INFORMATONAL HEARING OF THE SENATE ENVIRONMENTAL QUALITY COMMITTEE

California Air Resources Board: An Overview of Air Pollution

Mary Nichols, Chair
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INTRODUCTION

Good morning, Mr. Chair and Members. Thank you for the opportunity to speak with you today about California's programs to reduce air pollution. As ARB approaches its 50th anniversary this year, it is a good time to reflect on California's clean air accomplishments and the role we have played nationally and globally.

ARB was established in 1967 under Governor Reagan, and was the first air agency of its kind, predating the U.S. Environmental Protection Agency. The California Clean Air Act, adopted in 1988, paved the way for the federal Clean Air Act amendments of 1990, which define today's framework for air pollution control.

In recognition of California's early efforts, ARB has unique authority under the federal Clean Air Act to regulate emissions more stringently than the federal government from some source categories. While EPA has primary authority for interstate trucks, aircraft, ships, locomotives, and some farm and construction equipment, the Clean Air Act also allows California to seek a waiver from U.S. EPA to enact more stringent emission standards for passenger vehicles, heavy-duty trucks, and certain off-road vehicles and engines. Over the years, California has received waivers

and authorizations for over 100 regulations. ARB also has primary responsibility for controlling emissions from fuels and consumer products. Local air districts, by contrast, are primarily responsible for controlling emissions from stationary sources, such as refineries and power plants. As a result of California's unique authority and innovative pollution control programs at the State and local levels, we have made tremendous progress in reducing air pollution. Over the last 50 years, air quality has improved by over 75 percent, and 30,000 premature deaths are avoided each year.

KEY MANDATES

Over the past 50 years, as our understanding of the impacts of air pollution has expanded, so too has the scope of our programs. Today, ARB is tasked with three key mandates: achieving health-based air quality standards for ozone, particulate matter and other air pollutants under the State and federal Clean Air Acts; reducing public exposure to toxic air contaminants; and reducing greenhouse gas emissions to 1990 levels by 2020, with further reductions to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050.

I will provide a little more background on each of these mandates. First, air quality standards. The EPA sets health-based standards and is required by federal law to regularly review those standards to ensure they are health-protective based on the latest science. This has led EPA to set a series of increasingly stringent standards over time. Our current planning focus is on meeting the 75 parts-per-billion ozone standard. Oxides of nitrogen, called NOx, are the key smog-forming pollutants we need to control. Meeting the 75 parts-per-billion ozone standard will require California to reduce NOx emissions 80 percent from today's levels by 2031. EPA also recently strengthened the

ozone standard to 70 parts-per-billion. Current efforts to meet the 75 parts-per-billion standard will help to put California on a trajectory to meet the newest, more health-protective standard later in that decade.

The second overarching mandate is to reduce exposure to toxic air contaminants. California's air toxics program began in 1983 with adoption of the Toxic Air Contaminant Identification and Control Act. Since then, the State has identified over 200 substances that are hazardous to human health, including lead, benzene, toluene, and asbestos. Today, the critical focus of the State's efforts is on diesel particulates, which account for about 70 percent of total known cancer risk related to toxic air contaminants. To address these health impacts, in 2000 the Board adopted the Diesel Risk Reduction Plan, which calls for an 85 percent reduction in diesel particulate emissions by 2020.

Finally, AB 32, and more recently SB 32, requires California to reduce GHG emissions to 1990 levels by 2020, with a 40 percent reduction below 1990 levels by 2030. California also has a long range goal defined in Executive Order to achieve an 80 percent reduction below 1990 levels by 2050. Meeting California's greenhouse gas reduction targets is an essential part of global actions needed to slow global warming and achieve climate stabilization.

TRENDS OVER TIME -- PROGRESS

So, what is our progress in meeting each of these mandates? Today, cars, trucks, and other mobile equipment are cleaner and more efficient than ever before, and pollution from stationary sources has been reduced significantly. The first three charts in your packet highlight California's progress in reducing the three pollutants that are

key to meeting our mandates: smog-forming NOx emissions; diesel particulate emissions, and greenhouse gas emissions. Let's start with the first chart, which shows California's progress in reducing smog-forming NOx emissions relative to the goal to attain the federal ozone standard by 2031. The curve that drops from left to right shows NOx emissions decreasing over 60 percent since 1990, based on regulations adopted to date. This progress reflects the benefits of both air district programs for stationary sources, and ARB and EPA programs for mobile sources. Because mobile sources are responsible for 80 percent of NOx emissions, programs to develop more stringent engine standards, cleaner fuels, and incentive funding have been responsible for a large portion of this progress. The blue dotted line at the bottom of the graph indicates the 80 percent reduction in NOx emissions needed to meet the 75 parts-per-billion ozone standard by 2031.

