

# Appendix F

## Correspondence and Guidance

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North Carolina Department of Environment and Natural Resources  
Division of Air Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary  
B. Keith Overcash, P.E., Director

September 16, 2005

**Subject:** Development of Motor Vehicle Emissions Budgets

Dear Transportation Partner:

The North Carolina Division of Air Quality (NCDAQ) is developing the attainment demonstrations for 8-hour ozone and PM<sub>2.5</sub> nonattainment areas in North Carolina. The State Implementation Plan (SIP) attainment demonstration submitted to the U. S. Environmental Protection Agency (USEPA) establishes the motor vehicle emissions budgets (MVEBs) that will be used in future transportation conformity demonstrations once approved or deemed adequate by the USEPA. At stakeholder meetings held throughout 2005, NCDAQ presented different approaches for setting MVEBs. As a result of the feedback received by NCDAQ during the stakeholder meetings, the decision was made to develop a policy memo that provides an explanation of NCDAQ's preference for the geographical basis of MVEBs in nonattainment areas and clearly outlines the procedures and timelines for setting those MVEBs.

NCDAQ believes that the MVEBs should be set at the county level. The reason NCDAQ believes this is appropriate is as follows:

- The motor vehicle emissions generated for SIP attainment demonstration are by county; therefore, developing county level MVEBs would maintain consistency with the attainment modeling. County level sub-area MVEBs provide additional assurance that future conformity determinations, transportation plans, and TIPs will produce emission patterns that will achieve and maintain the National Ambient Air Quality Standards (NAAQS).
- County level sub-area MVEBs preserve the growth projected by Metropolitan Planning Organizations (MPOs)/Rural Planning Organizations (RPOs)/North Carolina Department of Transportation (NCDOT). NCDAQ has relied on MPOs/RPOs/NCDOT to provide these future projections of vehicle miles traveled (VMT) in the SIP process and will continue to rely on MPOs/RPOs/NCDOT as the source of this data throughout the MVEB setting process.
- County level sub-area MVEBs would eliminate the requirement for a new conformity analysis for all MPOs/RPOs in the nonattainment area if one of the MPOs/RPOs revises or updates their respective long range transportation plan or transportation improvement program when there are conforming plans in place for the other areas. In a situation where there are conforming plans in place and there are county level sub-area MVEBs, if one MPO in the nonattainment area had a conformity lapse, the neighboring MPOs/RPOs would not be impacted until their next conformity determination was due.

**Planning Section**

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- If an area-wide MVEB involving multiple MPOs/RPOs is set and conformity cannot be demonstrated, it could take significantly longer to resolve which projects should be removed from the various plans. If resolution is not reached in a timely manner, it could result in a conformity lapse for the entire nonattainment or maintenance area.

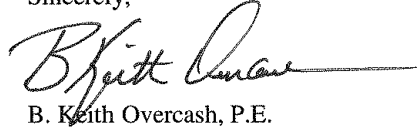
An important component to the SIP development process is interagency consultation. Therefore, NCDAQ requests feedback from the transportation partners on MVEBs development. NCDAQ's preference is not to set MVEBs for areas less than a county boundary since the emission estimates are made on a county level basis. The exception to this would be partial counties designated as nonattainment. Additionally, NCDAQ prefers not setting MVEBs based on MPO/RPO boundaries since this would result in having to update the MVEBs every time the MPO/RPO boundaries change. The process for recommending other approaches is provided below.

- Transportation partners are invited to provide in writing their preferred approach to setting MVEBs. If setting MVEBs for area-wide or multi-county sub-area is the desired approach, then it must be agreed upon by all of the transportation partners that are responsible for conducting conformity analyses for that area. This includes the MPO(s) and NCDOT after consultation with the RPO(s).
- NCDAQ requests that all written submittals outlining a MVEB approach that consists of more than one county (i.e., area-wide or multi-county sub-areas) include a technical explanation as to why the MVEBs should be set as such. This explanation should include information that illustrates the similarities between the counties listed in the approach such as, but not limited to: degree of urbanization, commuting patterns, expected population and VMT, and expected population and VMT growth rates.
- All requests should be submitted for consideration to NCDAQ by **January 16, 2006**. This will allow NCDAQ time to review and respond to the requests prior to finalizing the documentation for the SIP in February 2006.
- Requests should be submitted to the attention of the Attainment Planning Branch Chief, Laura Boothe, 1641 Mail Service Center, Raleigh, NC 27699-1641.

NCDAQ is responsible for submitting the SIP attainment demonstration and ensuring that the measures in the demonstration will allow the area to attain, as well as maintain the NAAQS. Transportation conformity was designed to help ensure that transportation plans, programs, and projects do not produce new air quality violations, worsen existing violations, or delay timely attainment of NAAQS. NCDAQ will take into consideration the recommended approaches from the transportation partners when developing the MVEBs. The transportation partners will have an opportunity to review the draft final MVEB approach prior to the SIP going through the public hearing process.

NCDAQ is committed to working with all of our partners during this process to determine the best course of action in achieving and maintaining air quality goals. If you should have any questions, please contact Laura Boothe of my staff at (919) 733-1488 or [laura.boothe@ncmail.net](mailto:laura.boothe@ncmail.net).

Sincerely,

A handwritten signature in black ink, appearing to read "B. Keith Overcash", with a long horizontal flourish extending to the right.

B. Keith Overcash, P.E.

BKO:lab

cc: Sheila Holman, NCDAQ  
Laura Boothe, NCDAQ  
Mike Abraczinskas, NCDAQ  
Lynorae Benjamin, USEPA  
Amanetta Wood, USEPA  
Eddie Dancausse, FHWA  
Loretta Barren, FHWA



**CABARRUS - ROWAN URBAN AREA  
METROPOLITAN PLANNING ORGANIZATION**

CABARRUS COUNTY • CHINA GROVE • CLEVELAND • CONCORD • GRANITE QUARRY • HARRISBURG • KANNAPOLIS  
LANDIS • MOUNT PLEASANT • ROCKWELL • ROWAN COUNTY • SALISBURY • SPENCER

February 8, 2006

Ms. Laura Boothe  
Chief of Attainment Planning Branch  
North Carolina Division of Air Quality  
1641 Mail Service Center  
Raleigh, NC 27699-1641

**RECEIVED**

FEB 10 2006

NC DAQ  
PLANNING SECTION

Dear Ms. Boothe:

**Subject: Endorsement of County Level Emission Budgets**

This letter is to transmit the Cabarrus-Rowan MPO endorsement of the county level emission budgets for Cabarrus and Rowan Counties as part of the development of the State Implementation Plan (SIP). The Cabarrus-Rowan Transportation Advisory Committee voted on January 18, 2006 to support the position and rationale given by the North Carolina Division of Air Quality in favor of county level emission budgets. We appreciate the opportunity to comment on this important state decision and look forward to participating as a stakeholder in future discussions on the SIP.

If you should have any questions regarding this letter, please contact Phil Conrad or I at (704) 795-7528.

Sincerely,

Mike Nunn, AICP  
Executive Director

cc: Mr. Don Bringle, TAC Chair  
Mr. Dan Mikkelsen, TCC Chair  
Ms. Linda Dosse, NCDOT

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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

January 31, 2006

Ms. Laura Boothe  
NC Division of Air Quality  
1641 Mail Service Center  
Raleigh, North Carolina 27699-1641

Subject: Development of Motor Vehicle Emissions Budgets

Dear Laura:

In response to your September 16, 2005 letter concerning development of Motor Vehicle Emissions Budgets (MVEB) we are providing the following comments for the Metrolina and Triangle regions.

For the Metrolina region, the Cabarrus-Rowan MPO has elected to support the county-level MVEB for Cabarrus and Rowan counties. The Mecklenburg-Union MPO and Gaston Urban Area MPO have requested a sub-area budget that includes all nonattainment counties in the region except for Cabarrus and Rowan. The Lake Norman and Rocky River RPOs also support a sub-area budget that includes all the nonattainment counties except for Cabarrus and Rowan. While NCDOT has supported a countywide budget, we recognize that our planning partners in the region have fully discussed this issue and have taken their position based on valid technical reasons. We do not oppose the county-level budget for Cabarrus and Rowan counties and a sub-area budget for the remainder of the nonattainment area.

For the Triangle region, the Durham-Chapel Hill-Carrboro MPO has elected to support the county-level MVEB. The Capital Area MPO has requested a sub-area budget that includes Franklin, Granville, Johnston, and Wake counties. The Kerr-Tar RPO supports a sub-area budget that includes all the nonattainment counties except for Durham and Orange counties. While NCDOT has supported a countywide budget, we recognize that our planning partners in the region have fully discussed this issue and have taken their position based on valid technical reasons. We do not oppose the county-level MVEB for Durham, Orange, and Person counties and a sub-area budget for Franklin, Granville, Johnston, and Wake counties.

NCDOT recognizes that NC Division of Air Quality has the responsibility and authority to establish MVEB for North Carolina and we fully support the course of action you choose to achieve and maintain the air quality goals for our State. Thank you for working with us and our planning partners throughout the State as we have wrestled with this issue. If you have any questions concerning our position or would like to discuss SIP development further with NCDOT, please do not hesitate contacting me at 919-715-5482 ext. 389.

Sincerely,

Dan Thomas, P.E.  
Technical Services Unit Head

cc: Mike Abraczinskas, NC Division of Air Quality  
Mike Bruff, P.E., NCDOT

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bcc: Jamal Alavi, P.E., NCDOT  
Derry Schmidt, P.E., NCDOT

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NC DAQ  
PLANNING SECTION

February 16, 2006

Ms. Laura Boothe  
Chief of Attainment Planning  
Division of Air Quality North Carolina Department of Environment and Natural Resources  
1641 Mail Service Center  
Raleigh, NC 27699-1641

Dear Ms. Boothe:

SUBJECT: Comments on setting the Metrolina Non-Attainment Area's Motor Vehicle Emissions Budgets for attaining the 8-hour Ozone National Ambient Air Quality Standard (NAAQS).

The Gaston Urban Area MPO, the Mecklenburg-Union MPO, the Lake Norman RPO, and the Rocky River RPO all recognize and appreciate the leadership and efforts of the North Carolina Department of Environment and Natural Resources (DENR), Division of Air Quality (DAQ) in developing the State Implementation Plan (SIP) to address ozone pollution in the Metrolina region. As a part our state's plan for improving air quality, the SIP will include Motor Vehicle Emission Budgets (MVEB) with limits on the amounts of Nitrogen Oxides (NO<sub>x</sub>) and Volatile Organic Compounds (VOCs) that may be emitted by on-road motor vehicles in the Metrolina Ozone Non-attainment Area (i.e., the North Carolina portion of what EPA calls the "Charlotte-Gastonia-Rock Hill, NC-SC" nonattainment area).

