

Agricultural Open Burning Emissions Inventory and Air Quality Impacts: Trends and Forecasts

**Central Valley Summit on
Alternatives to Open Burning of Agricultural Waste
November 7, 2017**

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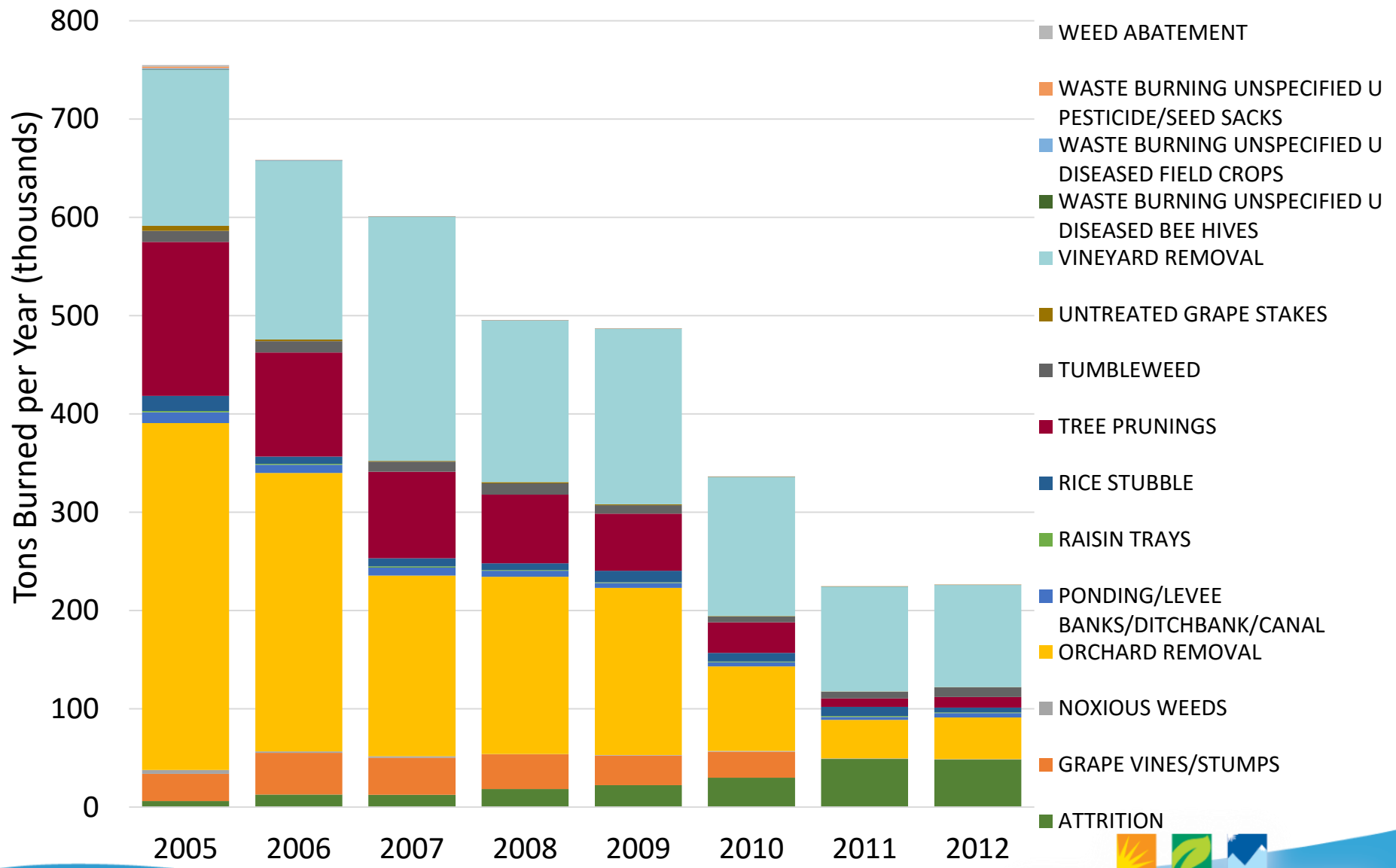
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Significant Reduction in Open Burning

