

Meeting PM2.5 Standards in the San Joaquin Valley

September 26, 2017

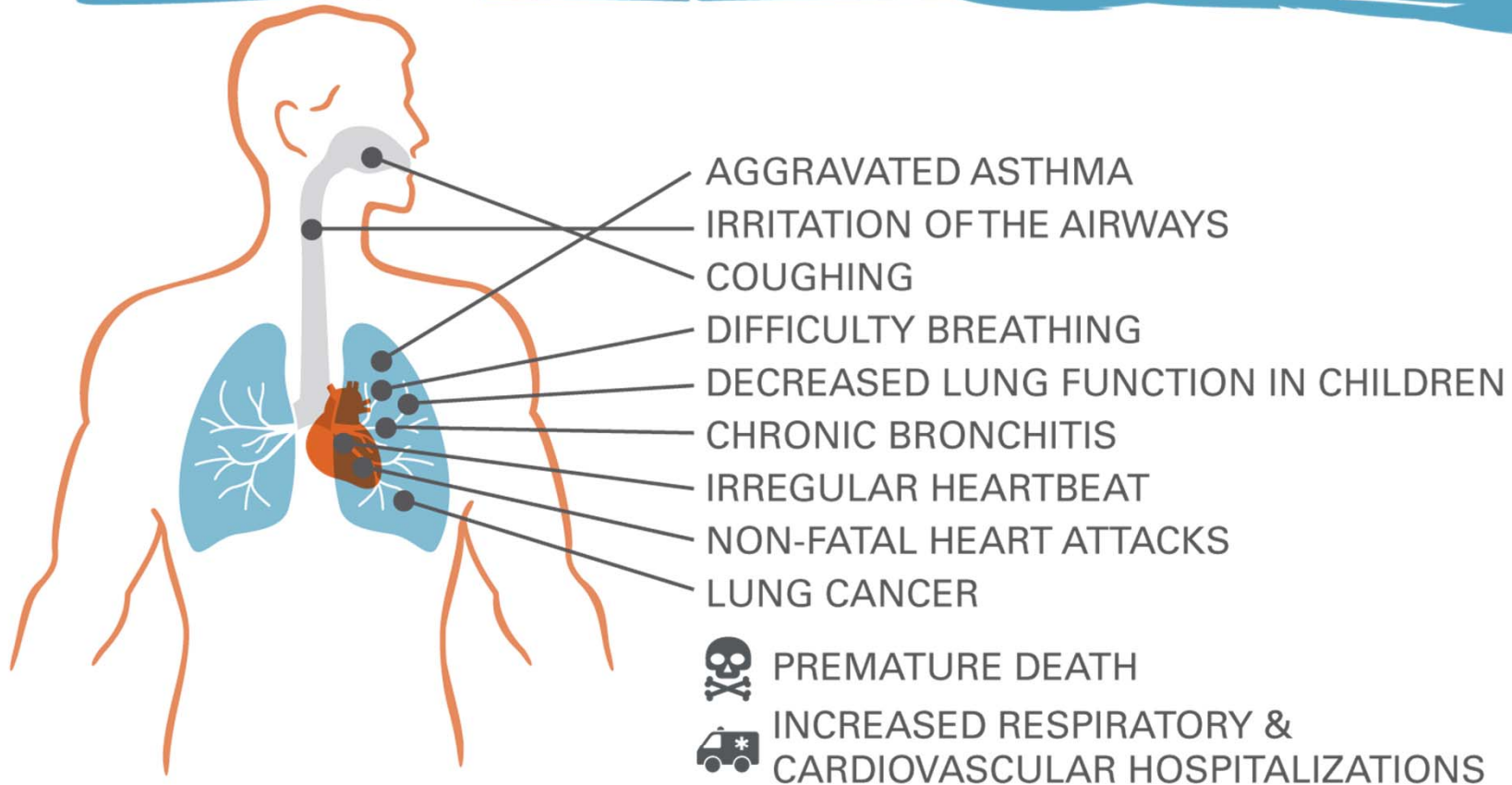


Objectives of Today's Workshop

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- Describe Valley's PM challenge
- Outline attainment strategy
- Provide update on modeling analysis
- Solicit public feedback

Health impacts from exposure to PM2.5



Children, older adults, and individuals with heart or lung diseases are the most likely to be affected by PM2.5.

