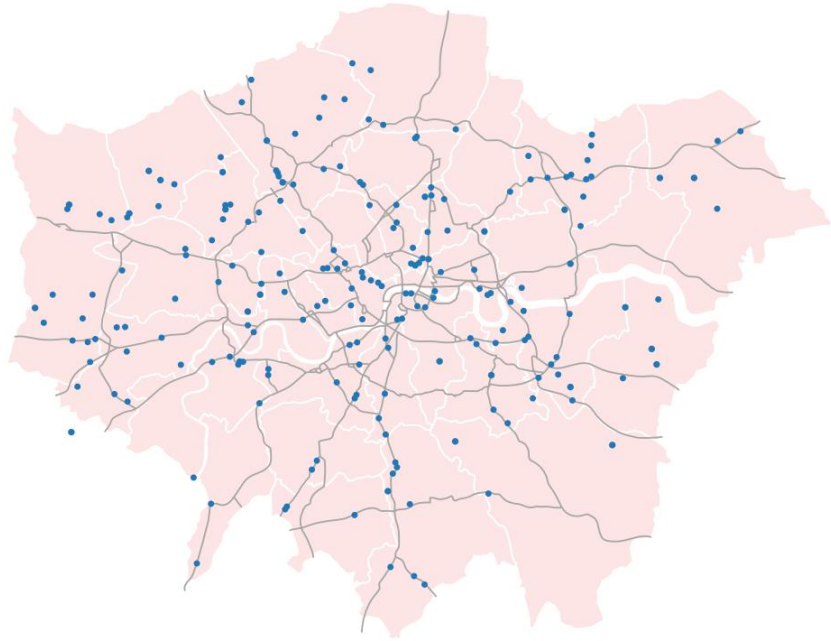
# London

- 100% bus electrification by 2037
- 5 Rapid Charging Hubs by 2025
- Rapid charging in each of the 221 Town Centres



Image: The Mayor's Electric Vehicle Infrastructure Taskforce (2019), London Electric Vehicle Infrastructure Delivery Plan

# London



Current L3 Distribution

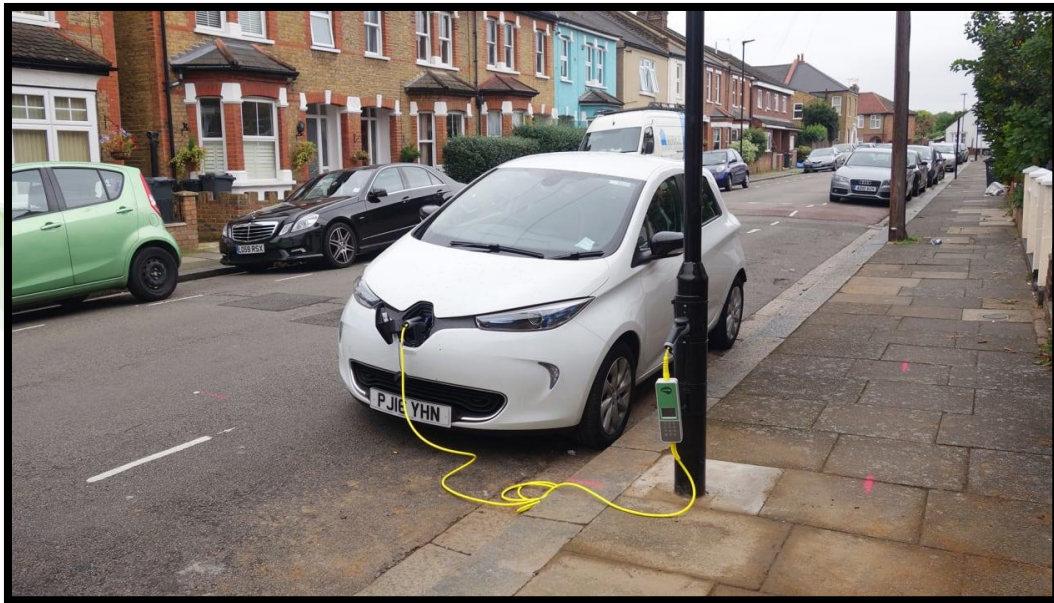


Planned L3 Distribution

The London Rapid  
Charging  
distribution to  
encourage spatial  
equity

Images: The Mayor's Electric  
Vehicle Infrastructure Taskforce  
(2019), London Electric Vehicle  
Infrastructure Delivery Plan

# Best Practices



- Start planning early
- Coordinate electrification of public fleets
- Concentrate funds in low-income areas
- Provide EV car sharing
- Engage a broad group of stakeholders
- Coordinate with existing infrastructure

Image: Ubitricity (2017), What if streetlights were electric car charging stations?



# Conclusions

- Blend of public and private investment
- Public Fleet Electrification
- Prioritizing Equity

