



2022

AIR QUALITY MANAGEMENT PLAN

Draft Policy Brief

Infrastructure - Energy Outlook



INTRODUCTION

This is one of five briefing papers intended to provide policy background information supporting adoption and implementation of the 2022 Air Quality Management Plan (AQMP). This paper specifically addresses decarbonization and climate policy development and its role in achieving the 2015 Ozone standard.

The 2022 AQMP relies on a significant transition to zero emissions (ZE) technologies across many sectors. Traditional technologies are not capable of delivering the 71 percent NOx emission reduction above and beyond current measures on the books needed to attain the 2015 8-hour standard by the 2037 deadline. The only pathway to attainment

requires widespread deployment of ZE technologies at scale. Two leading fuels for zero emissions technologies today that have the potential to be used at scale by 2037 are electricity and hydrogen. Each of these fuels present unique challenges including production, regional and local distribution, fueling locations, policy approaches, regulatory environment, costs, incentive programs, etc. These challenges require many different levels of government to



engage and participate in policy development to ensure that they are appropriately addressed to meet the many goals of the state, including attainment of air quality standards.

The 2022 AQMP Mobile Source Control Measure 15 (MOB-15) is a workplan, to be implemented in conjunction with the California Energy Commission (CEC), California Public Utilities Commission (CPUC), and other partner agencies, that will support and accelerate the deployment of zero emission infrastructure needed for a widespread deployment of zero emission vehicles and equipment in the South Coast AQMD and Coachella Valley. Strategies recommended through this workplan include identifying and carrying out key research needs, targeted advocacy for policy goals with other agencies, developing specific data products for other agencies to use in their assessments, convening stakeholders together to focus on air quality goals as a primary component of zero emissions planning efforts, and potentially including zero emissions fueling and charging infrastructure in proposed rules (e.g., indirect source rules).

MOB-15 is intended to support a fuel transition to zero emission technologies at the scale needed to meet air quality goals and the federal National Ambient Air Quality Standards (NAAQS) standards. Meeting these timelines will require unprecedented fuel transitions away from conventional diesel fuel for stationary and mobile sources which is a major contributor to Nitrogen Oxides (NOx) emissions. Although the clean air goals of the South Coast AQMD are focused on reducing criteria air pollutants, the actions taken in this workplan to support a rapid transition to zero emission technologies will also reduce greenhouse gas emissions as a co-benefit. The NAAQS and California’s Climate Change Programs have

similar sources and strategies, and the state’s efforts to reduce GHG emissions are aligned with the clean air goals of the South Coast AQMD and can be leveraged to meet NAAQS timelines.

Preliminary estimates of the statewide ZE infrastructure needs have been developed by the CEC and the California Air Resources Board (CARB) based on existing state goals and mandates. These preliminary estimates are largely based on a transition to ZE vehicles for on-road transportation sources, and do not fully address the adoption of ZE technologies by other emission sources, including stationary, locomotives, and off-road equipment. These preliminary estimates will need to be further developed to include the ZE infrastructure needs of all sources and address the unique needs of the South Coast and Coachella Valley Air Basins. Through this workplan, the South Coast AQMD will work alongside and in coordination with these agencies and other entities to develop region-focused cost estimates and logistical projections that can then be used as policy encouragement. Where appropriate, the South Coast AQMD can serve as a lead facilitator for stakeholders to contribute their expertise and perspectives while identifying areas that require further study or development to meet clean air goals.

BACKGROUND

This section briefly describes the major agencies involved in the planning and development of ZE infrastructure and the specific legislative actions, planning documents, and ZEV targets that will require a rapid build out of new charging/fueling infrastructure to support the adoption of these ZE vehicles and equipment.

AGENCIES AND ROLES

The major agencies involved in the development of ZE infrastructure are shown in the Table 1 below with a brief description of their roles.