- Valley has toughest restrictions on ag open burning
- In 2003 Senate Bill 705 was adopted requiring the phase-out of agricultural open burning by crop type
- Phase-out can be delayed if certain findings are made
 - No economically viable alternative
 - Open-burning of material would not contribute to air quality violation
 - There is no long-term funding for biomass power plants
- From 2003 to 2012, open burning of agricultural waste had been reduced by over 80%



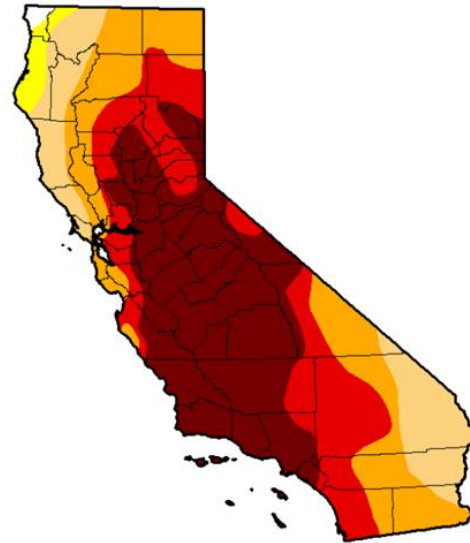
Open Burning Reduction 2005-2012



Exceptional Drought

- California experienced worst drought in over a century between 2011-2017
- Most of Valley had record low rainfall in 2013
- Drought and increase in fallowed land resulted in increased need to dispose of agricultural waste
- Hundreds of thousands of acres of orchards and vineyards removed due to drought and crop economics

U.S. Drought Monitor California



March 8, 2016
(Released Thursday, Mar. 10, 2016)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.43	99.57	97.49	83.16	60.86	38.48
Last Week 3/1/2016	0.43	99.57	95.13	82.66	60.86	38.48
3 Months Ago 12/8/2015	0.14	99.86	97.33	92.26	69.09	44.84
Start of Calendar Year 12/29/2015	0.00	100.00	97.33	87.55	69.07	44.84
Start of Water Year 9/29/2015	0.14	99.86	97.33	92.36	71.08	46.00
One Year Ago 3/10/2015	0.16	99.84	98.11	93.44	67.46	39.92

Intensity:

 D0 Abnormally Dry D3 Extreme Drought
 D1 Moderate Drought D4 Exceptional Drought
 D2 Severe Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
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NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

The National Drought Mitigation Center | 3310 Holdrege Street | P.O. Box 830988 | Lincoln, NE 68583-0988
phone: (402) 472-6707 | fax: (402) 472-2946 | [Contact Us](#) | [Web Policy](#)



