Control Strategy Development and Analysis

Judy Rand, NJDEP, May 17, 2023

SIP Requirements

Reasonably Available Control Measures (RACM)

- Moderate and above nonattainment areas
- Does your modeling predict attainment or do you need more controls?
- Do any of the potential control measures advance the attainment date by one year?

Reasonably Available Control Technology (RACT)

- Subset of RACM, major stationary sources
- Moderate and above nonattainment areas and all Ozone Transport Region States
- CTGs or state specific

SIP Requirements

Attainment Demonstration Modeling

- Moderate and above nonattainment areas
- Control measures in the modeling must show attainment

Reasonable Further Progress (RFP)

- Moderate and above nonattainment areas
- Show that progress from control measures meets RFP
  - Moderate: 15% emission reduction over 6 years
  - Serious and above: 18% over 6 years, 3% /year thereafter

SIP Requirements

Weight of Evidence

- Your attainment modeling doesn't show attainment, but is within a certain margin, very close
- Quantify any control measures not included in the modeling
- Demonstrate that along with the measures in the modeling, it is predicted that the area will reach attainment by the attainment date

SIP Requirements

Maintenance Plan Control Measures

- The control measure commitments in your maintenance plan to maintain compliance with the NAAQS during the maintenance period

Contingency Control Measures

- Attainment Demonstrations
- Maintenance Plans

Regional Haze "Asks"

Start Control Measure Strategy Work Early

- Rules take a lot of time from plan to adoption!!
- Control measure commitments must be in place before an air emissions projection inventory is completed in order to be in the modeling attainment demonstration, RFP analysis or redesignation request
- Start looking for measures with the promulgation of each new NAAQS if you will be in nonattainment, or never stop looking for measures if you are already in nonattainment of a NAAQS
- If you are in moderate nonattainment of a NAAQS, all potential controls need to be evaluated for your RACM demonstration and now for Contingency Measures also.

Pollutant Evaluation

- Evaluate how far off from attainment of a NAAQS your area is or will be

- Do screening modeling to estimate:
  - if NOx or VOC measures will be more effective for a certain area
  - if transport is the main issue or local emissions
  - the sources of monitor exceedances (tagging)
  - how much of a criteria pollutant or precursor needs to be reduced to reach attainment
  - If potential new control measures will bring the area into attainment

Inventory Evaluation

- Evaluate your inventory for the largest sources of pollutant emissions
- Evaluate actual and projection inventories, because there are existing controls in place with future effective dates and turn over benefits (fleet and equipment turnover)
- For Ozone, look at summer day emissions, not annual

Inventory Evaluation

- Rank inventories by largest emissions, however note:
  - You also want to look at the largest benefit achievable, which is not always the largest emissions.
  - A large emission category may have no practical control for large reductions, but a small emission category may have the potential for large reductions.
  - Several control measures OTC has done in the past were not reflected properly in the inventory (PFCs, HEDD)
  - Inventories are often updated and improved AFTER a detailed control measure analysis (**what came first the chicken or the egg?)**

Inventory Evaluation

SCC Code Challenges:

- Inventories are by detailed SCC codes, but to do a proper control measure analysis individual SCC codes must be grouped together to match potential control measure strategies at a higher level, for example:
    - Tier 3 SCC code instead of Tier 4
        - Boilers
        - Power plants
        - Emissions from bulk gasoline storage
        - Industrial surface coatings
        - Distillate oil consumption
- State SCC codes vary, we don't all use the same SCC codes, there are too many to choose from
- Industry does not always report SCC codes consistently or accurately

