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JOINT INFORMATIONAL HEARING OF THE SENATE ENVIRONMENTAL QUALITY COMMITTEE AND SENATE TRANSPORTATION COMMITTEE

Wednesday, March 4, 2020
California State Capitol, Room 4203
9:00 a.m.

Putting the Brakes on California's Rising Transportation Emissions

BACKGROUND INFORMATION

Across the state, Californians have already begun experiencing the impacts of climate change, including extreme droughts, wildfires, flooding, and coastal degradation, all of which are expected to worsen as the planet warms. While the state has begun taking steps to address these impacts, actions must simultaneously be taken to mitigate the root of the problem: greenhouse gas (GHG) emissions.

California has committed to drastically reducing its GHG emissions, and has already made progress. AB 32 (Núñez and Pavley, 2006) required California to reduce GHG emissions to 1990 levels by 2020, a goal which was achieved four years early. The state's GHG emission reduction goals for the coming decades are more ambitious, however. SB 32 (Pavley, 2016) requires the California Air Resources Board (ARB) to ensure that the state's GHG emissions are reduced to 40% below 1990 levels by 2030. Executive Orders from the past two Governors (S-3-05 and B-30-15) both call for a GHG reduction to 80% below 1990 levels by 2050. In 2018—in light of growing urgency for rapid decarbonization—even more ambitious targets were proposed by Governor Brown's Executive Order B-55-18

(which called for achieving carbon neutrality no later than 2045) and Senator De León's SB 100 (which required all the state's electricity to come from carbon-free resources by 2045). Achieving these goals will require unprecedented efforts and coordination across all sectors of California's economy.

However, emissions from the transportation sector, the state's largest source of GHGs, are still on the rise. According to ARB's GHG emission inventory, transportation sector emissions have grown to 41% of California's total emissions in 2017. A 2018 Legislative Analyst's Office report found that 90% of the transportation sector's emissions were from on-road sources – 69% passenger vehicles and 22% heavy-duty vehicles.

Greenhouse gas emissions from the transportation sector are the product of two factors: the total distance the state's vehicle fleet travels and the GHG emissions associated with that travel. California considers the first factor using the unit of Vehicle Miles Traveled (VMT). In October of 2019, a report from Next 10 (a nonpartisan, nonprofit organization) looked at transportation emission trends in 2016-2017 and found that despite the state's intention to rein in VMT and GHG emissions, both had increased. The silver lining was that while VMT increased by 0.5%, total transportation emissions rose less - only 0.1%. This means that while Californians are driving more than ever before, on average the vehicles they are using are producing fewer GHG emissions. While this is a step in the right direction, drastic and substantial reductions are still needed.

As we begin the 2020 legislative session, it is important to consider what the state must do over the next decade to mitigate emissions. The goal of this hearing is to understand why emissions from California's transportation sector continue to rise, showcase the state's current efforts to address this, and discuss how to align actions affecting transportation emissions with the state's economy-wide and sector-specific greenhouse gas emission reduction goals.

Questions the committees may wish to consider for today's panelists include:

- How do transportation emission reduction goals align with the state's economy-wide emission reduction goals?
- What existing clean transportation programs should be relied on more heavily to meet state goals?
- What novel programs are being considered to increase the rate of transportation GHG emission reductions?

- What strategies should the state consider to minimize trips in single-occupancy vehicles in order to reduce VMT?
- Given the effect of congestion on vehicle efficiency, could another metric like Vehicle Hours Traveled be a more useful measure of GHG emissions than VMT?
- With so many options on the table, how should we prioritize resources to reduce transportation GHG emissions in efficient, cost-effective ways?
- What kind of co-benefits to issues like public health, safety, and congestion can GHG emission reduction strategies provide?
- How can we construct transportation emission reduction policy in such a way that its costs are not disproportionately borne by the state's low-income communities?

Current efforts to reduce transportation's climate impact

Cleaning up the fleet

The majority of the money being spent on reducing California's transportation emissions is spent on either improving the standards for internal combustion engine (ICE) vehicles, or encouraging greater zero emission vehicle (ZEV) adoption. Below are some of the many efforts underway that may be pertinent to this informational hearing.