Loss of Significant Biomass Capacity

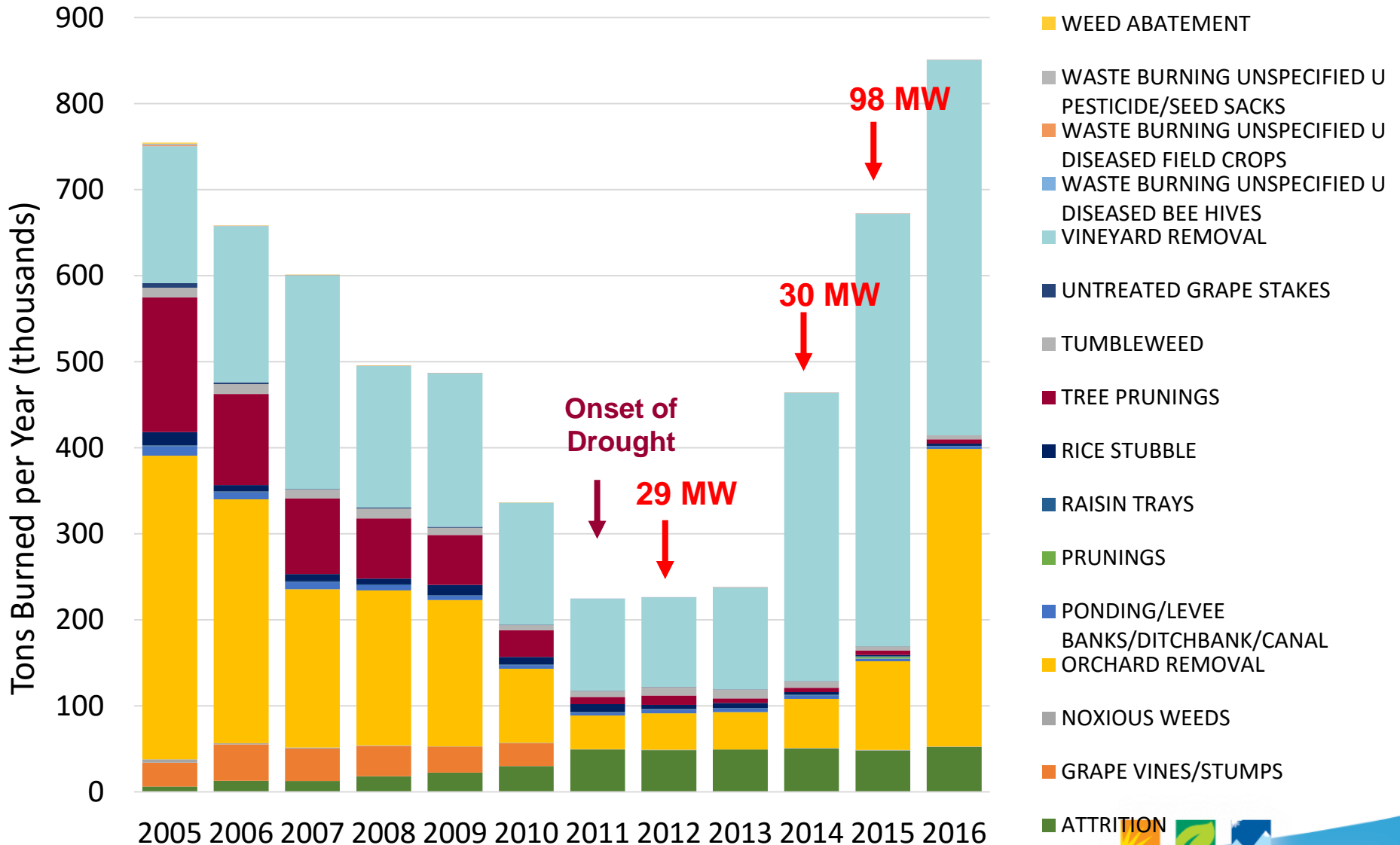
- Since 2012, six biomass facilities have closed in the Valley, removing approximately 157 MW of capacity (over 50%)
- Considerably reduced the available options to dispose of ag waste, particularly from large orchard removals
- Since 2012, open burning of agricultural waste has rapidly increased due to exceptional drought and biomass power industry decline



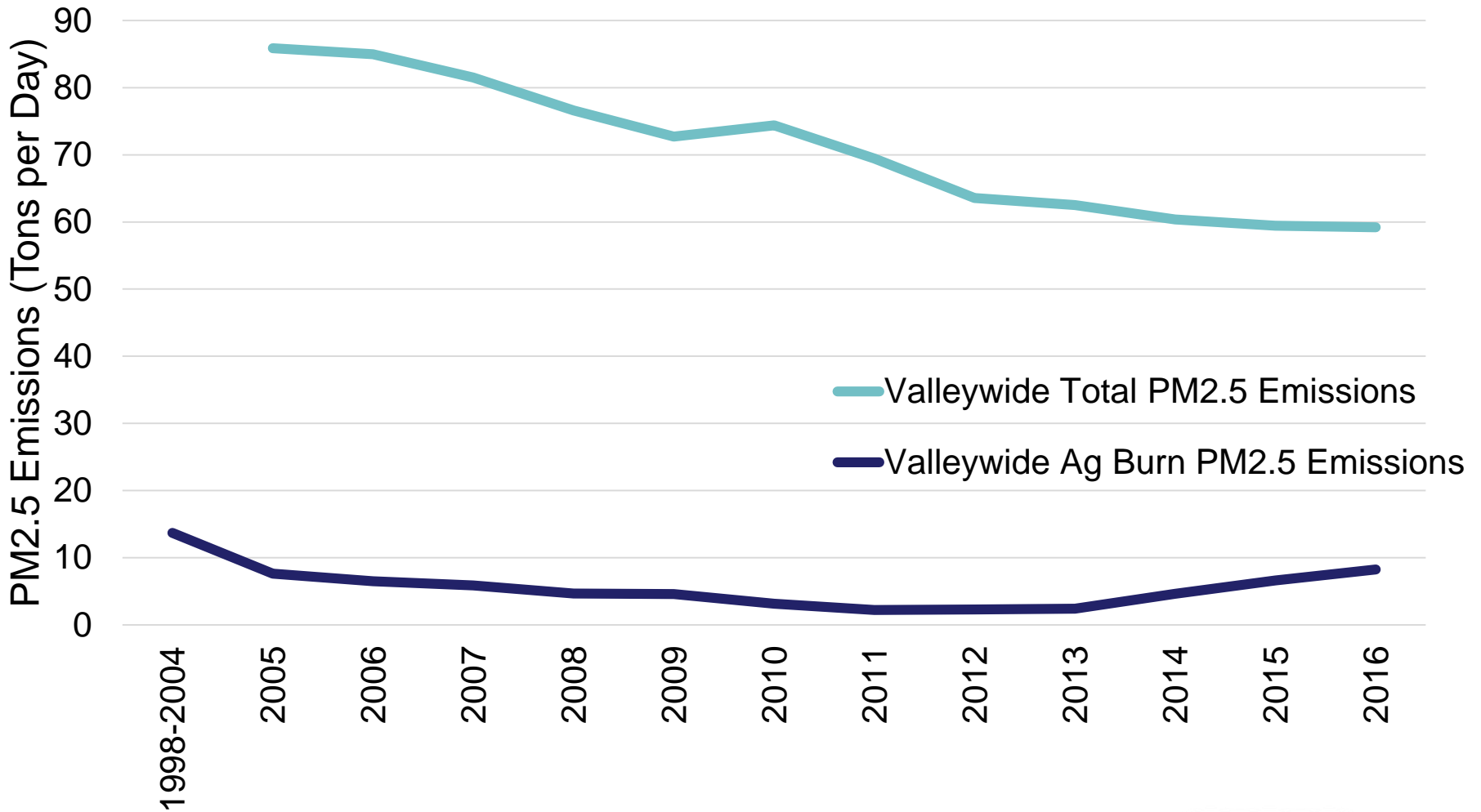
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Valley Agricultural Burning Increasing