Inventory Evaluation

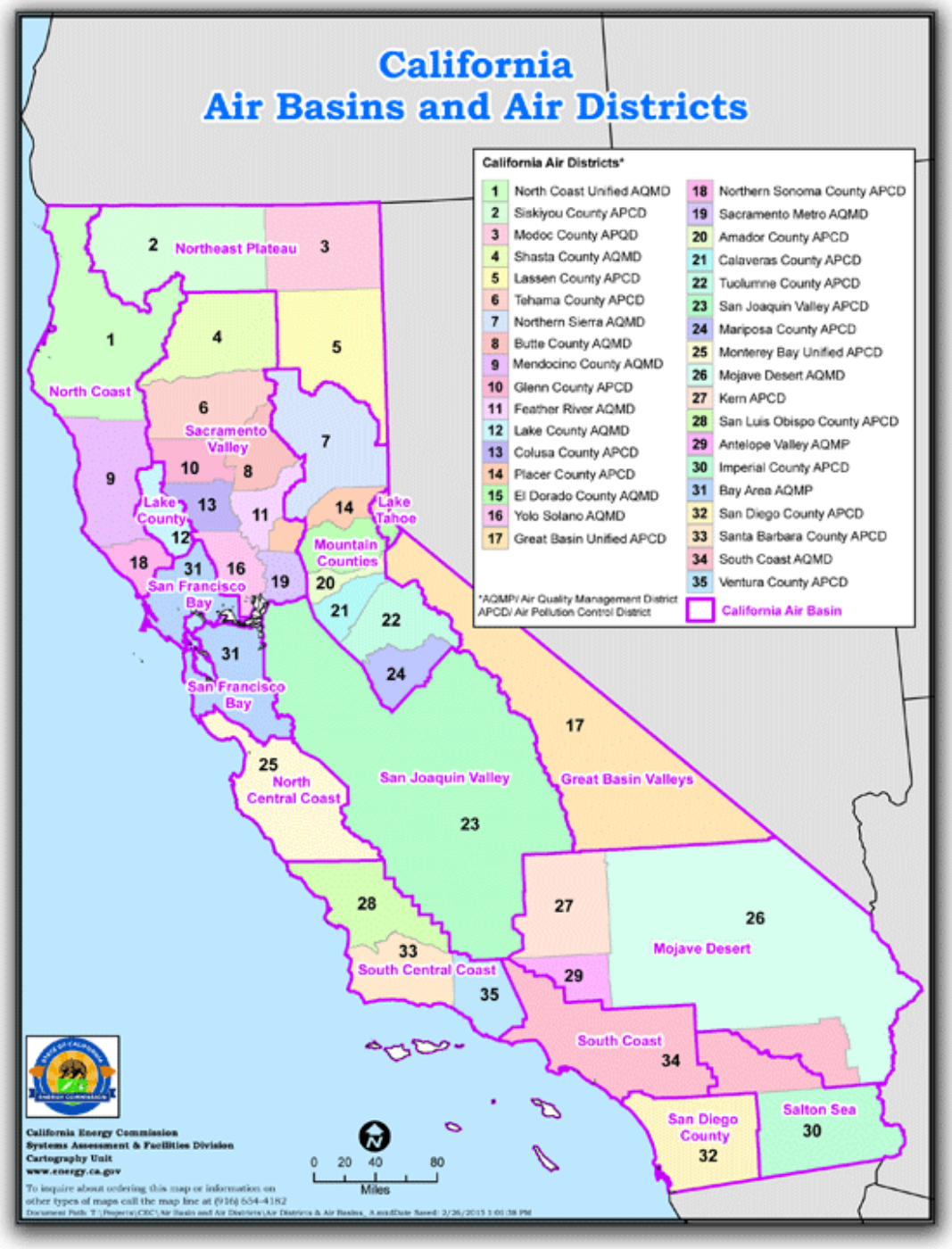
Fugitive Dust PM categories (paved and unpaved roads, construction, agriculture, etc…)

- Monitoring does not support EPA's emission estimates for fugitive dust.
- Is unadjusted in the NEI and/or regional base inventories/modeling inputs.
- Is adjusted/reduced in modeling inventories in the SMOKE model because fugitive dust doesn't transport like other pollutants.
- NJ adjusts/reduces fugitive dust in SIP inventories
- This is not a very feasible area for control regardless on a large scale, it is more of a localized issue.

Looking for New Control Measures

Evaluate CA state, South Coast Air Quality Management (SCAQMD) and other CA district rules and attainment plans

- They are leaders in air quality
- They have numerous staff and do detailed emission inventory survey's
- EPA often follows CA's lead, but slightly less stringent
- CARB often follows SCAQMD lead, but slightly less stringent
- The northeast region has adopted many CARB and CA individual district rules.


California
Air Basins and Air Districts
California Air Districts*
1 North Coast Unified AQMD
2 Siskiyou County APCD
3 Modoc County APQD
4 Shasta County AQMD
5 Lassen County APCD
6 Tehama County APCD
7 Northern Sierra AQMD
8 Butte County AQMD
9 Mendocino County AQMD
10 Glenn County APCD
11 Feather River AQMD
12 Lake County AQMD
13 Colusa County APCD
14 Placer County APCD
15 El Dorado County AQMD
16 Yolo Solano AQMD
17 Great Basin Unified APCD
18 Northern Sonoma County APCD
19 Sacramento Metro AQMD
20 Amador County APCD
21 Calaveras County APCD
22 Tuolumne County APCD
23 San Joaquin Valley APCD
24 Mariposa County APCD
25 Monterey Bay Unified APCD
26 Mojave Desert AQMD
27 Kern APCD
28 San Luis Obispo County APCD
29 Antelope Valley AQMP
30 Imperial County APCD
31 Bay Area AQMP
32 San Diego County APCD
33 Santa Barbara County APCD
34 South Coast AQMD
35 Ventura County APCD
*AQMP/ Air Quality Management District
APCD/ Air Pollution Control District
California Air Basin
Northeast Plateau
North Coast
Sacramento Valley
Lake County
Lake Tahoe
Mountain Counties
San Francisco Bay
San Francisco Bay
North Central Coast
San Joaquin Valley
Great Basin Valleys
South Central Coast
Mojave Desert
South Coast
San Diego County
Salton Sea
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Looking for New Control Measures