The second chart shows progress in reducing diesel particulate emissions, which have decreased approximately 80 percent since 1990. Mobile sources are responsible for 90 percent of toxic diesel PM, thus mobile source programs are primarily responsible for the significant progress that has occurred. In this chart, the dotted line at the bottom reflects the 2020 diesel particulate matter emission reduction goal defined in the Diesel Risk Reduction Plan.

Next, the third chart displays our progress in reducing greenhouse gas emissions, relative to the 2020 and 2030 targets. California's greenhouse gas emissions are now 10 percent lower than peak levels we saw prior to adoption of AB 32. Mobile sources, along with the fuels that power them, are the largest source of greenhouse gas emissions, accounting for nearly 50 percent of total emissions in the

State. Comprehensive actions to reduce greenhouse gas emissions from vehicles and fuels are therefore a critical aspect of reaching California's climate goals, and I am happy to report that we are on track to meet the initial 2020 target.

These emission reductions translate into tangible air quality improvements and are the real-world proof of the effectiveness of California's air pollution control programs. Twenty-five years ago, the entire South Coast Air Basin, the nation's smoggiest region, violated the ozone standard. Today, concentrations have declined 45 percent, and 40 percent of the population lives in communities that meet the standard. In the San Joaquin Valley, where fine particle pollution is the toughest challenge nationwide, levels have dropped 20 percent since 2001.

Exposure to toxic air contaminants has also decreased substantially. Levels of diesel particulates in the air have dropped nearly 70 percent since 1990, with some of the most significant decreases in California's most disadvantaged communities. Levels of lead measured in the air are now 90 percent lower than twenty-five years ago, and benzene levels have also dropped nearly 90 percent.

This progress has occurred while California's population and economy have continued to grow. Our economy is now the world's sixth largest, and job growth in the State has outpaced the national rate. In addition, the costs of air pollution control represent less than one percent of the State's gross state product and have led to the creation of 42,000 jobs and revenue of 8 billion dollars. California has continued to demonstrate that reducing emissions and economic growth go hand-in-hand.

KEY PROGRAMS RESPONSIBLE FOR SUCCESS

I will now turn to discussing some of the key programs that have been responsible for California's significant progress reducing air pollution. I understand there will be a separate hearing addressing California's climate programs; however, it's important to note that while early programs focused on reducing smog-forming pollutants, many programs provide multiple benefits, and we have been strengthening our efforts to develop programs that reduce smog-forming, diesel particulate, and greenhouse gas emissions simultaneously.

As I mentioned earlier, California has led the nation in developing innovative and technology-advancing pollution control programs. In 1966, California established the nation's first emission requirements for passenger cars, followed by use of two-way catalytic converters 10 years later. Over the last 50 years, California has since adopted more than 300 clean air regulations and programs. These regulations range from setting vehicle emission standards and requirements for cleaner fuels, to developing cleaner formulations for consumer products. My testimony today will highlight a few of the most significant programs for two of the largest sectors - cars and trucks - which have been responsible for the majority of progress in reducing smog-forming NOx and diesel particulate matter emissions.

The next two charts in your packet display the same overall NOx and diesel particulate matter emission trends I discussed earlier, but now overlaid with a number of major initiatives responsible for the reductions we've seen over the last 25 years. Each chart has three major colored sections, highlighting three programmatic areas that have been fundamental to our success: stringent engine standards, cleaner fuels, and

programs to accelerate the turnover of vehicles and engines. The diamonds indicate the start dates for key programs. This chart allows you to see the changes in emissions as we implemented key programs.

Beginning in 1990, ARB's Low Emission Vehicle standards for passenger cars and trucks have set increasingly cleaner engine standards. As a result, today's cars are now 99 percent cleaner. In 1990, ARB also adopted the zero-emission vehicle, or ZEV, mandate, which set minimum sales requirements for new vehicles. Most recently, in 2012, ARB adopted the Advanced Clean Cars program, developed through collaboration with EPA and the National Highway Traffic Safety Administration. This program lays the foundation for the next generation of ultra-clean vehicles. The program includes tighter criteria pollutant standards, more stringent greenhouse gas emission standards, and increased production requirements for ZEVs through the 2025 model year.