Table 1

Agencies and Roles involved in ZE Infrastructure

Agency	Agency Description	Role in EV Infrastructure
CARB	California Air Resources Board	The state’s lead agency for climate change programs, has regulatory authority over mobile sources, adopts regulations for zero emission vehicles and equipment to meet state goals, lead statewide ZE infrastructure workshops in support of adopted and proposed ZEV regulations.
CEC	California Energy Commission	The state’s primary energy policy and planning agency, funding support (residential and commercial, such as EnergIIZE), prepares the Integrated Energy Policy Report (IEPR), etc.
CAISO	California Independent System Operator	Operator of the high-voltage distribution of electricity. No ownership of any infrastructure or generation.
CPUC	California Public Utilities Commission	The regulatory agency that regulates privately owned public utilities in CA, must approve all rates that each electric utility charges its customers.

Local Utilities	Multiple Agencies ¹	Owner of local transmission infrastructure and distributor of electricity. Some of these are regulated as public utilities under CPUC, and some are independent operators. Those regulated by CPUC have a different set of rules than smaller public power agencies regarding energy rates, infrastructure ownership, and behind the meter activity.
SoCalGas	Natural gas provider	Planning to adapt system for production and distribution of H2.
Go-Biz	State agency facilitating ZEV transition	Primary point of contact for businesses, prepared the ZEV Market Development Strategy, working with 29 different agencies involved with ZEVs, working on interconnection, and permitting timelines
South Coast AQMD	South Coast Air Quality Management District	Coordinating local information sharing and policy development/advocacy through AQMP MOB-15 workplan
SCPPA	Southern California Public Power Authority	Provides joint planning, financing, construction, and operation of transmission and generation projects. Comprised of eleven municipal utilities and one irrigation district.
Transportation Agencies	Caltrans, CTC (Cal. Transportation Commission), CalSTA (Cal State Transportation Agency), SCAG (Southern California Association of Governments), LADOT, etc.	Transportation planning and funding agencies at the state, regional, and local government levels. Each receive federal funds for transportation projects.

The following tables describe some of the specific legislation, planning documents, and targets that contribute to the current planning and analysis around the transition to ZE technologies.

¹ Southern California Edison, San Diego Gas & Electric, Bear Valley Electric Service, City of Riverside, Rancho Cucamonga Municipal Utility, City of Industry, Colton Electric Utility Department, Moreno Valley Utility, Pasadena Water & Power, Los Angeles Department of Water & Power, City of Cerritos, Azusa Light & Power, City of Corona Department of Water & Power, City of Banning Electric Department, City of Anaheim Public Utilities Department, City of Vernon Municipal Light Department, Burbank Water & Power, Glendale Water & Power, Victorville Municipal Utilities Services, Anza Electric Coop, Imperial Irrigation District.

Table 2
GHG Reduction Goals

	Legislation / EO / Rule	Important Targets
Emission Targets	AB 32 (2006)*	1990 GHG by 2020
	EO B-16-12 (2012)	80% below 1990 GHG levels from the transportation sector by 2050
	SB 350 (2015)	Power Sector: 40% GHG reduction by 2030 50% renewable generation by 2030
	SB 32 (2016)	40% below 1990 levels by 2030

* CARB Scoping Plan (5-years: 2008, 2013, 2017, 2022)

Table 3
Zero Emission Vehicle Targets

	Legislation / EO / Rule	Important Targets
Vehicle Targets	EO B-16-12 (2012)	Light-Duty Vehicles (LDV): 1.5 million ZEVs by 2025 10% ZEV sales by 2015 25% ZEV sales by 2020
	EO B-32-15 (2015) *	
	Innovative Clean Transit Rule (2018)	Transit Buses: Beginning in 2029, 100% of new purchases by transit agencies must be ZEBs, with a goal for full transition by 2040.
	SB 44 (2019) **	Directs CARB to update the Mobile Source Strategy and set goals for reducing emissions from medium & heavy duty vehicles (MDV/HDV) by 2030 and 2050 consistent with state goals laid out in EO B-32-15
	EO N-79-20 (2020)	LDV: 100% ZEV sales by 2035 Drayage: 100% ZEV in use by 2035 MDV/HDV: 100% ZEV sales by 2045
	Advanced Clean Truck Rule (2020)	Heavy Duty Electric Vehicles: 300,000 by 2035
	HDV Omnibus Regulations (2021)	HDV NOx stds for 2024 and 2027 models

