

UPDATE ON PM_{2.5} SIP DEVELOPMENT FOR THE SAN JOAQUIN VALLEY

California Air Resources Board Meeting
May 25, 2017



Today's Update

2

- October Board Direction
- Opportunities for Near-term Reductions
- Attainment Strategy Development
- Next Steps

October Board Direction

3

- Tabled consideration of Moderate Plan for 12 ug/m³ annual standard
- Board direction to staff
 - Identify additional near-term reductions from stationary and mobile sources
 - Conduct further public outreach in the Valley
 - Develop comprehensive attainment strategy for multiple PM_{2.5} standards
 - Provide Board with status report

Valley Must Meet Multiple Standards

4

Increasing health protection
↓

**65 $\mu\text{g}/\text{m}^3$
24-hr Standard**

- Now attains

**15 $\mu\text{g}/\text{m}^3$
Annual Standard**

- Clean Air Act deadline: expeditiously as possible – 2020 target date

**35 $\mu\text{g}/\text{m}^3$
24-hr Standard**

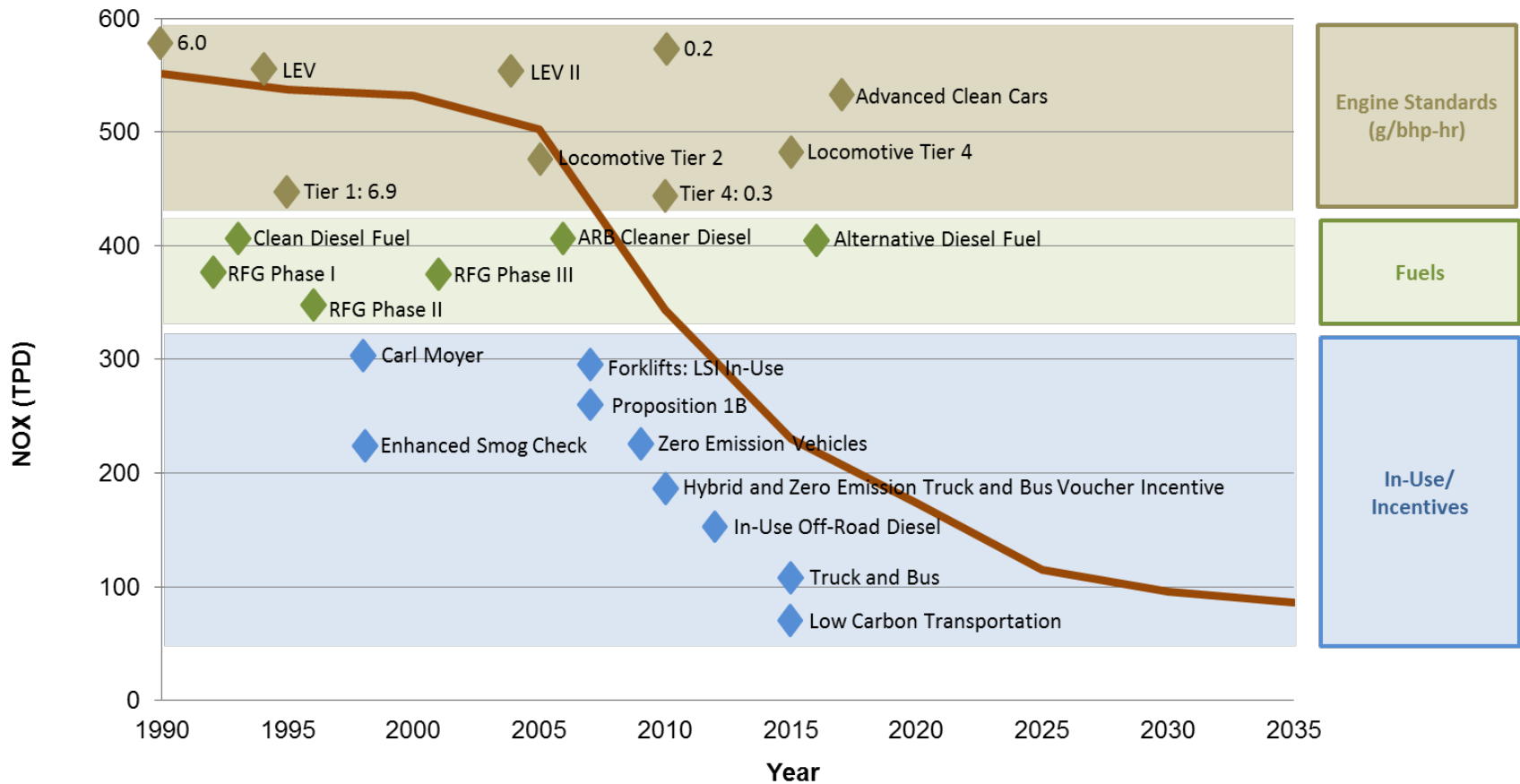
- Clean Air Act deadlines: 2019 to 2024

**12 $\mu\text{g}/\text{m}^3$
Annual Standard**

- Clean Air Act deadlines: 2021 to 2030

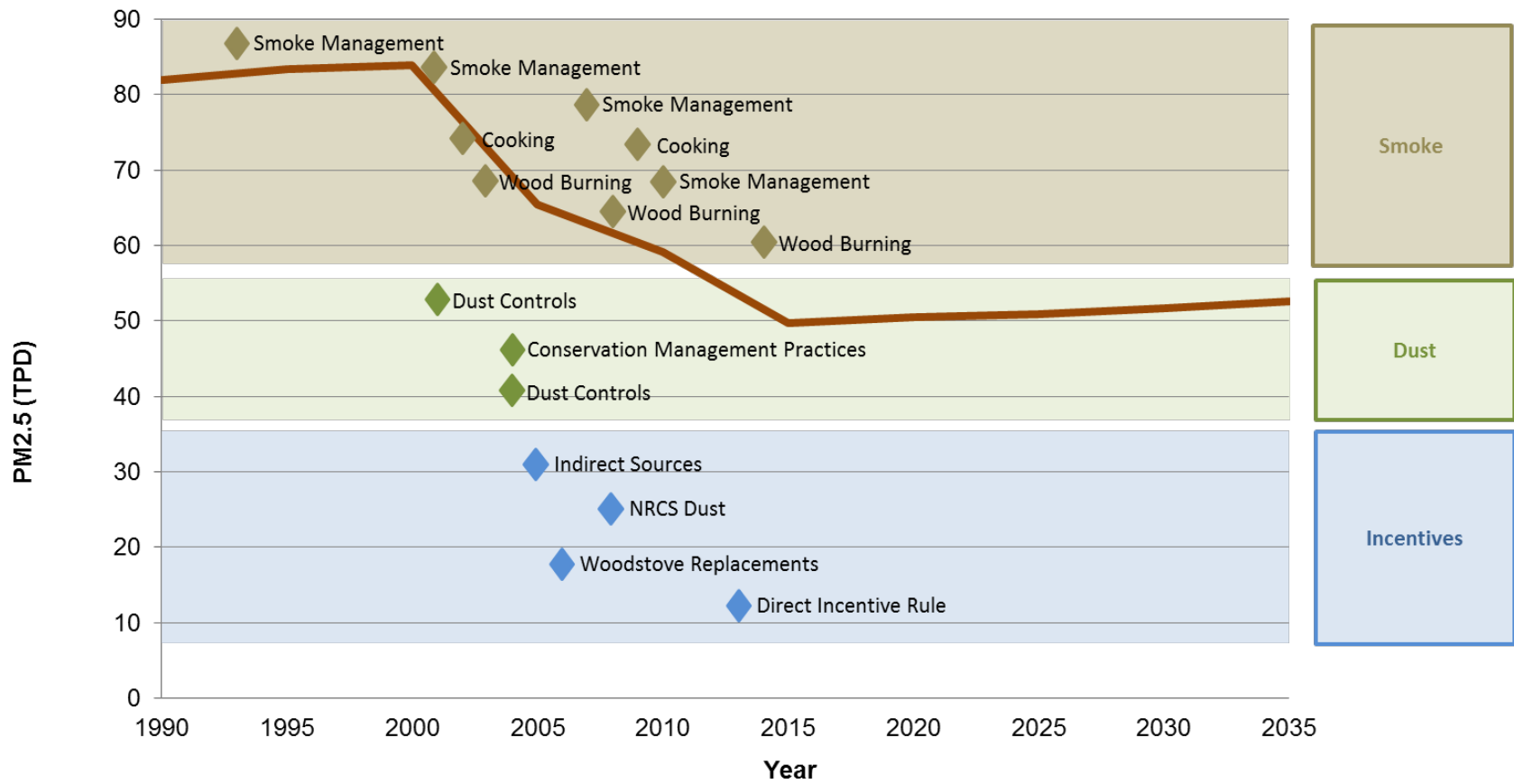
Foundation for Attainment Strategy: Current Mobile Source NOx Reductions

5



Foundation for Attainment Strategy: Current Stationary/Area PM2.5 Reductions

6



Public Outreach in Valley

7

- ARB Outreach Efforts:
 - December 1, 2016 public workshop
 - May 17, 2017 community meeting
- District Outreach Efforts:
 - Four workshops on plan development
 - Four workgroup meetings on air quality modeling and potential measures

Near-Term Actions Identified Since October

8

- Further strengthening of residential burning requirements
- Enhanced control requirements for commercial charbroiling
- Agricultural dust reduction measures
- Incentive programs to advance deployment of cleaner trucks, tractors, and off-road equipment
- Heavy-duty truck I&M program
- More stringent requirements for boilers, IC engines, and glass plants

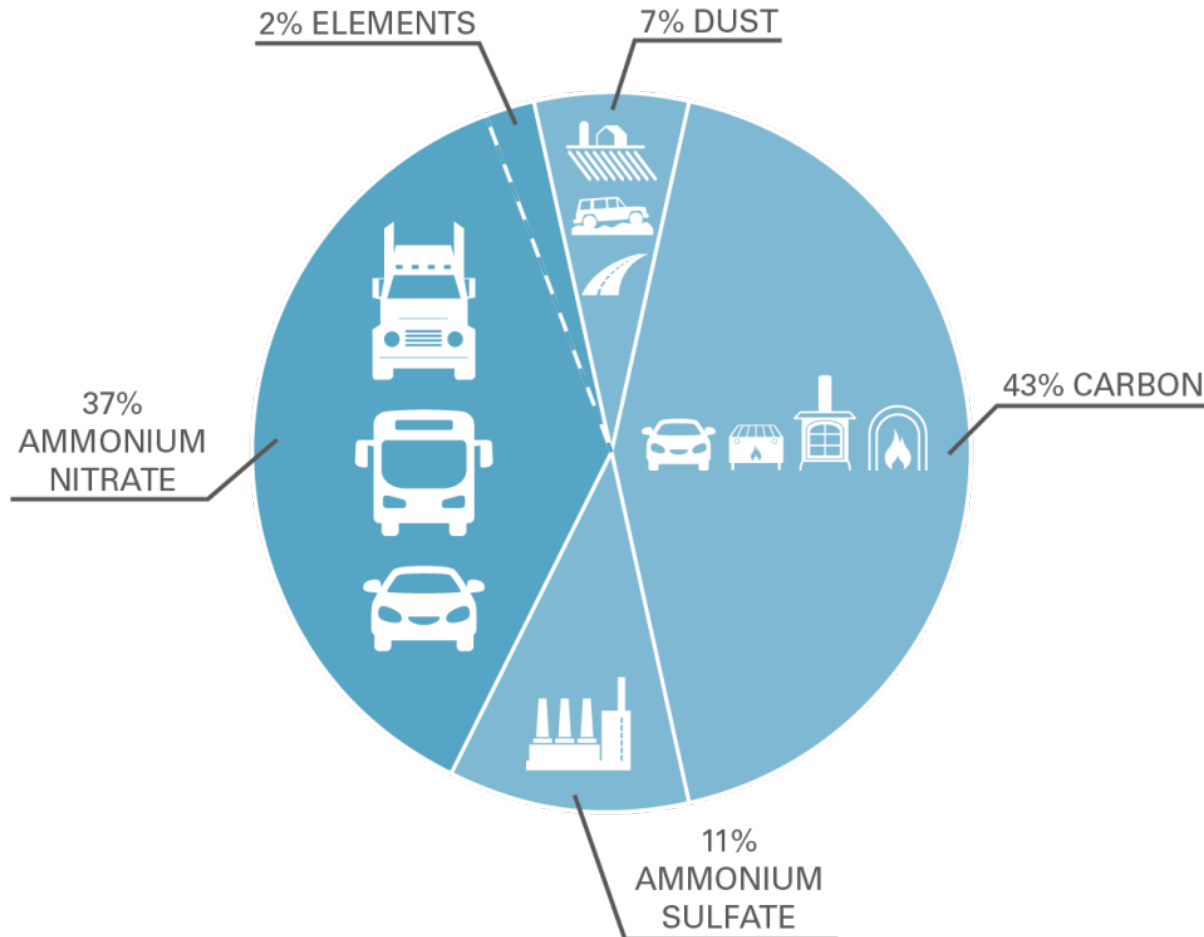
9

Attainment Strategy Development

Key Sources Contributing to Annual PM2.5 Levels

10

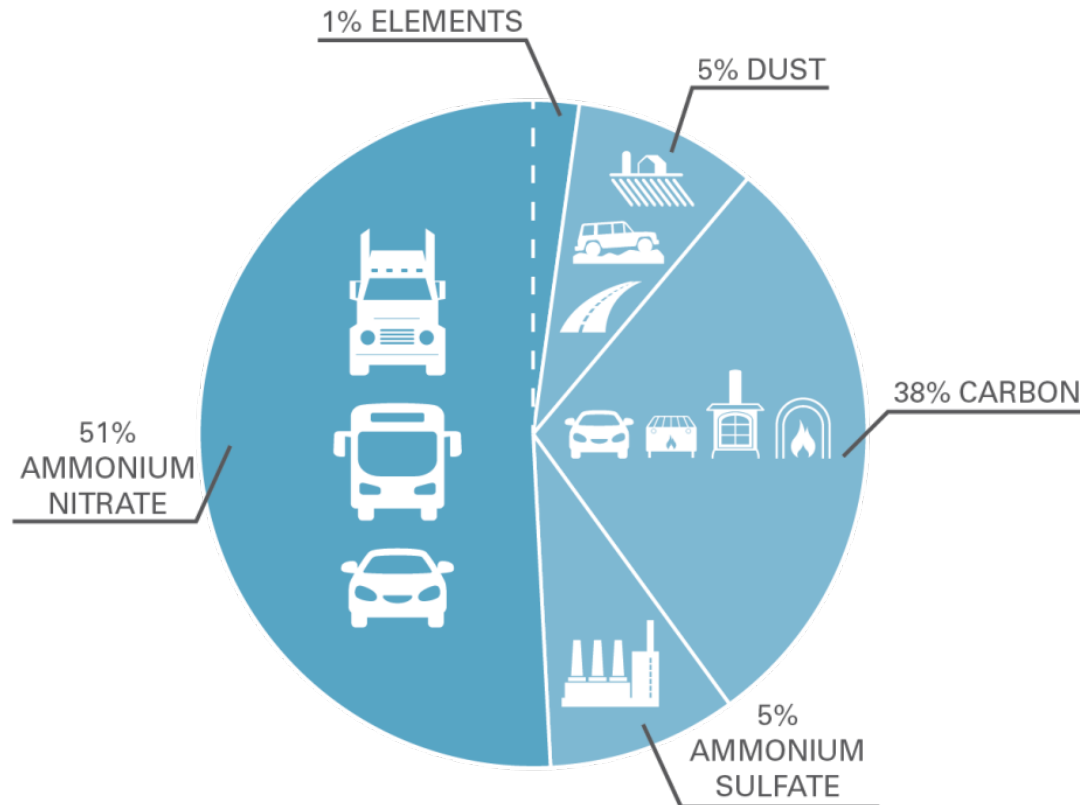
Bakersfield 2013 Annual Average (17 $\mu\text{g}/\text{m}^3$)



Key Sources Contributing to Peak PM2.5 Levels

11

Bakersfield 2013 Peak Day (63 ug/m³)



Core Elements of Attainment Strategy

12

Air quality modeling is informing most effective approaches



Preventing wood smoke impacts on peak days



Controlling charbroiling emissions in urban areas



Minimizing ag and urban dust



Aligning standards with advances in control technologies



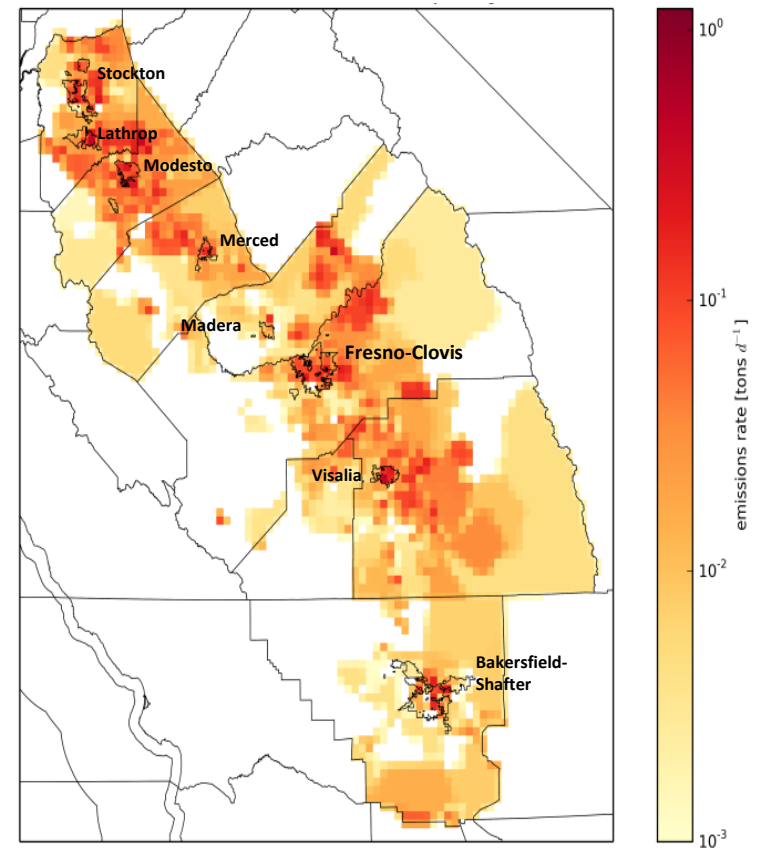
Enhancing deployment of cleaner mobile source technologies

Wood Burning

13

- Accounts for about 30% of PM_{2.5} carbon particles on peak winter days
- Reducing neighborhood impacts results in significant health benefits
- Cost effective approach to achieve significant air quality benefits

Residential Wood Burning Emissions



Wood Burning: New Actions

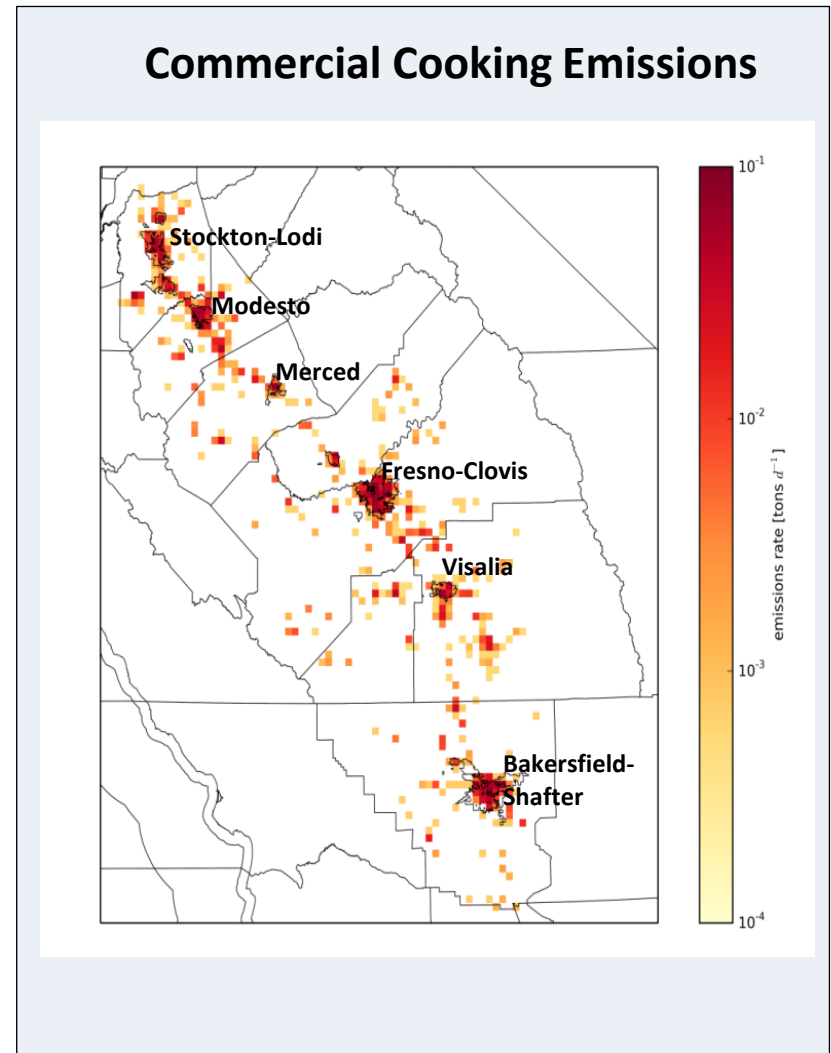
14

- Continued replacement of woodstoves and fireplaces with cleaner devices
- Expanded wood burning curtailment season
- Replacement of wood burning devices when homes are sold or remodeled
- *Further strengthen rule to prevent all burning on days approaching unhealthy levels ($> 20 \text{ ug/m}^3$)*

Commercial Charbroiling

15

- Accounts for about 20% of PM_{2.5} carbon particles year round
- Concentrated emissions in populated areas creates localized health impacts
- Effective control technologies now being demonstrated in the Valley



Commercial Charbroiling: New Actions

16

- Require controls for under-fired charbroilers in new restaurants throughout the Valley
- Offset installation costs through incentives
- Current control technologies can reduce emissions by 75 to 85%
- *Further focus on retrofits for additional restaurants in Bakersfield and Fresno (~1/3 of restaurants)*



Fugitive Dust: New Actions

17

- Drier conditions associated with drought can increase dust emissions
- District proposals include:
 - Replace almond harvesters with new dust reduction technologies
 - Update Conservation Management Practices to include additional dust reduction measures
- *Further evaluate requirements for urban dust sources such as open areas and unpaved parking lots*



Other Stationary Sources: New Actions

18

- Advances in more stringent control technologies provide additional opportunities for reductions
- District proposals include:
 - Electrify agricultural IC engines
 - Establish lower NO_x limits for stationary IC engines, steam generators, and boilers
 - Install ultra-low NO_x flare technologies
 - Establish lower NO_x and SO_x limits for glass plants

Mobile Sources: New Actions

19

- 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*

Reducing Ag Tractor Emissions

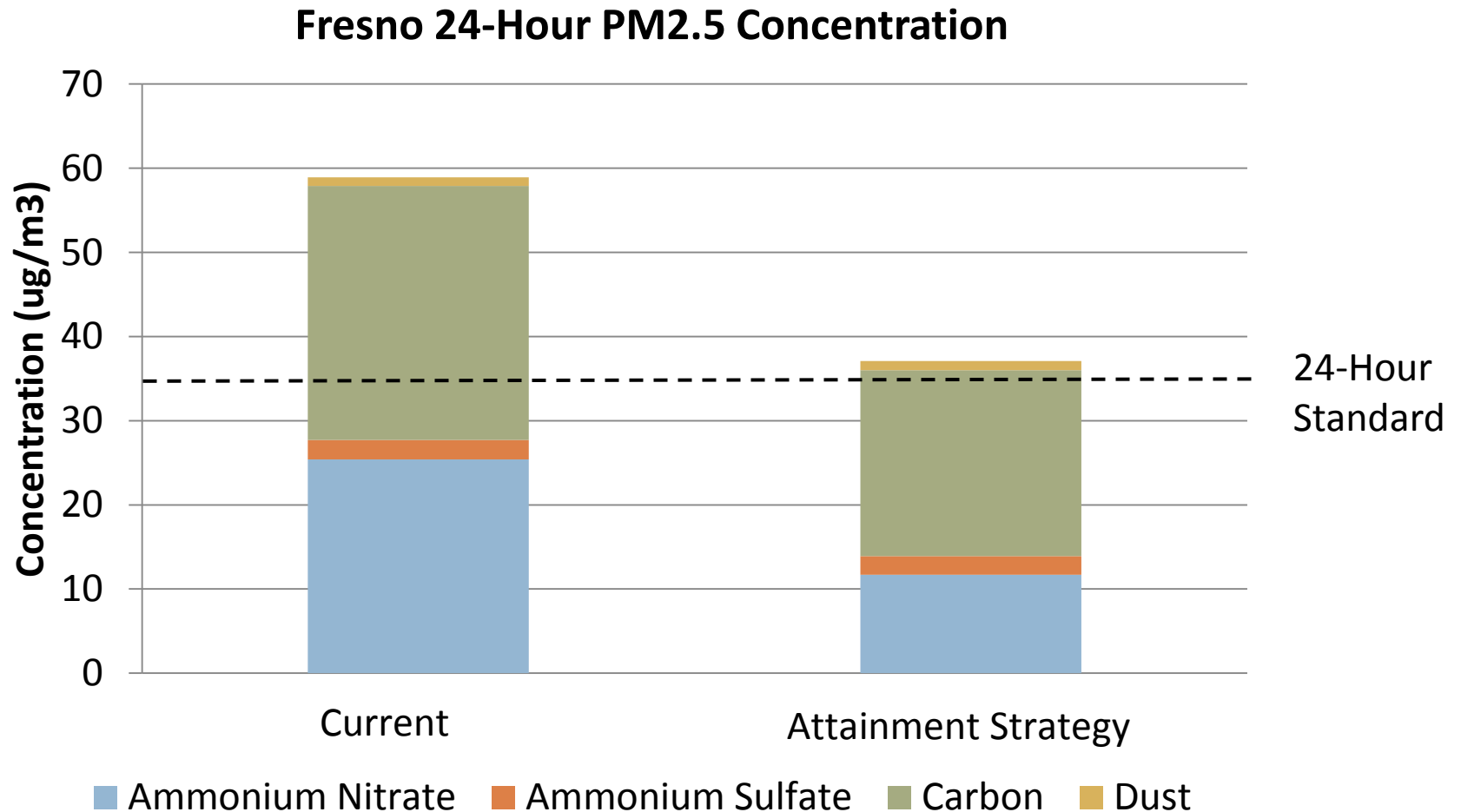
20

- Nearly \$400 million invested to date through public/private partnership
- Funded replacement of over 5,000 Tier 0-1 engines to implement prior SIP measure
- Reduced over 9 tons/day of NOx in 2017
- Initiating new tractor trade up program with \$500,000 in initial funding

