Chapter 8

Reasonable Further Progress

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Chapter 8: Reasonable Further Progress

8.1 INTRODUCTION

This chapter explains and demonstrates reasonable further progress (RFP) by achieving incremental emission reductions required until the SJVAB reaches attainment of the federal PM2.5 air quality standard. The data in this chapter is based on information that has been provided in other chapters and appendices of this plan.

8.2 REASONABLE FURTHER PROGRESS REQUIREMENTS

The Clean Air Act (Act) requires attainment plans to meet RFP by achieving incremental emission reductions to ensure attainment of National Ambient Air Quality Standards (NAAQS) by the attainment date (Section 171(1)). The Act does not identify specific emission reduction benchmarks that must be met for PM attainment plans.

EPA's interpretation of the Act's RFP requirement in the Implementation Rule for the PM2.5 NAAQS identifies the concept of achieving generally linear progress (72 FR 20633). According to 40 CFR 51 Subpart Z Section 51.1000 (Definitions):

- The **RFP benchmark plan** is the RFP plan that shows generally linear progress from the baseline emissions year through the milestone inventory years.
- The **baseline year inventory** for RFP is the inventory for the year used as the base year for the attainment demonstration (for this plan, the baseline year inventory is 2005).
- **Milestone year inventories** occur in 2009 and 2012.
- **Full implementation inventory** is the level of emissions that demonstrates attainment. In the San Joaquin Valley the full implementation inventory is 2014.

Determination of RFP milestones involves several steps:

1. Determining the total reductions that must be achieved to reach attainment.
   The *2008 PM2.5 Plan* satisfies this in Chapter 3.
2. Determine the attainment year that is as expeditious as practicable. This plan identifies 2014 as the most expeditious attainment date practicable in the San Joaquin Valley.
3. Determining the fraction of reductions that are achieved in each milestone year.

The Implementation Rule recognizes that the attainment demonstration will identify the pollutants to be included in the RFP demonstration, the relative reductions needed for each of these pollutants, and the attainment year.

8.3 REASONABLE FURTHER PROGRESS CALCULATIONS

Tables 8-1, 8-2, and 8-3 show benchmark calculations specified in EPA's Implementation Rule.

Table 8-1 Emissions Inventory Adjusted for Plan Control Strategy
(in tons per day)

Description	2005	2009	2012	2014
Direct PM2.5				
Baseline Inventory (Table B-1)	86.0	79.8	77.0	75.0
Subtract District CM Reductions (Table 6-4)	0.00	1.60	6.69	6.70
Subtract ARB CM Reductions (Chapter 9)	0.00	0.00	0.00	5.00
Direct PM2.5 Inventory After Plan Control Strategy	86.0	78.2	70.3	63.3
NOx				
Baseline Inventory (Table B-2)	575.4	500.9	424.4	376.2
Subtract District CM Reductions (Table 6-4)	0.00	2.43	8.56	8.97
Subtract ARB CM Reductions (Chapter 9)	0.00	0.00	0.00	76.00
NOx Inventory After Plan Control Strategy	575.4	498.5	415.8	291.2
SOx				
Baseline Inventory (Table B-3)	26.4	23.0	23.8	24.5
Subtract District CM Reductions (Table 6-4)	0.00	0.06	0.92	0.92
Subtract ARB CM Reductions (Chapter 9)	0.00	0.00	0.00	0.00
SOx Inventory After Plan Control Strategy	26.4	22.9	22.9	23.6

Table 8-2 Determining Benchmark Milestones as Tons per Day of Reductions
(Calculation described in footnotes))

Column no.	2	3	4	5	6	7	8	9
Pollutant	**2005 Emissions Inventory [1]**	**Attainment Benchmark, tpd [2]**	**Number of tons to be reduced [3]**	**Tons to be reduced by 2009 [4] (relative to 2005)**	**2009 EI Benchmark [5] tpd**	**Tons to be reduced by 2012 [6] (relative to 2005)**	**2012 EI Benchmark, tpd [7]**	**2014 EI Benchmark [8] tpd**
Direct PM2.5	86	63.3	22.7	10.1	75.9	17.7	68.3	63.3
NOx	575.4	291.2	284.2	126.3	449.1	221.0	354.4	291.2
SO_2	26.4	23.6	2.8	1.2	25.2	2.2	24.2	23.6