As a result of ARB's efforts, auto manufacturers are producing increasing numbers of zero-emission vehicles, with over 33 models now available. Over 265,000 ZEVs are on the road today, with a goal of over 1.5 million by 2025. California's ZEV programs are also leading to increased numbers of ZEVs nationally and internationally through partnerships with other states and the International ZEV Alliance.

The engine standards are enforced through ARB's certification program and in-use testing. While I understand this committee will hold a hearing on the Volkswagen and Fiat Chrysler cases in the future, I would like to briefly note that The VW investigation and settlement highlights the critical need for California's program, separate from U.S. EPA's, to certify new motor vehicles to our stringent emission standards and ensure

those vehicles are operating as certified. After ARB-directed university research suggested anomalies in VW diesel emissions, ARB staff in our Southern California laboratory doggedly tested and retested those vehicles -- including developing special test cycles to get a complete picture of the excess emissions that occurred while driving on the road. This effort led to record civil penalties, complete mitigation of excess and illegal emissions, significant investment in California's growing ZEV market, and relief to affected VW owners and lessees. We hope to never see behavior like this again, but as you may know, ARB has already applied the special test cycles that exposed VW's cheating to other manufacturers, leading to our allegations against Fiat Chrysler just last week.

As with passenger cars, heavy-duty truck engine standards have also been lowered over time, with the most recent standard set in 2010. Today's engines now produce 90 percent less NOx than their predecessors. Our next effort is focused on working with EPA to develop the next generation of low-NOx standards. Because interstate trucks that travel in California contribute a significant fraction of overall truck emissions in the State, federal action is essential. EPA has recently announced they will begin development of new standards in response to work by ARB, and petitions by California air districts. We hope to continue working with EPA on this crucial endeavor, particularly in light of the critical public health benefits federal action would provide.

To meet the mandate of the Diesel Risk Reduction program, we have adopted over 40 programs addressing a variety of heavy-duty trucks and engines, the primary sources of diesel pollution. Because trucks are one of the largest sources of diesel emissions, and can remain on the road for many years, the Truck and Bus rule is an

essential program to reduce both NOx and diesel particulate emissions from the existing truck fleet. The rule requires that nearly every truck operating in California is upgraded to 2010 engine standards by 2023, and equipped with filters that capture toxic particulate emissions. A new diesel truck equipped with a particulate filter today emits 95 percent fewer particles than a truck without a filter. Other regulatory programs to reduce diesel particulate matter address vehicle idling, and requirements to ensure truck control technologies remain effective in-use.

At the same time, California's reformulated gasoline standard and clean diesel programs require fuel producers to meet increasingly stringent standards, which have reduced both smog-forming and toxic pollutants from gasoline and diesel. Use of cleaner-burning gasoline, for example, has removed emissions equivalent to 3.5 million vehicles from California's roads. Looking forward, the Low Carbon Fuel Standard and Alternative Diesel Fuel Regulation will decrease both greenhouse gas and criteria pollutant emissions by incentivizing increasing volumes of renewable fuels.

These regulatory measures are complemented by incentive programs to accelerate the transition to cleaner technologies. Incentive programs provide immediate emission reductions and corresponding health benefits, assist regulated entities in complying with our regulations, support needed longer-term transformation to zero-emission technologies, and stimulate economic investment in advanced technologies.

In the light-duty sector, ARB administers a number of programs to help advance the cleanest zero-emission passenger vehicles and provide assistance for scrapping and replacing some of the dirtiest vehicles currently on the road.

The Clean Vehicle Rebate Project, or CVRP, provides rebates to consumers for purchasing zero-emission and plug-in hybrid passenger vehicles. ARB adopted new income eligibility limits as well as higher rebates for low-income consumers this year to help ensure the program supports the growth of the ZEV market in a more effective manner. To date we have funded over 170,000 rebates for cleaner passenger vehicles.