CAFE Standards. The Corporate Average Fuel Economy (CAFE) standards are federal regulations to improve the average fuel economy of light-duty vehicles over time. These are to be set at the "maximum feasible level" regarding technological feasibility, economic practicality, effect of other standards on fuel economy, and need of the nation to conserve energy. The rate at which fuel economies were to rise under CAFE standards was further increased under the Obama administration.

In late 2018, federal regulatory entities proposed a rule (the Safer Affordable Fuel Efficient (SAFE) rule) that would freeze the CAFE standards at the same fuel economy for model years 2021-2026, in stark contrast to the previous standard's nearly 5% annual increase. In response, ARB proposed a compromise including a 3.7% annual fuel economy increase. In the ensuing months and amidst numerous legal proceedings, a number of auto manufacturers expressed support for either ARB's approach or the federal

SAFE rule. At the time of this hearing, the final SAFE rule is under review, and the final outcome is still uncertain. Estimates of cumulative nationwide GHG emission impacts from the rule as proposed put the total effect at nearly 3 billion additional tons of CO₂-equivalents.

DGS purchasing policies. Concerning the above controversy, some automakers aligned with ARB and recognized California's authority to set emission standards independently of the federal government. Effective January 1, 2020, the California Department of General Services requires that state agencies purchase vehicles from those manufacturers.

This decision was in addition to other actions made by DGS. As of November 2019, DGS prohibits state agencies from purchasing any sedans solely powered by an internal combustion engine. The DGS fleet has already reduced fuel usage by 22.3% compared to its 2003 baseline, ahead of a statutory goal to reduce it 20% by 2020, and on a path to a 50% reduction goal by 2030.

Carl Moyer Memorial Air Quality Standards Attainment Program. The Carl Moyer Program, which has operated since 1998, provides grant funding for cleaner-than-required engines, equipment, and other sources of air pollution in both on-road vehicles and off-road equipment.

Approximately \$1 billion has been allocated to date and the program continues to provide over \$60 million in grant funding each year to cover repowering and retrofitting eligible vehicles. The program is funded through tire fees and smog impact vehicle registration fees. The grants are mainly distributed by the state's local air districts, and specific vehicle and technology eligibilities vary accordingly.

Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program. The FARMER Program uses Greenhouse Gas Reduction Fund (GGRF) money to provide funding for agricultural harvesting equipment, heavy-duty trucks, agricultural pump engines, tractors, and other equipment used in agricultural operations.

Overall, the program has implemented \$97 million into projects to replace approximately 2,600 vehicles. By shifting vehicles used in the agricultural sector to be cleaner, the program has reduced an estimated 64,000 metric tons of CO₂-equivalents.

Heavy Duty Inspection and Maintenance Program. In 2019, Sen. Leyva's SB 210 created a smog check program for heavy-duty vehicles similar to what already existed for light-duty vehicles. Rulemaking is currently underway to implement SB 210, including a preliminary pilot study phase.

Since smog is created as a reaction between nitrogen oxides (NO_x) and hydrocarbons, smog tests ensure that fuel is being burned efficiently in order to minimize hydrocarbons in the tailpipe exhaust. Black carbon, one product of inefficient combustion, has a short-lived but extremely potent warming effect in the atmosphere.

Advanced Clean Trucks. ARB is currently developing its Advanced Clean Trucks regulations, which will include a zero-emission truck sales mandate, as well as company and fleet reporting requirements. The regulations have been the subject of robust discussion about how ambitious the state's goals should be in the heavy-duty vehicle electrification space, and the final regulations should be presented later this year.

ZEV Goals. California has a number of increasing and complimentary ZEV goals: 1 million vehicles by 2023 as directed by SB 1275 (De León, 2014), over 1.5 million vehicles by 2025 as directed by Executive Order B-16-12, and 5 million vehicles by 2030 as directed by Executive Order B-48-18. While only the 2023 goal is statutory, the Executive Orders have also provided substantial direction to manufacturers, regulators, and (less-directly) consumers.

Based on cumulative sales of vehicles reported by the California Energy Commission in 2019, there were nearly 600,000 EVs predicted to be on the state's roads. That number includes PHEVs, so for strictly zero-emission vehicles, the estimate is closer to 330,000. Next 10 estimates that the number of ZEVs on the road will need to increase by 17.7% annually to reach the 2025 goal, and by 27.2% annually after that to reach the 2030 goal.

