

Appendix D

Reasonable Further Progress and Contingency Reductions

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Introduction

Reasonable further progress (RFP) refers to the annual emission reductions required to demonstrate continued and steady progress toward attaining air quality standards. A SIP must demonstrate both RFP and attainment to be approvable. It must also include contingency emission reductions that must be achieved if a nonattainment area fails to meet certain milestones. The RFP requirements for the 8-hour ozone standard are described in the “Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard,” and build upon the requirements specified in Clean Air Act sections 172(c)(2), 182(b)(1) and 182(c)(2)(b).

This appendix will summarize how California meets its RFP and contingency reduction requirements. It is important to note that the requirements are met in every nonattainment area with already-adopted measures. No new emission reduction commitments are required and no reductions from the State Strategy’s proposed new measures are needed to meet the requirements.

RFP Requirements

RFP requirements vary by nonattainment classification. The following is a discussion about RFP requirements for California nonattainment areas as initially designated by U.S. EPA.

Areas with a basic classification that can attain the standard within the first five years after the designations become effective (2004-2009) do not have to demonstrate RFP. Three basic areas, Sutter Buttes, Butte County and San Diego County will meet the federal standard by 2009. Areas with a marginal classification – Imperial County and San Francisco Bay Area – are not subject to RFP requirements.

Moderate and basic areas that require more than five years to attain must demonstrate RFP. Their RFP demonstrations include an initial 15 percent reduction in ROG and/or NOx emissions from the 2002 baseline ROG inventory by 2008. They then must achieve additional reductions per year, averaged across each consecutive 3-year period or part thereof until their attainment year. Basic areas needing additional time to attain include: Eastern Kern, Southern Mountain Counties, Central Mountain Counties, and Western Nevada County. Moderate areas include: Ventura, Antelope Valley and Western Mojave Desert.

Areas whose 1-hour ozone rate of progress plans were not approved by the U.S. EPA are subject to different RFP requirements. These areas still must meet the initial RFP target of 15 percent ROG reductions for the first six years (2002-2008), as set forth in Clean Air Act section 182(b)(1). They cannot use NOx emission reductions to satisfy the initial target when ROG emissions are not sufficient. The areas subject to this restriction are Coachella Valley, Antelope Valley, and Western Mojave Desert, which comprise the former Southeast Desert 1-hour ozone nonattainment area. This presents a challenge for the former Southeast Desert areas because their nonattainment status is due in part to pollution transported from the South Coast. In such situations,

U.S. EPA allows the nonattainment area to account for emissions occurring, and emission reductions achieved, in upwind areas to be credited towards rate of progress. With transport included in the calculation, the Coachella Valley meets rate of progress requirements.

For RFP, nonattainment areas classified serious and above must demonstrate an 18 percent reduction in ROG and/or NOx emissions from the 2002 baseline ROG inventory by 2008. In the years that follow, they must demonstrate, on average, an additional 3 percent per year reduction in ROG and/or NOx emissions until their attainment year. Serious areas are: San Joaquin Valley, Coachella Valley and Sacramento. Note that for the reasons given above, Coachella Valley is subject to a 15 percent ROG-only reduction requirement from 2002 to 2008. The South Coast Air Basin is classified as severe.

For moderate and above 8-hour ozone nonattainment areas, a limited amount of NOx reductions may also be used, to a point, as a substitution for ROG reductions for RFP. NOx emission reductions creditable toward the RFP requirement cannot be greater than the cumulative NOx reductions that are necessary to demonstrate attainment. This attainment consistency requirement is meant to prevent the substitution of NOx reductions for progress purposes that would not lead toward attaining the ozone standard.

U.S. EPA has taken the position in guidance, and not in regulation, that for nonattainment areas classified under Subpart 2, reductions needed for progress in the attainment year should equate to those needed for attainment. ARB staff disagrees. We believe a plain reading of the Act indicates that a 3 percent reduction per year is needed between the next-to-last milestone year and the attainment year. For example, in a severe-15 area, the next-to-last milestone year is 2017 and the attainment year is 2018. A 45 percent reduction is needed in 2017 for RFP. Therefore, the RFP requirement for the next year (2018) is three percent more, or 48 percent – and not the reductions needed for attainment.