* Sustainable Freight Action Plan (2016)

**2020 Mobile Source Strategy (to be updated every 5 years to address goals for MDV/HDV))

Table 4
Zero Emission Infrastructure Targets

	Legislation / EO / Rule	Important Targets
Infrastructure Targets	SB 1389 (2002)*	
	AB 8 (2013)**	100 hydrogen stations by 2024
	EO B-48-18 (2018)	5 million ZEVs by 2030 200 hydrogen stations by 2025 250,000 EV charging station by 2025
	AB 2127 (2018)***	LDV: 700,000 chargers by 2030 MHEV: 157,000 chargers by 2030
	SB 671 (2021)****	MHEV: Infrastructure needs, projects, operation in freight corridors. (California Transportation Commission)

* CEC Integrated Energy Program Report (biannual)

** CEC Report on Fuel Cell Electric Vehicles and Station Network (annual)

*** CEC AB 2127: EV Charging Infrastructure Assessment Report (biannual)

**** Clean Freight Corridor Efficiency Assessment (due Dec 1, 2023)

In addition to the above policies, the Advanced Clean Fleets (ACF) Rule and the Advanced Clean Cars II are upcoming regulations that will continue to advance the targets under EO N-79-20.

KEY ISSUES

A widescale transition to zero emission technologies will require that the infrastructure be available ahead of need. The gap between these targets and new infrastructure required to meet them is largely the focus of this control measure. The uncertainties and challenges related to planning, development, and operation of zero emission infrastructure will be addressed through the strategies identified below.

Funding the transition to zero emission fueling is a challenge that needs to be addressed through collaboration at all levels of governance and within every market. Beyond investments, multiple areas demand attention to accomplish this transition, including improving building codes, improving reliability of charging and hydrogen fueling networks, streamlining permitting, improving interconnection times, and working on the standardization of charging and fueling infrastructure. To address these issues, regulation, targeted investment, and sustained coordination across state and local agencies, utilities, and the private market will be necessary. South Coast AQMD will play a key role in coordinating agencies and disseminating information to stakeholders to facilitate the development of ZE infrastructure and help address concerns related to affordability and equity.

A widescale transition to zero emission technologies is necessary for air quality standard attainment, and the South Coast AQMD will take actions through implementation of the strategies below to support and accelerate this transition in the South Coast AQMD.

RECOMMENDATIONS

Staff recommends implementing several strategies and actions to advance the deployment of ZE technologies. These strategies fall under two different types: (1) researching specific needs of the South Coast Basin and (2) advocating, supporting, and complementing existing work by other agencies.

- **Strategy 1 – Agency Coordination**

MOB-15 will involve significant collaboration among state agencies, local utilities and various other stakeholders involved in the planning, design, permitting, construction, operation, and maintenance of ZE infrastructure in the South Coast AQMD. For example, this strategy will involve close coordination with CARB and CEC by sharing information, aligning efforts, and providing feedback and input on ZEV projections, infrastructure assessments and related policies. In 2023, the CEC is required to adopt the next Integrated Energy Policy Report (IEPR) which will include an assessment of major energy trends and issues facing California’s electricity, natural gas, and transportation fuel sectors. Public processes around the development of this report provide the South Coast AQMD an opportunity to provide input on policy recommendations that follow from this assessment. The South Coast AQMD will participate in the public process and collaborate with the CEC in development of the IEPR by providing feedback and input on proposed energy plans and policies with the goal of aligning efforts to achieve the air quality goals in the South Coast AQMD. The South Coast AQMD will also work with CARB and CEC to develop specific estimates of charging/fueling infrastructure needed to support a widespread adoption of ZEVs across multiple sectors of vehicles and equipment in the South Coast region.