Historically, the Division of Air Quality has set such emission budgets for each county designated as being in nonattainment, and on behalf of DAQ you have indicated this to be your preference for development of the upcoming SIP for attaining the eight-hour ozone NAAQS. That preference was explained in your memorandum dated September 16, 2005 that invited DAQ's transportation partners (i.e. MPOs, RPOS, and NCDOT) to provide in writing their preferred approach to setting MVEBs by February 20, 2006. We write to you today to provide those comments.

Our reasons for originally preferring a single, region-wide budget are due to:

1. Our concerns about the uncertainty associated with the accuracy and subsequent applied precision of the mobile source emissions models used by NCDAQ (as required by the U.S. Environmental Protection Agency),
2. The accuracy and subsequent applied precision of the air quality model used to help set the emissions budgets for mobile sources in the SIP,
3. Our preference to maximize our flexibility to manage regional growth.

The results of an extensive research effort that was conducted to calculate vehicle emission factors using Mobile 5a (a recent and very similar, but not current version of the Mobile emissions model) are documented in the "National Cooperative Highway Research Program (NCHRP) Report # 394 - Improving Transportation Data for Mobile Source Emission Estimates (1997)". The conclusion reached in that report was that the likely actual vehicle pollutant emissions could easily vary from those predicted by the Mobile model by as much plus or minus forty (40) percent. Mainly, this was due to the uncertainty associated with the extensive variety of transportation-related input parameters required by the Mobile model

(such as vehicle fleet mix, median age of vehicles, daily vehicle miles of travel and average speeds by facility type, percentage of cold vs. hot starts, etc.). Page 49 from that report, which includes the summary of the study findings, is attached for reference.

Motor vehicle emissions estimates used for setting the MVEB budgets, although quite uncertain, result in budgets that are applied very precisely as the means to demonstrate that an area's transportation plans and programs continue to conform to the SIP. Unfortunately, most elected officials and citizens are not aware of the details of just how precisely these relatively uncertain emissions estimates are applied in the typical regulatory context of demonstrating air quality conformity.

Although the MVEBs set in the SIP for attaining the 8-hour ozone standard will be for the attainment demonstration year of 2009, that 2009 budget may need to be used to demonstrate conformity for our Long-Range Transportation Plan (LRTP) for planning year horizons as far into the future as 40 years from now. We acknowledge that, with the recent approval of the federal transportation reauthorization (SAFETEA-LU), there is a possibility that may result in this not being required. Nonetheless, there does remain the distinct possibility that this very precise, but possibly not very accurate comparison of motor vehicle emissions against motor vehicle emissions budgets could be required for many more years as well. We are especially concerned that MVEBs for individual counties would exacerbate the mismatch between precision and accuracy. Long-range, future year comparisons to county-based MVEBs would have greater levels of uncertainty associated with a variety of additional factors than region-wide MVEBs. Greater limitations would occur in counties than in a region for factors affecting: (1) whether or not the area actually grows as forecasted in the transportation model, (2) what types of planned mobility improvements actually get implemented, (3) the types of vehicles actually driven in the future as opposed to what we forecast today.

There is uncertainty accompanying model predictions. For numerous reasons, model estimates will not perfectly predict observed air quality at any given location, neither at the present time nor in the future. The U.S. EPA<sup>1</sup> recommends using models in a relative sense in concert with observed air quality data. While this approach should reduce some of the uncertainties of getting the predictions in the vicinity of a monitor to more closely match the measured concentration at that monitor, it neither addresses the latent uncertainty of the precise emissions origin, nor the actual path the emissions took, nor the actual chemistry involved, to result in the modeled prediction.

Past modeling analyses have shown that future design value uncertainties of 2-4 ppb can result from use of alternate, yet equally appropriate, emissions inputs, chemical mechanisms, and meteorological inputs<sup>2, 3</sup>. This is roughly equivalent to a NO<sub>x</sub> MVEB uncertainty of 10-

<sup>1</sup> Guidance on the Use of Models and Other Analyses in Attainment Demonstrations for the 8-hour Ozone NAAQS. EPA-454/R-05-002, October 2005.

<sup>2</sup> Jones, Jennifer M., C. Hogrefe, R. Henry, J. Ku, and G. Sistla, (2005), "An Assessment of the Sensitivity and Reliability of the Relative Reduction Factor Approach in the Development of 8-hr Ozone Attainment Plans", JAWMA, 55 (1), 13-19.

<sup>3</sup> Sistla, G., C. Hogrefe, W. Hao, J. Ku, R. Henry, E. Zalewsky, and K. Civerolo, (2004), "An Operational Assessment of the Application of the Relative Reduction Factors in the Demonstration of Attainment of the 8-Hour Ozone National Ambient Air Quality Standard", JAWMA, 54 (8), 950-959.

40 tons per day.

Given all these uncertainties, at least one major magnitude of possible error, that being how much regional emissions sub-allocated by budget to each county within the Metrolina non-attainment region, would be eliminated by having a single emissions budget for the entire non-attainment area.

As we see it, the much larger single geographic domain would have several management advantages including; (1) reducing from seven to one the number of budget comparisons to potentially fail for reasons that could be solely due to inaccurate model parameter assumptions and results; (2) in the event of an exceedance triggering a funding lapse, increasing the area over which air quality improvement solutions could be devised and applied; and, (3) encouraging close cooperation among all the stakeholders involved throughout the Metrolina non-attainment area so that our shared air quality improvement efforts are proactively and effectively addressed.

We acknowledge that the Cabarrus-Rowan MPO has recently decided to support county-level MVEBs for Cabarrus County and Rowan County. We would have preferred a different outcome. Their decision is the only reason why we are not requesting a single MVEB for the entire Metrolina region as we would prefer. Our preferred regional approach, since we have not been able to change the action of the Cabarrus-Rowan MPO, is that we recommend and respectfully request having a single consolidated MVEB for the entirety of the Metrolina nonattainment area, excluding Cabarrus and Rowan Counties. The appropriate resolutions from the above-named MPOs and RPOs reflecting this agreement are provided as attachments to this letter. Also attached is additional information providing further detailed technical justification to support this request.

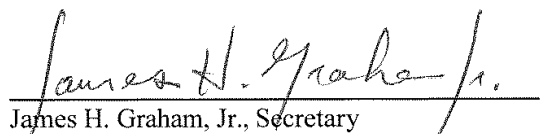
Because of the overarching importance of the outcome of SIP emissions budgets setting process, regardless of what geographic area(s) are ultimately used for setting the MVEBs in the Metrolina non-attainment region, we also respectfully request the opportunity to review and concur with the motor vehicle emissions budgets and transportation-related input parameters to the emissions model before they become finalized for the 30-day public comment period and subsequent inclusion in the North Carolina's SIP for attaining the eight-hour ozone NAAQS.

As always, all of the members of the Gaston Urban Area MPO and Mecklenburg-Union MPO, as well as the Lake Norman RPO and Rocky River RPO greatly appreciate your Department's leadership and steadfast commitment to improving North Carolina's air quality. As evidenced once again by your solicitation for input on this important matter, we are grateful for your long-standing commitment to seeking consensus among our many and varied stakeholders in cooperatively developing effective action plans for improving air quality in North Carolina.

We look forward to continuing to work closely with your department and our regional partners in developing and implementing a plan for improving air quality that also reinforces our efforts to sustain both the economic growth and overall quality of life for the Metrolina region through cooperative and closely coordinated planning and implementation of multi-modal transportation investments. If you have any comments, or need any additional

information or assistance on this or other matter, please do not hesitate to contact either of us at the e-mail address or telephone numbers indicated below.

Sincerely,



James H. Graham, Jr., Secretary  
Gaston Urban Area Metropolitan Planning Organization  
hankg@cityofgastonia.org  
704-854-6663



Robert W. Cook, Secretary  
Mecklenburg-Union Metropolitan Planning Organization  
rwcook@ci.charlotte.nc.us  
704-336-8463



Rebecca Yarbrough, Secretary  
Lake Norman Rural Planning Organization  
Rocky River Rural Planning Organization  
ryarbrough@centralina.org  
704-348-2704

Attachments:

1. NCHRP Report #394 – Improving Transportation Data for Mobile Source Emission Estimates (1997), Table 4-7
2. GUAMPO Resolution
3. MUMPO Resolution
4. Lake Norman RPO Resolution
5. Rocky River RPO Resolution
6. Issue Paper: Technical Considerations for Motor Vehicle Emissions Budgets

cc: Mike Bruff, P.E., Transportation Planning Branch  
TAC & TCC members

TABLE 4-7 Individual and combined effects of input errors

Case	Input Parameter	True Value vs. Estimated Value	Percentage Difference in Emission Rates <sup>1</sup>		
			CO	VOC	NO <sub>x</sub>
Freeway	Speed	65 vs. 60 mph	+42%	+13%	+16%
	HDDV Mix	10.6 vs. 6.2%	-1%	-1%	+18%
	Median Age of Vehicles	7.5 vs. 6.5 yrs	+7%	+8%	+6%
	All Three Combined (Compounded Effect)		+46%	+19%	+44%
Arterial	Speed	45 vs. 40 mph	-8%	-7%	+3%
	HDDV Mix	1.0 vs. 3.1%	-8%	-4%	-3%
	Median Age of Vehicles	5.5 vs. 6.5 yrs	-14%	-12%	-9%
	Cold Start Fraction	10.6 vs. 20.6%	-15%	-23%	-2%
	All Four Combined (Compounded Effect)		-38%	-28%	-15%
Collector	Speed	20 vs. 25 mph	+22%	+17%	+0.4%
	Median Age of Vehicles	7.5 vs. 6.5 yrs	+7%	+8%	+6%
	Cold Start Fraction	30.6 vs. 20.6%	+15%	+23%	+2%
	All Three Combined (Compounded Effect)		+38%	+32%	+9%

<sup>1</sup>These percentages were calculated as  $((\text{True Value} - \text{Estimated Value}) \div \text{Estimated Value})$ .

bined effect. It was anticipated that the combined effect would exceed the sum of the individual effects when all signs were in the same direction and that mixed signs would dampen the combined effect. No such clear pattern exists in the data. This can be seen in Table 4-8.