[1] Column 2 shows the baseline inventories from Table B-2
[2] Column 3 comes from Chapter 3, which shows that the 2014 inventory with plan controls will bring the Valley into attainment (see also Chapter 9)
[3] Column 4 = Column 2 – Column 3
[4] Column 5 = 44.4% of Column 4;
[5] Column 6 = Column 2 – Column 5
[6] Column 7 = 77.8% of Column 4;
[7] Column 8 = Column 2 – Column 7
[8] Column 9 = Column 3

Table 8-3 Comparison of 2009 and 2012 RFP Benchmarks and Projected Levels

Year	Direct PM2.5		NOx		SO_2	
	Benchmark [1]	Projected Level [2]	Benchmark [1]	Projected Level [2]	Benchmark [1]	Projected Level [2]
2009	75.9	78.2	449.1	498.5	25.2	22.9
2012	68.3	70.3	354.4	415.8	24.2	22.9

[1] From Table 8-3, Columns 6 and 8
[2] From Table 8-2, shaded rows

As discussed earlier, EPA's Implementation Rule specifies that generally linear progress should be achieved and that emissions in the milestone years should be at levels that are roughly equivalent to the benchmark emission levels. The 2009 and 2012 projected levels shown in Table 8-3 are the milestone year emission levels for RFP. Table 8-4 presents calculations that demonstrate that the emission reductions achieved meet the RFP requirements. Cumulative emission reductions are the reductions achieved from the 2005 baseline emissions; they include the reductions from the on-going control programs as well as new reductions from the control measures in the plan, minus the emission reductions held for contingency.

Table 8-4 Fraction of Reductions Achieved in Each Milestone Year

PM2.5				
Milestone Year	**Baseline Emissions (tpd)**	**Cumulative Emission Reductions (tpd)**	**Percent of Emission Reductions Needed for Attainment**	**Percent per year**
2005	86.0			
2009	79.8	7.1	32	2
2012	77.0	15	68	2
2014	75.0	22	100	3
NOx				
Milestone Year	**Baseline Emissions (tpd)**	**Cumulative Emission Reductions (tpd)**	**Percent of Emission Reductions Needed for Attainment**	**Percent per year**
2005	575.4			
2009	500.9	59.6	22	3
2012	424.4	142.3	53	4
2014	376.2	266.9	100	5
SOx				
Milestone Year	**Baseline Emissions (tpd)**	**Cumulative Emission Reductions (tpd)**	**Percent of Emission Reductions for Attainment**	**Percent per year**
2005	26.4			
2009	23.0	3.5	125	3
2012	23.8	3.5	125	2
2014	24.5	2.8	100	1

As shown in the above table, the PM2.5 Plan meets RFP requirements, with continuous and generally linear progress towards attainment by achieving between 2% and 5% per year of emission reductions from direct PM2.5 and NOx. Emissions from SO_2 in both milestone years are below the attainment level. In terms of cumulative progress towards attainment, there is steady progress for each pollutant as shown in Table 8-5, so that 100% of the necessary reductions are achieved by the attainment date.

Vast reductions will be achieved in the Valley by 2009 and 2012, ensuring continuous progress towards attainment in 2014. Extraordinary progress has been made thus far and will continue to be made. Attainment by 2014 requires a sizable magnitude of reductions. NOx alone must be reduced by 50% between 2005 and 2014. The District's far-reaching stationary and area source reductions ensure that no stone has been left unturned. ARB's baseline mobile source strategy is likewise achieving significant ongoing reductions from both on- and off-road mobile sources between now and 2014. Due to the innovative nature of ARB's new measures and the technical complexities of implementation, the final increment of the emission reductions needed for attainment will not occur until 2014.

In summary:

- Reductions in direct PM2.5 and precursor emissions are being achieved as quickly as possible;
- There is a downward trend in emissions between 2009 and 2012 at a rate of 3% to 6% per year;
- The Valley will reach attainment as expeditiously as practicable.