# $PM_{2.5}$ SIP Transportation Overview

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# PM2.5 SIP Process

- Proposed regulations and air quality plan released for public comment November 17, 2014
- Public Comment period closes December 19, 2014
- Several different ways to comment
  - Seeking FMATS review and recommendations on motor vehicle emissions budget
- DEC will review and consider the comments received, make adjustments if necessary, then adopt and transmit the plan to EPA
  - Deadline to submit $PM_{2.5}$ SIP to EPA by December 31, 2014

# Key Components of the Air Quality Plan

- Promote the installation of cleaner burning wood heaters
  - Local change out program
  - State emission standards for new devices
- Use best burning practices and seasoned, dry wood
  - Balance economically heating homes and healthy air
  - Save money
  - Make it easy for consumer to burn cleanly & efficiently
  - Proposed state requirement to burn dry wood in winter
- Expand the availability of natural gas in the area
  - Progress is being made
- Other programs and measures including transportation

# Air Quality Plan - Highlights

- DEC website allows you to access entire document or focus on specific sections of the SIP
- Plan includes local, state, and federal programs that help reduce pollution
  - Plan shows that it is not possible to achieve compliance by the end of 2015
  - More time is needed – compliance can be achieved by 2019
- SIP Section 7 contains transportation control measures
  - vehicle plug ins, mass transit, diesel anti-idling
- SIP Section 13 discusses conformity and motor vehicle emission budgets

# SIP Section 13
# Conformity and Motor Vehicle Emission Budgets

- Why budgets needed for SIP not demonstrating attainment by required 2015 deadline?
  - Triggered by Reasonable Further Progress (RFP) requirements in general preamble to Clean Air Act
  - RFP criteria required budgets for 2017 (3 years from 2014 SIP due date)
  - Separate budgets needed for $PM_{2.5}$ and NOx
- Budget methodology
  - Based on SIP emission inventory projections for motor vehicles, not tied to attainment
  - Calculations rely on fleet characteristics, VMT forecasts from 2012 MTIP, winter episode meteorology, MOVES 2010, use of plug-ins

# Motor Vehicle Emission Budgets

| | Motor Vehicle Emission Budgets (tons/day, non-attainment area) | |
|---|---|---|
| Calendar Year | PM2.5 | NOx |
| 2017 and later | 0.33 | 2.13 |

- Budgets established using MOVES 2010 as shown
- Budgets include plug-in effects that reduce fleet-wide $PM_{2.5}$ emissions by roughly 5%
- $PM_{2.5}$ budgets assume no fugitive road dust (winter)

# Current and Future PM2.5 Conformity Requirements

- Non-attainment areas without an approved SIP can use either of two "interim" conformity tests:
  - *Build vs. No-Build* – Build emissions cannot exceed No Build
  - *Not to Exceed Baseline* – Future year emissions cannot exceed baseline. Option selected by FMATS, 2008 baseline year, analysis years 2020, 2030, 2040. $PM_{2.5}$ and NOx (precursor).

- With an approved SIP, transportation plan emissions are compared to attainment budgets set in the SIP

- Plans don't conform if emissions exceed the SIP budgets

# Future Implications – PM2.5 SIP

- Current MTP used interim "not to exceed baseline" test for $PM_{2.5}$ in absence of approved SIP
- Deadline to submit $PM_{2.5}$ SIP to EPA by December 31, 2014
- EPA must determine if SIP is <u>complete</u> within six months, approval can take longer
- The SIP includes motor vehicle emission budgets (MVEBs) for $PM_{2.5}$ and NOx for calendar year 2017 and later:
  - $PM_{2.5}$ = 0.33 tons/day
  - NOx = 2.13 tons/day
- Budget tests required for regional transportation conformity determinations once EPA finds SIP MVEBs <u>adequate</u> (may occur prior to finding of completeness)

# Preliminary Analysis of Budget Tests

- Results from $PM_{2.5}$ conformity modeling for 2040 MTP were compared to the MVEBs in the Draft $PM_{2.5}$ SIP:

| MOVES2010 Vehicle Emissions | | |
|---|---|---|
| Calendar | (tons/day) | |
| Year | PM2.5 | NOx |
| 2020 | 0.327 | 2.21 |
| 2030 | 0.292 | 1.70 |
| 2040 | 0.314 | 1.77 |
| Budget | **0.33** | **2.13** |

- MTP NOx emissions over SIP budgets and $PM_{2.5}$ close in 2020
- MTP emissions likely higher due to differences in fleet characteristics between SIP and MTP modeling: SIP used 2010 DMV data, MTP based on 2014 DMV data

# Do We Have a Problem for Future Conformity?

- FMATS expects next conformity analysis in spring 2015
- If EPA finds SIP budgets adequate prior to that date, that conformity analysis will have to test MTIP emissions against the budgets – MTIP will not conform if budgets exceeded
- Two approaches considered to avoid this situation:
  - Incorporate safety margins in SIP budgets -
    - Adjust budgets upward to include anticipated safety margin
    - Not tied to attainment demonstration, but State-set rate of progress (for all sources, not just motor vehicles)
    - Timing challenging - SIP to EPA by December 31, 2014
  - Test future conformity using EPA's newest MOVES2014 model –
    - Current analysis based on MOVES2010
    - MOVES 2014 contains effects of latest Tier 3 standards
    - Two-year grace period from Oct 2014 to Oct 2016 allows either model to be used for conformity

# MOVES2014 Emissions Evaluation

- 2040 MTP emissions re-run using MOVES2014:

| MOVES2014 Vehicle Emissions | | |
|---|---|---|
| Calendar | (tons/day) | |
| Year | PM2.5 | NOx |
| 2020 | 0.23 | 1.76 |
| 2030 | 0.13 | 0.92 |
| 2040 | 0.10 | 0.76 |
| Budget | **0.33** | **2.13** |