The only pattern observed is that the combined effect for NO<sub>x</sub> is always higher than its component parts and the combined effect for CO and VOCs is always smaller than the sum of their components. Not enough conditions were observed to know whether this pattern holds over a broad range of parameter values.

### CONCLUSIONS

On the basis of the results of a sensitivity analysis of the MOBILE5a emissions model, it was found that the emission

factors calculated by the model vary substantially when the travel-related inputs to the model are varied within the usual ranges of accuracy and precision expected with the current state of the practice in transportation planning. An error of 5 mph in the estimated value of speed for a freeway can cause a 42 percent difference in CO emission factor. A 4.4 difference in percent in HDDV mix can cause an 18 percent difference in NO<sub>x</sub> emission factor. A 10.0 difference in percent of cold-start fraction can cause a 23 percent difference in VOC emission factor. The combined effect of the individual errors can create a difference in certain emission factors of nearly 50 percent. These errors in input factors are within reasonable and realistic limits and are not exaggerated—the effect of these errors on emission factors should be of serious concern.

With regard to the combined effect of different sources of error, the directions of errors in individual input parameters are unpredictable. It would be unwise to expect and rely on the compensatory effect of individual errors; rather, it would be prudent to recognize the likelihood of cases where the individual errors may be compounded to high levels. The three cases presented above represent realistic scenarios; the results point to the possibility of large errors in emission rates caused by errors in travel-related inputs to MOBILE5a.

### REFERENCES

- Benson, P. E. (1988). "Corrections to Hot and Cold Start Vehicle Fractions for Microscale Air Quality Modeling." *Transportation Research Record*, No. 1176.

TABLE 4-8 Pattern of combined error<sup>1</sup>

Case	Direction of Individual Errors	
	All Same Sign	Mixed Signs
Freeway	NO <sub>x</sub> higher	CO lower VOC lower
Arterial	CO lower VOC lower	NO <sub>x</sub> higher
Collector	CO lower VOC lower NO <sub>x</sub> higher	

<sup>1</sup>The table shows how the combined error compared with the algebraic sum of individual errors.

**RESOLUTION OF THE GASTON URBAN AREA  
METROPOLITAN PLANNING ORGANIZATION  
CONFIRMING MOTOR VEHICLE EMISSIONS BUDGET  
(MVEB) STRATEGIES FOR THE NORTH CAROLINA  
PORTION OF THE METROLINA REGION**

A motion was made by **Phyllis Harris** and seconded by MPO/TAC Member **Irl Dixon** for the adoption of the following resolution, and upon being put to a vote was duly adopted.

WHEREAS, the Cabarrus-Rowan Metropolitan Planning Organization (CRMPO), Gaston Urban Area Metropolitan Planning Organization (GUAMPO), Lake Norman Rural Planning Organization (LNRPO), Mecklenburg-Union Metropolitan Planning Organization (MUMPO), Rocky River Rural Planning Organization (RRRPO), and the North Carolina Department of Transportation (NCDOT), are working with the North Carolina Division of Air Quality (NCDAQ) to develop a State Implementation Plan (SIP) to address ozone non-attainment in the Metrolina area; and

WHEREAS, the aforementioned agencies in the Metrolina area wish to contribute to the solution of the non-attainment problem by 2009; and

WHEREAS, the SIP requires an air quality modeling demonstration to show that the emissions control strategy of the plan to PASS all future non-attainment conformity tests; and

WHEREAS, an important product of the SIP development process is the allocation of nitrogen oxides (NOx) and volatile organic compounds (VOC) Motor Vehicle Emissions Budgets (MVEB) for the non-attainment area; and

WHEREAS, NCDAQ has invited MPOs and RPOs in the Metrolina area to provide in writing their preference for establishing the MVEBs in our region; and

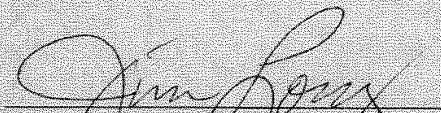
WHEREAS, NCDOT will consider the preference of the LNRPO and RRRPO,

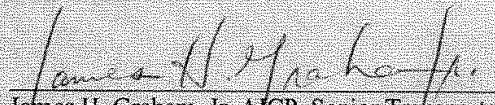
WHEREAS, the MVEB, once approved by the United States Environmental Protection Agency (USEPA), must be compared to projected emissions in future conformity determinations;

---

NOW THEREFORE, BE IT RESOLVED that the GUAMPO, LNRPO, MUMPO, and RRRPO agree to recommend to NCDAQ that a single sub-regional MVEB be established for the counties of Gaston, Lincoln, Mecklenburg, Union, and the portion of Iredell County in the Metrolina nonattainment area on this the 29<sup>th</sup> day of November, 2005.



  
Jim Long, Chair, Transportation Advisory Committee  
Gaston Urban Area Metropolitan Planning Organization  
ATTESTED:

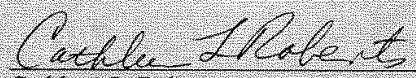
  
James H. Graham, Jr. AICP, Senior Transportation Planner  
Gaston Urban Area Metropolitan Planning Organization

Resolution adopted upon a motion of **Phyllis Harris**, seconded by **Irl Dixon**, by a vote of the majority of the Gaston Urban Area Transportation Advisory Committee.

North Carolina  
Gaston County

I, **Cathleen L. Roberts**, a Notary Public for said County and State, do hereby certify that **Jim Long** personally appeared before me on this the 29th day of November, 2005, and acknowledge the due execution of the foregoing instrument.

Witness my hand and official seal, this the 29th day of November, 2005.

  
Cathleen L. Roberts  
Notary Public

My Commission Expires 7/6/2010

**RESOLUTION OF THE  
MECKLENBURG-UNION METROPOLITAN PLANNING ORGANIZATION  
CONFIRMING MOTOR VEHICLE EMISSIONS BUDGET (MVEB)  
STRATEGIES FOR THE NORTH CAROLINA PORTION OF THE  
METROLINA REGION**

A motion was made by Mr. Sexton and seconded by MPO Member Ms. Moore for the adoption of the following resolution, and upon being put to a vote was duly adopted.

WHEREAS, the Cabarrus-Rowan Metropolitan Planning Organization (CRMPO), Gaston Urban Area Metropolitan Planning Organization (GUAMPO), Lake Norman Rural Planning Organization (LNRPO), Mecklenburg-Union Metropolitan Planning Organization (MUMPO), Rocky River Rural Planning Organization (RRRPO), and the North Carolina Department of Transportation (NCDOT) are working with the North Carolina Division of Air Quality (NCDAQ) to develop a State Implementation Plan (SIP) to address ozone non-attainment in the Metrolina area; and

WHEREAS, the aforementioned agencies in the Metrolina area wish to contribute to the solution of the non-attainment problem by 2009; and

WHEREAS, an important product of the SIP development process is the allocation of nitrogen oxides (NOx) and volatile organic compounds (VOC) Motor Vehicle Emissions Budgets (MVEB) for the non-attainment area; and

WHEREAS, NCDAQ has invited MPOs and RPOs in the Metrolina area to provide in writing their preferred approach for establishing the MVEBs in our region; and

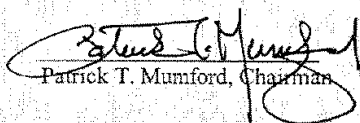
WHEREAS, NCDOT will consider the preference of the LNRPO and RRRPO; and

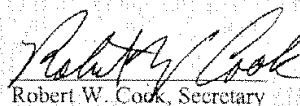
WHEREAS, the MVEB, once found adequate or approved by the United States Environmental Protection Agency (USEPA), must be compared to projected emissions in future conformity determinations.

NOW THEREFORE, BE IT RESOLVED that the GUAMPO, LNRPO, MUMPO, RRRPO agree to recommend to NCDAQ that a single sub-regional MVEB be established for the counties of Gaston, Lincoln, Mecklenburg, Union, and the portion of Iredell County in the Metrolina nonattainment area.

\*\*\*\*\*

I, Patrick T. Mumford, Chairman of the Mecklenburg-Union Metropolitan Planning Organization, do hereby certify that the above is a true and correct copy of an excerpt from the minutes of a meeting of the Mecklenburg-Union Metropolitan Planning Organization, duly held on this the 18<sup>th</sup> day of January, 2006.

  
Patrick T. Mumford, Chairman

  
Robert W. Cook, Secretary

B

**ROCKY RIVER  
RURAL  
PLANNING  
ORGANIZATION**

1300 Baxter Street,  
Suite 450  
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**OFFICERS**

Tony Dennis  
TAC Chairman

Harold Thompson  
TAC Vice-chairman

Raymond Allen  
TCC Chairman

Scott Rowell  
TCC Vice-chairman

Serving Anson, Stanly  
and Union Counties



**RESOLUTION OF THE ROCKY RIVER RPO  
CONFIRMING MOTOR VEHICLE EMISSIONS BUDGET STRATEGIES  
FOR THE NORTH CAROLINA PORTION OF THE METROLINA REGION**

A motion was made by Tony Dennis and seconded by Jane Van Sindergh the adoption of the following resolution, and upon being put to a vote was duly adopted.

WHEREAS, the Cabarrus-Rowan Metropolitan Planning Organization (CRMPO), Gaston Urban Area Metropolitan Planning Organization (GUAMPO), Lake Norman Rural Planning Organization (LNRPO), Mecklenburg-Union Metropolitan Planning Organization (MUMPO), Rocky River Rural Planning Organization (RRRPO), and the North Carolina Department of Transportation (NCDOT) are working with the North Carolina Division of Air Quality (NCDAQ) to develop a State Implementation Plan (SIP) to address ozone non-attainment in the Metrolina area; and

WHEREAS, the aforementioned agencies in the Metrolina area wish to contribute to the solution of the non-attainment problem by 2009; and

WHEREAS, an important product of the SIP development process is the allocation of nitrogen oxides (NOx) and volatile organic compounds (VOC) Motor Vehicle Emissions Budgets (MVEB) for the non-attainment area; and

WHEREAS, NCDAQ has invited MPOs and RPOs in the Metrolina area to provide in writing their preferred approach for establishing the MVEBs in our region; and

WHEREAS, NCDOT will consider the preference of the LNRPO and RRRPO; and

WHEREAS, the MVEB, once found adequate or approved by the United States Environmental Protection Agency (USEPA), must be compared to projected emissions in future conformity determinations.

