



Butte Fine Particulate Matter (PM_{2.5}) Planning

Presentation to:
Mat-Su Borough Assembly
Meeting

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FEBRUARY 21, 2017



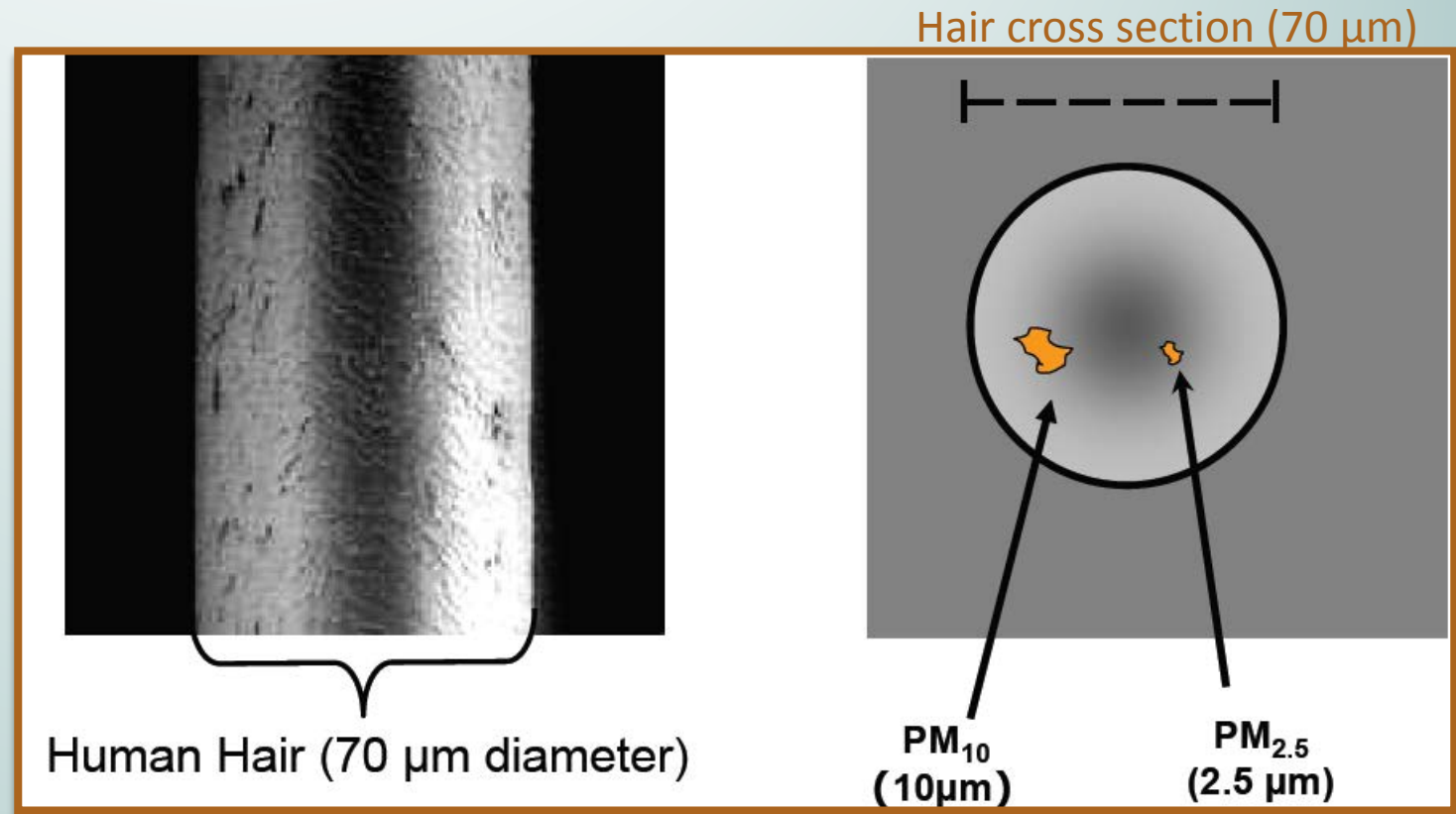
Purpose of the Presentation

- Goal is to protect Human Health
- Air Monitoring is continuing to show unhealthy levels of fine particulate matter (PM2.5)
- Wood burning sources
- Need for immediate action
- Local solutions
- Collaboration with DEC's Air Quality Program