The Enhanced Fleet Modernization Program, or EFMP, provides funding to consumers in the San Joaquin Valley and South Coast air districts who voluntarily choose to replace their old, dirty vehicles. The old vehicles are scrapped and replaced with cleaner, more fuel-efficient vehicles. Of the more than 1,400 vehicles that have been replaced to date, 95 percent have gone to participants living in or near disadvantaged communities whose household incomes are less than 225 percent of the Federal Poverty Level. We are currently working with the Sacramento, Bay Area and San Diego air districts to expand the program to those regions.

In addition to EFMP, ARB is funding several other programs specifically aimed at increasing access to clean vehicles in disadvantaged communities pursuant to SB 1275 by Senator De León. These include a car sharing project designed to enable individuals in disadvantaged communities to drive ZEVs without the costs of car ownership; a financing assistance project that helps to improve access to affordable financing for the purchase or lease of ZEVs by lower-income consumers; and an agricultural worker van pool program that would provide expanded access to clean transportation vanpools for agricultural workers in the San Joaquin Valley's disadvantaged communities.

On the heavy-duty side, ARB's history of heavy-duty incentive funding programs goes back nearly 20 years, starting with the Carl Moyer Program in 1998. Since its

inception, the Carl Moyer Program has replaced more than 50,000 engines from heavy-duty trucks, off-road construction and agricultural equipment, vessels, and locomotives.

The Goods Movement Emission Reduction Program was approved by California voters as part of Proposition 1B in 2006 in order to help accelerate the turnover of older, dirty trucks and freight equipment. To date, this $1 billion program has funded over 13,000 heavy-duty truck replacements, along with cleaner yard trucks, locomotives, cargo handling equipment, harbor craft, and shore power for ships at berth.

The Air Quality Improvement Program, or AQIP, funds ARB's Truck Loan Assistance Program, which helps small business truckers secure financing for upgrading their fleets with newer trucks in order to comply with ARB's Truck and Bus Regulation. Since 2009, about $83 million in ARB funding has been expended to provide over $800 million in financing for nearly 13,500 cleaner trucks and retrofits. Nearly 60 percent of loans have been issued to single truck fleets and over 80 percent have been issued for trucks in or near disadvantaged communities. AQIP also funds the Agricultural Equipment Trade Up Pilot Project for the San Joaquin Valley.

The Low Carbon Transportation Program is funded by Cap-and-Trade Auction Proceeds. Investments in heavy-duty vehicles and equipment are guided by SB 1204 by Senator Lara. This program includes a variety of projects at different stages of technology readiness., such as the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, and truck and bus pilot deployment projects for commercially available technologies, and advanced technology demonstration projects, all of which help to facilitate technology advancement and spur economic growth. To date, we have

allocated $211 million to projects that have resulted in the deployment of over 2,900 vehicles and pieces of advanced technology equipment.

Lastly, I'd like to mention school bus funding. Several of these programs make it possible to retrofit or replace school buses. But our school bus fleet is aging faster than we can keep up. Currently, there are hundreds of buses that are over 30 years old and that are completely uncontrolled - predating all air quality standards. This is a health risk to our youngest population, especially low-income children. ARB is working with school districts and associations, air districts, and others to see what more can be done to accelerate our transition to cleaner buses for our school children. However, more funding is needed to get new or retrofitted buses on the road now.

CLOSING

In closing, ARB's motor vehicle control programs are developed based on 50 years of experience, and we have made great progress in reducing pollution. This progress is the product of a collective effort involving the Legislature, air districts, environmental groups, and regulated industries. We should be proud of this progress. But, let me be clear on this point: There is more work ahead of us.

Approximately one-third of California's 38 million residents still live in communities that exceed the federal ozone and PM2.5 standards. Exposure to diesel particles is too high, especially in disadvantaged communities near freight facilities such as ports, rail yards, and distribution centers. And, we need to continue to build on our efforts to reduce greenhouse gas emissions to meet the 2030 reduction target, as well put California on a long-term trajectory towards 2050 and beyond.

Necessary strategies are being defined in plans that will be coming to the Board this year, including the State's mobile source strategy for meeting federal air quality standards and the Scoping Plan Update to achieve the 2030 greenhouse gas reduction target in SB 32. These plans, along with the California Sustainable Freight Action Plan, will lay out the actions required to support a comprehensive transformation of the transportation sector to meet our air quality, risk reduction, and climate goals. I look forward to continue working with you to build on California's strong environmental legacy to achieve the State's goals.

Thank you for your time. I would be happy to answer any questions you have.