



# Open House

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**6pm-Open House Begin**

**7pm-Presentations**

MSB: Overview & Legislation

DEC: Monitoring Update

**Questions**

Please submit question cards at the back of the room

**8-Open House Ends**

Will continue until 8pm & staff will be available for questions  
and follow-up





# Butte Air Quality Open House

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**Brianne Blackburn**  
**Ted Eischeid**

**Matanuska Susitna Borough**  
Planning Department



January 22, 2019

Calm winds and the inversion result in poor air quality.



❶ The winter sun, low in the sky, supplies less warmth to the Earth's surface.

❷ Warmer air aloft acts as a lid and holds cold air near the ground.

❸ Pollution from wood fires and cars are trapped by the inversion.

❹ Mountains can increase the strength of valley inversions



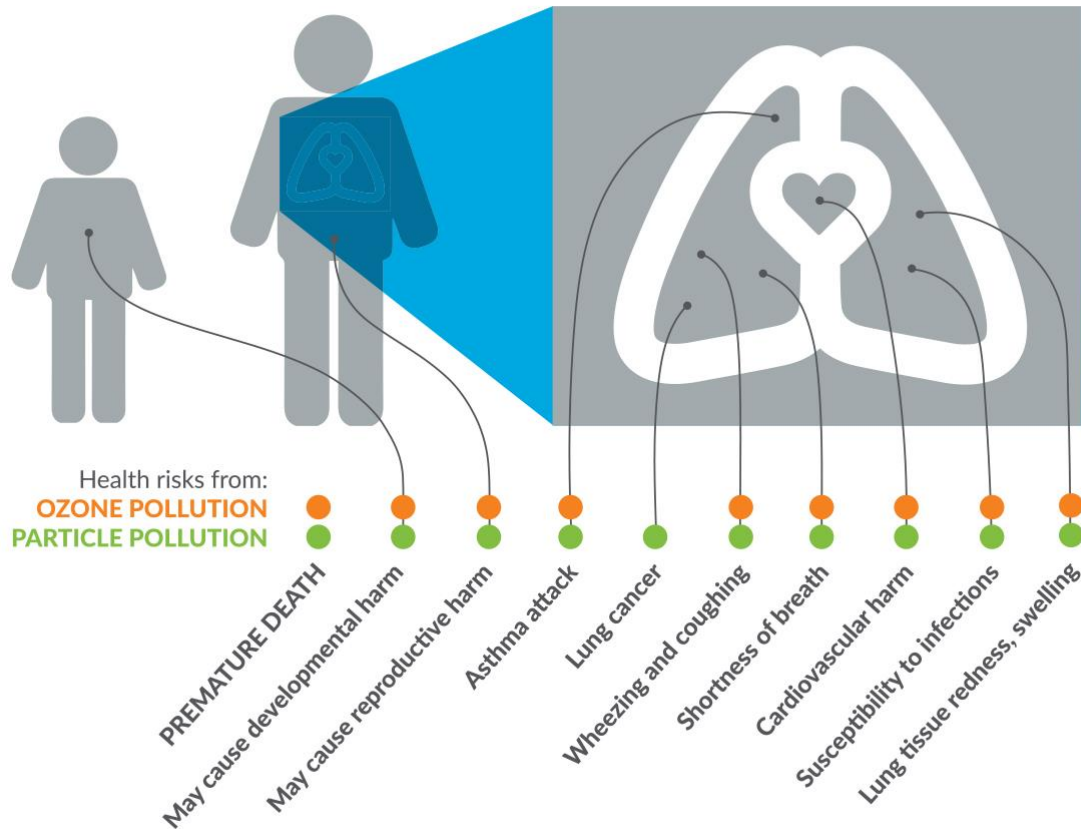
# Elevated PM<sub>2.5</sub> in winter months

- Small particles from combustion (primarily wood smoke in this area)
- November-February
- Typically clears up within a few days
- Well documented impacts to health



# Why do we care?

Air pollution can lead to illness and premature death.