Defining Healthy Air

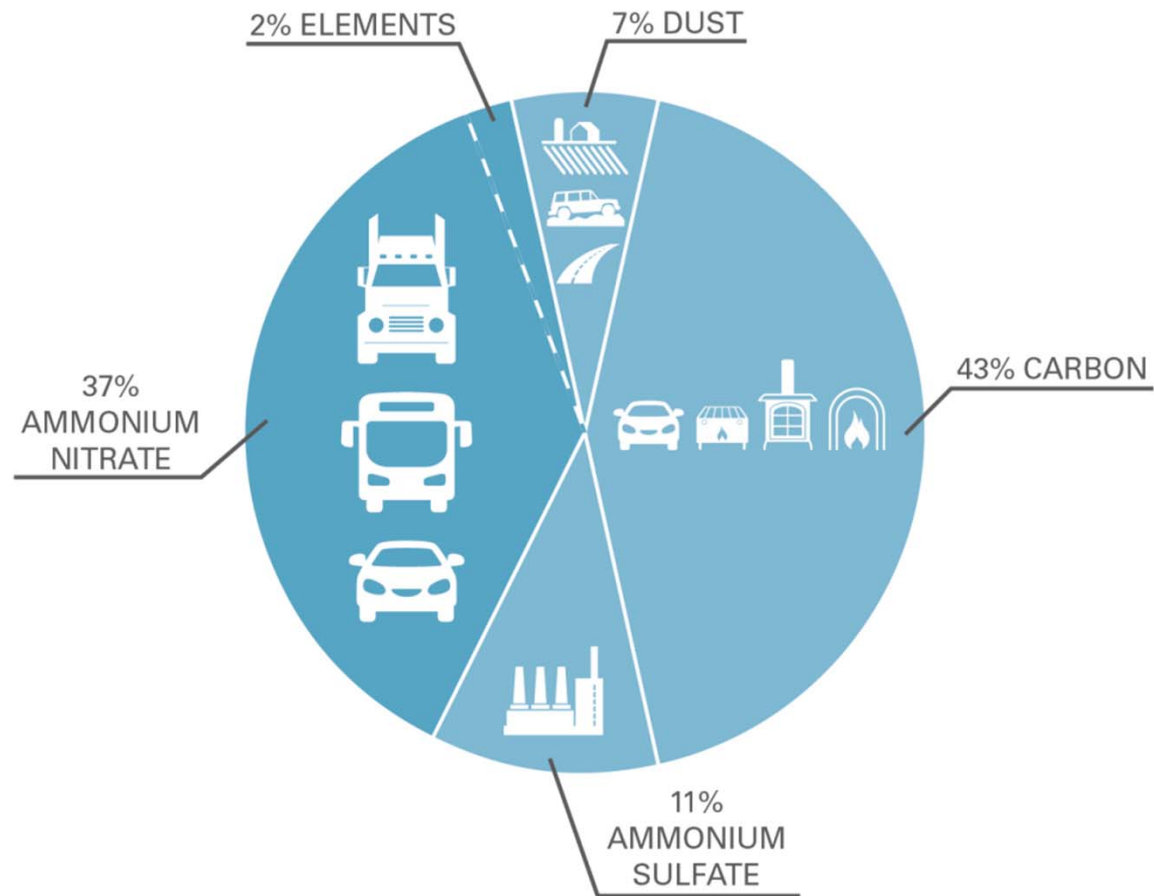
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- PM2.5 standards protect against both short-term and long-term health effects:
 - ▣ Daily standard: 35 $\mu\text{g}/\text{m}^3$
 - ▣ Annual standard: 12 $\mu\text{g}/\text{m}^3$
- Current programs have reduced PM2.5 levels in the Valley nearly 20% over last 15 years
- 2016 cleanest PM2.5 year on record for Valley
 - ▣ Now in attainment of 65 $\mu\text{g}/\text{m}^3$ 24-hr standard
 - ▣ Fewest exceedances of 35 $\mu\text{g}/\text{m}^3$ 24-hr standard
 - ▣ Highest number of Good AQI days across all Valley counties
 - ▣ Fewest number of Unhealthy AQI days across all Valley counties
- Comprehensive PM2.5 SIP will define remaining actions needed to meet PM2.5 standards