Benefits of Measures Identified to Date

24-Hour Standard

21

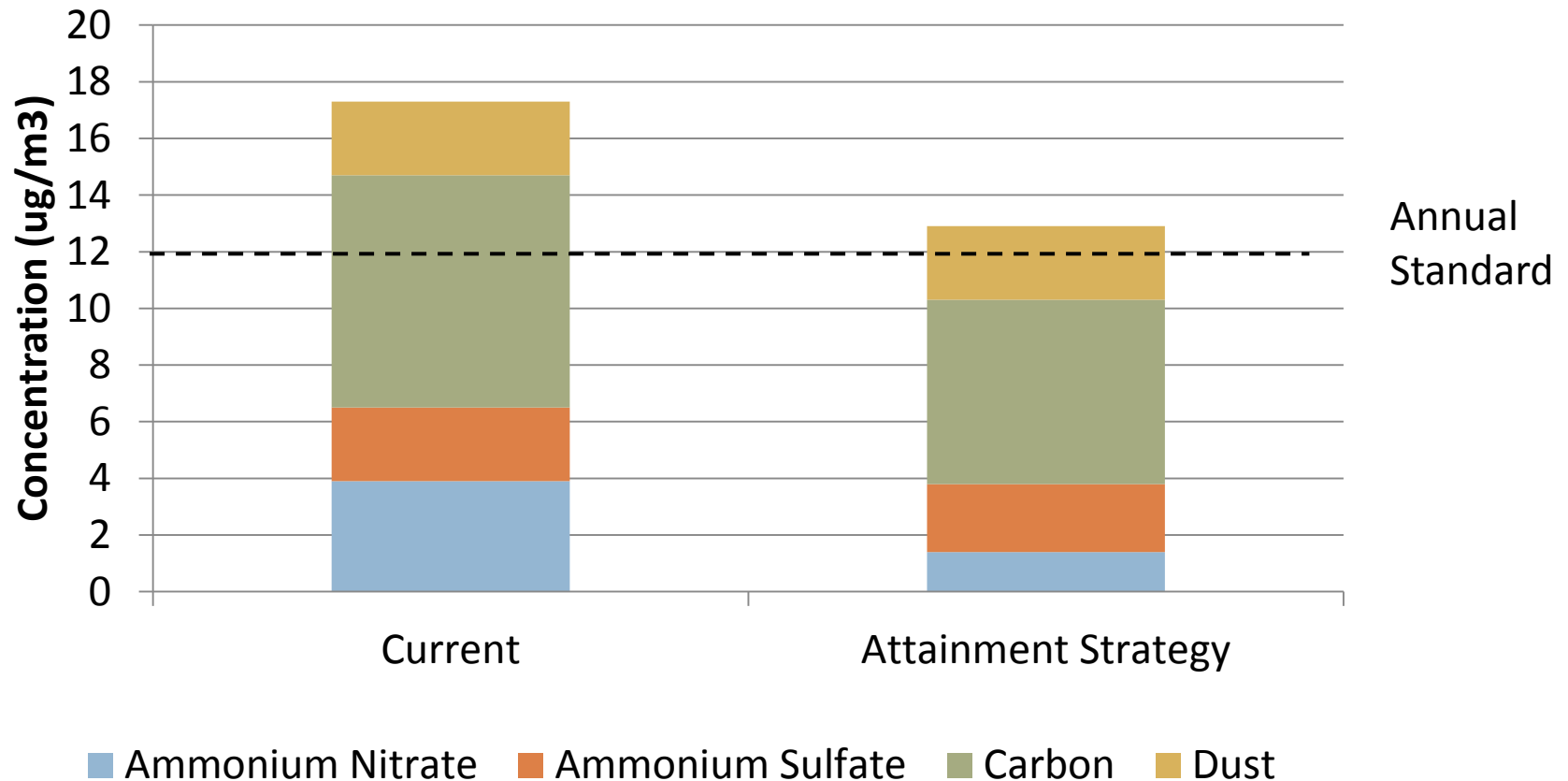


Benefits of Measures Identified to Date

Annual Standard

22

Bakersfield Annual PM2.5 Concentration



Additional Stakeholder Suggestions

23

- Replace public fleets with cleaner technologies
- Electrify school buses and small ag equipment
- Support for additional EV charging stations
- Replace oil workover and drilling equipment with cleaner engines
- Reduce PM2.5 emissions from biomass incinerators, boilers and steam generators
- Eliminate all residential and agricultural burning
- Ban leaf blowing
- Enhanced public education and outreach
- Implement further controls to reduce ammonia

Continued Strategy Development

24

- Continue to work with District to refine air quality modeling
- Identify approaches to close small remaining attainment gap
- Quantify emission reductions from additional measures
- Complete comprehensive attainment demonstration

Timing of Reductions

25

- Strengthened requirements for wood burning can begin now
- Commercial charbroiling requirements can begin now but may need a phase-in period
- Mobile source incentives provide additional ongoing reductions
- Full implementation of truck and bus rule and I&M program development between 2020 - 2023
- Timing for phase-in of overall reductions suggests:
 - 2024 attainment for 24-hour standard
 - 2025 attainment for annual standard

Next Steps in Report Back to Board

26

- Early summer: complete attainment demonstration
- August: District consideration of SIP
- September: ARB consideration of SIP
- Ongoing: continued public outreach and additional Valley workshops