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Planning Scenario to Meet Emission Reductions Needed from Transportation Sector in South Coast AQMD

Additional submitted attachment is included below.

South Coast
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May 29, 2019

Planning Scenario to Meet Emission Reductions Needed from Transportation Sector in South Coast AQMD
Docket Number 19-IEPR-04 (Transportation)

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to discuss the air quality needs of our region in coordination with California Energy Commission's (CEC's) upcoming 2019 Integrated Energy Policy Report (IEPR) and AB 2127 planning effort. We also appreciate your providing us the opportunity to present some of the specific challenges and needs with electric infrastructure in light of our upcoming federal air quality attainment dates at your May 2nd staff workshop for the Electric Vehicle Charging Infrastructure Assessment for AB 2127. As was presented, attaining these air quality standards provides direct public health benefits in addition to avoiding federal sanctions, and we encourage CEC to include this matter as one of its top priorities in this IEPR.

It is our understanding that the current IEPR planning effort from CEC is focused on a 2030 target year, which is well positioned to plan for a key attainment date for South Coast AQMD, namely meeting the 75 ppb 8-hour ozone standard by 2031. Based on analysis in our 2016 Air Quality Management Plan, emissions of nitrogen oxides (NOx) must be reduced by about 55% below baseline levels in order to attain this standard by 2031. By 2031, we project that while about 5% of NOx will come from light duty vehicles, more than 70% of NOx will come from other mobile sources, including heavy duty trucks, off-road equipment, locomotives, etc. In order to meet air quality standards, a significant fraction of these larger vehicles and equipment will need to be zero emissions, and likely electrically powered. The charging needs for this fleet of vehicles/equipment at the regional scale may be substantial, and we appreciate CEC's willingness to provide some preliminary analysis for what those needs are as part of the IEPR.

As South Coast AQMD staff has been pursuing potential new policies and regulations to meet federal air quality standards we have conducted some planning exercises that evaluate the mix of vehicles/equipment that could be needed. The last page of these comments contains a table that illustrates one potential scenario of vehicle turnover that would be needed beyond what would occur with existing CARB regulations by 2031. This scenario is not an explicit policy goal of South Coast AQMD so much as a staff planning exercise that illustrates the scale of turnover needed to meet federal ozone standards by 2031. The estimates presented here are based on broad assumptions about the timing of technology readiness for each vehicle/equipment sector, the estimated differential cost in purchasing these vehicles/equipment through time, and the potential NOx emission benefit of each technology beyond baseline conditions. The turnover of

vehicles/equipment could occur through any combination of financial subsidies, regulations, or market forces affecting vehicles/equipment in South Coast AQMD. Other vehicle/technology/timing mixes are possible, however the overall scale of turnover presented in the following table provides a sense of the level of turnover needed.

South Coast AQMD staff appreciates CEC's consideration of a South Coast AQMD attainment planning scenario as part of its AB 2127 and IEPR planning efforts. We are available to discuss the scenario presented here in more detail, or to work with CEC staff to evaluate other potential planning scenarios. Don't hesitate to contact me at (909) 396-3244 or imacmillan@aqmd.gov to discuss this further.

Sincerely,

Ian MacMillan
Planning and Rules Manager
Planning, Rule Development, and Area Sources Division
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Source Category	Approximate Total Number of Units Operating in SCAQMD (2019)	Quantity of Units Replaced During 5-Year Period 2021-2025 [1]			Quantity of Units Replaced During 5-Year Period 2026-2030 [1]			Percentage of 2019 Fleet Turned Over to ZE		
		NZE [7]	ZE [8]	Highest Tier [9]	NZE	ZE	Highest Tier	ZE (2021-2025)	ZE (2026-2030)	Total by 2030
Cars and Light-duty Trucks	10,700,000	-	75,000	-	-	150,000	-	1%	1%	2% [10]
School Buses	7,600	-	6,000	-	-	1,600	-	79%	21%	100%
Transit Buses	5,400	-	2,500	-	-	2,900	-	46%	54%	100%
Class 4 Trucks	230,000	5,000	30,000	-		50,000	-	13%	22%	35%
Class 5-6 Trucks	140,000	20,000	5,000	-	10,000	30,000	-	4%	21%	25%
Class 7-8 Trucks	83,000	20,000	5,000	-	-	20,000	-	6%	24%	30%
Off-Road A [2]	144,000	-	-	10,000	-	50	13,500	0%	0%	0%
Off-Road B [3]	89,000	1,000	5,000	5,000	1,000	2,500	5,000	6%	3%	8%
Off-Road C [4]	225,000	-	100,000	-	-	50,000	-	44%	22%	67%
Port Cargo Handling Equipment	3,000	500	1,250	-	-	1,750	-	42%	58%	100%
Locomotives	17,000 [5]	-	-	100	100	-	600	0%	0%	0%
Metrolink	12	-	-	12	-	-	-	0%	0%	0%
Vessels	3,800 [6]	1,000	-	100	2,000	-	1,000	0%	0%	0%
Aircraft	7,500 [5]	-	-	-	-	-	100	0%	0%	0%

1- The number of units under each category represents what can be turned over beyond existing baseline assumptions in South Coast AQMD 2016 Air Quality Management Plan (AQMP). In most cases, the baseline values for ZE and NZE is effectively zero.

2- Off-Road A: Construction and Industrial Equipment (all off-road categories correspond to classifications in CARB OFF-ROAD models)

3- Off-Road B: Ground Supporting Equipment, non-port Cargo Handling Equipment, Agricultural, Military, and Oil Drill Equipment, and Transportation Refrigeration Units

4- Off-Road C: Light Commercial and Portable Equipment Registration Program Equipment

5- Locomotives and Aircraft populations reflect the entire national fleet that could visit SCAQMD. Replaced units are assumed to stay in SCAQMD.

6- Vessel population is number of calls of cargo ships (containerized, bulk, tanker) and replaced 'units' are actually replaced calls

7- Near Zero Emissions Tailpipe (NZE): Assumes 90% lower NOx than the current most stringent regulatory standard - typically fueled by natural gas currently, but could use any fuel. For vessels, NZE assumes only a 40% reduction in NOx below baseline levels.

8- Zero Emissions Tailpipe (ZE): Electric or Fuel Cell Technology with zero tailpipe emissions. Scenario assumes most ZE vehicles in this timeframe are electric, though hydrogen is not precluded and in some cases may be more commercially viable.

9- Highest Tier: latest/more stringent emissions standard adopted for each emission source category by EPA including Tier 4 final for off-road equipment, Tier 3 for the vessels, and Tier 8 for the aircraft

10- Total number of light-duty ZE is expected to be much higher than shown in table due to market forces and existing CARB regulations. The value shown here represents a potential number of light duty vehicles that could be provided additional financial subsidy