Key Sources Contributing to Annual PM2.5 Levels

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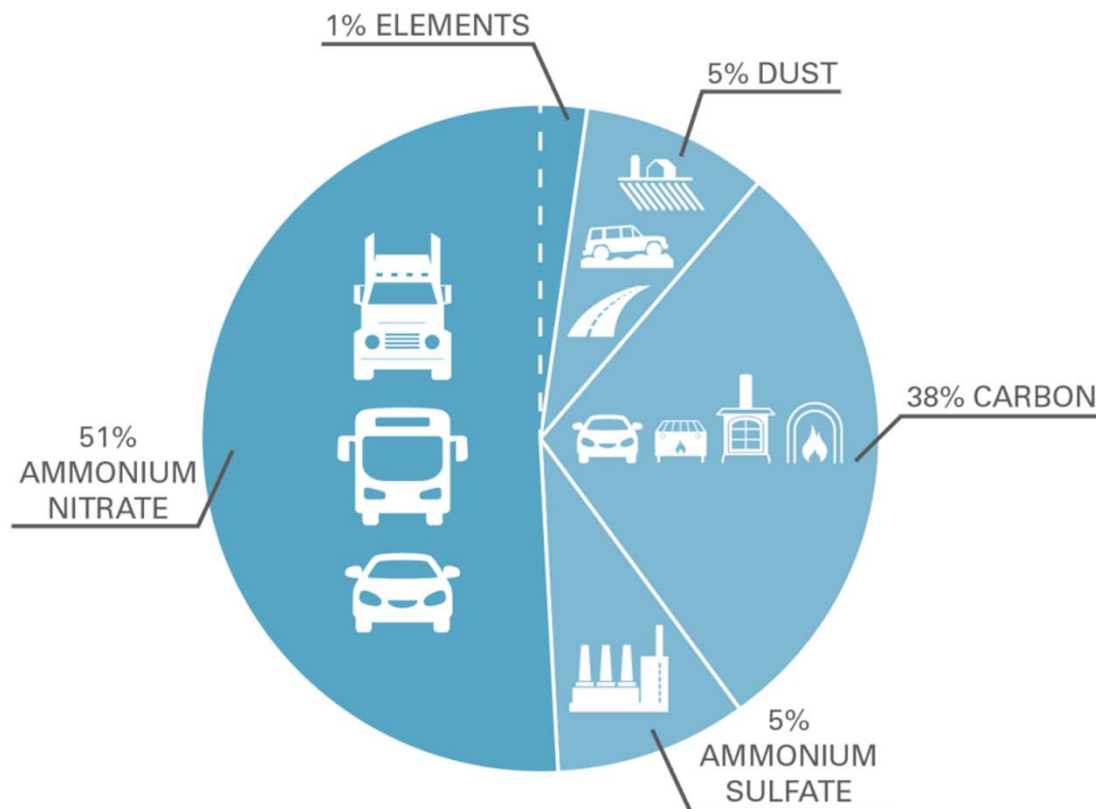
Bakersfield Annual Average ($17 \mu\text{g}/\text{m}^3$)



Key Sources Contributing to Peak PM_{2.5} Levels

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Bakersfield Peak Day (63 $\mu\text{g}/\text{m}^3$)



Air Quality Modeling

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- District and ARB have been working together to continue enhancing and refining air quality modeling for attainment strategy
 - ▣ Addressing remaining air quality modeling
 - ▣ Ammonia precursor analysis: 30% cut under federal guidance does not produce significant PM_{2.5} benefits, additional analysis underway
 - ▣ Additional emission reduction scenarios (residential wood burning, ag burning, charbroiling, fugitive dust)
- Latest modeling indicates that proposed attainment strategy most effective in achieving expeditious attainment