## Impacts to health

**22% of Mat-Su population  
(22,361 residents) had a  
health condition aggravated  
by PM<sub>2.5</sub> in 2017**



# Dust vs Smoke

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- The borough experiences both
- Dust events occur with high winds;  $PM_{2.5}$  occurs on cold, calm days
- Monitoring equipment can differentiate between dust and smoke



# What is the Borough doing with air quality?

## The Borough is NOT in Non-Attainment

- **Agreement in place with DEC since 2006**
  - **Coordination:** education and communication of advisories (PM<sub>2.5</sub> & PM<sub>10</sub>)
- **Outreach to community and community leaders**
  - **Key message:** Burning dry wood; avoid burning outdoors during inversions
- **Proposed Legislation**
  - Local, targeted efforts to manage air resources



# Will this impact wood stoves?

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- **No. This legislation asks residents to delay burning outdoors on days when air is unhealthy and advisories have been issued (an average of 2-4 days per year)**
- The following language has been incorporated into the proposed MOU update, legislative documents, and the air quality management plan:

**The Mat-Su Borough wants to protect residents' way of life including their right to heat their homes with wood. This legislation does not regulate wood stoves or other heat sources.**



# Proposed Legislation

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## CODE UPDATES

- Simplifies complex, unenforceable code
- Eliminates outdated language

Delay burning outdoors when air quality advisories have been issued (an average of 2-4 days per year)

## CREATE PLAN

- Adopt plan to implement targeted solutions at a local level

Both include language that specify these efforts do not provide authority for MSB to regulate wood stoves

## UPDATE AGREEMENT

- Allows the Borough to have an air quality program



# Butte Air Monitoring Update

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# History State Air Monitoring in the Butte

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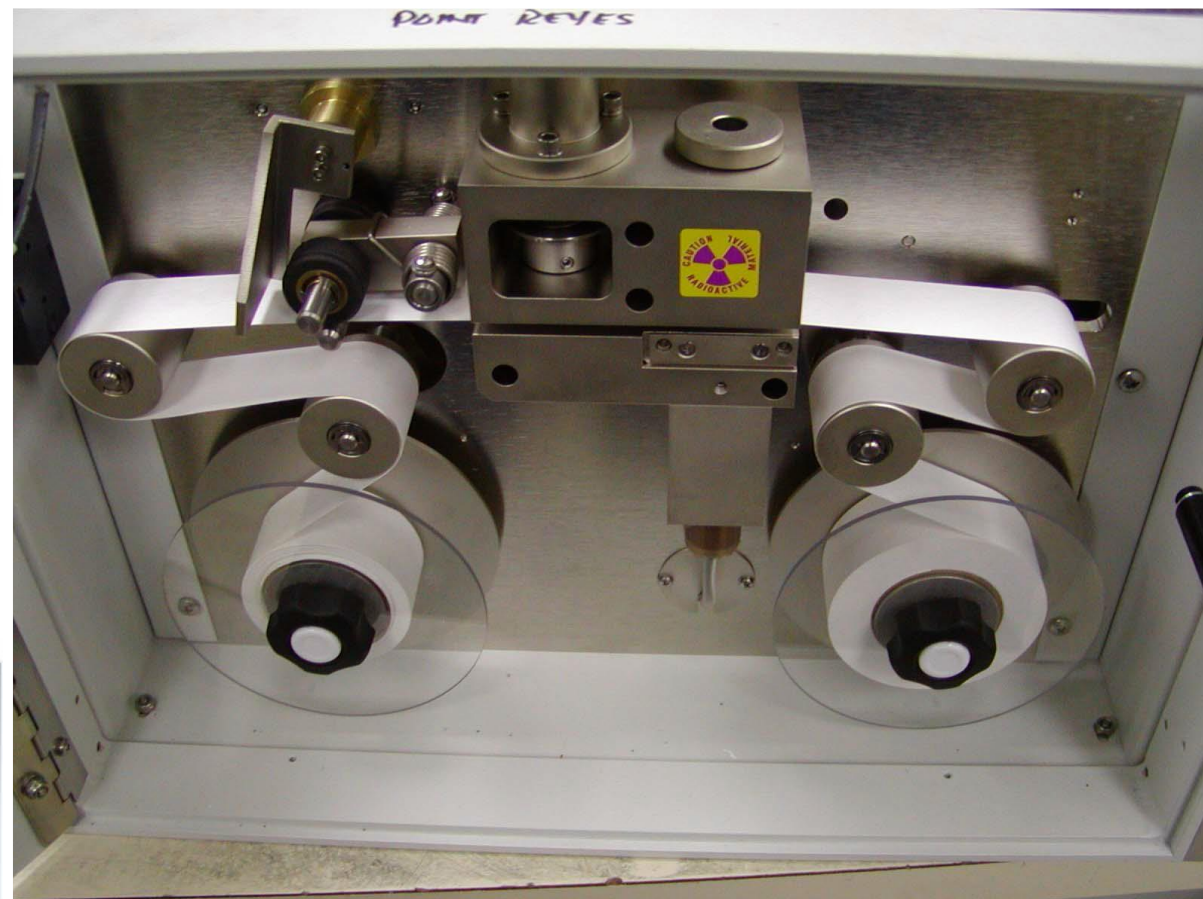
- **1998**      DEC established permanent site at Harrison Ct
  - In early 1990s site established at Pioneer peak Baptist Church
  - Monitor wind blown dust from Knik and Matanuska River beds
  - Manual PM<sub>10</sub> High volume sampler
- **1999**      Added PM<sub>2.5</sub> analyzer
  - EPA established new health based standard for PM<sub>2.5</sub>
  - Initially, most PM<sub>10</sub> sites outfitted with PM<sub>2.5</sub> samplers to better understand sources for PM<sub>2.5</sub>
- **2006**      EPA strengthens PM<sub>2.5</sub> health standard
  - New standard set to 35 µg/m<sup>3</sup> for 24 hour average
  - Monitoring required if within 80% of the standard (i.e. ≥ 28 µg/m<sup>3</sup> )
- **2010**      Daily sampling requirement
  - Switched to 2 Beta Attenuation Monitors, PM<sub>10</sub> and PM<sub>2.5</sub>
  - Data displayed on DEC website near real time