NOW THEREFORE, BE IT RESOLVED that the GUAMPO, MUMPO, LNRPO, and RRRPO agree to recommend to NCDAQ that a single sub-regional MVEB be established for the counties of Gaston, Lincoln, Mecklenburg, Union, and the portion of Iredell County in the Metrolina nonattainment area.

\*\*\*\*\*

I, Tony Dennis, RPO TAC Chair, do hereby certify that the above is a true and correct copy of an excerpt from the minutes of a meeting of the Rocky River TAC duly held on the 26<sup>th</sup> day of January 2006.

Rocky River RPO TAC Chair

Rocky River RPO Secretary

**LAKE NORMAN  
RURAL  
PLANNING  
ORGANIZATION**

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Tom Anderson  
TAC Chairman

Bob Austell  
TAC Vice-chairman

Brad Dyer  
TCC Chairman

Chris Bauer  
TCC Vice-chairman

Serving Cleveland,  
Gaston, Iredell and  
Lincoln Counties



**THE LAKE NORMAN RPO RESOLUTION  
CONFIRMING MOTOR VEHICLE EMISSIONS BUDGET  
STRATEGIES FOR THE NORTH CAROLINA PORTION OF  
THE METROLINA REGION**

A motion was made by Elbert Richardson and seconded by Jerry Self for the adoption of the following resolution, and upon being put to a vote was duly adopted.

WHEREAS, the Cabarrus-Rowan Metropolitan Planning Organization (CRMPO), Gaston Urban Area Metropolitan Planning Organization (GUAMPO), Lake Norman Rural Planning Organization (LNRPO), Mecklenburg-Union Metropolitan Planning Organization (MUMPO), Rocky River Rural Planning Organization (RRRPO), and the North Carolina Department of Transportation (NCDOT) are working with the North Carolina Division of Air Quality (NCDAQ) to develop a State Implementation Plan (SIP) to address ozone non-attainment in the Metrolina area; and

WHEREAS, the aforementioned agencies in the Metrolina area wish to contribute to the solution of the non-attainment problem by 2009; and

WHEREAS, an important product of the SIP development process is the allocation of nitrogen oxides (NOx) and volatile organic compounds (VOC) Motor Vehicle Emissions Budgets (MVEB) for the non-attainment area; and

WHEREAS, NCDAQ has invited MPOs and RPOs in the Metrolina area to provide in writing their preferred approach for establishing the MVEBs in our region; and

WHEREAS, NCDOT will consider the preference of the LNRPO and RRRPO; and


WHEREAS, the MVEB, once found adequate or approved by the United States Environmental Protection Agency (USEPA), must be compared to projected emissions in future conformity determinations.

NOW THEREFORE, BE IT RESOLVED that the GUAMPO, MUMPO, RRRPO, and LNRPO agree to recommend to NCDAQ that a single sub-regional MVEB be established for the counties of Gaston, Lincoln, Mecklenburg, Union, and the portion of Iredell County in the Metrolina non-attainment area.

\*\*\*\*\*

I, Tom Anderson, RPO TAC Chair, do hereby certify that the above is a true and correct copy of an excerpt from the minutes of a meeting of the Lake Norman RPO TAC duly held on the 24<sup>th</sup> day of January, 2006.

  
Lake Norman RPO TAC Chair

  
Lake Norman RPO Secretary

## Technical Considerations for Motor Vehicle Emissions Budgets

### THE ISSUE

NCDAQ has indicated their preference for applying county-based Motor Vehicle Emission Budgets (MVEBs) in the State Implementation Plan for North Carolina. NCDAQ has requested that any alternate approach be agreed to by all the organizations responsible for transportation conformity [MPOs and NCDOT (in consultation with affected RPOs)], and include a technical justification.

This document describes technical issues associated with county-based budgets as compared to a multi-county budget that would include a single budget for Mecklenburg, Union, Gaston, Lincoln counties, plus the non-attainment portion of Iredell County. This document is also applicable to an area-wide budget, if Cabarrus and Rowan Counties were also included.

### DAQ'S VIEWPOINT

The case for county-based budgets centers on the four reasons outlined in DAQ's September 16, 2005 letter:

1. The motor vehicle emissions generated for SIP attainment demonstration are by county; therefore, developing county level MVEBs would maintain consistency with the attainment modeling.

County level-sub area MVEBs provide additional assurance that future conformity determinations, transportation plans, and TIPs will produce emission patterns that will achieve and maintain the National Ambient Air Quality Standards (NAAQS).

2. County-level MVEBs preserve the growth projected by MPOs/RPOs and NCDOT.

NCDAQ has relied on MPOs/RPOs/NCDOT to provide these future projections of vehicle-miles of travel (VMT) in the SIP process and will continue to rely on MPOs/RPOs/NCDOT as the sources of this data throughout the MVEB setting process.

3. County level-sub area MVEBs would eliminate the requirement for a new conformity analysis for all MPOs/RPOs in the nonattainment area if one of the MPOs/RPOs revises or updates their respective long range transportation plan or transportation improvement program when there are conforming plans in place for the other areas.

In a situation where there are conforming plans in place and there are county level sub-area MVEBs, if one MPO in the nonattainment area had a conformity lapse, the neighboring MPOs/RPOs would not be impacted until their next conformity determination is due.<sup>1</sup>

4. If an area-wide MVEB involving multiple MPOs/RPOs is set and conformity cannot be demonstrated, it could take significantly longer to resolve which projects should be removed from the various plans.

If resolution is not reached in a timely manner, it could result in a conformity lapse for the entire nonattainment or maintenance area.

### TECHNICAL CONSIDERATIONS: Multi-County or Area-Wide MVEB

<sup>1</sup> This is not strictly the case for many counties in Metrolina; where MPOs and RPOs would share a county budget, as in Gaston, and Union, more than one MPO or RPO would be affected by a lapse.



A multi-county budget covering only Mecklenburg, Union, Gaston, Lincoln and the non-attainment portion of Iredell Counties (or, as an alternative, the entire nonattainment area) adequately addresses DAQ concerns and minimizes the errors inherent in the assumptions and simplifications used to translate growth into travel, travel into emissions and to allocate emissions to small areas. A multi-county budget would avoid the potential problems associated with assigning budgets to very small contributors to emissions, as would be the case with county-level budgets, and would not substantially change the conformity consequences or decision-making schedule implications when compared to county-level budgets.

1. The assumptions and simplifications used in translating growth into travel, travel into emissions, and allocating emissions to geographic areas in the transportation and air quality modeling processes are too imprecise to justify setting separate budgets for counties or portions of counties that are small contributors to overall regional emissions.

The table below gives the amount and percentage of motor vehicle NO<sub>x</sub> emissions in Gaston County, Mecklenburg County, and the other five counties (and partial county) combined in the non-attainment area in the Year 2010 "Build" from Table I-10 ("Build/Nobuild test) of the conformity report for the Metrolina region's 2030 Long Range Transportation Plans.

<i>Motor Vehicle Emissions</i>	2010 NO <sub>x</sub> motor vehicle emissions (kg/day)	Percent of region's motor vehicle NO <sub>x</sub> emissions
Gaston County	5855	10.9%
Mecklenburg County	24240	45.2%
Other five Counties:		
Union, Lincoln, Cabarrus, Rowan, Iredell (P)	23480	43.8%
Total Non-attainment area	53606	100%

If based on percent of person trips originating in each county would mean the county budgets for motor vehicle NO<sub>x</sub> emissions could be as follows, as a percentage of the nonattainment area total. County level budgets would mean setting firm limits for sources that, in the case of Union County (11.6%), Lincoln County (4.2%), Cabarrus County (10.7%), Rowan County (7.5%), and the nonattainment portion of Iredell County (4.3%), represent less than 44% of on-road mobile NO<sub>x</sub> in the Metrolina area. County level budgets would treat these relatively small contributors in the same way that Mecklenburg County would be treated, not because these specific relatively small contributors are more important for air quality than Mecklenburg County which generate the same or more emissions, but because of arbitrary county boundaries. Setting hard budgets for these small contributions is not supported by the levels of accuracy inherent in the analysis processes or by any logic that these areas are more significant from an air quality perspective than other areas.

Assigning seven separate, individual motor vehicle emissions budgets implies a level of geographic precision in transportation and air quality modeling that is not supported by the estimation techniques that are used.

The argument that smaller geographies must be preserved is weakened in the face of modern understanding of regional planning models. Specifically, it has been shown in the Metrolina regional travel demand model that projected VMT growth is not restricted to the county with the increase in jobs or other attractions, but county-level projections impact growth through a wide geographic area, including other counties, and thus affect motor vehicle emissions in multiple counties.

#### *The Metrolina regional travel demand model*

Developed in 2005 for regional planning applications and air quality conformity, the Metrolina model is based on the four-step travel demand process (trip generation, trip distribution, mode choice and assignment). The model encompasses the entire Metrolina nonattainment area. To develop the model, several new surveys and studies were conducted, such as:

- Home-interview study of 3,333 households (2002).
- Workplace survey of 185 establishments (2003).
- Video recording of 338,808 license tags (83.5% accuracy) on 9 sites on regional interstates and freeways (2002).

The emissions projections are based on latest planning assumptions for the entire Metrolina nonattainment region. A single transportation model run must always be completed for the nonattainment area as a whole in order for impacts on VMT to be evaluated. The on-road emissions applied as inputs into the SIP air quality model for the Metrolina area were developed directly from VMT and speed data provided from the Metrolina regional model.

#### *The Air Quality Model*

Simplification of the causes and effects on emissions values occurs when the air quality model used for attainment demonstration modeling assigns motor vehicle emissions into the grid cells within each county. The emissions are assigned to cells based on the centerline road mileage (by functional class) from the 2000 Census street network (called TIGER line files), not by actual measured VMT or by lane miles on the current highway network. Therefore – to take one example – a mile of I-77 in Mecklenburg County north of I-277 receives exactly the same amount of emissions as a mile of I-85 in Gaston County at the Cleveland County line, even though the former carries 3.4 times as much traffic as the latter. This same Year 2000 representation of the road system is used to allocate emissions in the future. Roads open to traffic after 2000 – such as the extension of I-485, and the construction of the US 74 bypass of Monroe and the Garden Parkway – are not reflected in the allocation of emissions when there will be greater variation in traffic volumes.

There is additional uncertainty accompanying air quality model predictions. Examples are limitations in the model's formulation which may be due to an incomplete representation in the model of physiochemical processes and/or meteorological, and other input data base limitations, which compound uncertainty associated with forecasting future levels of emissions.