Particulate Matter (PM)

- A complex mixture of extremely small particles and liquid droplets.
- PM_{10} vs $PM_{2.5}$

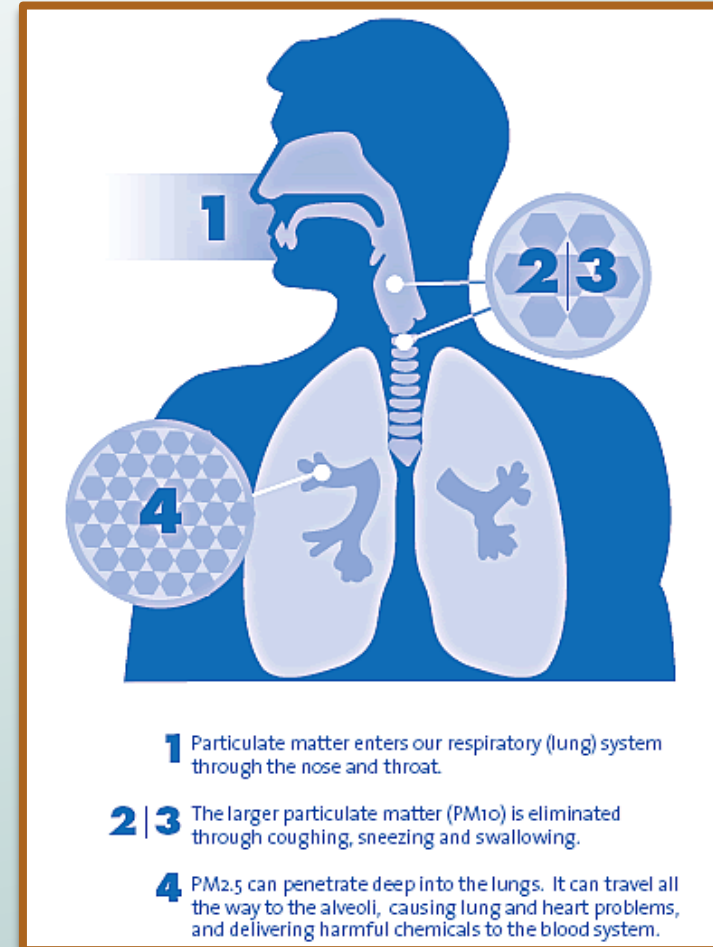


Source: M. Lipsett, California Office of Environmental Health Hazard Assessment



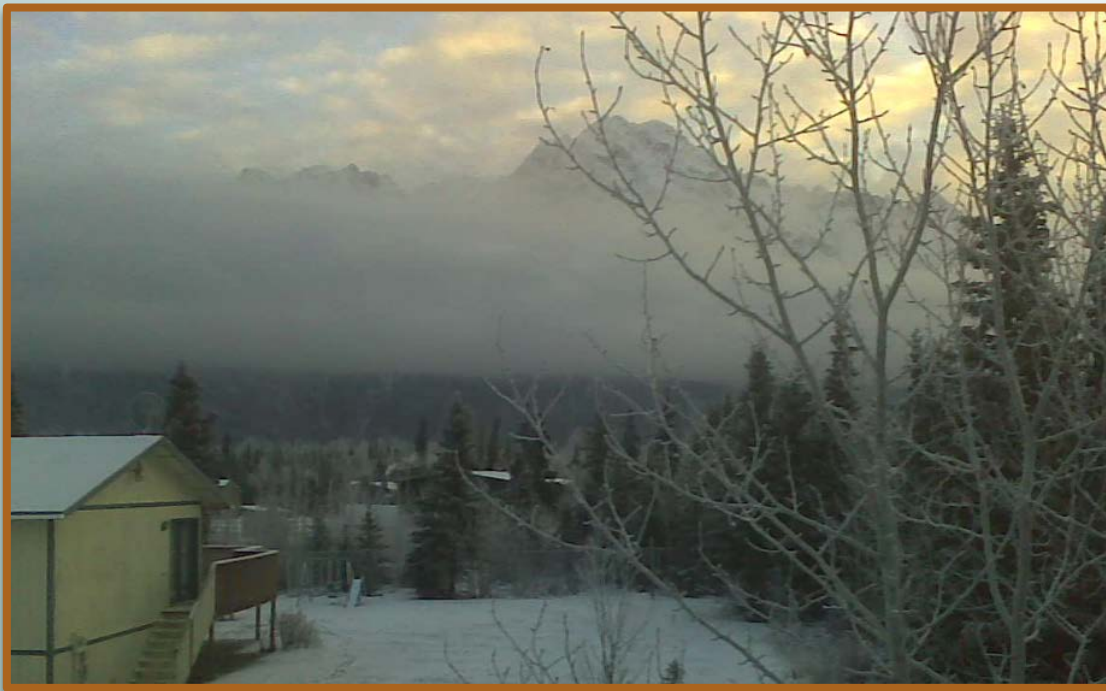
Particle Pollution and Public Health

- Health effects associated with exposure to fine particles include:
 - Premature death in people with heart and lung disease
 - Changes in heart rate variability; Irregular heartbeat; Non-fatal heart attacks
 - Increased hospital admissions and emergency room visits
 - Increased respiratory symptoms (coughing, wheezing and shortness of breath)
 - Lung function changes in children and older adults





