Public Advisory Workgroup Meeting #3

District Measures

February 09, 2017

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Overview

- District preparing integrated attainment strategy that addresses multiple PM2.5 standards under federal Clean Air Act
- Three PM2.5 plans due between now and Fall 2017
  - 5% Plan due December 2016 for 1997 PM2.5 Standard (because of EPA inaction)
  - Serious area attainment plan due August 2017 for 2006 PM2.5 Standard
  - Moderate area plan due October 2016 for 2012 PM2.5 Standard (plan submitted to ARB September 2016)
- District must also adopt plan to address 2015 Ozone Standard (70 ppb) – NOx strategy critical to address both PM2.5 and ozone standards
- Meeting new standards requires enormous reductions in emissions, particularly from mobile sources
- District remains committed to leaving no stone unturned to find additional reductions from sources under our jurisdiction

Public Advisory Workgroup (PAW)

- Hear perspective and receive input for plan from all affected stakeholders and subject matter experts
- Provide committee members with resources to reach out to constituents that you represent
- Provide forum for discussion/suggestions before each plan milestone is completed

PAW Meetings

- **Air Quality Modeling**
  - How modeling is conducted and importance for attainment planning
  - Modeling approach and key questions
  - Modeling results and attainment targets
- **ARB Mobile Source Measures for the San Joaquin Valley**
  - Current control strategy
  - Potential measure options
- **District Measures**
  - Current control strategy
  - Potential measure options
- **Incentive-based Measures**
  - Existing funding and incentive strategy
  - Need for additional incentive funding
- **Contingency Measures**
  - Requirements under federal Clean Air Act
  - Discuss control measures to withhold to satisfy contingency requirements

Integrated Plan Timeline

December 2016	• District scoping meeting • ARB workshop
January – July 2017	• 1-11-17: PAW Meeting (Discuss Modeling) • 1-25-17: PAW Meeting (Discuss ARB Mobile Source Measures for the San Joaquin Valley) • 2-9-17: PAW Meeting (Discuss District Measures) • 3-2-17: Upcoming workshop (tentative)
Ongoing	Updates at public meetings (Governing Board, Citizens Advisory Committee, Environmental Justice Advisory Group) with opportunities for public input
August 2017	District Governing Board public hearing to consider adoption of the proposed plan

Pursue Expeditious Attainment

- 2006 PM2.5 Standard – Attainment Deadline 2019
- 2012 PM2.5 Standard – Attainment Deadline 2021
- ARB must provide mobile source reductions as expeditiously as possible
- District will not ask for an attainment deadline extension or a bump up to a classification with delayed attainment unless
  - Finding is made by District and ARB that all available and reasonable mobile and stationary control measures are not adequate to achieve attainment by the prescribed deadlines

DISTRICT MEASURES UNDER CONSIDERATION

Boilers and Steam Generators > 5.0 MMBtu/hr (Rules 4306 & 4320)

ARB Emissions Inventory (annual average tons per day)

Pollutant	2013	2019	2021	2025
NOx	**1.80**	**1.39**	**1.31**	**1.14**

- First District rule for boilers, steam generators, and process heaters adopted December 1993
- Rule 4320 adopted October 2008 to enforce requirements supplementary to Rule 4306
- Boilers have undergone several generations of NOx controls
  - Boiler rules amended multiple times to implement more stringent limits as technologies became feasible
- NOx emissions reduced approximately 96% from this source category
- Potential measure for discussion: Enhanced NOx control requirements for boilers and steam generators with a total rated heat input greater than 5 MMBtu/hr
  - Assess lower NOx emission limits based on recent installations and latest technologies

Boilers and Steam Generators
2.0 MMBtu/hr to 5.0 MMBtu/hr (Rule 4307)

ARB Emissions Inventory (annual average tons per day)

Pollutant	2013	2019	2021	2025
NOx	**0.45**	**0.35**	**0.33**	**0.29**

- Adopted in December 2005 to establish emission limits for boilers, steam generators, and process heaters sized 2-5 MMBtu/hr; subsequently amended three times
- NOx emissions have been reduced by over 84% for units in this source category since 2000
- Potential measure for discussion: Explore additional NOx control requirements for boilers and steam generators with a total rated heat input less than or equal to 5 MMBtu/hr