Upwind Emissions in RFP Demonstrations

Ozone levels are influenced by ROG and NOx emitted both within a nonattainment area and transported from upwind locations. U.S. EPA acknowledges this relationship by allowing emission reductions from upwind locations outside the nonattainment area to be included for RFP, up to 100 kilometers for ROG and 200 kilometers for NOx.

The inclusion of transport contributions of ROG and NOx provides key emission reductions in RFP analyses for the following nonattainment areas: Antelope Valley and Western Mojave Desert, Central Mountain Counties, Coachella Valley, Eastern Kern, Southern Mountain Counties and Western Nevada. Their emission inventories for RFP purposes include ROG and NOx emissions from counties that are (1) entirely within the designated 100km and 200km distances, and (2) part of the area's established federally-approved transport couples.

Federal Motor Vehicle Control Program Adjustments

Section 182(b)(1)(D) of the Clean Air Act stipulates that emission reductions stemming from the federal on-road motor vehicle control program as it existed in 1990 may not be used to help meet minimum emission reduction requirements for RFP purposes. This precludes states from securing the emission reductions required to demonstrate satisfactory progress for ozone simply on the merit of the federal motor vehicle control program as it existed in 1990. The Clean Air Act also prohibits states from taking credit for emission reductions resulting from using gasoline with a Reid vapor pressure limit specified by 1990. States are required to adjust for the benefits of these federal programs in RFP calculations. ARB staff has considered the combined benefits of the federal motor vehicle and fuel volatility programs for purposes of this discussion, and will reference them below as the “federal program” and “federal program adjustments”.

California’s pioneering efforts to set emission standards from motor vehicles resulted in nationwide emission standards adopted by U.S EPA. In general, California’s auto emission standards have been, and are, more stringent than federal standards, particularly for passenger vehicles.

In analyzing what federal program adjustments should be made to California nonattainment area RFP reductions, ARB staff analysis concluded that the federal program did not provide any additional benefits beyond California’s program and that the federal program adjustment in all nonattainment areas should be zero. This is a bit different than the rate of progress reductions for the last 1-hour ozone SIP, where some federal program adjustments were made. ARB staff’s methodology for calculating the federal program benefits remains unchanged, except to reflect a change in the baseline year from 1990 (for 1-hour ozone plans) to 2002.

California’s on-road control program has continued to advance since 1990, so emissions from motor vehicles in 2002 are much lower than they were in 1990. Additionally, large increases in vehicle miles traveled from 1990 to 2002 result in a higher-emitting federal fleet for 8-hour ozone RFP than for the 1-hour ozone rate of progress. Combined, these factors lead to the conclusion that the pre-1990 federal program provides no benefits to California in 8-hour ozone RFP plans.

Contingency Requirements

Contingency reductions are to take effect without further ARB or air district action if the nonattainment area does not achieve an RFP milestone, or if the area does not attain the federal 8-hour ozone or PM_{2.5} standard at the end of their identified attainment year. This requirement does not apply to marginal nonattainment areas, only to basic, moderate, serious, severe and extreme areas (for RFP only). Since these contingency reductions must be achieved without further action, U.S. EPA has interpreted this to mean that the contingency reductions must be from measures that have already been adopted when the submittal is made (or possibly prior to U.S. EPA taking action).

The bulk of emission reductions needed to attain the federal standards in this submittal are achieved through regulations that make up California’s mobile source emission control program, which has been very successful in reducing emissions within California

and represents the foundation supporting attainment of both federal and State ambient air quality standards. ARB has a well established history of adopting and implementing mobile source control regulations on time or earlier than it has committed to do so. As a result, we expect to achieve, and even exceed, our RFP goals without the need for contingency reductions.