Fine Particulate Matter Sources (PM_{2.5})



- Fine particulates are typically formed as a result of fuel combustion
- Wood-fired heating devices
- Burning construction debris or trash (burn barrels)
- Land clearing



PM_{2.5} Monitoring

- Year-round mandatory monitoring for PM_{2.5} in Butte since Dec 1998
- Year-round monitoring in Palmer since 2011
- Public can access real time air monitoring data:
 - <http://dec.alaska.gov/Applications/Air/airtoolsweb/Aq/>





Monitoring

- Butte monitor getting close to violating the national PM_{2.5} standard

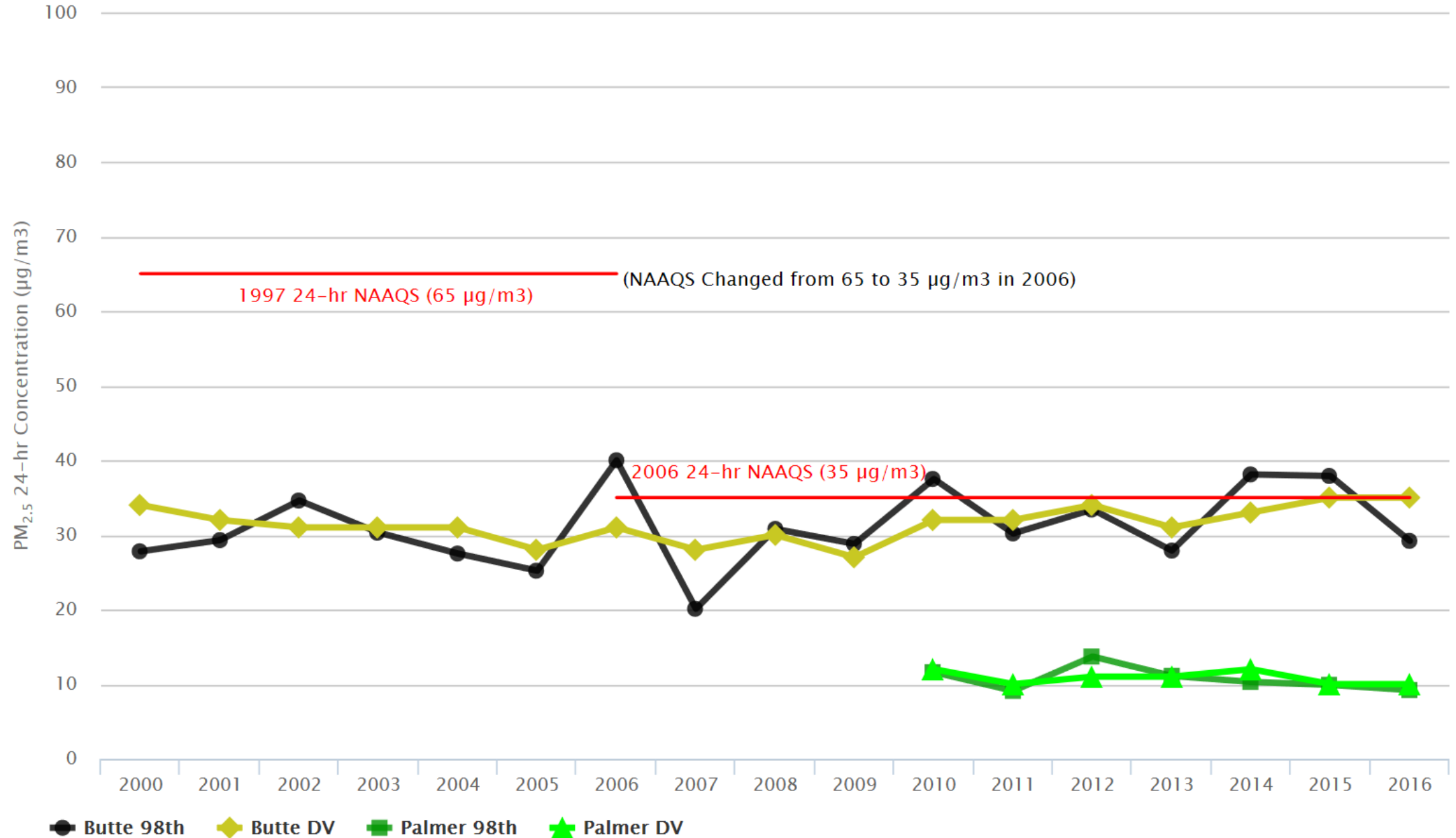
➤ 98 th Percentile PM _{2.5} 24-hr Average Concentration, µg/m ³	2014	2015	2016	2016 Design Value	Not in Attainment*
	38.1	37.9	29.2	35.1	35

