Recommendations for Some MOVES Inputs

Sunil Kumar

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Recommendation – Inventory Development Approach

- Emissions Development Approaches
  - Emissions calculation method - Total Inventory Vs Emission Rate
  - Domain level – County Vs Custom Domain
  - Four (4) combinations of emissions development approaches possible –
    - 1. Total inventory - County
    - 2. Total inventory – Custom domain
    - 3. Emission rate – County
    - 4. Emission rate - Custom domain

- Comparison of Emissions Development Approaches
  - Emissions inventory development time
  - Emissions data submission to EPA – Data & format requirements for
    - A. National Emissions Inventory (NEI)
    - B. Base year SIP emissions inventory (NEI Format)
  - Comparison of emissions (Total Inventory Vs Emissions Rate)
    - Results available later, but a few important issues discussed here

Recommendation – Inventory Development Approach

Emissions Inventory Development Time

Attributes	Total Inventory	Emission Rate
Model Run Time – 1 Jurisdiction & 1 Milestone Year (Washington, DC - 2007)	Ozone – 25 minutes PM2.5 – 4.1 hours	Ozone – 4.75 hours PM2.5 – 64 hours
Estimated Inventory Development Time (Model Run Time + Post-processing Time) – Whole Nonattainment Area & 1 Milestone Year County Approach 1997 Ozone NAA (11 juris.) 1997 PM2.5 NAA (10 juris.) Custom Domain Approach 3 Custom domains – DC, MD, VA	County Approach Ozone – 5 hours (approx.) PM2.5 – 40 hours (approx.) Same as model run time, no additional post-processing time needed. Custom Domain Approach Ozone – 1.25 hours (approx.) PM2.5 – 12.3 hours (approx.) **Can not allocate custom domain level emissions to individual counties (MOVES Tech. Guidance, page 11-12).**	County Approach Ozone – 52 hours plus PM2.5 – 640 hours plus Custom Domain Approach Ozone – 14.25 hours plus PM2.5 – 190 hours plus Additional time needed to post-process emissions rates to develop total emissions. VMT conversion needed to match emissions rate output format requires a number of assumptions, might introduce loss of accuracy in emissions results. Chances of manual errors.

Recommendation – Inventory Development Approach

Emissions Data Submission to EPA

Attributes	Total Inventory	Emission Rate
National Emissions Inventory (NEI) & Base Year SIP Emissions Inventory Data (NEI Format) NEI Format Emissions by county and SCC	County Approach Emissions readily available by county and SCC (NEI format). No assumptions needed for emissions data conversion/reformatting. No chance of manual error or loss of accuracy in emissions results due to data conversion. Custom Domain Approach Emissions available by SCC, not by county **(Can not allocate custom domain level emissions to individual counties, MOVES Tech. Guidance, page 11-12).**	County Approach Emission rates available by county and SCC. Significant post-processing time & effort needed to calculate total emissions. Custom Domain Approach Emission rates available by SCC. Significant post-processing time & effort needed to calculate total emissions and then to allocate those emissions to different counties.

Recommendation – Inventory Development Approach

Comparison of Emissions
(Total Inventory Vs Emission Rate)

- **Results available later**
- **Important issues to keep in mind –**
  - **Emission rate is derived from total emission, which is calculated first by MOVES**

    (Emission rate = Total emission / distance traveled)
  - **Since emission rates are derived from total emissions, emissions inventories developed using emission rate approach must match total emissions developed by the model. So no added advantage in using ER approach.**
  - **VMT conversion for emissions rate processing requires a number of assumptions, which might introduce loss of accuracy in emissions results. Chances of manual errors.**
  - **What goes inside MOVES is very difficult to model outside.**

Recommendation – Inventory Development Approach (Summary of Findings)

Attributes	Inventory-Custom Domain	Inventory-County	Emission Rate-Custom Domain	Emission Rate-County
1. Emissions Inventory Development Time	Least time consuming	More than Inventory-custom domain, but less than both ER options	Less than ER-County, but still very time consuming, **Not practical**	Extremely time consuming (highest among all four options), **Not practical**
2. NEI & Base Year SIP Emissions Inventory (NEI Format)	**Not possible**	Readily available	Possible, but requires extensive post-processing, additional time needed	Possible, but requires significant post-processing, additional time needed
COG Recommendation (Based on above two factors)	**Use Inventory-County combination option.**			