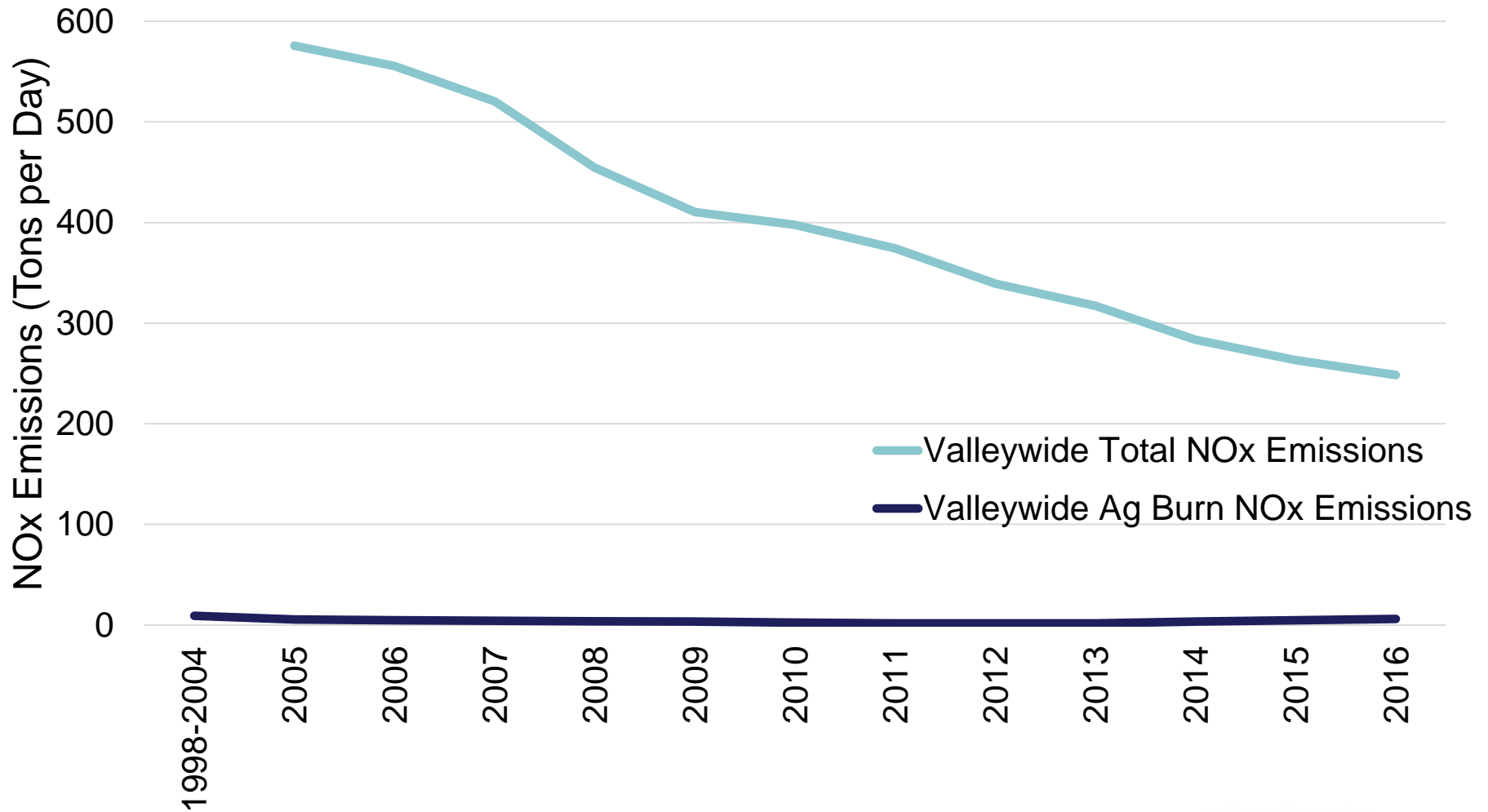
PM2.5 Emissions from Ag Burning



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NOx Emissions from Ag Burning



2016 Valley Air Quality Best on Record Despite Increase

- Despite increase in open burning
 - Highest number of “Good” Air Quality Index (AQI) days across all of the District’s counties
 - Fewest number of “Unhealthy” AQI days across all counties
- Valley now meets 1997 24-hour PM_{2.5} standard (65 µg/m³)
 - Over 600 rules adopted by the District
 - Most effective and efficient incentive grants program
 - Significant investments by Valley businesses and residents
 - Stringent regulatory programs by District and ARB



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Mitigating Air Quality Impact