Non-Ag IC Engines (Rule 4702)

ARB Emissions Inventory (annual average tons per day)

Pollutant	2013	2019	2021	2025
NOx	2.76	2.39	2.28	2.14

- Amended 12 times since May 21, 1992
  - Lowered emission limit for lean-burn engines by 98.5% from 740 ppmv to 11 ppmv
  - Lowered emission limit for rich-burn engines by 98.3% from 640 ppmv to 11 ppmv
- Valley businesses have invested millions of dollars to comply and reduce 19 tons NOx/day since 2000 through extensive retrofits and replacements
- Potential measure for discussion: Explore additional NOx controls for non-ag IC engines

Ag IC Engines (Rule 4702)

ARB Emissions Inventory (annual average tons per day)

Pollutant	2013	2019	2021	2025
NOx	10.17	4.06	3.69	3.00

- Ag IC engine emissions regulated under Rule 4702 starting in 2005
- Emissions reduced over 80% through significant investments by ag operations to retrofit and replace thousands of irrigation pump engines resulting in 14.2 tons/day emissions reductions since 2005
- Ag operations still facing looming compliance deadlines under current rule
- Potential measure for discussion: Regulatory and incentive-based strategies to electrify agricultural irrigation pump engines in areas impacting peak Valley PM2.5 sites and where access to electricity is available
  - Need to assess economic feasibility of lowering NOx limits for ag engines (current limits higher than non-ag in recognition of rural operation and other limitations)
  - Need additional local, state, and federal incentive funding to accelerate transition

Commercial Charbroilers (Rule 4692)

ARB Emissions Inventory (annual average tons per day)

Pollutant	2002	2005	2019	2021	2025
PM2.5	3.36	2.75	3.16	3.25	3.46

- Adopted March 2002
  - Applicable to chain-driven charbroilers that cook >875 pounds of meat per week (e.g., Red Robin, Burger King, etc.)
  - Reduced emissions from chain-driven charbroilers by 84%
  - Restaurants comply through use of catalytic oxidizers
- Amended September 2009 to expand applicability to include more chain-driven charbroilers
  - Applicability expanded to chain-driven charbroilers that cook ≥400 pounds of meat per week
  - Reduced 25% of remaining PM2.5 emissions
- Underfired charbroilers currently exempt from emission control requirements (e.g., BBQ restaurants, steakhouses, etc.)

Commercial Charbroilers (Rule 4692)

- Potential measure for discussion: Continue to develop commercially available and working control technologies for underfired charbroilers
  - Under-fired charbroiler technologies not fully tested; need further evaluation and demonstration in Valley
  - Board approved $750,000 to fund Restaurant Charbroiler Technology Partnership program for demonstration projects to assess feasibility and effectiveness
  - Despite efforts to promote funding, District has faced difficulty in identifying proven technologies and finding restaurants willing to participate
  - No other regions have adopted successful regulations or deployment of technology

Flares (Rule 4311)

ARB Emissions Inventory (annual average tons per day)

Pollutant	2013	2019	2021	2025
NOx	0.39	0.36	0.34	0.32

- Adopted June 2002
- Amended in 2009 to add Flare Minimization Plan requirements to the rule
- District has most stringent rule
  - Rule compared to other regions (North Dakota, Santa Barbara, etc.)
- Potential measure for discussion: Enhanced NOx control requirements for flares
  - Amend rule to include additional ultra-low NOx flare emission limitations for existing and new flaring activities at Valley facilities to the extent that such controls are technologically achievable and economically feasible, by Dec 31, 2017
  - Amend rule to include additional flare minimization requirements to the extent that such controls are technologically achievable and economically feasible, by Dec 31, 2017

District Residential Wood-Burning Control Strategy

ARB Emissions Inventory (annual average tons per day)