# Sampling Equipment – BAM 1020



Size selective inlet for  $PM_{10}$  and  
Very sharp cut cyclone for  $PM_{2.5}$



# Concentration trends and sources

- $PM_{10}$ 
  - Windblow dust
  - Typically spring and fall
  - High winds, no or low snow cover
  - Road sanding
- $PM_{2.5}$ 
  - Subset of  $PM_{10}$
  - Smoke
  - In summer due to wildfires, widespread issue
  - Winter time, slash burning and wood heat
  - Low wind speeds and temperature inversions





## Definitions

98<sup>th</sup>  
Percentile

The daily value out of a year of PM<sub>2.5</sub> monitoring data below which 98 percent of all daily values fall.

[40 CFR 50](#)

[Appendix N - see section 4.5\(a\)](#)

24 hour  
Design  
Value (DV)

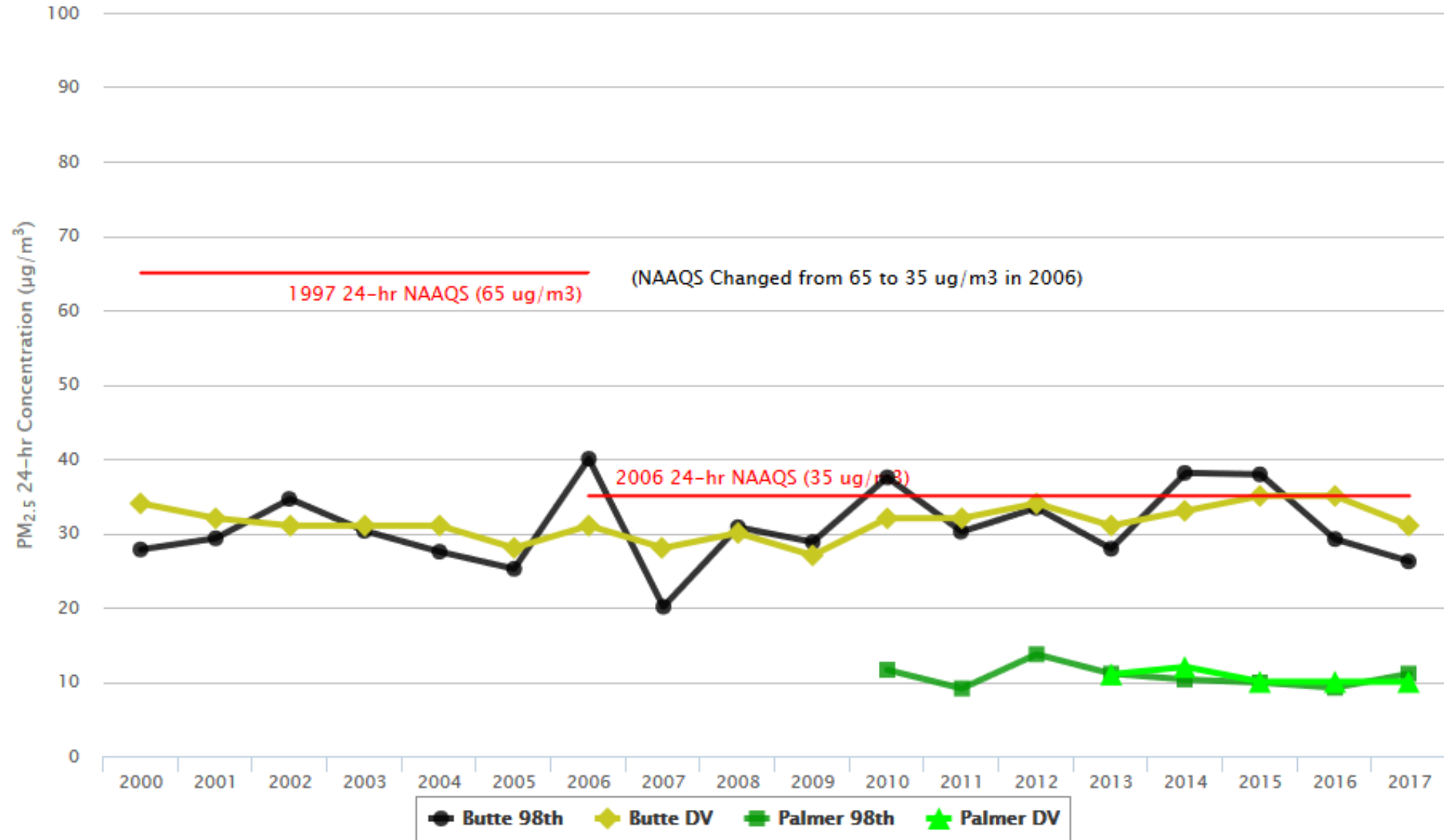
Three year average of the 98th percentile value. An area is in violation of the NAAQS when the Design Values is greater than the 24 hour NAAQS for PM<sub>2.5</sub>, which is currently set at 35 µg/m<sup>3</sup>