- Changes in emission rates and Tier 3 vehicle and fuel effects results in lower future emissions using MOVES2014
- Using MTP growth assumptions (1.4% VMT/year), budgets will be easily met in 2020-2040
- Safety margins not needed, future conformity analysis can be conducted using MOVES2014

# FMATS Review and Approval of SIP Motor Vehicle Emission Budgets

- Interagency consultation and FMATS review important to developing emission budgets
- Analysis presented indicates that emission budgets are adequate without safety margins for any near term FMATS conformity analyses
- Seeking recommendation from FMATS approving the SIP emission budgets

# FMATS 2040 Metropolitan Transportation Plan Conformity Analysis

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**December 3, 2014**

# Conformity – What, Where and Why

- *What:* Transportation conformity is a way to ensure that Federal funding and approval goes to those transportation activities that are consistent with air quality goals.
- *Where:* Conformity applies to transportation plans, transportation improvement programs (TIPs), and projects funded or approved by FHWA or FTA in areas that do not meet or previously have not met air quality standards. These areas are known as "nonattainment areas" or "maintenance areas," respectively.
- *Why:* Fairbanks is a non-attainment area for fine particulates ($PM_{2.5}$) and a maintenance area for carbon monoxide (CO).

# Current PM2.5 Conformity Requirements

- Designated non-attainment for 24-hour $PM_{2.5}$ in Dec. 2009
- EPA published Transportation Conformity Rule PM Amendments effective April 2010 – addressed 24-hour $PM_{2.5}$ standard
- With an approved SIP, transportation plan emissions are compared to attainment budgets set in the SIP
- Deadline to submit $PM_{2.5}$ SIP to EPA by December 31, 2014
- Non-attainment areas without an approved SIP can use either of two "interim" conformity tests:
  - *Build vs. No-Build* – Build emissions cannot exceed No Build
  - *Not to Exceed Baseline* – Future year emissions cannot exceed baseline. Option selected by FMATS, 2008 baseline year, analysis years 2020, 2030, 2040. $PM_{2.5}$ and NOx (precursor).

# CO Conformity Requirements

- Fairbanks submitted CO Maintenance Plan in Apr. 2004 (demonstrating ambient standards were being met), EPA approved in Sep. 2004
- Maintenance Plan had 10-year horizon
- Fairbanks submitted a new CO Limited Maintenance Plan (LMP) which was approved by EPA in Aug. 2013
- With approved LMPs, emissions analysis and budget tests no longer needed, following conformity requirements still apply:
  - Transportation plans must still meet Interagency Consultation and timely implementation of TCMs criteria
  - Ambient monitoring must still continue
  - Project-level requirements still apply
  - Major changes in planning assumptions must be identified

# Consultation Procedures

- Interagency Consultation (IAC)
  - Conformity requires consultation among air and transportation agencies on conformity analysis issues, such as underlying assumptions and methodologies
  - Two IAC meetings held (Dec. 2013, Oct. 2014), documented in Appendix F of Draft Conformity Analysis
  - Key issues focused on new transportation model, emission modeling methods and SIP consistency
- Public Consultation
  - FMATS updated Public Participation Plan for 2040 MTP
  - MTP schedule includes public review
  - Final conformity analysis will incorporate response to public comments

# Conformity Analysis Summary

- New 2040 MTP travel modeling runs (2013 base year, 2040 forecast) used to model vehicle activity
- Updated fleet developed from Alaska DMV to fulfill "latest planning assumption" conformity requirements
- EPA's MOVES2010b vehicle emissions model used to estimate vehicle emissions in 2008, 2020, 2030, 2040 based on MTP travel activity
- Accounts for vehicle plug-in effects
- Emissions calculated within $PM_{2.5}$ non-attainment area
- Separate emission estimates also developed for CO maintenance area (not required, but done for completeness)

# PM Emission Test Results

- MTP vehicle emission modeling results:

| $PM_{2.5}$ Conformity Test Results | | | | |
|---|---|---|---|---|
| Analysis Year | $PM_{2.5}$ (tons per day) | $PM_{2.5}$ Emissions ≤ Base Year? | NOx (tons per day) | NOx Emissions ≤ Base Year? |
| 2008 Baseline | **0.584** | - | **5.478** | - |
| 2020 | 0.327 | **Yes** | 2.207 | **Yes** |
| 2030 | 0.292 | **Yes** | 1.702 | **Yes** |
| 2040 | 0.314 | **Yes** | 1.771 | **Yes** |

- 2040 MTP passes interim PM conformity test!

# CO Conformity Results

- Applicable conformity requirements and status:
  - *Interagency consultation criteria and TCM implementation requirements* – Interagency consultation included for both PM and CO elements, TCMs in the LMP (e.g. plug-ins) still in place
  - *Projects in LMP areas must meet criteria for CO hot-spots and screening analyses* – To be performed on a project-specific basis
  - *Affirm the continuation of ambient monitoring and that no violations of the CO standards have occurred* – Ambient monitoring still continuing in Fairbanks, highest levels in last three years less than 40% of the applicable standards
  - *Identify major changes in planning assumptions that could affect CO* – No significant changes in long-term planning assumptions other than travel growth (1.1% per year in last MTIP to 1.4% per year in MTP) – will not jeopardized maintenance based on CO emissions analysis

# 2040 MTP Conformity Findings

- All requirements of the Transportation Conformity Rule have been satisfied for $PM_{2.5}$ -- a finding of conformity for the new 2006 $PM_{2.5}$ standard is supported for the 2040 MTP.
- All requirements of Transportation Conformity Rule for CO under a Limited Maintenance Plan also met – a finding of conformity for the CO standards is also supported for the 2040 MTP.