The South Coast AQMD will coordinate with local utilities on their energy demand analyses and assist in identifying prioritized locations for ZE infrastructure, including the level of upgrades needed. Coordination with local utilities on their funding programs may help streamline and accelerate the deployment of ZE infrastructure. Many local utilities have programs that provide funding support for the design and installation of ZE infrastructure, however these programs require long lead times for planning, design, engineering, and approvals prior to construction/installation of the ZE infrastructure. Also, these programs are not typically aligned with the vehicle incentives causing delays in ZEV deployments. This process will be further impacted with the rapid rollout of ZEVs that are expected. Early planning and coordination are key factors to assuring the ZE infrastructure will be ready in time for ZEV deployment. The South Coast AQMD will coordinate with local utilities with the goal of aligning the vehicle incentives with ZE infrastructure funding, maximizing funding opportunities, and encourage fleet owners to plan early for the timelines involved in obtaining approvals and installing the ZE infrastructure. The South Coast AQMD will also provide feedback and input on rate structures and incentive programs that will accelerate the adoption of ZEVs across multiple sectors of vehicles/equipment.

The South Coast AQMD will also coordinate with city/county jurisdictions, as needed, on any potential issues affecting the deployment of ZE infrastructure and propose policy solutions that can support ZEV adoption. And, finally, the South Coast AQMD will collaborate with private industry to understand practical and business model constraints to transitioning to zero emission technologies.

- **Strategy 2 – Assess ZE Infrastructure Needs for the South Coast AQMD**

This strategy is a crucial step to accelerating ZEV adoption across the South Coast AQMD. As noted earlier, the statewide estimates are currently limited in scope and do not give a specific breakdown by region. Zero emission vehicles are expected to be highly concentrated in the South Coast AQMD compared to other areas of the state. This higher concentration will require significantly more grid-level infrastructure planning and development, such as new transmission lines and substations. A more precise South Coast AQMD-focused assessment of the number and types of zero emission infrastructure needed to support the future ZEV population in the South Coast AQMD is critically important to inform and guide the current planning and development efforts, and shape potential policies and strategies moving forward.

- **Strategy 3 –Develop Cost Projections**

The South Coast AQMD can assist in the development of cost projections to build out the ZE infrastructure at the scale needed to support a widespread transition to zero emission technologies for all emission sources where feasible. The cost projections must include the full costs associated with deploying the ZE infrastructure. For example, the costs of utility grid upgrades as well as the costs for upgrades at potential sites where the infrastructure is expected to be installed (e.g., new substations, panel upgrades, conduits, wires and charging stations) must be considered. Assessments undertaken in this strategy should recognize needs identified in Strategy 1 as well as the unique role of other agencies involved in planning assessments for ZE infrastructure. These cost projections will identify the level of funding needed and support efforts to identify and secure funding for ZE infrastructure in the South Coast region. This strategy will also help inform the planning and development efforts that are underway.

- **Strategy 4 – Assess Funding Needs**

The South Coast AQMD has a long history of supporting research, development, demonstration, and early deployment of cleaner technologies. This expertise will be leveraged to support the development of zero emission infrastructure using the cost projections developed pursuant to Strategy 3. This may include support for projects or programs that would advance the technology or accelerate the build out of ZE infrastructure in the South Coast AQMD. South Coast AQMD will identify potential funding mechanisms and sources (e.g., legislation, grants, incentives, and other programs) for zero emission infrastructure in the South Coast AQMD. Federal, state, and local sources, including private funds, will be considered with the goal of maximizing investments in zero emission infrastructure in the South Coast AQMD. The South Coast AQMD will also identify specific sectors that are well positioned for transitioning to zero emission technologies but currently lack support by local, state, or federal programs.

