2023 MARAMA SIP Development Workshop

Clean Air Act Section 110(l) Noninterference Demonstrations (Anti-Backsliding Requirements)

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North Carolina Department of Environmental Quality, Division of Air Quality

Topics Covered

- Clean Air Act (CAA) Section 110(l) Requirements for Noninterference Demonstrations (NID)
  - Remove or relax a control measure adopted in a State Implementation Plan (SIP)
- Applicability and Eligible Control Measures
- Designing a NID (Case-by-Case)
- North Carolina NID Example:
  - Relax Federal Summertime Low-Reid Vapor Pressure (RVP) Requirement for Gasoline for Ozone Maintenance Areas
- Other North Carolina Examples

Acronyms and Abbreviations

Acronym	Definition
CAA	Clean Air Act
CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
I&M	Inspection and Maintenance
MVEB	Motor Vehicle Emission Budget
NAAQS	National Ambient Air Quality Standards
NID	Noninterference Demonstration
NNSR	Nonattainment New Source Review
NOx	Nitrogen Oxides
PSD	Prevention of Significant Deterioration
psi	Pounds per Square Inch
RACM	Reasonably Available Control Measures
RACT	Reasonably Available Control Technology
RFP	Reasonable Further Progress
RVP	Reid Vapor Pressure
SIP	State Implementation Plan
VOC	Volatile Organic Compound

CAA Section 110(l)

"*Each revision to an implementation plan submitted by a State under this chapter shall be adopted by such State after reasonable notice and public hearing. The Administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in section 171 of this title), or any other applicable requirement of this Act.*"

- Air agency must demonstrate that any modification to its SIP will not interfere with attainment and maintenance of any of the National Ambient air Quality Standards (NAAQS), Rate of Progress (ROP) (1-hour ozone) / Reasonable Further Progress (RFP) (8-hour ozone) requirements, or any other applicable requirement of the CAA.

- Example: Removing a control measure from a SIP.

EPA Reference Documents

- *Demonstrating Noninterference Under Section 110(l) of the Clean Air Act When Revising a State Implementation Plan*, DRAFT, USEPA, June 8, 2005.
  - o Draft guidance is provided as an attachment to this presentation.
  - o Note: While the draft guidance provides some foundational information, the Section 110(l) NIDs will need to be prepared for very specific circumstances. Therefore, it is important for air agencies to coordinate with their relevant EPA Regional Office to define the technical specifications for developing the Section 110(l) NID to ensure it meets EPA approval criteria.

- *Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures*, Memorandum from Stephen D. Page, Director, Office of Air Quality Planning and Standards, to Regional Air Division Directors, August 7, 2012.
  https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/20120807_page_stage2_re

Applicability of CAA Section 110(l) Noninterference Demonstration (NID)

- Applies to all requirements of the CAA.
- Applies to all areas of the country regardless of classification (i.e., attainment, nonattainment, unclassifiable or maintenance) for all of the six criteria pollutants and all applicable requirements (e.g., RACT/RACM, I&M, NNSR, PSD).
- Applies to all pollutants whose emissions and/or ambient concentrations may change as a result of the SIP revision.
- NID not required for a revoked NAAQS (e.g., 1979 1-Hour Ozone NAAQS)
  - However, the State must demonstrate noninterference with any relevant or applicable CAA requirement including a measure adopted in its SIP for a prior NAAQS.

Affected Control Measures

- “Mandatory” control measures
  - o SIP requirement for an area based on designation status (nonattainment) and classification (e.g., moderate and above for ozone NAAQS).
  - o Cannot be removed from the SIP unless the area is redesignated to attainment and EPA approves the Section 110(l) NID.
- “Discretionary” control measures
  - o Measures not tied to an area’s classification or not mandated by the CAA.
  - o Can be removed from an attainment, nonattainment or maintenance plan if EPA approves the Section 110(l) NID.
- Certain CAA sections may prohibit an area from removing a control measure:
  - o General Savings Clause (Section 193) – applies only to nonattainment areas for measures adopted into the SIP before the 1990 CAA Amendments
  - o Significant Interstate Contribution (Section 110(a)(2)(D))
  - o Interstate Ozone Transport Region (Section 176A and Section 184)

How Does an Air Agency Design a NID?