The Air Quality model is a sophisticated and complex tool, and state-of-the-science, but it is still not reliable enough to accurately attribute the origins of emissions causing high ozone readings. The attribution of motor vehicle emissions is more likely to be correct when the sources of emissions are considered is over a wider area rather than a smaller area. The fact that the air quality model results must be adjusted with "relative reduction factors" indicates the level of uncertainty in the model. The U.S. EPA<sup>2</sup> recommends using models in a relative sense in concert with observed air quality data (i.e., taking the ratio of future to present predicted air quality and multiplying it times an "ambient" design value). The "Relative Reduction Factor" approach reduces some of the uncertainty attendant with using absolute model predictions alone by getting the predictions in the vicinity of a monitor to more closely match the measured concentration at that monitor. However, "relative Reduction Factors" do not address the latent uncertainties associated with the precise grid cell of emissions origin, nor of the actual path the emissions took,

<sup>2</sup> Guidance on the Use of Models and Other Analyses in Attainment Demonstrations for the 8-hour Ozone NAAQS. EPA-454/R-05-002, October 2005.

nor of the actual chemistry involved, to result in the modeled prediction. The relative reduction factor only gets the final model result “right,” but is unable to help the air quality model get the right answer for the right physical and chemical reasons.

Past modeling analyses have shown that future design value uncertainties of 2-4 ppb can result from use of alternate, yet equally appropriate, emissions inputs, chemical mechanisms, and meteorological inputs<sup>3, 4</sup>. Assuming it takes 5 to 10 tons of NO<sub>x</sub> to create a ppb of ozone; this is roughly equivalent to a NO<sub>x</sub> MVEB uncertainty of 10-40 tons per day. This is not to say that the model is not useful. The model is a tool for justifying the magnitude of MVEBs, and to give an indication of the potential of a SIP to be effective.

With all these uncertainties, at least one major level of possible error, that being how much emissions are sub-allocated by budget to each county within the Metrolina non-attainment region, would be eliminated by having a single emissions budget for the entire non-attainment area.

In short, the assumptions and simplifications used in translating growth into travel, travel into emissions, and allocating emissions to geographic areas in the transportation and air quality modeling processes are too imprecise to justify setting separate budgets for counties or portions of counties that are small contributors to overall regional emissions.

2. A multi-county budget would group counties together logically based on travel patterns, providing the scale needed to address any changes if conformity can not be demonstrated.

If conformity can not be demonstrated, area wide or corridor specific measures may be needed and a multi-county budget results in logical groupings of counties; the county lines are arbitrary dividing lines that tend to mask actual travel patterns. The I-85 and US 74 corridors carry traffic from Gaston County into Mecklenburg County. The US 74 corridor carries traffic from Union County into Mecklenburg County. The I-85 corridor carries traffic from Cabarrus and Rowan Counties into Mecklenburg County. The I-77 corridor carries traffic from Iredell County into Mecklenburg County. From the 2000 Census, 26% of the Gaston County workforce commutes into Mecklenburg County, 41% of the Union County workforce commutes into Mecklenburg County, 34% of the Cabarrus County workforce commutes into Mecklenburg County, 8% of the Rowan County workforce, and 16% of the Iredell County workforce commutes into Mecklenburg County.

The following tables summarize by trip purpose and year the total modeled person trips crossing county lines. These tables highlight the interdependency of the counties in the Metrolina area, and therefore, the value of establishing multi-county budgets.

<sup>3</sup> Jones, Jennifer M., C. Hogrefe, R. Henry, J. Ku, and G. Sistla, (2005), “An Assessment of the Sensitivity and Reliability of the Relative Reduction Factor Approach in the Development of 8-hr Ozone Attainment Plans”, JAWMA, 55 (1), 13-19.

<sup>4</sup> Sistla, G., C. Hogrefe, W. Hao, J. Ku, R. Henry, E. Zalewsky, and K. Civerolo, (2004), “An Operational Assessment of the Application of the Relative Reduction Factors in the Demonstration of Attainment of the 8-Hour Ozone National Ambient Air Quality Standard”, JAWMA, 54 (8), 950-959.



<b>2000 Person Trips Crossing Mecklenburg County Lines</b>			
	<b>Work Trips</b>	<b>Non-Work Trips</b>	<b>Total Trips</b>
Cabarrus	105,000	178,000	283,000
Gaston	90,000	119,000	209,000
York	69,000	98,000	167,000
Union	50,000	120,000	170,000
Iredell	28,000	49,000	77,000
Lincoln	13,000	27,000	40,000
Lancaster	4,000	10,000	14,000

<b>2010 Person Trips Crossing Mecklenburg County Lines</b>					
	<b>Work Trips</b>	<b>Non-Work Trips</b>	<b>Total Trips</b>	<b>2000-2010 Increase</b>	<b>2000-2010 Cumulative Change</b>
Cabarrus	143,000	255,000	398,000	115,000	115,000
Gaston	118,000	160,000	278,000	69,000	69,000
York	98,000	138,000	236,000	69,000	69,000
Union	71,000	177,000	248,000	78,000	78,000
Iredell	42,000	79,000	121,000	44,000	44,000
Lincoln	17,000	41,000	58,000	18,000	18,000
Lancaster	7,000	19,000	26,000	12,000	12,000

<b>2020 Person Trips Crossing Mecklenburg County Lines</b>					
	<b>Work Trips</b>	<b>Non-Work Trips</b>	<b>Total Trips</b>	<b>2010-2020 Increase</b>	<b>2000-2020 Cumulative Change</b>
Cabarrus	190,000	336,000	527,000	129,000	244,000
Gaston	145,000	198,000	343,000	65,000	134,000
York	128,000	176,000	304,000	68,000	137,000
Union	108,000	237,000	345,000	97,000	175,000
Iredell	57,000	106,000	163,000	42,000	86,000
Lincoln	21,000	57,000	78,000	20,000	38,000
Lancaster	8,000	23,000	31,000	5,000	17,000

<b>2030 Person Trips Crossing Mecklenburg County Lines</b>					
	<b>Work Trips</b>	<b>Non-Work Trips</b>	<b>Total Trips</b>	<b>2020-2030 Increase</b>	<b>2000-2030 Cumulative Change</b>
Cabarrus	227,000	416,000	643,000	116,000	360,000
Gaston	178,000	250,000	428,000	85,000	219,000
York	143,000	197,000	340,000	36,000	173,000
Union	138,000	299,000	437,000	92,000	267,000
Iredell	71,000	124,000	195,000	32,000	118,000
Lincoln	27,000	70,000	97,000	19,000	57,000
Lancaster	11,000	29,000	40,000	9,000	26,000

3. Federal rules specifically permit region wide budgets and many regions around the nation that are much larger than Metrolina and with worse air quality use a region wide budget.

The federal rules governing the conformity process describe two alternatives to apply the emissions budget to a nonattainment areas; a county budget is not one of them. Section 93.124(d) of the rules states:

“If a nonattainment area includes more than one MPO, the implementation plan may establish motor vehicle emissions budgets *for each MPO, or else*[italics added] the MPOs must collectively make a conformity determination *for the entire area.*” [Italics added]

Metrolina is a multi-county area designated as being in nonattainment for 8-hour ozone; the EPA did not adopt separate designations for each county in the Metrolina area. The entire region attains (or not) together. For that reason, an area-wide budget would match better with the area-wide designation<sup>5</sup>. The language of the federal rules is clear that either a region wide budget or multi-county budgets are adequate (in fact, no mention of county-based budgets is in the rules). If DAQ is concerned that precise distribution of motor vehicle emissions within a region is a significant concern, DAQ should justify that concern through sensitivity analysis demonstrating how changes in growth forecasts or facility construction would affect ozone levels at monitored sites. Many regions of far larger geographic extent than Metrolina, with much higher emission levels, and with much worse air quality, use region wide budgets. For a list of how MVEBs are set in other regions, visit the following web sites:

<http://www.fhwa.dot.gov/environment/conformity/complex/attacha.htm>

<http://www.fhwa.dot.gov/environment/conformity/complex/attachb.htm>

<http://www.fhwa.dot.gov/environment/conformity/complex/group2.htm>

By explicitly permitting multi-county budgets, up to and including a single region-wide budget, the US EPA recognizes that a regional budget is sufficient to demonstrate conformity of transportation plans with air quality attainment goals.

4. County based budgets are unlikely to be effective at influencing land use.

One reason for supporting county-based budgets is the belief that they will encourage counties to adhere to land use plans in place at the time budgets were set. If supporters of county-based budgets believe that land use development, as reflected in the socioeconomic forecasts used in the Metrolina Regional Model, should have firmer controls, there may be more effective mechanisms that can be used outside of the conformity process, for three reasons:

- Land use is only one response to a budget exceedence; the others are the funding of transportation facilities/services and the implementation of “off-model” activities such as incident management, transportation demand management programs and ridesharing.
- MPOs, designated as responsible for demonstrating transportation conformity, have no land use authority and can only request that individual local governments make land use changes; and land use plan changes significant enough to influence air quality may require a substantial amount of time for a community to undertake.

<sup>5</sup> This ideal may not be achieved because Cabarrus and Rowan Counties decided against joining the other counties to form an area wide budget, thus we have requested a multi-county budget.

Counties are an arbitrary boundary for emissions, but the DAQ process treats them as firm boundaries. This is most problematic at the Mecklenburg/Gaston, Mecklenburg/Cabarrus, and Mecklenburg/Iredell lines where high amounts of VMT and congestion occur. Where the model takes all of the emissions just on the Mecklenburg side of the line and spreads them throughout Mecklenburg County and all of the emissions just on the Gaston, Cabarrus, and Iredell sides of the lines and spreads them throughout each of those counties, respectively.

If communities wish to use socioeconomic data and emissions data to address land use concerns, they can use this data in discussions whether budgets are set at the county level or multi-county level. Multi-county budgets do not change how emissions are calculated or reported, only how they are applied in comparing forecast emissions to budgets. County level reporting of input data is a convenience, not a requirement of any of the data sets, and either multi-county inputs or county inputs could be generated from the Metrolina regional transportation model.

5. Ozone is a regional problem (as demonstrated by the extent of the non-attainment area, which even includes areas without a violating monitor) and is best addressed by the entire region working together; the region has demonstrated that it can work cooperatively on an identical schedule to address conformity.