- **Strategy 5 – Identify Policies and Strategies to Support ZEV Adoption**

The South Coast AQMD will identify potential policy and strategies to accelerate the deployment of ZE infrastructure in the region. This may include support for studies that investigate the total cost of ownership (TCO) for specific ZEV operations. When the TCO for ZEVs, including all costs

related to the purchase and operation of a ZEV, is less than the cost of a conventional-fueled vehicle, widespread ZEV adoption becomes much easier to achieve. One of the key barriers to ZEV adoption identified by stakeholders is the higher initial cost of owning and operating a ZEV, but these costs often do not reflect the TCO over time.

Incentives have largely been focused on helping to offset the higher purchase price of zero emission vehicles, however, they don't account for the full costs of owning and operating a ZEV over its lifetime. A TCO study would include all costs associated with owning and operating a ZEV, such as the purchase price, cost of infrastructure needed to fuel/charge the vehicle, energy/fuel costs, registration fees, and maintenance costs. Infrastructure costs are not typically covered by existing incentive programs but can be a significant barrier to consumers who are considering ZEV adoption. Stakeholders have also expressed concerns for infrastructure reliability and resiliency which can affect ZEV operations. The South Coast AQMD will identify potential policy and strategies to assist in overcoming the challenges and support the adoption of ZEVs as the preferred vehicle.

- **Strategy 6 – Identify Policy Needs Across Different Sectors**

Each sector within the transportation industry and beyond has a different readiness level, and a targeted policy unique to that sector will accelerate the ZEV adoption rate. For example, transit buses were one of the first sectors identified to fully transition to zero emission due to a long history of targeted policies and public funding. This strategy can be replicated for other sectors, such as drayage trucks, cargo vans, street sweepers, and off-road vehicles. Each of these vehicle types has a different duty cycle and demand, so it may be possible to develop policies to promote ZEVs within each sector. The South Coast AQMD can adopt policies to encourage ZE spread but can also target advocacy at other regulatory bodies toward the same end.

- **Strategy 7 – Ensure Equity and Affordability**

A significant portion of the South Coast AQMD is comprised of disadvantaged communities, which experience a higher amount of pollution burden compared to other communities. Several programs have been implemented that target these communities for actions that will reduce emissions or provide funding support for projects that will reduce emissions and/or exposure to air pollution. The South Coast AQMD will advocate and identify actions that will accelerate ZEV adoption and infrastructure rollout in these communities. A substantial barrier to ZEV adoption in disadvantaged communities is the higher cost of these vehicles, and incentive programs are typically not sufficient to offset this higher cost. The South Coast AQMD will work with all stakeholders involved in ZE infrastructure to ensure that zero emission technologies are distributed affordably and equitably.

- **Strategy 8 – Align Efforts with Other Local, State, and Federal initiatives**
South Coast AQMD will work in tandem with state agencies and other stakeholders involved in planning and development of ZE infrastructure to align our efforts and avoid duplication of actions that will be taken by these respective entities. While the South Coast AQMD will deliver results specific to its jurisdiction, other agencies may produce similar reports for a different region with a different focus, potentially creating confusion. The South Coast AQMD will coordinate with relevant local, state, and federal agencies to ensure that activities undertaken by this workplan add value above and beyond the actions taken by other local, state, or federal initiatives and will address the specific needs of the South Coast AQMD.

REFERENCES

AB 2127 (2018) requires the California Energy Commission to biennially assess the electric vehicle charging infrastructure needed to meet the state’s goals of putting at least 5 million zero-emission vehicles on California roads by 2030 and reducing greenhouse gas emissions to 40 percent below 1990 levels by 2030. <https://www.energy.ca.gov/programs-and-topics/programs/electric-vehicle-charging-infrastructure-assessment-ab-2127>

Report on AB 8: Attaining 100 Hydrogen Refueling Stations <https://cafcp.org/blog/report-ab-8-attaining100-hydrogen-refueling-stations>

Hydrogen Station Network Self-Sufficiency Analysis per Assembly Bill 8
https://ww2.arb.ca.gov/sites/default/files/2020-11/ab_8_self_sufficiency_report_draft_ac.pdf

Executive Order N-79-20 <https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>