Pollutant	2000	2013	2019	2021	2025
PM2.5	8.66	3.26	2.81	2.81	2.81

- District Rule 4901:
  - No Burn Day curtailments
  - Ban open hearth fireplaces in most new developments
  - Require EPA certified units at property transfer
- Residential Wood-Burning curtailment program most cost-effective public health measure instituted by the District
  - Lowest price, $/ton
  - Largest PM2.5 reductions (5.1 tons/day during wood burning season)
  - Consistent with the Health Risk Reduction Strategy; Rule reduces health impacts when and where emissions reductions are most needed

Enhanced Residential Wood-Burning Program

- Rule 4901 amended in September 2014
  - Lowered no burn threshold from 30 to 20 µg/m^3 for dirty units responsible for 95% of wintertime emissions (most stringent level in nation)
  - Allowed more burn days for Valley residents who have invested in clean burning devices
  - Required registration to facilitate effective enforcement and equipment maintenance (less than 2,000 registered units; only 90 registered units in Kern County)
- Strong outreach and enforcement
- Increased financial incentives to Valley residents to replace old high polluting devices with cleaner devices
- Achieved greater PM2.5 emissions reductions throughout season, even on burn days
- Potential measure for discussion: Explore feasibility of prohibiting wood-burning devices in new homes on parcels with 2 homes or less per acre
  - Current rule already prohibits wood burning devices in homes on parcels with higher density

Ag Open Burning (Rule 4103)

ARB Emissions Inventory (annual average tons per day)

Pollutant	2013	2019	2021	2025
PM2.5	2.27	2.24	2.23	2.21

- The San Joaquin Valley, in adherence with applicable state laws instituted under SB705 (2003 Florez), has toughest restrictions on ag open burning in the state
- No longer allow burning of all field crops (except rice), almost all prunings and almost all orchard removals
- Comprehensive Smoke Management System only allows limited amount of burning still permissible on days with favorable meteorology and in amounts that will not cause a significant impact on air quality
- Until 2014, restrictions resulted in 80% reduction in open burning of ag waste
- Exceptional drought conditions and demise of biomass power industry has resulted in increase in open burning and threatens District's ability to maintain broad restrictions on open burning of ag waste into the future

Ag Open Burning (Rule 4103)

- Potential measure for discussion: Given decline of biomass industry that has served as cleaner alternative for open burning of agricultural waste, continue to identify and develop other alternatives
  - Avoid relaxing prohibitions on agricultural burning where no feasible alternatives are available
  - Explore use of pyrolysis/gasification to convert biomass to syngas, biochar, or other forms of energy
  - Explore use of biomass as mulch/land application/soil incorporation/ compost
- Central Valley Summit on Alternatives to Open Burning of Agricultural Waste
  - Bringing together Valley growers, researchers/experts, representatives from the biomass power industry, representatives from new and developing technology vendors, and Valley stakeholders
  - Summit in late May or early June of 2017

Conservation Management Practices (Rule 4550)

ARB Emissions Inventory (annual average tons per day)

Pollutant	2000	2013	2019	2021	2025
PM2.5	29.45	20.47	19.96	19.80	19.46

- Adopted in 2004, first rule of its kind
  - Received EPA Region IX "2005 Environmental Award for Outstanding Achievement"
  - PM10 emissions reduced by 35.3 tons per day
  - Helped Valley reach attainment of federal PM10 air quality standard
  - Reduces emissions from over 3.2 million acres of Valley farmland
- Potential measure for discussion: Enhanced Conservation Management Practices (CMP) for ag operations to reduce directly emitted particulate matter
  - Evaluate all feasible opportunities for additional emission reductions

Healthy Soils Initiative

- "Healthy Soils" helps to promote conservation practices that reduce emissions and enhance soil organic matter content
  - Increase in soil water retention and reduction of soil erosion
  - Improvement in plant growth and yields
  - Reduction in criteria pollutants and GHGs
  - Reduced effects of toxic substances in soil
- Potential measure for discussion: Work with Valley growers to develop San Joaquin Valley Healthy Soils Initiative aimed at reducing directly emitted particulate matter while enhancing crop yield
  - Incentive-based approach (identify potential funding mechanisms)
  - Evaluate practices that minimize dust from wind erosion and soil disturbances while improving soil health