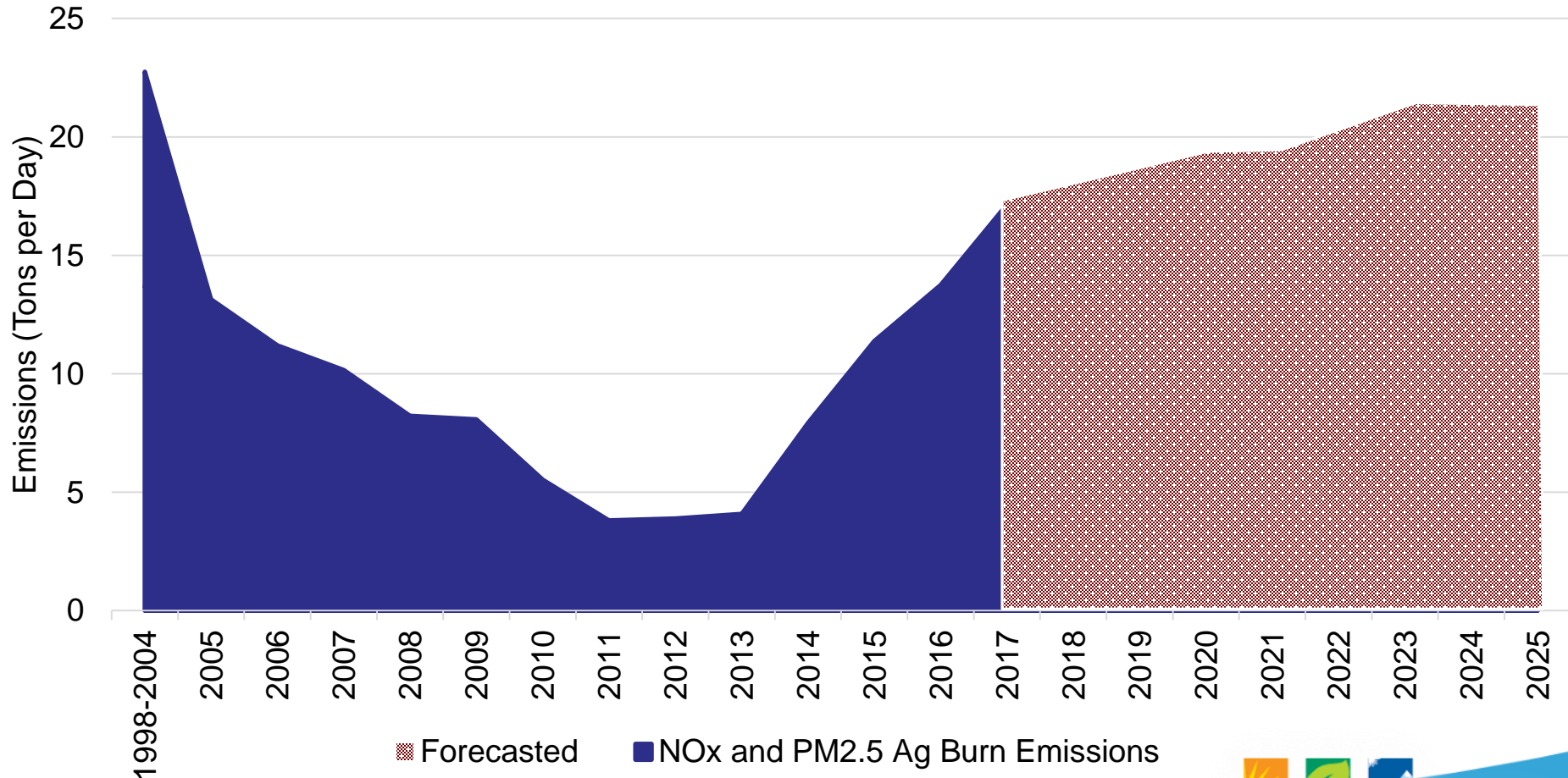
- Burning carefully controlled and monitored through District's Smoke Management System
- Limited amount of burning permissible on days with favorable meteorology and in amounts that will not cause a significant impact on air quality
- During winter, open burning curtailed in counties with residential wood burning curtailments
 - When PM_{2.5} is forecast to be greater than 20 µg/m³
- Forecasted emissions trends will depend on actions
 - Without alternative, open burning will continue to increase



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Open Burning Emissions to Increase Without Cost Effective Alternative