Further progress on air quality may be most likely when leaders perceive that it is a shared concern, rather than a concern that can be compartmentalized. The region has demonstrated its ability to plan together, even when not required to: the recent conformity reports associated with the 2030 LRTPs and 2006-12 TIPs were undertaken in the same manner as would be required with a single region-wide budget. The close planning coordination required by a multi-county MVEB would be a continuation of the precedent set with the 2030 LRTPs and 2006-12 TIPs, would dovetail with the existing schedule for future LRTP and TIP conformity reports throughout the region, and is appropriate for a region wide issue such as ozone pollution. Furthermore, the only step an MPO would be required to undertake if another MPO or rural county changed its Plan is follow its public involvement process and adopt the new conformity document including that Plan.

**Subject:** Support for County-Level MVEB  
**From:** roland tilley <ron\_d\_tilley@yahoo.com>  
**Date:** Sun, 19 Feb 2006 09:30:00 -0800 (PST)  
**To:** laura.booth@ncmail.net

Laura,  
On behalf of citizens for Smrth Growth, I am writing to express our support for county level MVEBs and urge you to continue with your traditional method for setting budgets.  
Thanks  
Ron

Yahoo! Mail  
Use Photomail to share photos without annoying attachments.



North Carolina Department of Environment and Natural Resources  
Division of Air Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary  
B. Keith Overcash, P.E., Director

June 21, 2006

Mr. Mike Nunn, AICP  
Executive Director  
Cabarrus-Rowan Urban Area Metropolitan Planning Organization  
135 Cabarrus Ave. East  
Suite 101  
Concord, NC 28025

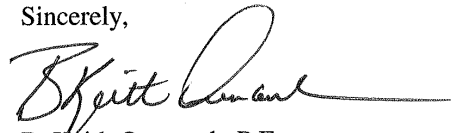
Dear Mr. Nunn:

Thank you for your letter about setting motor vehicle emission budgets (MVEBs) for the Charlotte-Gastonia-Rock Hill 8-hour ozone nonattainment area. We greatly appreciate your feedback on the setting of the MVEBs.

We have decided to set county level MVEBs for transportation conformity purposes in this nonattainment area and appreciate your support of this. We believe that since the area is modeling so close to the 8-hour ozone National Ambient Air Quality Standard, county level MVEBs better serve our goals of attaining and maintaining the standard in order to protect public health.

The North Carolina Division of Air Quality is committed to working with all our partners during the State Implementation Plan (SIP) process to determine the best course of action in achieving and maintaining air quality goals. If you should have any questions, please contact Laura Boothe of my staff at (919) 733-1488 or [laura.boothe@ncmail.net](mailto:laura.boothe@ncmail.net).

Sincerely,



B. Keith Overcash, P.E.

BKO:lab

cc: Sheila Holman, NCDAQ  
Laura Boothe, NCDAQ  
Don Bringle, Chair, Cabarrus-Rowan Urban Area MPO TAC  
Dan Mikkelsen, Chair, Cabarrus-Rowan Urban Area MPO TCC  
Linda Dosse, NCDOT

**Planning Section**

1641 Mail Service Center, Raleigh, North Carolina 27699-1641  
2728 Capital Blvd., Raleigh, North Carolina 27604  
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North Carolina Department of Environment and Natural Resources  
Division of Air Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary  
B. Keith Overcash, P.E., Director

June 21, 2006

Dan Thomas  
Technical Services Unit Head  
Transportation Planning Branch, NCDOT  
1554 Mail Service Center  
Raleigh, NC 27699-1554

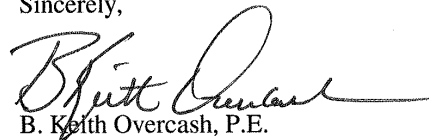
Dear Mr. Thomas:

Thank you for your letter about setting motor vehicle emission budgets (MVEBs) for the Raleigh-Durham-Chapel Hill and Charlotte-Gastonia-Rock Hill 8-hour ozone nonattainment areas. We greatly appreciate your feedback on the setting of the MVEBs.

We have decided to set county level MVEBs for transportation conformity purposes in these two nonattainment areas. We believe that county level MVEBs better serve our goals of attaining and maintaining the standard in order to protect public health.

The North Carolina Division of Air Quality is committed to working with all our partners during the State Implementation Plan (SIP) process to determine the best course of action in achieving and maintaining air quality goals. If you should have any questions, please contact Laura Boothe of my staff at (919) 733-1488 or [laura.boothe@ncmail.net](mailto:laura.boothe@ncmail.net).

Sincerely,



B. Keith Overcash, P.E.

BKO:lab

cc: Sheila Holman, NCDAQ  
Laura Boothe, NCDAQ  
Mike Abraczinskas, NCDAQ  
Mike Bruff, PE, NCDOT  
Derry Schmidt, PE, NCDOT

**Planning Section**

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North Carolina Department of Environment and Natural Resources  
Division of Air Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary  
B. Keith Overcash, P.E., Director

June 21, 2006

Mr. James H. Graham  
Secretary  
Gaston Urban Area Metropolitan Planning Organization  
PO Box 1748  
Gastonia, NC 28053

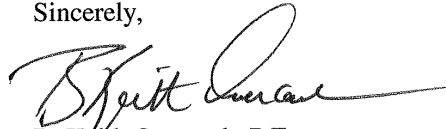
Dear Mr. Graham:

Thank you for your letter about setting motor vehicle emission budgets (MVEBs) for the Charlotte-Gastonia-Rock Hill 8-hour ozone nonattainment area. We greatly appreciate your feedback on the setting of the MVEBs.

My staff has thoroughly reviewed and discussed your submittal and it is our decision to set county level MVEBs for transportation conformity purposes. We believe that since the area is modeling so close to the 8-hour ozone National Ambient Air Quality Standard, county level MVEBs better serve our goals of attaining and maintaining the standard in order to protect public health.

The North Carolina Division of Air Quality is committed to working with all our partners during the State Implementation Plan (SIP) process to determine the best course of action in achieving and maintaining air quality goals. If you should have any questions, please contact Laura Boothe of my staff at (919) 733-1488 or [laura.boothe@ncmail.net](mailto:laura.boothe@ncmail.net).

Sincerely,



B. Keith Overcash, P.E.

BKO:lab

cc: Sheila Holman, NCDAQ  
Laura Boothe, NCDAQ  
Robert W. Cook, MUMPO  
Rebecca Yarbrough, Lake Norman Rural Planning Organization  
Mike Bruff, P.E. Transportation Planning Branch  
Patrick Mumford, Chair, MUMPO TAC

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Jim Humphrey, Chair, MUMPO TCC  
Jim Long, Chair, Gaston Urban Area MPO TAC  
Danny Jackson, Chair, Gaston Urban Area MPO TCC  
Thomas R. Anderson, Chair, Lake Norman RPO TAC  
Brad Dryer, Chair, Lake Norman RPO TCC  
Tony Dennis, Chair, Rocky River RPO TAC  
Raymond Allen, Chair, Rocky River RPO TCC





**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
WASHINGTON, D.C. 20460

April 15, 2004

THE ADMINISTRATOR

Honorable Michael Easley  
Governor of North Carolina  
20301 Mail Service Center  
Raleigh, North Carolina 27699-0301

Dear Governor Easley:

Today, we enter a new chapter in our country's clean air commitment. President Bush outlined this chapter when he directed the Environmental Protection Agency (EPA) to implement a national Clean Air strategy committing us to make the years ahead one of the most productive periods of air quality improvement in our nation's history.

The last 35 years have seen a growing commitment to clean air and a progression of science and technology that has informed our decision-making and guided our actions. I often think of our clean air history as a relay where a baton is passed from generation to generation and from Administration to Administration. It is a relay in which we must all be involved and a relay where our participation is never done. This Administration has made a commitment to accelerate our clean air progress so that all Americans live healthier, longer, more productive and prosperous lives. It is a commitment to no turning around or backsliding in air quality improvement.

Part of our nation's commitment to clean, healthy air deals with reducing levels of ozone. That effort began in the 1970s with a 1-hour standard for ozone — now, in 2004, the more protective, health-based 8-hour ozone standard is ready for implementation.

Today, I fulfill my legal obligation under the Clean Air Act to issue final designations for all areas of the country for the 8-hour ozone standard. The enclosed table identifies the areas in your state that are designated as nonattainment, meaning that some areas of your state do not meet the more protective, health-based 8-hour ozone standard. I am also today deferring the designation date for the areas in your state participating in Early Action Compacts. I am confident that your commitment and the actions you are taking in these areas will result in achieving clean air faster.

Having been through this process as a governor myself, I recognize that having parts of your state designated as being in nonattainment will require more actions on your part to achieve cleaner, healthier air. This ozone standard is strong medicine, and we need to work together to

make certain your state can, as others have in the past, clean the air while sustaining economic growth. That is why the President has asked EPA to develop tools that reduce the transport of pollution across state boundaries.

During 2004, we are issuing a suite of national Clean Air Rules as part of the President's strategy that will specifically address the transport of pollution. These national rules and other clean air actions will bring the vast majority of areas of the country into attainment with this standard over the next 15 years. The Clean Air Rules, when fully implemented, will cut power plant emissions of sulfur dioxides, nitrogen oxides and mercury by nearly 70 percent, and will also reduce emissions from off-road diesel fuels, vehicles and engines by over 90 percent — those black puffs of smoke are going to be a thing of the past. Together, these Clean Air Rules will build on the tremendous progress made over the last 30 years, and do it in record time.

We have a national strategy and tools to provide people with cleaner, healthier air now and in the future. The result is more protection, faster and ensures that clean air and a prosperous economy will be this generation's contribution to our children and grandchildren.