Attainment Strategy Objectives

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- Submit single document addressing all pending federal requirements for PM_{2.5}
- 5% reduction in NO_x annually until Valley attains 1997 annual PM_{2.5} standard of 15 µg/m³
 - ▣ District, ARB, EPA, and stakeholders believe it would be prudent to include 5% Plan in attainment strategy addressing all PM_{2.5} standards
- Attain 2006 24-hour PM_{2.5} standard of 35 µg/m³ by December 31, 2024
 - ▣ To get 5-year extension to 2024, must demonstrate Most Stringent Measures and expeditious attainment in proposed attainment strategy
- Attain 2012 annual PM_{2.5} standard of 12 µg/m³ by December 31, 2025
 - ▣ Must submit plan requesting reclassification to Serious non-attainment

Pursuing Expeditious Attainment

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- District committed to leaving no stone unturned to find additional reductions from sources under our jurisdiction
- Working with ARB to ensure that State provides all possible mobile source control strategies that result in additional reductions in emissions
- District and ARB have conducted extensive review of emission reduction opportunities through public process
- Final scope, design and effectiveness of measures subject to comments from Valley businesses and residents through the public participation process

Proposed Attainment Strategy

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- Will contain new measures that apply valleywide
- Will contain new measures focused on reducing emissions in “hot-spot” regions with most difficult attainment challenge
 - ▣ Targeted use of incentive grants
 - ▣ Targeted regulations
 - ▣ Reduced future regulatory burden for specific regions
 - ▣ Reduced overall cost to all regions by achieving attainment of federal standards more expeditiously
 - ▣ For regions that may face more stringent future measures, added regulatory cost will be mitigated by added incentives

Need for Hot-Spot Strategy

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- Under federal Clean Air Act, entire Valley is designated as not meeting standard if only handful of high concentrations occur at a monitor at the worst location, at the worst time
- Traditional Approach:
 - ▣ Quantify reductions needed at worst locations
 - ▣ Identify measures needed to bring worst locations into attainment
 - ▣ Impose same controls throughout entire Valley
- Hot-Spot Strategy:
 - ▣ Focus strategies on hot-spot regions
 - ▣ Facilitate greater cost-effectiveness (reduce overall costs)
 - ▣ May be the only path available to reach attainment

Hot-spot Strategy Considerations

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- Hot-spot-based strategy will not include any rollback or relaxation of existing regulatory requirements
- Shifting incentive dollars to “hot-spot” areas may reduce grant opportunities in other areas
 - ▣ Can be offset by reducing future regulatory burden
- District ARB and EPA believe the hot-spot strategy is permissible under existing law
- Supplemented with proposed Community-Level Targeted Strategy that will focus on reducing public exposure to pollution sources of local concern
 - ▣ Modeling demonstrates that reductions from some measures, even at great cost, do not measurably reduce PM_{2.5} concentrations at Valley’s design value sites
 - ▣ Anecdotal evidence demonstrates that emissions from some sources cause periodic short-term localized nuisance

Mobile Source Actions



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- Reductions from new measures in Mobile Source Strategy
 - More stringent engine standards
 - Requirements for zero emission technologies
 - Low emission diesel fuel standard
- Incentivize turnover to cleanest technologies
 - Heavy duty trucks and buses
 - Ag tractors
 - Off-road equipment
- Further reduce heavy-duty truck emissions through I&M program

Agricultural Equipment Measure

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- Incentives have successfully reduced emissions
 - ▣ 14 tons per day NO_x reductions achieved by 2017
 - ▣ Additional 13 tons per day by 2025 from natural turnover
- New measure takes advantage of incentives along with backstop rule
- New funding in recent budget

New Stationary Source Control Measures

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- Building off existing stringent requirements, new potential stationary source measures
 - ▣ Lower NO_x requirements for boilers, steam generators and process heaters
 - ▣ Lower NO_x requirements for glass manufacturing facilities
 - ▣ Lower NO_x requirements for non-agricultural engines
 - ▣ Electrify agricultural pump engines in areas impacting peak PM_{2.5} sites where access to electricity is available (incentive-based)
 - ▣ Require ultra low-NO_x flares for flaring activities and enhance flare minimization practices
 - ▣ Additional reductions of fugitive dust (directly emitted PM) from cropland tilling and fallow lands through new enhanced conservation management practices
- Each measure will undergo technological and economic feasibility analysis

