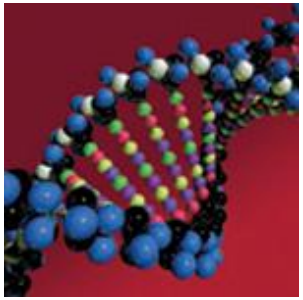
MOVES2010a and Representative Counties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ENVIRON

Overview

- Introduction to representative counties
- Project example using MOVES National Scale
- Extended idle emissions
- Questions/Discussion

What is a Representative County?

- **A county selected from a group of similar counties to represent the group**
  - Neighboring counties often have similar fleet age of emitting vehicles, subject to similar fuels programs, etc
  - Similar or identical model inputs produce similar or identical outputs
- **Example: State A has one O_3 nonattainment area**
  - Emission Rates for (1) Control Area
  - Emission Rates for (2) the rest of the state
  - VMT, vehicle population, (speeds) for all counties in State A
  - Post-processing required
  - Shorter MOVES run duration

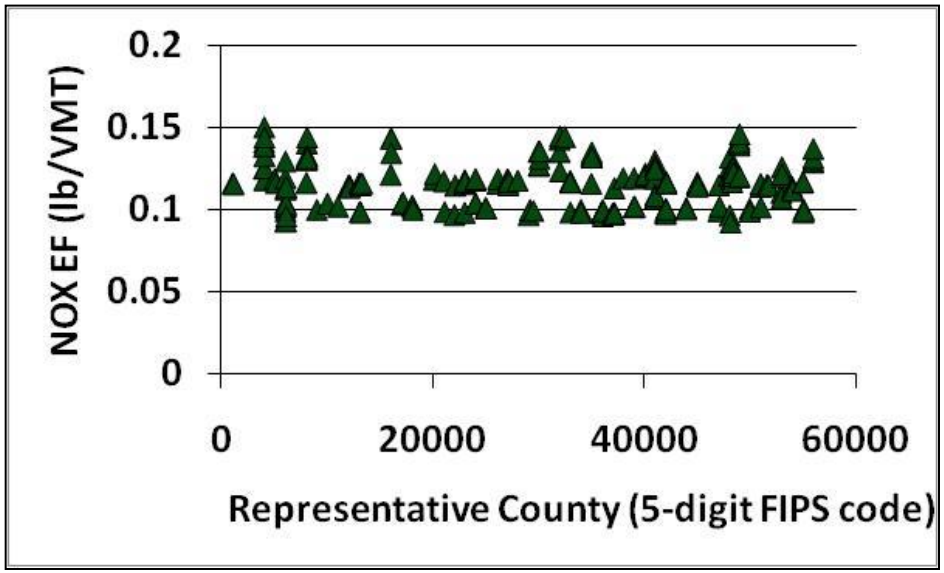
Project Examples using Representative Counties

- **Project #1: Nationwide Emissions by County for "what-if" scenarios**
  - Impacts of light duty technology standards on air quality: What if we were still at Tier 1?
  - MOVES **Inventory** Calculation Type for ~200 representative counties to represent the nation's ~3,200 counties
- **Project #2: Regional Emissions by Grid Cell**
  - MOVES **Emission Rate** Calculation Type
  - Requires a post-processor to combine lookup tables with activity
    - SMOKE
    - CONCEPT or other link-level processor

Project Example: Nationwide Emissions by County for What-If Scenarios

- **National Domain/Scale (default data model data)**
- **Inventory Calculation Type**
- (1) Queried the default database to group counties with similar underlying data
- (2) Selected ~200 counties to represent ~3,200 counties
- (3) Ran MOVES for Jan/Jul Average Day emissions of VOC, CO, NO_X, PM, NH_3, SO_2 and VMT for 200 counties
- (4) Post processed output to develop nationwide inventory
  - Representative County emissions divided by VMT activity
  - 3,200 County VMT from National County Database in NMIM