Glass Melting Furnaces (Rule 4354)

ARB Emissions Inventory (annual average tons per day)

Pollutant	2000	2013	2019	2021	2025
NOx	8.73	6.21	3.30	3.41	3.50
SOx	4.43	2.00	1.68	1.73	1.76

- Adopted in 1994 and amended six times
- Industry has invested millions of dollars to reduce 70-80% NOx
- Potential measure for discussion: Tighter NOx controls for glass plants matching control levels already achieved in practice in the Valley
  - District rule limit of 1.5 lb-NOx/ton of glass pulled
  - District facilities currently meeting 0.6-0.8 lb/ton of glass pulled
  - South Coast RECLAIM level not comparable to District's enforceable limits
- Potential measure for discussion: Explore additional SOx controls for glass plants
  - Evaluate the potential for additional reductions from the use of scrubbing or other technologies

Public Fleets

ARB Emissions Inventory (annual average tons per day)

Pollutant	2013	2019	2021	2025
NOx	7.23	4.84	4.17	3.06

- Over past 20 years, District and ARB have adopted a number of regulatory and incentive-based strategies to reduce emissions from public fleet vehicles
  - Public fleets include public transit, commercial airport ground access, public agencies and utilities, solid waste collection, and school bus
  - Emissions from public fleets significantly reduced and represent 2% of Valley's NOx emissions by 2025
- Potential measure for discussion: Enhance public fleet regulations allowing for near-zero emissions technologies to achieve near-term reductions
  - Work with ARB to identify additional emissions reductions through regulatory and/or incentive-based measures
  - Request guidance from Governing Board at next Board Hearing scheduled for February 16, 2017

Incentive-Based Strategy

- Robust incentive-based emission reduction strategy necessary to achieve enormous reductions needed within pre-2025 timeframe
  - Need significant reductions from mobile sources under state and federal jurisdiction
  - Incentive-based measures can achieve more reductions, more expeditiously, with greater cost-effectiveness
- Developing aggressive incentive-based measures to achieve the needed emissions reductions will require significant funding
  - Dollars needed are well in excess of current or prospectively scheduled future appropriations from local, state, and federal sources
  - Preliminary estimates of over $1 billion per year through 2025 and beyond
- District's grant programs provide foundation for significantly expanded incentive-based strategy needed for attainment
  - Over $1.4 billion invested in clean air projects through incentive grant programs
  - Over 123,000 tons of emissions reduced
  - State audits commend District as "shining example" for effectiveness and efficiency
  - High demand across a variety of incentive programs due to reputation and established relationships with local agencies, businesses, and other stakeholders

District Incentive Strategy

- In addition to significant state/federal funding for incentive-based emissions reductions required for attainment, District will utilize locally generated funds to deploy comprehensive incentive strategy:
  - Local funding for replacement of agricultural tractors
  - Local funding for replacement of heavy duty trucks
  - Local funding for replacement of locomotives
  - Local funding for replacement of light-duty vehicles
  - Local funding for replacement of construction/other off-road equipment
  - Local funding for replacement of residential wood burning devices
  - Local funding for grant program to deploy clean ag harvesting technology with focus on areas impacting peak sites in Valley
  - Local funding for demonstration of advanced emission reduction technologies through the District's Technology Advancement Program

Almond Harvest Technology Incentive Program

ARB Emissions Inventory (annual average tons per day)

Pollutant	2013	2019	2021	2025
PM2.5	6.67	6.54	6.50	6.41

- Almond harvest emissions occur from shaking, sweeping, and pickup activities
  - 76% of total almond harvest emissions from pickup activities
  - Lower emitting technologies have been developed in recent years
- Potential measure for discussion: Development of new grant program to provide local funding to deploy clean ag harvesting technology with focus on areas impacting peak sites in Valley
  - Studies show control efficiencies range from 30-70%, depending on harvester technology

Additional Information

- Up-to-date information available at www.valleyair.org/integrated-pm25-plan
- Receive email updates on the development of this plan and future air quality attainment plans – email sign up available at http://www.valleyair.org/lists/list.htm
- Email comments to airqualityplans@valleyair.org