

Achieving Carbon Neutrality Through a Cost-Effective Path

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CARB 2022 Scoping Plan Update - Electricity Sector Technical Workshop

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SCE's Pathway to 2045 | Carbon neutrality in 2045 can be achieved through deep decarbonization of the electric sector, electrification of vehicles and buildings, and equitable access to clean technology

SCE's Pathway to 2045

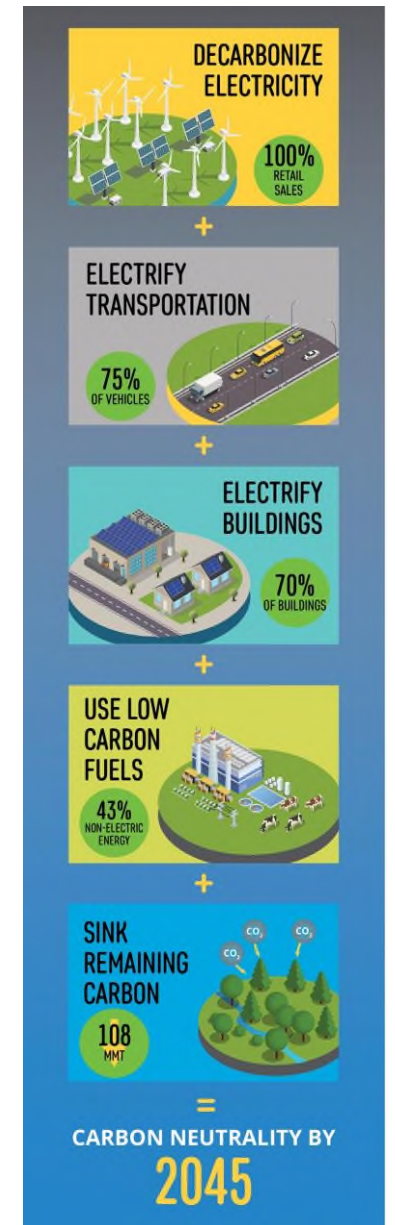
- Utilities provide 100% carbon-free electricity for retail sales by 2045
- Electrify 3/4 of light-duty, 2/3 of medium-duty, and 1/3 of heavy-duty vehicles
- Electrify almost 3/4 of space and water heating in buildings
- Clean fuels for hard-to-electrify applications
- Carbon removal needed to offset the remaining emissions
- Equity, access, reliability, and affordability

SCE's Mind the Gap

- Unparalleled action and coordination are needed to meet California's 2030 Climate Goals to set the state on a feasible path to meet the 2045 goals

CARB's Scoping Plan

- Critical planning role in defining how the state can achieve its GHG reduction targets
 - ❖ **2017 Scoping Plan Update:** Strategy for achieving California's 2030 GHG target (SB 32) 40% below 1990 levels
 - ❖ **2022 Scoping Plan Update:** Assess progress towards achieving 2030 target and chart a path for CA to achieve carbon neutrality by 2045



Electric Sector | Key Barriers and Policy Actions Needed to Meet State Climate Goals

Decarbonizing the power supply



■ 2030 trajectory ■ 2030 Target from Pathway

Key Barriers:

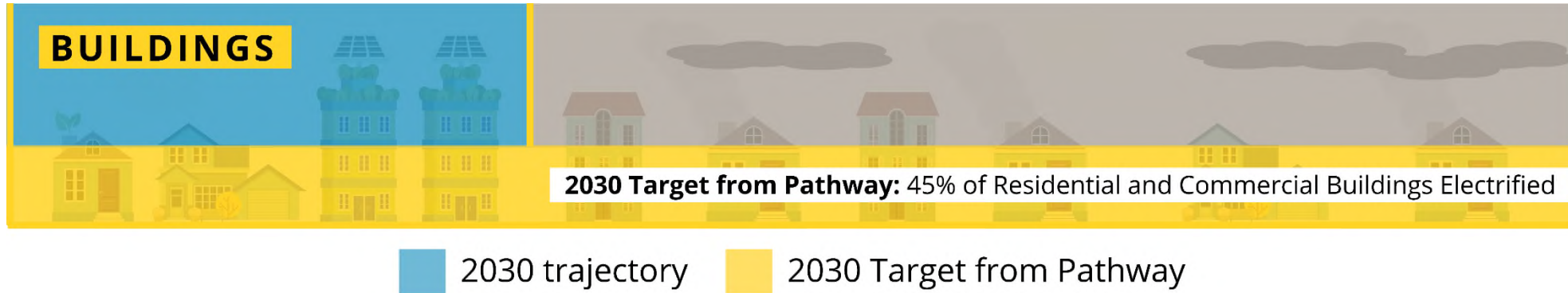
- Transmission upgrades needed for interconnection and reliability take 10+ years for completion
- Uncertainty in where, when, and how much demand and clean resource development will materialize leads to delay
- Clean energy, storage development, and grid advancements to meet reliability requirements, along with climate adaptation and safety expenditures, are near-term actions that place upward pressure on rates

Policy Recommendations:

- Refresh/revise reliability and resource planning processes
- Enhance resource planning coordination across the Western Interconnection
- Increase the pace of generation interconnection
- Streamline the review and approval of requests for utility infrastructure upgrades and grid capability

Building Electrification | Key Barriers and Policy Actions Needed to Meet State Climate Goals

Efficient Electrification



Key Barriers:

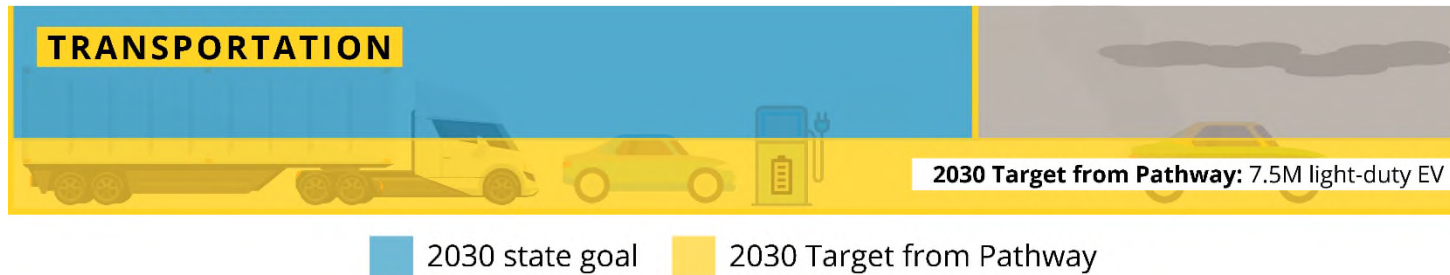
- Current trajectory of programs and policies supporting BE is insufficient to achieve California's GHG target
- California lacks a defined quantitative target for emissions reductions
- Lack of widespread funding or market support to incentivize the adoption of heat pump-based equipment

Policy Recommendations:

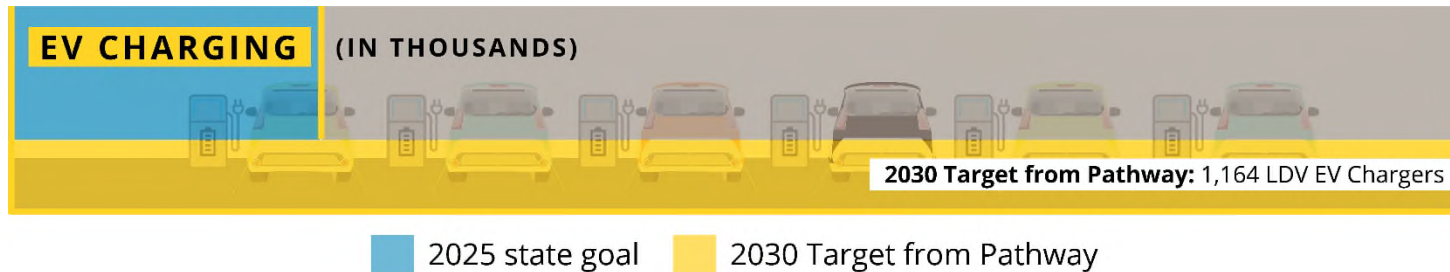
- Adopt statewide heat pump targets
- Fully electrify new construction and expand retrofit requirements
- Eliminate fossil fuel appliance incentives
- Provide cap-and-trade and other state funds to support heat pump adoption