In the heavy-duty space, the Sustainable Freight Action Plan was issued pursuant to EO B-32-15. It requires California's freight industry to improve its efficiency, relative to the amount of carbon emitted, by 25% by 2030 and calls for 100,000 ZEV freight vehicles to be deployed by 2030.

Clean Vehicle Rebate Program (CVRP). CVRP uses GGRF money to provide consumer rebates for light-duty ZEVs, plug-in hybrid electric

vehicles, and zero-emission motorcycles. While the vast majority of rebates that have been provided are for battery- and plug-in- electric vehicles, hydrogen fuel cell vehicles are also eligible zero-emission vehicles.

A recent analysis of rebate data from 2010-2018 estimated that rebates reduced a total of 2.2 million metric tons of CO₂-equivalents. The same study found that over 50% of respondents stated the CVRP rebate was essential to their purchase.

Enhanced Fleet Modernization Program (EFMP). EFMP is an incentive program funded through a \$1 surcharge on vehicle registration to a total of \$30 million annually. It provides financial incentives for low-income Californians statewide to retire (and potentially replace, with cleaner vehicles) their older, high-emitting vehicles.

Clean Cars 4 All. Clean Cars 4 All uses GGRF money to provide incentives up to \$9,500 to lower-income California drivers to scrap their older, high-polluting car and replace it with a zero- or near-zero emission replacement. This program goes beyond EFMP by focusing on low-income and disadvantaged communities, and it currently exists only in the South Coast, San Joaquin, Bay Area, and Sacramento air districts.

So far, the program has distributed \$23.3 million through 4,634 vehicle vouchers to residents. By increasing turnover of polluting vehicles and incentivizing the purchase of cleaner ones, Clean Cars 4 All has saved an estimated 605,690 gallons of fuel and mitigated 24,337 metric tons of CO₂-equivalents.

Clean Miles Standard. The vehicles used by transportation network companies (TNCs) are driven more miles per day than the average passenger vehicle, so policies affecting them can have a large effect. Recently, SB 1014 (Skinner, 2018) created the Clean Miles Standard and Incentive Program. This required ARB to adopt annual targets and goals for GHG emission reductions from TNC vehicles, and for TNCs to develop GHG emission reduction plans. Preliminary regulation design is underway this year.

Advanced Clean Cars. In 2012, CARB adopted a set of regulations to control emissions from passenger vehicles, collectively called Advanced Clean Cars. It includes regulations to reduce smog-forming pollution, reduce

GHG emissions, and to promote the transition to ZEVs. Collectively, these regulations have reduced emissions from California's passenger vehicle fleet, both by cleaning ICE vehicle emissions and driving more ZEV sales.

ZEV Requirements. The ZEV regulation ("ZEV mandate") is part of the Advanced Clean Cars regulations, and it requires manufacturers to produce and sell specific numbers of battery electric, hydrogen fuel cell, and plug-in hybrid-electric vehicles. Manufacturers meet the ZEV mandate by producing zero-emission vehicles, with more credits being given for vehicles with longer electric ranges. The requirement ratchets up annually, and will reach 22% by 2025, representing an estimated 8% of all vehicle sales being ZEVs. Currently, nine other states have adopted California's mandate, collectively representing nearly 30% of new car sales in the US.

California's Low Carbon Fuel Standard (LCFS). The original LCFS—established by Governor Schwarzenegger through EO S-01-07 with the goal of encouraging the innovation, use, and production of cleaner, low-carbon fuels in California in order to reduce GHG emissions—set a goal of reducing the Carbon Intensity (CI) of fuels in the state to 10% below 2010 levels by 2020. CI is determined by the lifecycle of GHG emissions associated with using gasoline and diesel fuel, as well as their alternatives. Since the original LCFS was adopted, ARB set a new goal to reduce the CI of fuels in the state to 20% below 2010 levels by 2030.