Sincerely,

/s/

Michael O. Leavitt

Enclosure

cc (w/enclosure):

Ms. Robin Smith, Assistant Secretary for Environmental Protection  
North Carolina Environment and Natural Resources Department

## Enclosure

### Boundary Designations for 8-hour Ozone Standards for North Carolina

(P) - Partial Counties

(EAC) - Early Action Compacts

<b>Nonattainment Area Name</b>	<b>Counties</b>	<b>Classification</b>	<b>Maximum Attainment Date (from June 15, 2004)</b>
<u>Charlotte-Gastonia-Rock Hill, NC-SC</u>	Gaston Mecklenburg Cabarrus Iredell (P) Lincoln Rowan Union	Moderate	June 2010
<u>Greensboro-Winston-Salem-High Point, NC</u> (EAC)	Davidson Davie Forsyth Guilford Alamance Caswell Randolph Rockingham	Moderate	Dec 2007
<u>Raleigh-Durham-Chapel Hill, NC</u>	Durham Granville Wake Chatham (P) Franklin Johnston Orange Person	Basic	June 2009
<u>Hickory-Morganton-Lenoir, NC</u> (EAC)	Alexander Burke (P) Caldwell (P) Catawba	Basic	Dec 2007
<u>Haywood and Swain Cos (Great Smoky Mountains National Park), NC</u>	Haywood (P) Swain (P)	Basic	June 2009
<u>Fayetteville, NC</u> (EAC)	Cumberland	Basic	Dec 2007
<u>Rocky Mount, NC</u>	Edgecomb Nash	Basic	June 2009

Note: Remainder of state is attainment



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
RESEARCH TRIANGLE PARK, NC 27711

AUG 15 2006

OFFICE OF  
AIR QUALITY PLANNING  
AND STANDARDS

**MEMORANDUM**

SUBJECT: 8-Hour Ozone National Ambient Air Quality Standards (NAAQS)  
Implementation--Reasonable Further Progress (RFP)

FROM: *for* William T. Harnett *David Sanders*  
Director, Air Quality Policy Division (C504-01)

TO: Regional Air Division Directors

The attached RFP document provides additional clarification that will be helpful for the RFP State implementation plans (SIPs) which are due June 15, 2007. The document includes a table summarizing situations covered by the Phase 2 8-hour ozone NAAQS implementation rule (November 29, 2005; 69 FR 71612). In addition, it summarizes questions raised by the Regional Offices and States and provides answers to those questions. Please distribute this document to your States, local control agencies, and tribal governments.

Regional Office staff may contact David Sanders at (919) 541-3356, or by email at [sanders.david@epa.gov](mailto:sanders.david@epa.gov) or John Silvasi (919) 541-5666, or by email at [silvasi.john@epa.gov](mailto:silvasi.john@epa.gov) with any questions.

Attachment

Internet Address (URL) • <http://www.epa.gov>

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## 8-Hour Ozone Implementation Q's and A's Concerning RFP

1. Appendix A of the Phase 2 8-hour ozone implementation rule provides guidance on calculating the RFP targets for several kinds of areas. However, it does not provide guidance for moderate areas that have an approved 15% VOC ROP plan under the 1-hour standard and that have an attainment date beyond 5 years after designation (Situation B in the table). How should the 8-hr ozone RFP target be calculated for these areas?

**Response:** These areas are treated like subpart 1 areas, which must obtain a 15% emission reductions (can be for NO<sub>x</sub> or VOC or a combination of either) for the first 6 years after the baseline year. OTAQ is developing guidance for this situation. In the meantime, the State should use Appendix A/Method 2 (which applies to serious and higher classified areas) except that instead of demonstrating RFP for a total of 18% emission reductions for the first 6 years, the total would be 15% due to the moderate classification. See 40 CFR 51.910(a)(1)(ii)(A), which refers to section 51.910(b)(2).

2. A state is planning to request a reclassification ("bump up") for an area from marginal to moderate for ozone. They want to develop an RFP plan by the end of the year for the primary purpose of establishing motor vehicle emissions budgets (MVEBs) for transportation conformity purposes and they would like to do so relying on current emissions reductions programs (i.e., without developing new regulations). If the area has achieved the 15% RFP requirement for the 1-hour standard in the portion of the area that was designated nonattainment for the 1-hour standard, would they only need to address 8-hour RFP for the counties that were not a part of the 1-hour nonattainment area?

**Response:** This example sounds like it fits under situation D in the attached chart. The State can choose to treat the two portions of the 8-hour area together or separately. If treated together, then the State would need to develop a new 15% RFP plan for the entire area. If treated separately, the portion of the area with an approved 15% plan for the 1-hour standard would be considered to have met the section 182(b)(1) RFP requirements and would instead be subject to the subpart 1 (section 172(c)(2)) RFP requirement. If the attainment date for the 8-hour area is greater than 5 years after designation, then these counties need a 15% reduction, but may use both VOC and NO<sub>x</sub>. If the attainment date is 5 or fewer years following designation, then the state could meet the RFP requirement for the former 1-hour nonattainment counties by adopting a SIP that demonstrates attainment as expeditiously as practicable. The counties that were not subject to the 15% RFP requirement for the 1-hour standard would be subject to the section 182(b)(1) RFP requirements and would need to achieve a 15% reduction in VOC emissions for the 6-year period following the baseline. Depending on the circumstances, the area that was not previously subject to the 15% requirement for the 1-hour standard could possibly fall under either situation F or G.

3. To meet the 8-hour 15% RFP requirement in the counties that were not previously subject to the 1-hour 15% RFP requirement, can the state rely on emission reductions that are being achieved by control programs (i.e., I/M) in the former 1-hour counties to account for RFP in the additional counties?

**Response:** Control programs that are being implemented in the counties not previously subject to the 1-hour 15% requirement can be relied on for purposes of meeting the 8-hour 15% RFP requirement in those counties. However, reductions can be relied on only to the extent that (a) they are achieved after the baseline year and meet the other criteria for creditability under CAA section 182(b)(1); (b) have not been relied on for purposes of meeting the RFP requirement for the 8-hour standard in the area previously subject to the 1-hour ozone 15% VOC ROP requirement; and (c) cover the period required for RFP. States should consult the appropriate EPA Regional Office for situations not explicitly described in the rule, preamble or in this guidance.

4. Can the state use reductions from 100 km for VOC and 200 km for NOx outside of the nonattainment area to account for RFP?

**Response:** Yes, permanent, enforceable and quantifiable reductions outside the designated nonattainment area can be used to meet RFP, but there needs to be a showing that these reductions are beneficial to the nonattainment area. We have existing guidance that discusses how the RFP calculation should be performed when relying on reductions outside the nonattainment area.<sup>1</sup>

5. Must 2002 be used as the baseline for RFP and, if so, does that mean that a state cannot take credit in its RFP plan for programs that were implemented prior to 2002?

**Response:** The Phase 2 Rule indicates a strong preference for using 2002 as the baseline but does provide limited leeway for choosing a different year. Reductions achieved up to the end of the baseline year cannot be relied on for purposes of RFP. Any reductions occurring prior to the end of the baseline year are accounted for in the baseline emissions inventory. RFP reductions are reductions from the level reflected in the baseline inventory and so reductions already accounted for in the baseline inventory cannot be relied upon for RFP credit. However, certain programs, particularly programs achieving reductions from the mobile sector, achieve additional emission reductions for many years after they are first implemented. Thus reductions that are not actually achieved until after the baseline year could be relied on for purposes of the 15% RFP requirement. We note that section 182(b)(1)(D) provides a short list of measures that are not creditable for purposes of the 15% RFP requirement.

6. Does a moderate area need to achieve an additional 3 percent RFP reduction beyond 2008 (i.e., should they have to achieve the 3 percent reductions through 2011)?

**Response:** Moderate areas are not subject to the “3% RFP” requirement in subpart 2, which applies only to serious and higher classified areas. The RFP SIP is only required to provide for RFP to the attainment date, not beyond the attainment date.

7. How should the state account for shutdowns and other emission reduction credits? How should they include these in RFP calculations?

**Response:** Any shutdowns prior to December 31, 2002 are reflected in the base year inventory emissions levels. A shutdown is creditable for RFP if it is permanent, enforceable, occurs after the baseline emissions inventory year, and is not being counted elsewhere. No growth should be assumed in emissions from the time of the shutdown to the time of the use of the emission

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<sup>1</sup> Memorandum of 12/29/1997 from Richard D. Wilson “Guidance for Implementing the 1-Hour Ozone and Pre-Existing PM10 NAAQS”

reduction credit in the RFP calculation. Consistent with our longstanding policy, for purposes of equity, EPA encourages States to allow sources to use banked emissions reductions credits for offsetting purposes. (57 FR 13553).

8. How does the State derive average summer weekday emission estimates? (Including those for shutdowns and other emission reduction credits?)

**Response:** To the extent that we can credit such shutdowns in the rate-of-progress plans, the State would need some procedure for calculating the emission reduction credits in units consistent with the needs of the rate-of-progress plans. The State can use techniques recommended in EPA guidance to calculate summer weekday emissions. See also response to question 3 above.

9. For RFP in situations where one part of the nonattainment area has met the 15% VOC ROP requirement under the 1-hour standard (the "1-hour area"), and another part of the area has not (the "new area"), the state may rely on emission reductions from the "1-hour area" to meet its VOC RFP requirement for the new area under the 8-hour standard. Are there other restrictions that apply?

**Response:** Yes. The attached chart indicates several different situations that might fit the example provided (see specifically, situations D – G, which provide details on how the RFP requirements would apply).

Reasonable Further Progress (RFP) Guidance for 8-hr O<sub>3</sub> NAAQS Implementation—A Quick Reference Tool (not to be a substitute for the Phase 2 rule itself)

SUBPART 2 AREAS

Situation <sup>1</sup>	IF					AND IF	THEN	Reference 40 CFR 51.910 (unless otherwise noted)
	Area type <sup>2</sup>	Subpart 2 Moderate	Subpart 2 Above Moderate	Attain Date ≤ 5 years	Attain Date > 5 years			
A	Entire NA area has approved 15% VOC ROP plan under 1-hr O <sub>3</sub> NAAQS	X		X			Area considered to have met the 15% VOC ROP requirement in Sect. 182(b)(1). Area subject to subpart 1 RFP, satisfied with measures that demonstrate attainment as expeditiously as practicable (see situation J).	(b)(2)(i)
B	Entire NA area has approved 15% VOC ROP plan under 1-hr O <sub>3</sub> NAAQS	X			X		Area considered to have met the 15% VOC ROP requirement in Sect. 182(b)(1). Area subject to subpart 1 RFP; satisfied with RFP plan to demonstrate 15% emission reductions (VOC and/or NO <sub>x</sub> ) from 2002 <sup>3</sup> to 2008 and time-proportional emission reductions every 3 years beyond 2008 out to attainment date (see situation K).	(b)(2)(ii)
C	Entire NA area has approved 15% VOC ROP plan under 1-hr O <sub>3</sub> NAAQS		X		X		Area considered to have met the 15% VOC ROP requirement in Sect. 182(b)(1). Area subject to RFP requirements of section 182(c)(2)(B); satisfied with plan achieving an average of 3 percent per year reductions (VOC and/or NO <sub>x</sub> ) over the 6 years following the baseline year and then an average of 3 percent per year (VOC and/or NO <sub>x</sub> ) for each subsequent 3 year period out to the attainment year	(a)(1)(i)(B)

<sup>1</sup> Situations other than those identified here should be discussed with the appropriate Regional Office.