- Consult with your EPA Regional Office for Guidance.

- Two options for the affected pollutant(s):
  1. Substitution of one measure by another with equivalent or greater emissions reductions/air quality benefit. Substitute measure emission reductions should be quantifiable, permanent, surplus, enforceable and contemporaneous (when the substitute is a new measure); or
  2. Air quality analysis showing that removing the measure will not interfere with other applicable requirements (i.e., without a substitute measure).
     - Review of monitoring data and emissions data is generally adequate.
     - If considering air quality modeling, discuss with your EPA Regional Office

How Does an Air Agency Design a NID?

- Pollutants Covered:
  - Focus of demonstration depends on the NAAQS for which the control measure was adopted, but pollutants for all NAAQS must be addressed.
- Geographic scale: Depends on the control measure (maintenance area, statewide, regional).
- Sectors Affected:
  - o All anthropogenic source sectors unless (otherwise directed by your EPA Regional Office) to understand the magnitude of emissions increases relative to total emissions for all sectors.
- Timing:
  - o The analysis should be "contemporaneous" to the time when the change to the control measure is expected to occur (e.g., year for emissions analysis).
  - o Contemporaneous means within 1 year before or after implementation of the change.
  - o Overall schedule needs to include time for EPA to complete its approval process (up to 18 months).

Example: Relaxation of Federal Summertime Low-Reid Vapor Pressure (RVP) Requirement for Gasoline

- RVP - a measure of fuel volatility that is linked with increases in evaporative (VOC) emissions from gasoline powered vehicles and equipment.
- EPA promulgated volatility regulations in 40 CFR Part 80.27(a)(2) that set maximum RVP standard of 9.0 pounds per square inch (psi) for attainment areas and 7.8 psi for nonattainment areas.
- North Carolina areas subject to ozone season 7.8 psi gasoline requirement due to moderate nonattainment designation for the 1979 1-hour ozone NAAQS:
  - o Triad: Davidson, Forsyth, Guilford, and Davie
  - o Triangle: Wake, Durham, and Granville
  - o Charlotte: Mecklenburg and Gaston

Example: Reasons for Seeking RVP Relaxation

- All 3 areas in compliance with the ozone NAAQS at the time the request to remove the RVP requirement was submitted to EPA.
  - 1979 1-hour, and 1997 and 2008 8-hour standards

- Request from North Carolina Petroleum and Convenience Marketers to study relaxation from 7.8 to 9.0 psi
  - Citing economic disadvantage between adjacent counties without stricter RVP requirements that are able to sell cheaper gasoline.
  - 7.8 psi gasoline was on average 9.4 cents/gallon more expensive in summer of 2012.
  - Cost difference of $13.1 million in the Triad and $13.8 million in the Triangle cited by the industry

- North Carolina is NOx-limited for ozone formation

Example: Required Steps for Each Area

1. Air Agency:
   - Prepare CAA Section 110(l) NID
     - Define technical specifications and discuss with EPA Region IV staff to make sure analytical design is correct
   - Revised Maintenance Plan (including Motor Vehicle Emission Budgets (MVEBs))
   - Public Notice and Comment
   - Submit final NID and Revised Maintenance Plan to EPA Region IV

2. EPA Region IV review and approval of the NID and SIP revision (after addressing any comments received during public comment on proposal)

3. Extra Steps for RVP Removal from SIP
   - EPA Administrator amends federal gasoline volatility rule for the areas

   - North Carolina Department of Agriculture and Consumer Services implements the new RVP standard