For all nonattainment areas, already-adopted measures provide more emission reductions than are needed to meet RFP requirements in every milestone year. Therefore, the emission reductions from adopted measures that go beyond the RFP requirements will constitute the contingency reductions in the unlikely event that the State does not meet the RFP goals.

Failure to meet federal air quality standards is determined by monitored air quality values in the attainment year, and is therefore determined after the end of the attainment year. California's motor vehicle emission control program allows ARB to provide additional emission reductions each year, based on the increasing benefits of measures that are already being implemented. Therefore, ARB proposes to include the benefits of one additional year of its ongoing motor vehicle program, including vehicle fleet turnover, and light-duty vehicle inspection and maintenance in the year following each area's attainment year.

Contingencies for new technologies

In terms of contingency for attainment, additional provisions apply to extreme areas that include new technologies in their attainment plans. These attainment demonstration plans can rely on future advances in emission reduction technologies (referred to as new technologies) if the State, among other things, submits enforceable commitments to develop and adopt contingency measures if the anticipated technologies do not achieve the planned reductions, and if the State demonstrates that the contingency reductions shall be adequate to achieve attainment and reasonable further progress.

These contingency reductions to back-up the new technology provisions are not due until three years before implementation of these new technology provisions. The need for technology development and long-term measures, as well the process for identifying long-term emission reductions is discussed in Chapter 3.

Reasonable Further Progress and Contingency Demonstrations

The following descriptions for each nonattainment area outline California's RFP and related contingency reductions demonstrations. Since already-adopted measures provide all contingency reductions needed for RFP and attainment, the requirement that reductions will occur without any further action by ARB or local air districts is fully met.

ARB staff reports for each nonattainment area will include demonstration of RFP and contingency reductions. Detailed charts providing the background for RFP and contingency reductions for South Coast, San Joaquin Valley, and Coachella Valley, can be found on pages 6-8 of this appendix. All three of these areas are expected to request a change in their nonattainment classifications – extreme for both South Coast

and San Joaquin Valley and severe-15 for Coachella Valley. The charts reflect the anticipated nonattainment classifications.

South Coast

The South Coast meets its RFP targets through 2014 purely on the basis of ROG reductions from the existing control program. From 2017 forward, the South Coast will need to use both ROG and NOx reductions from the existing control program. Reductions from proposed new measures are not needed to achieve the progress targets.

Adopted measures in the South Coast Air Basin are expected to yield enough reductions to meet the RFP goals and will also yield a surplus that will meet the contingency reduction requirements for the area.

San Joaquin Valley

The San Joaquin Valley meets its RFP targets through both ROG and NOx reductions from the existing control program. Reductions from proposed new measures are not needed to achieve the progress targets.

Adopted measures in the San Joaquin Valley are expected to yield enough reductions to meet the RFP goals and will also yield a surplus that will meet the contingency reduction requirements for the area.

Coachella Valley

Because the Southeast Desert 1-hour ozone nonattainment area did not have a federally-approved progress plan, the Coachella Valley's 8-hour RFP plan must demonstrate a 15 percent emission reduction from 2002 to 2008 by relying only on ROG reductions. The area meets this requirement. Expecting the South Coast District to request a bump up to the severe -15 classification for the Coachella Valley, progress is calculated through 2018. Upwind emissions of ROG have been used from Orange County, the portion of San Bernardino County within the South Coast Air Basin, and the portion of Riverside County within South Coast Air Basin. Upwind emissions of NOx from these counties and Los Angeles County have also been included.

Adopted measures in the Coachella Valley are expected to yield enough reductions to meet the RFP goals and will also yield a surplus that will meet the contingency reduction requirements for the area.