[40 CFR 50](#)

[Appendix N - see section 4.5\(b\)](#)

## PM<sub>2.5</sub> 24-hr Design Values

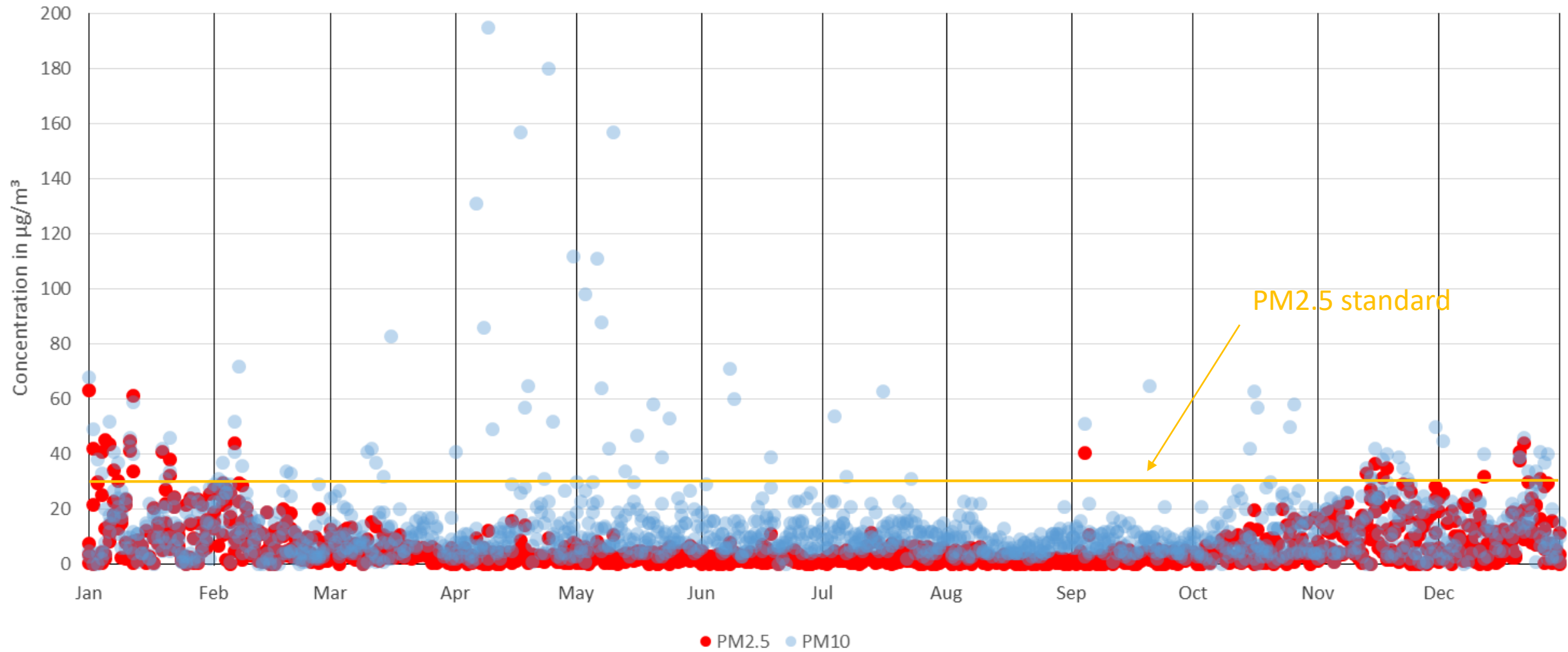
Butte, Palmer