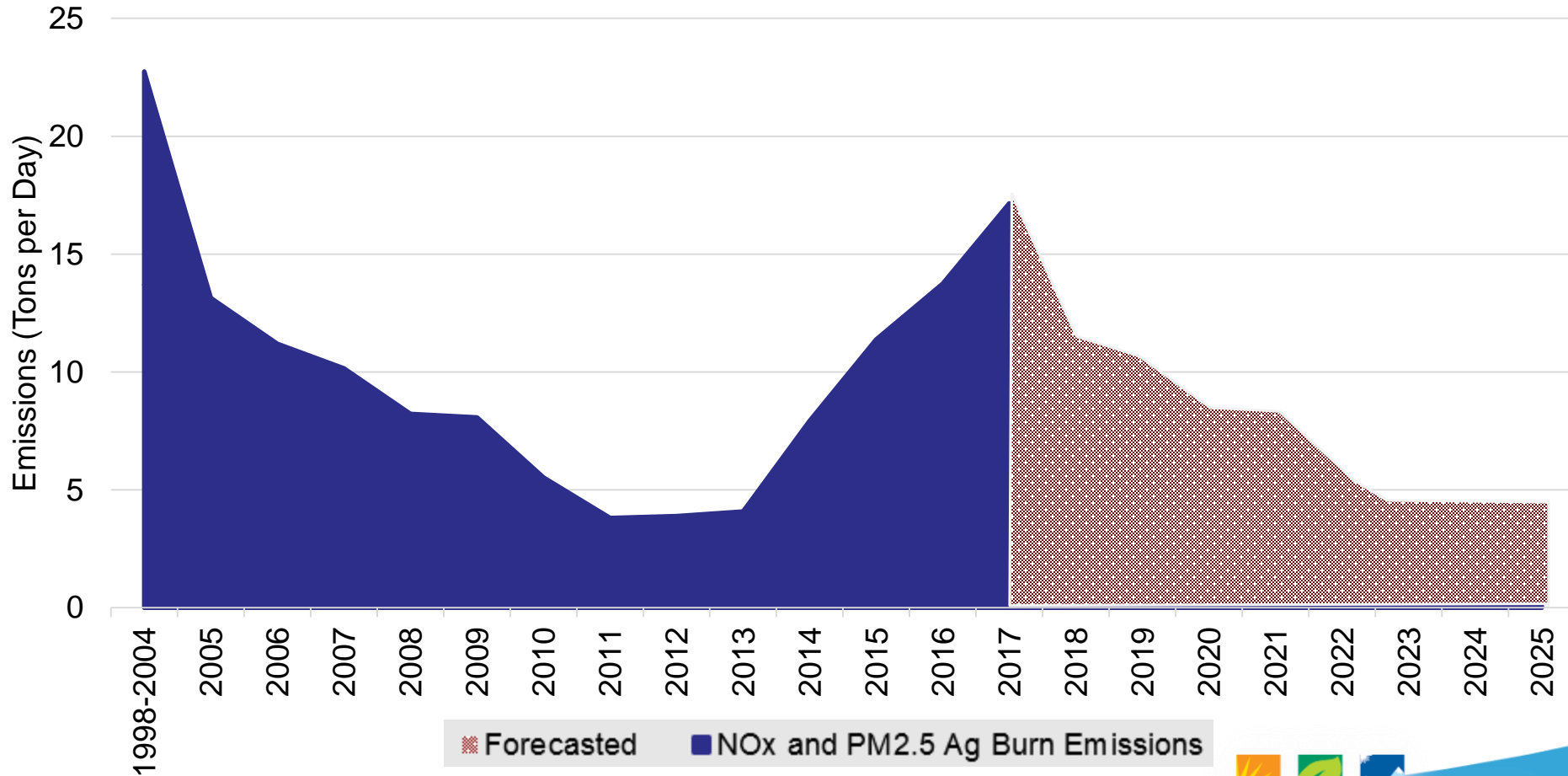
Forecasted NOx and PM2.5 Ag Burn Emissions



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Open Burning Emissions can Decrease With Cost Effective Alternative



Forecasted NOx and PM2.5 Ag Burn Emissions



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