The LCFS is performance-based and fuel-neutral, allowing the market to determine how the CI of California's transportation fuels will be reduced. This works by setting annual CI standards and requiring producers of fuels with CIs above the standard to purchase credits that are generated by producers of fuels with CIs below the standard. This effectively means that producers of fuels with higher CIs are subsidizing the production of lower-carbon fuels. In the vehicle fueling space, renewable natural gas, ethanol, biodiesel, hydrogen, and EV charging capacity are some of the notable low carbon fuels generating credits and revenue under LCFS. Taken as a whole, academic analyses of LCFS have shown that it has reduced California GHG emissions by roughly 10% since its inception.

Reducing VMT

In addition to the above clean vehicle efforts, other important programs reduce transportation-related GHG emissions by reducing VMT and encouraging the use

of transit, shared vehicles, and alternative transportation options, such as bikes, scooters and walking. Greatly increasing transit ridership is at the center of our VMT reduction efforts.

Transit. California provides operating subsidies of, on average, 80% to every transit agency totaling between \$5 - \$6 billion annually from a combination of federal, state and local taxes. Included in this is the Low Carbon Transit Operations Program, which is funded by a 5% continuous appropriation from the GGRF (\$111 million for FY 2019-20).

Transit capital costs are also subsidized, with the Transit and Intercity Rail Capitol Program funded by a 10% continuous appropriation from the GGRF (\$222 million for FY 2019-20), and a 25% continuous appropriation for the High Speed Rail Program (\$556 million for FY 2019-20).

Affordable Housing and Sustainable Communities Program. This program increases the supply of affordable housing near jobs, stores, and transit, and is funded by a 20% continuous appropriation from the GGRF (\$445 million for FY 2019-20).

Active Transportation Program. This program, run by Caltrans and the California Transportation Commission, supports building bicycle and pedestrian facilities. It is currently funded at about \$230 million annually out of state transportation revenues.

Sustainable Communities Strategies. Regional metropolitan planning organizations in California are required to develop Sustainable Communities Strategies (SCS), or long-range plans, which align transportation, housing, and land use decisions toward achieving GHG emissions reduction targets set by ARB.

Vehicle Miles Traveled in the application of the California Environmental Quality Act. Pursuant to SB 743 (Steinberg, 2013) beginning in July 2020, the impact of projects on transportation will be assessed based on changes to VMT, rather than on the impact to the Level of Service. The intended effect is to reduce GHG emissions and support multimodal transportation networks.

HOV lanes/Express lanes. Originally intended to relieve congestion, High Occupancy Vehicle, or carpool, lanes also reduce VMT and have become an important incentive for the sale of ZEVs.

Redoubling the State's Efforts

Governor Newsom's EO N-19-19, issued September 2019, "require[s] that every aspect of state government redouble its efforts to reduce greenhouse gas emissions and mitigate the impacts of climate change while building a sustainable, inclusive economy". The order gives specific instructions to four entities: the Department of Finance (DOF), the Department of General Services (DGS), the California State Transportation Agency (CalSTA), and ARB. While the actions taken by DGS as well as the Climate Investment Framework from DOF will likely help reduce state GHG emissions, this hearing will focus specifically on the direction provided to CalSTA and ARB.

This order directs CalSTA, in consultation with DOF to (1) align the state's climate goals with transportation spending on planning, programming and mitigation, where feasible, (2) reduce VMT, (3) develop innovative strategies to reduce traffic congestion, (4) fund transportation options that reduce GHG emissions and contribute to the overall health of Californians, and (5) mitigate increases in transportation costs for lower income Californians.

Executive Order N-19-19 also states that ARB must take steps to reach California's goal of five million zero emissions vehicles sales by 2030. Specifically, this order requires ARB to (1) develop new criteria for the clean vehicle incentive program, (2) to encourage manufacturers to produce clean, affordable cars, (3) propose new strategies to increase demand for zero emissions vehicles, and (4) consider strengthening or adopting new regulations to meet GHG reduction goals in the transportation sector.

Looking forward

In this informational hearing, the committees will hear from leaders at CalSTA and ARB about their work to reduce transportation emissions, as well experts in the relevant policy areas. Should emissions from the transportation sector continue to rise, it will be exceedingly difficult to meet the state's decarbonization goals. Making progress will likely require a combination of changing existing programs and creating innovative, new ones as well.