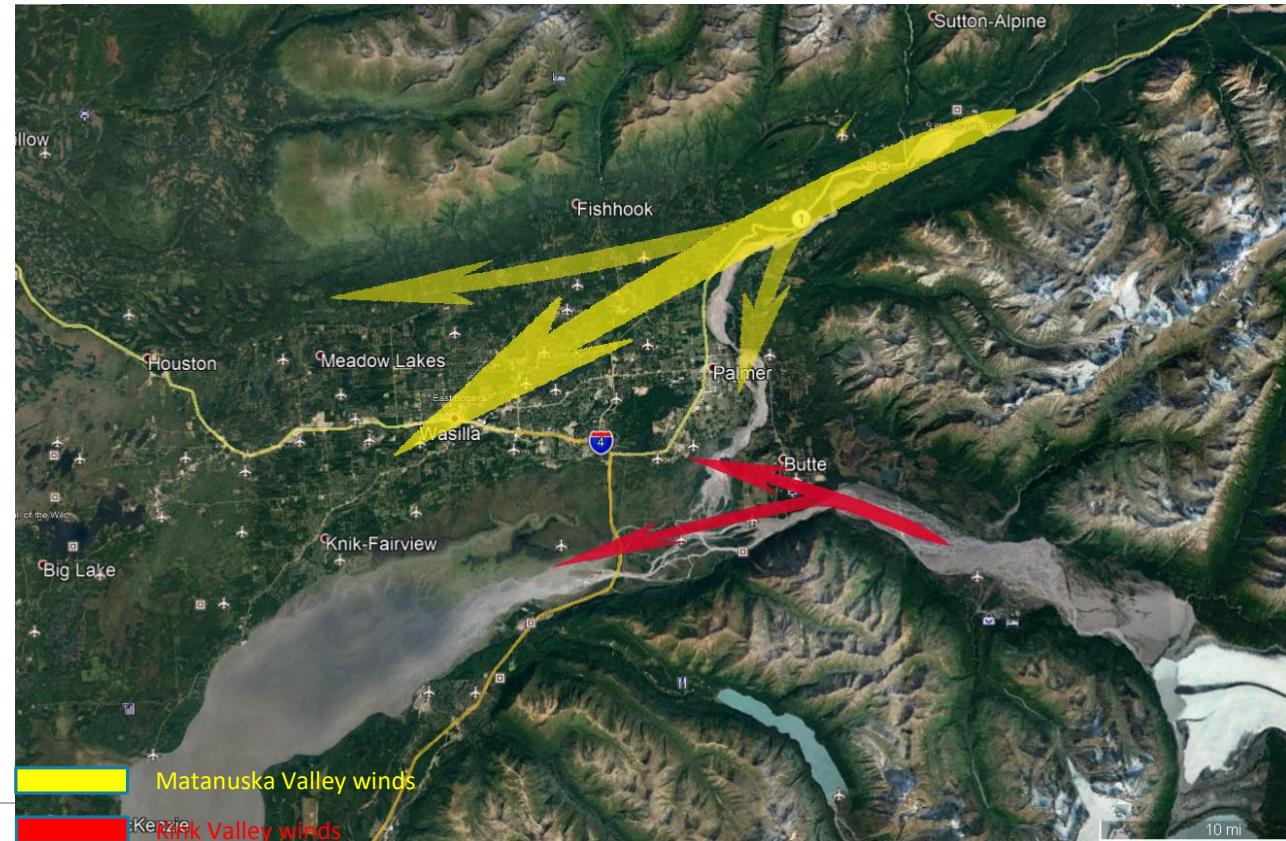
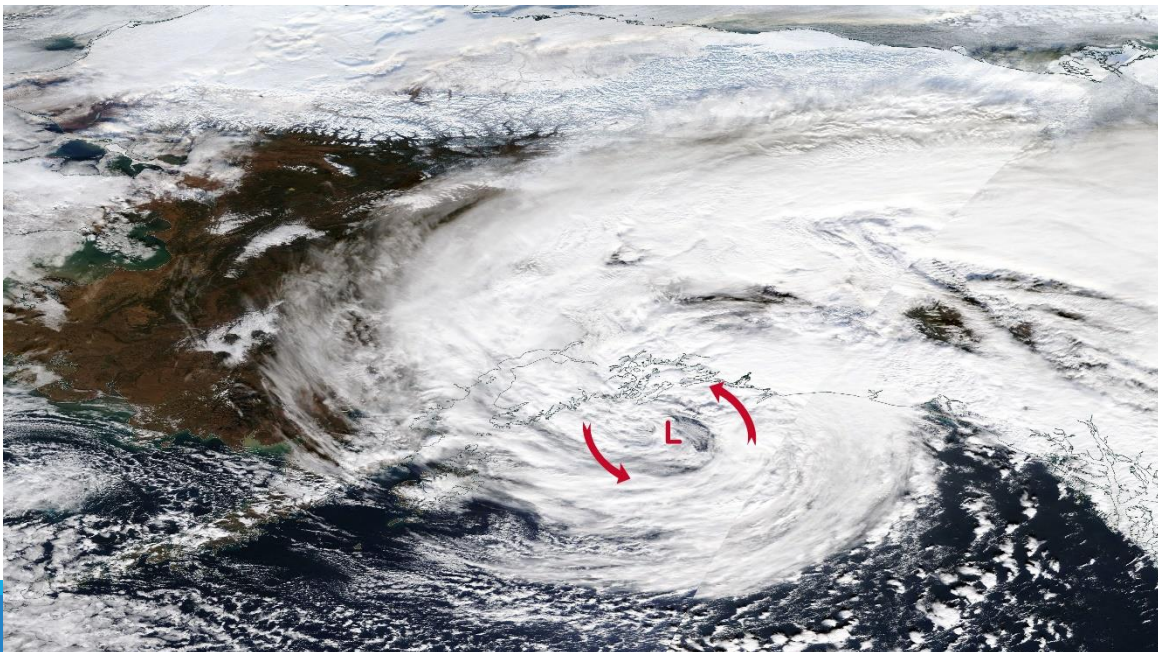
Alaska Department of Environmental Conservation | Division of Air Quality | <http://dec.alaska.gov/air/>



