

Economic Feasibility Analysis and Related Considerations for New Regulations

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Background

- San Joaquin Valley has unmatched natural challenges
 - Geography, meteorology create ideal conditions for creating/retaining pollution
- Federal air quality standards demand significantly more emission reductions
- Despite efforts to find cost effective reductions, costs are increasing
- Valley businesses have already invested in several generations of pollution controls.
- Governing Board requested a detailed report on economic feasibility analysis

Magnitude of Challenge

- 2007 Ozone Plan and 2008 PM_{2.5} Plan call for 75% reduction in NO_x to attain federal health-based standards
- Measures identified leave a gap for ozone attainment - “Black Box”
- Plans pending for tougher federal ozone and PM_{2.5} standards

The Big Picture

- **Federal Clean Air Act & State legislation**
 - **Ambient Air Quality Standards**
 - **District Attainment Plan**
 - **Develop & adopt rules**
 - **Industry reduces emissions**

CLEANER AIR


Why we adopt rules

- Decisions on which industries get more controls - and when - are not arbitrary
- State and federal air quality standards and attainment deadlines establish the rate of progress needed
- District protects public health by adopting and implementing Attainment Plans
 - Atmospheric modeling shows how much reductions are needed to attain
 - Attainment Plans assess all possible control options
 - Board-adopted Plans establish District commitments

Legal Mandates for Rulemaking

- Federal mandates
 - Implement RACT (BACM for PM and precursors) on all major sources
 - Meet emission reduction milestones for Reasonable Further Progress
 - **Implement additional controls as needed to attain by the federal deadline**
- California mandates
 - Achieve 5% per year reductions in ozone precursors, or implement every feasible measure (CCAA)
 - Adopt Best Available Retrofit Control Technology (BARCT)
 - Particulate matter: implement all feasible measures (SB 656)

Extensive Public Process for Rule Development

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- Research the source category
 - Staff Report & Scoping Meeting
 - Draft Rule & Workshops
 - Economic Analysis & Environmental Analysis
 - Proposed Rule

Governing Board Hearing

Economic Analysis

- Objectives are to estimate economic impacts of new regulations, in order to
 - Reduce excessive costs before Governing Board considers the proposal
 - Disclose economic impacts for consideration during the Board's decision-making
- Two-phase analysis
 - Cost Effectiveness
 - Socioeconomic Impacts

Cost Effectiveness

$$\text{Cost Effectiveness (\$/ton reduced)} = \frac{\sum \text{Costs (\$/yr)}}{\text{Emission Reductions (tons/yr)}}$$

- District staff estimates compliance costs for likely compliance scenarios
 - Costs include control equipment, construction, O&M labor and supplies, fuel penalties, permitting, monitoring systems, testing
 - Sources of data: stakeholders, equipment vendors, other agencies
 - Capital costs are distributed over 10 years at 10% to generate annualized costs (dollars per year)
- Emission reductions are estimated using updated source-specific data

Cost Effectiveness: Value and Limitations

- Cost effectiveness (CE) is useful for inter-modal (e.g., stationary-mobile) and inter-industry comparisons
- Review of historical CE data reveals trends over time (see Tables 1 and 2 for historical escalation of unit costs)
- CE standardizes costs on a wide spectrum of sources and industries:
 - Does not reflect actual equipment life or actual interest rates

Cost Effectiveness: Value and Limitations, 2

- CE validity relies on the quality of cost data;
 - Reliable data is not always readily available
- By itself, CE does not show financial impacts on business; only “unit cost” of reductions;
 - Some businesses can afford high costs, while others cannot afford low costs
 - Excessive values (>5x average) can indicate areas of unusually high compliance costs

Socioeconomic Analysis

- Assesses financial impacts on affected businesses, industries, and the economy
- Staff compiles total costs for each directly affected industry using same data as in Cost Effectiveness
- Stakeholder focus groups convene to refine cost estimates, identify potential business responses (e.g., price increases, layoffs)

Socioeconomic Analysis

- District hires an independent economist
 - Reviews directly affected industries' employment trends, wages, profitability, competitiveness, and role in the regional economy (base industry or support industry)
 - Compares compliance costs against net profits of each industry
 - If added costs would cause a 10% change in Return on Equity, economist determines a significant impact and pursues further analysis using the IMPLAN economic model to assess “ripple effect” on general Valley economy
- Separate analysis for small business

Cost Considerations

- Goal is to assure most cost-efficient rule that achieves District goals (mandates)
- Options available for cost mitigation:
 - Reduce administrative burdens
 - More time to comply, sometimes in exchange for more emission reductions
 - Adjustments to emission limits
 - Market-based options (e.g., facility-wide limits)
 - Cost-effective mitigation fees

Mitigation Examples

- Rule 4354 (Glass Furnaces)
 - February 2008 version impact – closure of all container glass facilities
 - Adjusted NO_x & SO_x limits, compliance schedule
 - Slightly less NO_x emission reduction and costs are less significant
- Rule 4306 (Boilers > 5 MMBtu/hr)
 - After 2005 adoption, operators found load-following emission limits challenging to implement
 - Extended compliance date
 - Gained 0.1 tpd NO_x reductions

Factors Overriding Cost Considerations

- In certain cases, District must adopt emission standards regardless of economic impacts on industry
- Federal requirements
 - Control Techniques Guideline (CTG)
 - Maximum Achievable Control Technology (MACT)
- State requirements
 - Air Toxics Control Measure (ATCM)

What Lies Ahead

- **Rules are expected to have smaller reductions, smaller total costs**
- For Governing Board Consideration in 2009
 - Residential Water Heaters
 - Commercial Charbroiling
 - Flares
 - Brandy and Wine Aging
 - Architectural Coatings
 - Employer-Based Trip Reduction
- For Governing Board Consideration in 2010
 - Open Burning (SB 700)
 - Residential Furnaces
 - Confined Animal Facilities
 - Adhesives
 - Organic Waste Operations
 - Internal Combustion Engines

Remaining Challenges

- Fulfilling “Black Box” reductions for attaining 8-hour ozone NAAQS
- Mobile sources represent 80% of Valley’s NOx emissions
- Attainment plans for tighter, new air quality standards for PM2.5 and ozone

Finding Future Reductions

- Incentive Funding for Mobile Sources
- Feasibility Studies for future stationary source controls, employing evolving technologies
- Hybrid projects: Incentives + “backstop” rules
- Fast Track projects to improve transportation and energy infrastructure, optimize business operations



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT