Update on FNSB Air Quality

Presentation to
The Fairbanks Chamber Energy, Environment &
Natural Resources Committee
August 11, 2021

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Overview

• Three main topics:
  • 1st Annual Air Quality Status Report
  • BACT Status
  • Woodstove emissions
    • Background – Why are wood heater emission standards important?
    • EPA Certification Process
    • DEC Certification Report Review Findings
    • DEC and FNSB Actions to Address Concerns
Reports
Progress and Annual Reports

- New Webpage where the EPA required Progress reports are posted and where the Annual reports on FNSB air quality are posted.
- Annual Report has information broken by calendar year and by season.
- Joint report by DEC and FNSB AQ Programs
- Posted in April 2021. Next year's is schedule to be posted by April 15, 2022.
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BACT Status
Best Available Control Technology (BACT)

• BACT is focused on the major point sources within the nonattainment area.
• DEC BACT Determinations included specific requirements and timelines for each facility.
• DEC received applications from each facility and has issued permits.
• EPA is now requesting more information and analysis of control technologies from sources primarily to get more source-specific detail on costs.
• Timelines not clear for when EPA may take action on the BACT portion of the SIP.
  • Uncertainty around EPA BACT decision resulting in delays in implementing controls
Woodstove Emissions
Why are wood heater emission standards important to the FNSB?

- PM2.5 issue ongoing for over 12 years
- Community has made significant progress, but is still twice the standard
- The plan in place to reach attainment by 2024 relies heavily on wood smoke controls
- Accelerated wood stove turnover to cleaner appliances a critical piece of control strategy
  - EPA’s certification process is the foundation on which wood stove control strategies are built
Understanding Wood Stove Certification and Alaska’s Approved Device List

• During FNSB Serious SIP development we faced a choice: to meet "Best Available Controls," either implement a pellet-only wood heater program or find another way to ensure an equivalent program.

• Wood heating devices must meet more stringent requirements to be on the DEC Approved Device List to be eligible to be sold for installation in the nonattainment area.

• List is based on EPA certification program
  • First check is for devices to meet EPA certification, then state emission standards applied, then underlying test data reviewed for acceptance.

• DEC has been reviewing the underlying certification test results to verify certification values as part of the state approval process.
What is the issue?

• DEC’s review of wood heater emission certification tests found systemic errors in EPA’s certification review program

• If new wood heaters are not cleaner than those they replace, emission benefits are not achieved as planned
  • May impact attainment projections
  • Has implications for other PM2.5 sources as additional controls may be required over time

• EPA has the responsibility to provide state and locals the tools to bring areas into attainment
  • Has failed to meet its responsibilities with respect to emissions from new wood heaters
EPA Woodstove Certification Process
Overview of the 2015 NSPS Certification Process

1. **Stove Prototype Designed**
2. **Manufacturer contracts with a test lab and 3rd party certifier**
3. **Test method selected**
4. **Manufacturer sends EPA 30-day notice intent to test**
5. **Lab conducts test**
6. **Lab writes report**
7. **Manufacturer sends report to 3rd party certifier applies for certificate of conformity**
8. **3rd party review - if testing complies with requirements, 3rd party reviewer issues certificate**
9. **Manufacturer submits application package to EPA**
10. **EPA reviews application**
11. **EPA certifies appliance for five years**
12. **Every five years after testing, manufacturer can request renewal with waiver from testing until model line discontinued**
13. **3rd party conducts inspections to make sure production models match prototype – all data CBI**
Testing Wood Stoves

• Single test on a prototype is used to certify an entire model line for a minimum of five years
  • Manufacturer can request renewals every five years and submit a waiver for testing
  • Compliance audit testing can be requested from EPA
    • Since 1988, no compliance audits have been conducted

• Testing protocol include:
  • Emission measurement protocols
  • Conditioning requirements
  • Fuel requirements
  • Appliance Operation requirements
DEC Wood Heater Certification Review
CERTIFICATION TEST REPORT REVIEW PROCESS

Obtained certification test reports from manufacturer websites.

Created an Excel review tool to standardize review of certification test reports.

Alaska and NESCAUM staff conducted reviews. Reviews are desk audits. They are not in-depth thorough reviews. Additional review may identify additional issues.

Summary sheets shared with Review Committee. Four state and local agencies reviewed findings from summary sheets.

Review based on RWH NSPS requirements and ADEC emission standards.

DEC allowed manufacturers to review summary sheets for errors to allow for corrections. Updating sheets as new information provided.

Review sheets publicly available: [https://dec.alaska.gov/air/burnwise/manufacturers-vendors/](https://dec.alaska.gov/air/burnwise/manufacturers-vendors/)

NESCAUM report available at: [www.nescaum.org](http://www.nescaum.org)
DEC Materials to Support Programs

https://dec.alaska.gov/air/burnwise/manufacturers-vendors/

DEC Regulatory Basis Document: Summary sheets developed/revised based on document, available on the web site

- Approved Device Lists
  - (Approved Device Lists June 2021)
  - (Wood Stoves, Pellet Stoves, Pellet Hydronic Heaters)

- Transition Device Lists
  - (Cordwood Jun 2021 (PDF), Pellet Jun 2021 (PDF), Hydronic Mar 2021 (PDF))
  - (Devices listed here remain on Public Approved Device List until milestone date listed by ADEC)

- No Determination Device List
  - (No Determination Device List Jun 2021 (PDF))
  - (Devices that are on EPA-certified list but have not been reviewed)

- Disapproved Lists
  - (Cordwood FEB 2021 (PDF), Pellet FEB 2021 (PDF), Hydronic Mar 2021 (PDF))

- Summary Review Sheets
  - (Cordwood Jun 2021 (XLS), Pellet Jun 2021 (XLS), Hydronic Mar 2021 (XLS))

See Instructions for directions on how to move a device between lists.

- Decision Matrix
  - (Cordwood & Pellet Stove Decision Matrix FEB 2021 (PDF))

- Statistics
  - (Simple Statistics FEB 2021 (PDF))

- Reports

Options for Addressing Deficiencies Through Retesting
- Options Document (Last Updated June 1, 2021) (PDF)
- M2BR report template (coming soon)
- Alt 1491DC report template (coming soon)
- Pellet report template (coming soon)
Summary of Findings

• No reports complete
  • Regardless of device type, test method
• All contain defects that could trigger rule revocation elements
• On average 12-21 defects per report – after manufacturer review
  • Original value: 16-21 defects per report
• Most significant issues
  • Did not report/obtain first-hour PM values and/or CO emissions
  • Failed to follow test methods:
    • Fuel length/Fuel volume
  • Contradictory information between owner’s manual and test reports
  • Testing at lowest emission rate
  • Aging (i.e., conditioning)

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<th>Pellet Stoves</th>
<th>Central Heaters</th>
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<td>Avg # of Audit Criteria per Report</td>
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<td>Avg # of Missing Report Elements per Report</td>
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New Stove Design or Redesigned Testing?

Step 1 Model – Owner’s Manual

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<th>Testing Information</th>
<th>Determination</th>
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<td>Wt Avg HHV Efficiency (%)</td>
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<td>Wt Avg CO (g/hi)</td>
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<td>Firebox vol. test report</td>
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Step 2 Model – Owner’s Manual

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Certification Test Report Review: Contradictory Information

132 certification test reports assessed

**Firebox volume**
- 46% report a different firebox volume in their materials than used in testing
- 43% materials matched

**Heat output**
- 75% do not match
- 22% match

**Efficiency**
- 28% do not match
- 65% match

**Fuel Length**
- 50% of M28R tests did not meet fuel length req.
- 68% of ASTM 3053 used shorter wood than recommended

### Table

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<th>Materials</th>
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<td>HHV efficiency (%)</td>
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<td>Firebox volume (ft³)</td>
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<td>Max heat output (Btu/hr)</td>
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<td>HHV efficiency (%)</td>
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Certification Test Report Review Results as of June 1, 2021

- Results will be updated as review continues
- Working with manufacturers to obtain information
- Working with EPA to determine most critical issues
- Working on options for addressing deficiencies through retesting

### Wood Stoves

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<th># of Reports Reviewed</th>
<th>Disapproved (emission threshold)</th>
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### Pellet Stoves

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<td>Not reported</td>
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<td><strong>Total</strong></td>
<td><strong>96</strong></td>
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<td><strong>34</strong></td>
<td><strong>43</strong></td>
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• **CONCERNS ABOUT EPA RWH CERTIFICATION PROGRAM INTEGRITY**
  • Serious deviations from rule requirements not identified by EPA OECA review
    • Process is not identifying basic and easily identifiable issues
  • Issues are widespread across many labs and manufacturers
  • Issues will impact the emission performance of the appliance
  • Found no complete test reports
    • 100% contained elements that should trigger revocation hearings under rule requirements
  • Lack of compliance assurance activities
    • EPA has not completed a single compliance audit for emission test in 30 years
    • Litigation currently underway related to NSPS audit provisions

• **ASTM TEST METHODS DEFICIENT AND REQUIRE REPLACEMENT or MAJOR REVISIONS**
  • Reviewers identified significant deficiencies within all ASTM Methods (2515, 2779, 2618, and 3053) that allow testing to reduce PM via lab practices rather than improved technology
  • At Alaska’s request, EPA recently adopted the Integrated Duty Cycle Cordwood Protocol as a Broadly Applicable Alternative Test Method (ATM) starting a pathway to cordwood test method improvement
  • A group of states, including Alaska, recently requested EPA revoke ASTM Method 3053 due to concerns
• **LACK OF TRANSPARENCY**
  • Certification test reports difficult to find
  • Public reports are inadequate to complete a full program assessment
  • Third-party oversight program data cannot be accessed
  • EPA broadly accepts data as Confidential Business Information

• **REPORT CONCLUSIONS**
  • ISO-accredited third-party certifiers and ISO-certified/EPA-approved labs are not following all rule requirements
  • States cannot rely on the federal program to identify cleaner appliances due to lax EPA oversight & ineffective test methods

• **EPA Acknowledgement - Letters to labs and third-party certifiers acknowledged “serious and systemic problems”**
DEC and FNSB Actions to Address Concerns

- Concerns related to wood heater certification have impacts to AQ programs within the nonattainment area
  - At a critical juncture with accelerated stove turnover
  - Need to ensure that new stoves are performing better than those they replace
  - DEC is working to provide a list of stoves whose tests support that they meet emission standards
  - Borough AQ program is proactively managing the change-out program to achieve targeted emission reductions
  - DEC is engaged with EPA Headquarters to push them to address issues and fix the national program

- To meet our local air quality objective, we need a well-functioning national certification program
  - It will take time for EPA to address issues and we don't have time!
  - An option, still in the concept phase, is independent testing of appliances to validate emissions.
Questions?