**Detailed Analysis of South Coast
Reasonable Further Progress and Contingency
(summer planning, tons per day)**

	2002	2008	2011	2014	2017	2020	2023
Baseline ROG	897.2	651.0	599.2	566.4	546.4	536.4	533.6
FMVCP/RVP Adjustment	0	0	0	0	0	0	0
RACT Corrections	0	0	0	0	0	0	0
Adjusted Baseline ROG	897.2	651.0	599.2	566.4	546.4	536.4	533.6
RFP commitment for ROG reductions from new measures		0	0	0	0	0	0
Required % change since previous milestone year (ROG or NOx) compared to 2002		18%	9%	9%	9%	9%	9%
Required % change since 2002 (ROG or NOx)		18%	27%	36%	45%	54%	63%
Target ROG levels		735.7	655.0	574.2	493.5	412.7	332.0
Apparent shortfall in ROG		-84.7	-55.8	-7.8	53.0	123.6	201.7
Apparent shortfall in ROG, %		-9.4%	-6.2%	-0.9%	5.9%	13.8%	22.5%
ROG shortfall previously provided by NOx substitution, %		0	0.0%	0.0%	0.0%	5.9%	13.8%
Actual ROG shortfall, %		-9.4%	-6.2%	-0.9%	5.9%	7.9%	8.7%
Baseline NOx	1078.4	849.6	737.1	649.7	578.0	530.2	505.1
FMVCP Adjustment	0	0	0	0	0	0	0
Adjusted Baseline NOx	1078.4	849.6	737.1	649.7	578.0	530.2	505.1
RFP commitment for NOx reductions from new measures	0	0	0	0	0	0	0
Change in NOx since 2002		228.9	341.3	428.7	500.5	548.2	573.3
Change in NOx since 2002, %		21.2%	31.7%	39.8%	46.4%	50.8%	53.2%
NOx reductions since 2002 already used for RFP substitution and contingency through last milestone year, %		0.0%	3.0%	6.0%	9.0%	17.9%	28.7%
NOx reductions since 2002 available for RFP substitution and contingency in this milestone year, %		21.2%	28.7%	33.8%	37.4%	33.0%	24.4%
Change in NOx since 2002 used for ROG substitution in this milestone year, %		0.0%	0.0%	0.0%	5.9%	7.9%	8.7%
Change in NOx since 2002 used for contingency in this milestone year, %		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Change in NOx since 2002 surplus after meeting substitution and contingency needs in this milestone year, %		18.2%	25.7%	30.8%	28.5%	22.1%	12.7%
Are RFP Requirements Met?		yes	yes	yes	yes	yes	yes
Are Contingency Reduction Requirements Met?		yes	yes	yes	yes	yes	yes

**Detailed Analysis of San Joaquin Valley
Reasonable Further Progress and Contingency
(summer planning, tons per day)**

	2002	2008	2011	2014	2017	2020	2023
Baseline ROG	468.0	426.5	405.8	403.7	400.3	402.3	408.8
FMVCP/RVP Adjustment	0	0	0	0	0	0	0
RACT Corrections	0	0	0	0	0	0	0
Adjusted Baseline ROG	468.0	426.5	405.8	403.7	400.3	402.3	408.8
RFP commitment for ROG reductions from new measures		0	0	0	0	0	0
Required % change since previous milestone year (ROG or NOx) compared to 2002		18%	9%	9%	9%	9%	9%
Required % change since 2002 (ROG or NOx)		18%	27%	36%	45%	54%	63%
Target ROG levels		383.8	341.6	299.5	257.4	215.3	173.2
Apparent shortfall in ROG		42.8	64.2	104.2	142.9	187.0	235.6
Apparent shortfall in ROG, %		9.1%	13.7%	22.3%	30.5%	40.0%	50.3%
ROG shortfall previously provided by NOx substitution, %		0	9.1%	13.7%	22.3%	30.5%	40.0%
Actual ROG shortfall, %		9.1%	4.6%	8.5%	8.3%	9.4%	10.4%
Baseline NOx	642.30	567.67	493.11	419.55	362.24	321.68	295.14
FMVCP Adjustment	0	0	0	0	0	0	0
Adjusted Baseline NOx	642.30	567.7	493.1	419.5	362.2	321.7	295.1
RFP commitment for NOx reductions from new measures	0	0	0	0	0	0	0
Change in NOx since 2002		74.6	149.2	222.8	280.1	320.6	347.2
Change in NOx since 2002, %		11.6%	23.2%	34.7%	43.6%	49.9%	54.0%
NOx reductions since 2002 already used for RFP substitution and contingency through last milestone year, %		0.0%	11.6%	16.7%	25.3%	33.5%	43.0%
NOx reductions since 2002 available for RFP substitution and contingency in this milestone year, %		11.6%	11.6%	18.0%	18.3%	16.4%	11.1%
Change in NOx since 2002 used for ROG substitution in this milestone year, %		9.1%	4.6%	8.5%	8.3%	9.4%	10.4%
Change in NOx since 2002 used for contingency in this milestone year, %		2.5%	3.0%	3.0%	3.0%	3.0%	3.0%*
Change in NOx since 2002 surplus after meeting substitution and contingency needs in this milestone year, %		0.0%	6.5%	9.4%	10.1%	7.0%	0.7%
Are RFP Requirements Met?		yes	yes	yes	yes	yes	yes
Are Contingency Reduction Requirements Met?		yes	yes	yes	yes	yes	yes**