- Evaluate EPA control measure evaluation reports.
- Evaluate other States rules for most stringent (Texas, Oregon….)
- Research new technology, internet searches
- Stakeholder Meetings and Workshops
  - Get ideas from stakeholders, industry, equipment manufacturers, environmental groups, the public…

Feasibility Evaluation

After compiling a list of potential control measures consider and evaluate the following:

- **Legal Feasibility**
  - Some mobile is only Federal
  - State agency can ‘t enforce residential….
- **Technological Feasibility**
  - Does the technology exist?
  - Does it have a track record?
- **Social Feasibility**
  - Will people be accepting (banning residential wood burning, …)

Feasibility Evaluation

- **Estimated Emission Reductions**
  - Proportion emission reductions from an existing rulemaking in another state by population, VMT or fuel usage depending on the measure
- **Effective Date of the Benefits**
  - What is the lead time for industry to comply in order to obtain emission reductions?
- **Pollutant Co-Benefits**
  - Other pollutants
  - Economic savings (gasoline recovery, …)
  - Regional goals
  - Energy planning
  - Soil and groundwater

Feasibility Evaluation

- **Economic Cost Effectiveness**
  - Costs:
    - Dollars per ton of pollutant reduced
    - Cost of compliance per facility
    - Total costs statewide
    - % Small Business
  - How does it compare to other measures already adopted?
  - Do the health benefits outweigh the costs?
  - Is it RACT, or beyond RACT?

Feasibility Evaluation

- **Federal Rules or Standards**
  - Is your rule more stringent than an existing rule or standard?
  - Is it a rule that does not exist at the Federal level?

- **Anticipated Sources of Controversy**
  - What are the anticipated sources of controversy, adversarial comments?
  - Is there a potential for lawsuit?

- **RACM Requirement**
  - Will it advance the attainment date by one year?

Regional Workgroups

Work with other states through regional workgroups to develop regional control strategies and model rules (OTC, NESCAUM, MANE-VU, MARAMA…..)

- This promotes uniformity of regulations which benefits states and industry, especially on product manufacturing rules where uniformity is very important
- Avoid duplicating efforts, more efficient
- Address transport

Ozone Transport Commission (OTC) Regional Control Strategies

NO_x Sources:

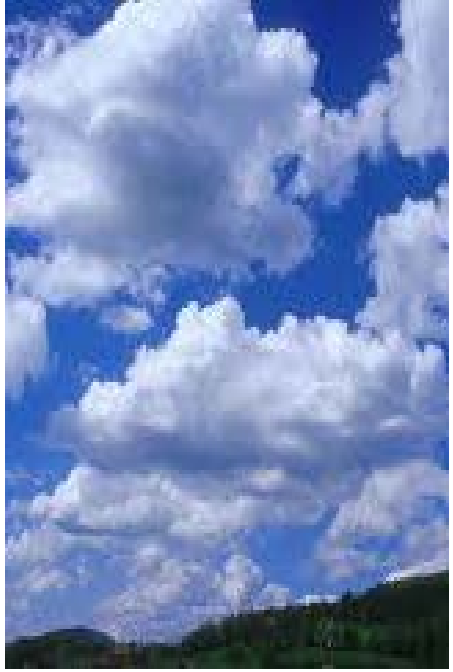
Model Rules or Guidance

1. Industrial/Commercial/Institutional Boilers
2. Power Plants–Oil and Gas-fired Boilers
3. Power Plants–High Electric Demand Day (HEDD) Turbines
4. Power Generation–Stationary Engines
5. Asphalt Production Plants
6. Cement Kilns
7. Glass Furnaces
8. New Small Natural Gas Boilers
9. Natural Gas Pipeline Compressors
10. Municipal Waste Combustors
11. Non-Road Diesel Idling
12. Aftermarket Catalytic Converters

VOC Sources:

Model Rules or Guidance:

1. Consumer Products
2. Architectural and Industrial Maintenance Coatings
3. Solvent Cleaning (Industrial/Commercial)
4. Solvents and Paint Thinners (Consumer)
5. Large VOC Stationary Storage Tanks
6. Autobody Refinishing
7. Asphalt Paving
8. Portable Fuel Containers
9. Industrial Adhesives and Sealants



Thanks!

Questions?

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