## Butte Site 24-Hour Average PM2.5 and PM10 Concentrations, 2015-2018



- Matanuska and Knik valley winds occur when a Low Pressure system (Low) is in the Gulf of Alaska
- Strength/duration of valley winds depends on location and intensity of the Low.
- A Low further to the west in the Gulf will enhance Knik Valley winds
- Low further to the east in the Gulf will enhance Matanuska Valley winds



- During Gulf of Alaska Lows, strong Low circulation pattern occurs in the Butte
- During cold stable air masses (winter), drainage flow from the valleys continue to interact and form weak circulation patterns in Butte area

# Current Data

## Annual PM<sub>2.5</sub> 98<sup>th</sup> percentile concentrations

	2014	2015	2016	2017	2018
98 <sup>th</sup> percentile (µg/m <sup>3</sup> )	38.1	37.9	29.2	26.1	19.2 (preliminary)

## Butte PM<sub>2.5</sub> design values

2016 DV(2014-16)	2017 DV(2015-17)	2018 DV(2016-18) preliminary	PM <sub>2.5</sub> Standard
35	31	25	35



# Conclusions

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- Several exceedances in 2014 and 2015 lead to the air quality impacts close to the EPA standard
- Sources include localized slash burning and wood heat
- Since 2016 air quality is improving
- There now is a little buffer, because the standard is based on a 3 year average
- To keep below the standard:
  - Continue to coordinate slash burning with MSB and DEC
  - Continue to burn dry wood



# Questions?

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