* 2024 mobile source program reductions are relied upon to meet 2023 contingency requirements.

** Contingency requirements met in 2023 through reductions from already-adopted mobile source measures.

**Detailed Analysis of Coachella Valley
Reasonable Further Progress and Contingency
(summer planning, tons per day)**

	2002	2008	2011	2014	2017	2018
Baseline ROG	379.3	299.9	282.0	271.4	265.9	265.0
FMVCP/RVP Adjustment	0	0	0	0	0	0
RACT Corrections	0	0	0	0	0	0
Adjusted Baseline ROG	379.3	299.9	282.0	271.4	265.9	265.0
RFP commitment for ROG reductions from new measures		0	0	0	0	0
Required % change since previous milestone year (ROG or NOx) compared to 2002		15%	9%	9%	9%	3%
Required % change since 2002 (ROG or NOx)		15%	24%	33%	42%	45%
Target ROG levels		322.4	288.3	254.1	220.0	208.6
Apparent shortfall in ROG		-22.50	-6.29	17.32	45.92	56.39
Apparent shortfall in ROG, %		-5.9%	-1.7%	4.6%	12.1%	14.9%
ROG shortfall previously provided by NOx substitution, %		0.0%	0.0%	0.0%	4.6%	12.1%
Actual ROG shortfall, %		-5.9%	-1.7%	4.6%	7.5%	2.8%
Baseline NOx	1159.3	917.2	794.6	697.2	618.1	597.4
FMVCP Adjustment	0	0	0	0	0	0
Adjusted Baseline NOx	1159.3	917.2	794.6	697.2	618.1	597.4
RFP commitment for NOx reductions from new measures	0	0	0	0	0	0
Change in NOx since 2002		242.1	364.7	462.0	541.2	561.9
Change in NOx since 2002, %		20.9%	31.5%	39.9%	46.7%	48.5%
NOx reductions since 2002 already used for RFP substitution and contingency through last milestone year, %		0.0%	3.0%	6.0%	13.3%	23.8%
NOx reductions since 2002 available for RFP substitution and contingency in this milestone year, %		20.9%	28.5%	33.9%	33.4%	24.6%
Change in NOx since 2002 used for ROG substitution in this milestone year, %		0.0%	0.0%	4.3%	7.5%	2.8%
Change in NOx since 2002 used for contingency in this milestone year, %		3.0%	3.0%	3.0%	3.0%	3.0%
Change in NOx since 2002 surplus after meeting substitution and contingency needs in this milestone year, %		17.9%	25.5%	26.5%	22.9%	18.9%
Are RFP Requirements Met?		yes	yes	yes	yes	yes
Are Contingency Reduction Requirements Met?		yes	yes	yes	yes	yes