Burn Cleaner Program Offering Enhanced Incentives in Hot-Spot Areas and Current Levels of Incentives in Rest of Valley

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- Enhanced levels of incentives provided in hot-spot areas
 - ▣ Kern County, Fresno County, City of Visalia, City of Madera, and City of Corcoran
- Program would replace wood burning devices with only natural gas or propane units in hot-spot areas
- Program would continue to offer current level of incentives Valleywide
- \$80 million estimated total cost, with \$60 million dedicated to hot-spot areas
- Exact funding levels and incentive program details to be finalized pending results of residential wood burning survey currently under way

More Stringent Residential Wood Burning Curtailments (12 $\mu\text{g}/\text{m}^3$ and 35 $\mu\text{g}/\text{m}^3$) in Hot-Spot Areas

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- In order to encourage participation in enhanced Burn Cleaner program, could implement more stringent wood burning curtailment program in hot-spot areas
 - ▣ Burn prohibitions for non-registered units at 12 $\mu\text{g}/\text{m}^3$
 - ▣ Burn prohibitions for all devices at 35 $\mu\text{g}/\text{m}^3$
- Measure suggested for Valley floor locations
 - ▣ Counties of Madera, Fresno, Kings, Tulare, and Kern
 - ▣ More specifically, cities of Madera, Fresno, Clovis, Corcoran, Visalia, and Bakersfield

Underfired Charbroiler Hot-Spot Strategy

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- Provide incentives for installation of controls and related modifications for existing underfired charbroilers within urban boundaries of hot-spots
 - ▣ Kern County, Fresno County, and cities of Visalia, Madera, and Corcoran
 - ▣ Provide funding to deploy control technologies at 40% of underfired charbroilers within urban boundaries in hot-spot areas
 - ▣ Average cost estimated at \$150,000 (capital plus 1st year maintenance)
 - ▣ Incentive cost estimated at \$30 million (covering 100% of costs)
 - ▣ To ensure early and robust use of District incentives, this measure may need to be supplemented with a regulatory backstop to encourage participation
- Adopt a rule requiring installation of PM controls on large new charbroilers within urban boundaries of hot-spot areas
 - ▣ Require installation of control technologies at new larger restaurants
 - ▣ May only be feasible with incentives to help restaurants offset cost
 - ▣ Incentive cost estimated at \$5 million (50% of costs)

Underfired Charbroiler Hot-Spot Strategy (cont'd)

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- Current incentive revenue sources primarily directed by state or federal statute for use on mobile source projects
- Emissions from majority of regulated stationary sources in Valley have already been reduced by over 90%
 - ▣ Additional emissions reductions will be difficult and more costly than requiring controls on under-fired charbroilers
- Facilitate efficient and cost-effective expenditure of resources by all parties involved
 - ▣ To achieve the same design value benefits possible through \$35 million investment in charbroiler PM reductions, businesses would have to incur \$14 billion in cost for NO_x reductions

Attainment Requires Additional Reductions by 2025

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- Proposed strategy demonstrates attainment of 24-hr standard and close to attainment for annual standard
- Gap in remaining emissions reductions required for attainment of annual standard may be filled with:
 - ▣ Use of existing local funds, including DMV funds, for incentive programs aimed at reducing emissions with a focus on remaining hot-spot areas
 - ▣ New funding from EPA, NRCS, and other federal agencies aimed at reducing emissions with focus on hot-spot areas
 - ▣ New funding from recent state Cap and Trade expenditure plan, Moyer, AB 118, and other state funds
 - ▣ Commitments by state and federal government for additional mobile source reductions if necessary

Next Steps

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- Complete residential wood burning survey
- Central Valley Summit on Alternatives to Open Burning of Ag Waste
- Complete underfired charbroiling technology assessment
- Work with ARB to complete air quality modeling
- Refine boundaries of hot-spot regions for each of the targeted strategies
- Conduct additional public workshops on proposed strategy with input from Valley businesses and other stakeholders
- Assess technological and economical feasibility of proposed measures
- Attainment plan to District Governing Board anticipated by December 2017
- ARB consideration of SIP in March 2018

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Comments & Questions

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