Example: Study Design/Approach

1. Air Quality Analysis
   - o Impact on Ozone NAAQS due to increases in VOC emissions
     - o Summary of attainment status and design value trends for all four standards (1979 1-hour and 1997, 2008, and 2015 8-hour standards)
   - o Address impact of relaxing RVP on all NAAQS (if no impact need to state why)
2. Emissions Analysis
   - o Pollutants: VOC and NOx (Ozone Season Summer Day)
   - o Onroad Mobile: MOVES2014 modeling
   - o Nonroad Mobile: MOVES2014 modeling
   - o Point and Area Sources: Triennial inventory grown to future years
3. Time periods: base year and future years (after implementation)
4. Geographic areas: each maintenance area county subject to 7.8 psi RVP requirement

Example: Results for Charlotte Area

Comparison of Emissions Increases to Safety Margins

Year	Increase in Anthropogenic Emissions (tons/day)		Change in Daily Anthropogenic Emissions (%)	
	VOC	NOx	VOC	NOx
2015	0.42	0.11	0.38%	0.09%
2026	0.32	0.01	0.32%	0.01%
Safety Margins				
2014 – 2026	12.66	62.64		
Increase as % of Safety Margin	3.3-2.5%	0.2-0.02%		

Example: Conclusions for Charlotte Area

- Conclusions
  - VOC emissions increases are minor relative to biogenic emissions from natural sources.
  - Charlotte Area is NOx-limited - the control of NOx emissions result in greater reductions of ozone compared to VOC emissions.
  - Small increase in VOC and NOx emissions have minimal impact on the safety margin for each pollutant.
  - Increases are not expected to have any measurable impact on ozone concentrations.
  - Relaxation of the RVP standard will have little to no impact on emissions of PM, SO2, NO2, CO, or Pb, or their related precursors and, therefore, little to no impact on the other NAAQS.
- EPA approved the 110(l) demonstration, maintenance SIP revision, and federal rule change related to RVP.

Example: References

References:

Charlotte Area: http://deq.nc.gov/about/divisions/air-quality/air-quality-planning/state-implementation-plans/charlotte-gastonia-salisbury-nc-2008-8-hour-ozone-area

Triangle Area: http://deq.nc.gov/about/divisions/air-quality/air-quality-planning/state-implementation-plans/raleigh-durham-chapel-hill-area

Triad Area: http://deq.nc.gov/about/divisions/air-quality/air-quality-planning/state-implementation-plans/greensboro-winston-salem-high-point-area

Other North Carolina Examples

Substitution Method

- Revisions to state's Inspection and Maintenance (I&M) Program
  https://www.deq.nc.gov/about/divisions/air-quality/air-quality-planning/state-implementation-plans-sips/inspection-and-maintenance-program-sip
  - From 2010 – 2020, I&M SIP revised several times to remove counties and reduce vehicle model year coverage.
  - NOx emission increases offset by (1) increasing I&M compliance rate; and (2) NOx emission reductions form State's Clean Smokestacks Act.

Air Quality and Emissions Analysis Method

- Repeal of Transportation Facilities Rules
  https://www.deq.nc.gov/about/divisions/air-quality/air-quality-planning/state-implementation-plans/nc-clean-air-section-110i-noninterference-demonstration-repeal-transportation-facilities-rules
- Removal NO_2 Emissions Control Requirements from Nitric Acid Manufacturing Plants
  https://deq.nc.gov/about/divisions/air-quality/air-quality-planning/state-implementation-plans/pre-hearing-draft-north-carolina-clean-air-act-section-110l-noninterference-demonstration-removal
- SIP Revisions to revise 15A NCAC 02D .0902 to narrow the Applicability of Work Practices for Sources of Volatile Organic Compounds from Statewide to Apply Only to the Metrolina Maintenance Area for the 1997 8-Hour Ozone Standard
  https://www.deq.nc.gov/news/events/public-comment-period-begins-pre-hearing-draft-north-carolina-clean-air-act-section-110l

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