**Compliance with the 24-hr PM_{2.5} NAAQS is determined using three years of air monitoring data. The design value is an average of 98th percentile 24-hr average PM_{2.5} concentrations over three years. Values < 35.5 round down to 35 and are considered in compliance.*

- Palmer monitor shows lower concentrations (2016 design value of 10 µg/m³)

PM_{2.5} 24-hr Design Values

Butte, Palmer



Butte PM_{2.5} Monitoring:

	98 th Percentile (µg/m ³)	Design Value (DV)* (µg/m ³)	Standard (µg/m ³)
2012	33.4	33.7	35
2013	27.9	30.5	35
2014	38.1	33.1	35
2015	37.9	34.6	35
2016	29.2	35.1	35

* DV < 35.5 round down to 35 and are in compliance



Butte PM_{2.5} Monitoring:

Long term trend of PM_{2.5} concentrations close to the health standard:

- More pronounced over the past 3 years: increased number of exceedances
- Three year design value for 2015 and 2016 were barely below the standard
- 2016 had lower 98th percentile than previous years.





Butte PM_{2.5} Monitoring

2017 Monitoring values (to date) show 4 dates that exceed the standard:

Date	PM2.5 concentration in $\mu\text{g}/\text{m}^3$
1/1/2017	63.5
1/2/2017	42.2
1/11/2017	41.6
2/6/2017	44.1





Consequences of Nonattainment

Formal designation by EPA as a nonattainment area triggers a wide range of expensive requirements that result in an Air Quality Plan that must be submitted within 3 years.

- Failure to plan or submit required items results in federal sanction clocks. The sanctions include items such as 2:1 industrial offsets and withholding federal highway money.
- All federally funded projects (road or other types) must meet conformity in order to get funded
- Once an area meets attainment, must maintain attainment for 20 years
- Requirements for ordinances and regulations that are enforceable (voluntary measures alone will not be enough)
- Plan must be able to demonstrate area can meet attainment
- Clean Air Act allows citizen lawsuits for failure to implement a plan



Potential Control Measures

Locally selected and implemented control measures have best chance of success.

Ideas from other communities:

- Promote or require the selling and burning of seasoned, dry wood
 - Moisture Disclosure Program (current State voluntary program)
 - Registered wood seller
 - Community drying lots or kiln
 - Loan out moisture meters
 - Issue firewood gathering permit to recently burned areas
- Encourage hook up to natural gas
 - Device change out programs
- Pair air advisories with messaging (use alternative source of heat, burn dry wood)
- Create a special purpose district with focused control measures
 - Local burn approvals
- If in nonattainment, voluntary measures will not be sufficient



What Can Residents Do to Reduce Wood Smoke?

- Better insulate and weatherize homes to reduce heating demands
- Select a clean burning heating device sized appropriately to the space
- Follow the manufacturer's operating recommendations
- Maintain wood heater and chimney
- Only burn clean, dry wood in a wood stove
 - Check the moisture content of your wood – aim for 20%
- Don't let your fire smolder
 - <http://burnwise.alaska.gov/>





Action Is Necessary to Prevent Nonattainment

How do we work together to engage community and explore options?