Transportation Electrification | Key Barriers and Policy Actions Needed to Meet State Climate Goals

Vehicle Adoption



EV Charging Infrastructure



Key Barriers:

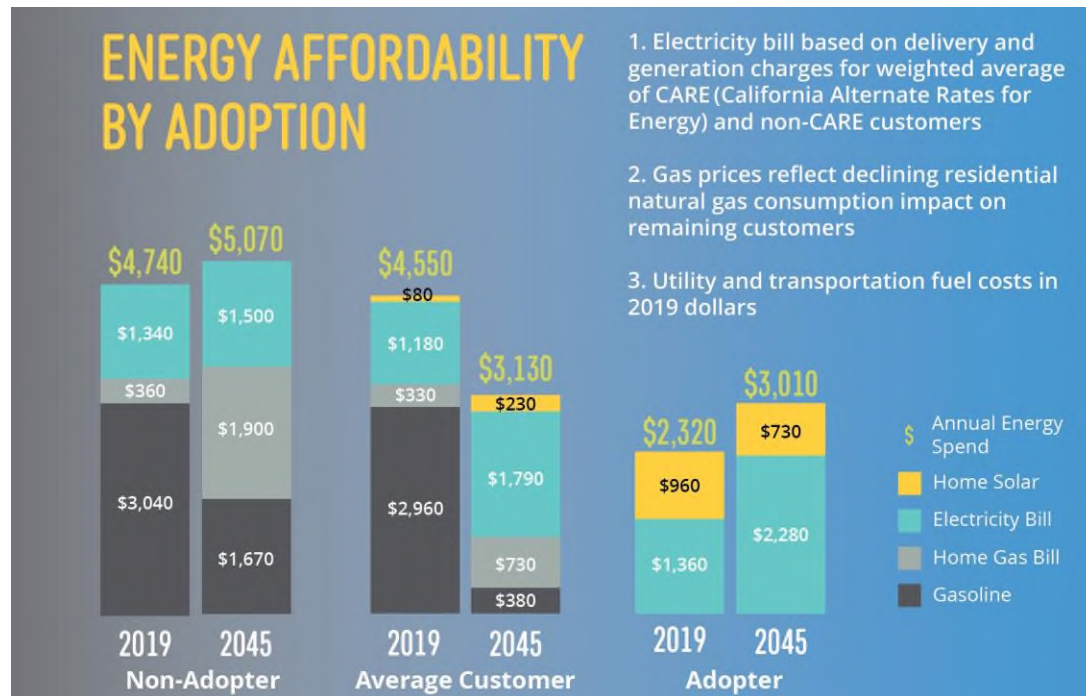
- Gap between the cost of internal combustion engine vehicles and electric vehicles
- Substantial funding needed for timely deployment of supporting infrastructure for nearly 8 million ZEVs by 2030
- Lack of awareness of ZEV models and capabilities

Policy Recommendations:

- Statewide plan for achieving 2030 EV targets
- Increase incentives with durable funding
- Provide incentives at point of sale
- Plan funding to identify needs and cover infrastructure gap
- 2030 target: 1.16M chargers → 7.9M ZEVs

Affordability | Customer affordability is key to decarbonizing California

SCE is committed to maintaining affordability for all customers while undertaking the work to provide safe, reliable, resilient, and clean energy to enable an equitable transition to a clean energy economy



- A decarbonized, electrified economy produces energy cost savings for an average household
- Over time increased electrification creates downward pressure on customer rates
- Energy consumption cost for average household decreases by one-third by 2045
- Household savings are driven by reduced gasoline consumption due to the high market penetration of electric vehicles
- All customers must have access to clean technologies
- Decarbonizing the economy is essential if we want to avoid the economic and human health impacts of climate change
- The clean energy transition will also fuel significant economic development and job growth