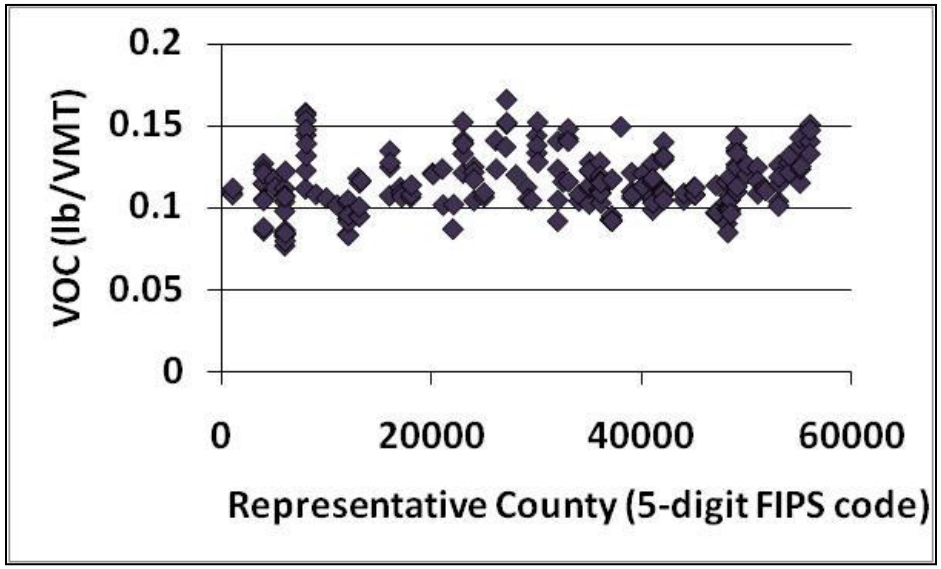
Representative County Emission Rates MOVES2010a database data (1/2)

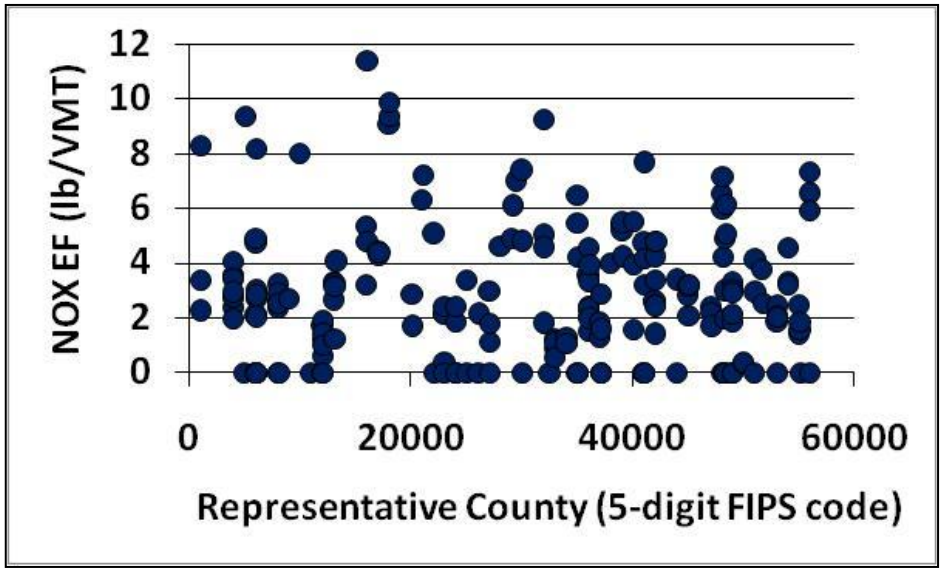


- Running Exhaust NO_X
- SCC 221000111
- July 2030

- Goal: capture regional variation based on default database *movesdb20100830*
- Differences in base data:
  - County specific data
    - T and RH, I/M, Fuels
    - Off-network activity (parked time and extended idle)
- Similarities in base data:
  - Does **not** contribute to scatter plot variation of EFs
  - Nationwide defaults
    - Age distribution
    - Speed distribution

Representative County Emission Rates MOVES2010a database data (2/2)





- Start Exhaust VOC
- SCC 220100100
- Jan 2030

- Extended Idle NO_X
- SCC 223007400
- July 2030

What to do about Extended Idle and representative counties?

- Activity basis (Source Hours Idling) is county specific
  - 'idleAllocFactor' field in `zone` table of MOVES database
- Emission factors (gram/vehicle/hour) for extended idle vary by location due to time spent idling per hour
- Not scalable by VMT or Population
- Solutions?
  - Preaggregate `idleAllocFactor` over county groups?
  - Don't use representative county framework for idle?