- Public Education
 - Road side signs when entering/exiting Butte
 - Distribute materials through woodstove dealers, wood sellers, mail outs, etc.
 - Education on local weather patterns
- Other ideas?
 - Incentive programs – encourage hook up to natural gas, device change outs
 - Enhance dry firewood options – energy logs
 - Conditions on slash burning/land clearing



Suggested Next Steps

- Finalize Memorandum of Understanding – Clearly identify roles and responsibilities between DEC and Mat-Su Borough
- Mat-Su Borough would have primary responsibility for preventing nonattainment – Local community best suited to tailor options and solutions
- DEC involvement would increase if area becomes nonattainment



Your Input

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<https://dec.alaska.gov/air/>

http://dec.alaska.gov/air/anpms/comm/matsu_pm2-5.htm

The screenshot shows the Alaska Department of Environmental Conservation (DEC) website, specifically the Division of Air Quality's Air Non-point Mobile Source (ANPMS) page for the MAT-SU - BUTTE - PM_{2.5} monitoring site. The page features a navigation bar with links to myAlaska, My Government, Resident, Business in Alaska, Visiting Alaska, and State Employees. The main content area includes a photo of a snowy mountain landscape, a table of 98th Percentile PM_{2.5} 24-hr Average Concentration data for the years 2012, 2013, 2014, and the Design Value and Cannot Exceed* values. The table shows values of 33.4, 27.9, 39.5, 34, and 35 respectively. A text box explains that the design value is an average of 98th percentile 24-hr average PM_{2.5} concentrations over three years, and the NAAQS is currently 35 µg/m³. The page also includes sections for Current Air Quality, Air Quality Monitoring Data, Outreach & Education, Complaint Form, Map, Monitoring Plan, Health and Safety, and Other Links. A sidebar on the right contains Quick Links and OF INTEREST sections. The footer includes contact information for the Division of Air Quality and links to various resources.

98 th Percentile PM _{2.5} 24-hr Average Concentration, µg/m ³	2012	2013	2014	Design Value	Cannot Exceed*
	33.4	27.9	39.5	34	35

*Compliance with the 24-hr PM_{2.5} National Ambient Air Quality Standard (NAAQS) is determined using three years of air monitoring data. The design value is an average of 98th percentile 24-hr average PM_{2.5} concentrations over three years. The 2012-2014 DV is 34 µg/m³. The NAAQS is currently 35 µg/m³.

Photo Taken December 14, 2014
24-Hr PM_{2.5} Average = 51.21 µg/m³

The Butte area of the Matanuska-Susitna Borough has experienced elevated levels of fine particulate matter (PM_{2.5}). Air quality monitoring data indicates that the area may exceed the PM_{2.5} National Ambient Air Quality Standard (NAAQS) of 35 micrograms/cubic meter. If the area continues to experience elevated levels of PM_{2.5}, EPA may designate the area as a nonattainment area.

Information on this page can help residents understand the issue and learn what actions they can take to improve air quality.

Current Air Quality

- Real-Time Air Quality Data
- Air Quality Advisories

Air Quality Monitoring Data

- Design Values
- Butte PM_{2.5} Data
- Palmer PM_{2.5} Data
- Butte Monitoring Report

Outreach & Education

- Burnwise Alaska
- Split, Stack, Store & Save

Complaint Form

- Statewide Complaint Form

Map

- Butte Monitoring Site Map

Monitoring Plan

- Air Monitoring Plan

Health and Safety

- Harms of Woodsmoke
- PM_{2.5} Health Effects

Other Links

- Mat-Su Borough Air Quality Webpage
- Exceptional Events
- Windblown Dust Events
- Glossary of Terms

QUICK LINKS

- ANPMS Contacts
- Air Pollution in Alaska
- Affected Communities
- Carbon Monoxide
- Indoor Air Quality
- Particulate Matter
- Regional Haze
- Air Toxics
- Projects & Reports

Programs

- Conformity
- Ultra Low Sulfur Diesel

OF INTEREST

- Division of Air Quality
- Monitoring and Quality Assurance
- Air Non-point Mobile Source
- Air Permit Program

Commissioner Public Notices Regulations Statutes Press Releases
Divisions/Contacts Employee Email

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