<sup>2</sup> Applies to an individual State portion if it is part of an interstate nonattainment area.

<sup>3</sup> Assuming 2002 is the base year for the inventory; 40 CFR 51.910(d) provides for using an alternative year.



Situation <sup>1</sup>	IF					AND IF	THEN	Reference 40 CFR 51.910 (unless otherwise noted)
	Area type <sup>2</sup>	Subpart 2 Moderate	Subpart 2 Above Moderate	Attain Date ≤ 5 years	Attain Date > 5 years			
D	Part of area has approved 15% VOC ROP plan under 1- hr O3 NAAQS <hr/> Part of area without approved 15% VOC ROP plan under 1- hr O3 NAAQS	X				Area does not meet criteria of situation G	The 8-hr nonattainment area has 2 options: Opt 1: Develop new baseline and new 8-hr 15 % VOC RFP emission reduction target for entire 8- hour area. OR Opt 2: Treat area as divided between portions of the area that have an approved 15% VOC ROP plan and those portions without an approved 15% VOC ROP plan under the 1-hr O3 NAAQS. For the portion with the approved 15% VOC ROP plan, subpart 1 RFP requirements apply (see situation J); for the portion without an approved 15% VOC ROP plan under the 1-hr O3 NAAQS, State must develop 8-hr 15 % VOC RFP emission reduction target for that portion of the 8- hour area; however, reductions may come from anywhere within the entire 8-hr O3 nonattainment area.	(a)(1)(iii)

Situation <sup>1</sup>	IF					AND IF	THEN	Reference 40 CFR 51.910 (unless otherwise noted)
	Area type <sup>2</sup>	Subpart 2 Moderate	Subpart 2 Above Moderate	Attain Date ≤ 5 years	Attain Date > 5 years			
E	Part of area has approved 15% VOC ROP plan under 1- hr O3 NAAQS		X			Area does not meet criteria of situation G	<ul style="list-style-type: none"> <li>This bullet is the same as under situation D. The 8-hr nonattainment area has 2 options: Opt 1: Develop new baseline and new 8-hr 15 % VOC RFP emission reduction target for entire 8-hour area for first 6 years after baseline year. OR Opt 2: Treat area as divided between portions of the area that have an approved 15% VOC ROP plan and those portions without an approved 15% VOC ROP plan under the 1-hr O3 NAAQS. For the portion with the 15% VOC ROP plan, subpart 1 RFP requirements apply (see situation K); for the portion without an approved 15% VOC ROP plan under the 1-hr O3 NAAQS, State must develop 8-hr 15 % VOC RFP emission reduction target for the first 6 years after the baseline year for that portion of the 8-hour area; however, reductions may come from anywhere within the entire 8-hr O3 nonattainment area.</li> <li>Section 182(c)(2)(B) RFP requirements apply after the first 6 years.</li> </ul>	(a)(1)(iii)
	Part of area without approved 15% VOC ROP plan under 1- hr O3 NAAQS							

Situation <sup>1</sup>	IF					AND IF	THEN	Reference 40 CFR 51.910 (unless otherwise noted)
	Area type <sup>2</sup>	Subpart 2 Moderate	Subpart 2 Above Moderate	Attain Date ≤ 5 years	Attain Date > 5 years			
F	Part of area has approved 15% VOC ROP plan under 1-hr O3 NAAQS					The part of the area without an approved 15% VOC ROP plan under the 1-hr standard-- a. had at one time been subject to the 15% VOC ROP requirement under the 1-hour ozone standard; b. actually obtained 15% VOC reductions after 1990; and c. had adopted and implemented control measures (that are approved in the SIP) that resulted in the 15% VOC reductions per section 182(b)(1) of the CAA and it is shown that the reductions are as expeditious as practicable.	EPA may treat the portion of the 8-hour nonattainment area without an approved 1-hr 15% VOC plan as under situations A, B, or C above, as appropriate).*	Not previously referenced
	Part of area without approved 15% VOC ROP plan under 1-hr O3 NAAQS—but had actually achieved 15% VOC due to adopted measures	X	X					

Situation <sup>1</sup>	IF					AND IF	THEN	Reference 40 CFR 51.910 (unless otherwise noted)
	Area type <sup>2</sup>	Subpart 2 Moderate	Subpart 2 Above Moderate	Attain Date ≤ 5 years	Attain Date > 5 years			
G	Part of area has approved 15% VOC ROP plan under 1-hr O3 NAAQS	X	X			a. At the time the area with an approved 15% VOC ROP plan adopted rules to meet the 15% ROP requirement, the area without an approved 15% VOC ROP plan had adopted and implemented control measures (and that were approved in the SIP) that were similar to those in the area with an approved 1-hr 15% VOC ROP plan; and b. The area had a similar mix of sources to that of the area with an approved 1-hr 15% VOC ROP plan.	EPA may treat the portion of the 8-hour nonattainment area without an approved 1-hr 15% VOC plan as under situations A, B, or C above, as appropriate).*	Preamble, 70 FR 71636, col 2
	Part of area without approved 15% VOC ROP plan under 1-hr O3 NAAQS							
H	Entire area without approved 15% VOC ROP plan under 1-hr O3 NAAQS	X	X			The area cannot meet conditions of situation I (below)	The area must meet the RFP requirements of section 182(b)(1) (and (c)(2)(B) depending on its classification).	(a)(1)(i)
I	Entire area without approved 15% VOC ROP plan under 1-hr O3 NAAQS; area had at one time been subject to 15% VOC ROP under 1-hour O3 standard	X	X			a. The area actually obtained 15% VOC reductions after 1990; and b. The area had adopted and implemented control measures (that have been approved in the SIP) that resulted in the 15% VOC reductions per section 182(b)(1) of the CAA and it is shown that the reductions are as expeditious as practicable.	EPA may treat the 8-hour nonattainment area without an approved 1-hr 15% VOC plan as under situations A, B, or C above, as appropriate).*	Not previously referenced

\* Rulemaking would also have to set forth EPA approval of the 15% VOC ROP plan under the 1-hour ozone standard.

# SUBPART 1 AREAS

Situation <sup>4</sup>	IF		THEN	
	Area type <sup>5</sup>	Attain Date ≤ 5 years	Attain Date > 5 years	Reference 40 CFR 51.910 (unless otherwise noted)
J	Entire area--Subpart 1	X		Area subject to subpart 1 RFP, satisfied with measures that demonstrate attainment as expeditiously as practicable
K	Entire area--Subpart 1		X	Area subject to subpart 1 RFP; satisfied with RFP plan to demonstrate 15% emission reductions (VOC and/or NOx) from 2002 <sup>6</sup> to 2008 and time-proportional emission reductions every 3 years beyond 2008 out to attainment date.

## ACRONYMS:

RFP Reasonable Further Progress (for 8-hour standard)  
 NA Nonattainment  
 ROP Rate of Progress (used with 1-hr standard)  
 VOC Volatile organic compound  
 NOx Nitrogen oxides  
 O3 Ozone  
 NAAQS National ambient air quality standard  
 CAA Clean Air Act

<sup>4</sup> Situations other than those identified here should be discussed with the appropriate Regional Office.

<sup>5</sup> Applies to an individual State portion if it is part of an interstate nonattainment area.

<sup>6</sup> Assuming 2002 is the base year for the inventory; 40 CFR 51.910(d) provides for using an alternative year.

# Appendix A to Preamble—Methods to Account for Non-Creditable Reductions When Calculating ROP Targets for the 2008 and Later ROP Milestone Years

The following methods properly account for the non-creditable emissions reductions when calculating ROP targets for the 2008 and later ROP milestone years.<sup>119</sup> They are consistent with requirements of sections 182(b)(1)(C) and (D) and 182(c)(2)(B) of the CAA.

(1) Method 1: For areas that must meet a 15 percent VOC reduction requirement by 2008:

(A) Estimate the actual anthropogenic base year VOC inventory in 2002 with all 2002 control programs in place for all sources.

(B) Using the same highway vehicle activity inputs used to calculate the actual 2002 inventory, run the appropriate motor vehicle emissions model for 2002 and for 2008 with all post-1990 CAA measures turned off. Any other local inputs for vehicle inspection and maintenance (I/M) programs should be set according to the program that was required to be in place in 1990. Fuel Reid Vapor Pressure (RVP) should be set at 9.0 or 7.8 depending on the RVP required in the local area as a result of fuel RVP regulations promulgated in June, 1990.

(C) Calculate the difference between the 2002 and 2008 VOC emission factors calculated in Step B and multiply by 2002 vehicle miles traveled (VMT). The result is the VOC emissions reductions that will occur between 2002 and 2008 without the benefits of any post-1990 CAA measures. These are the non-creditable reductions that occur over this period.

(D) Subtract the non-creditable reductions calculated in Step C from the actual anthropogenic 2002 inventory estimated in Step A. This adjusted VOC inventory is the basis for calculating the target level of emissions in 2008.

(E) Reduce the adjusted VOC inventory calculated in Step D by 15 percent. The result is the target level of

VOC emissions in 2008 in order to meet the 2008 ROP requirement. The actual projected 2008 inventory for all sources with all control measures in place and including projected 2008 growth in activity must be at or lower than this target level of emissions.

(2) Method 2: For areas covered under 40 CFR 51.910(a)(1)(ii)(C) and that meet an 18 percent VOC emission reduction requirement by 2008 with NO<sub>x</sub> substitution allowed, following EPA's NO<sub>x</sub> Substitution Guidance:

(A) Estimate the actual anthropogenic base year inventory for both VOC and NO<sub>x</sub> in 2002 with all 2002 control programs in place.

(B) Using the same highway vehicle activity inputs used to calculate the actual 2002 inventory, run the appropriate motor vehicle emissions model for 2002 and for 2008 with all post-1990 CAA measures turned off. Any other local inputs for I/M programs should be set according to the program that was required to be in place in 1990. Fuel RVP should be set at 9.0 or 7.8 depending on the RVP required in the local area as a result of fuel RVP regulations promulgated in June, 1990.

(C) Calculate the difference between 2002 and 2008 VOC emissions factors calculated in Step B and multiply by 2002 VMT. The result is the VOC emissions reductions that will occur between 2002 and 2008 without the benefits of any post-1990 CAA measures. These are the non-creditable VOC reductions that occur over this period. Calculate the difference between 2002 and 2008 NO<sub>x</sub> emissions factors calculated in Step B and multiply by 2002 VMT. This result is the NO<sub>x</sub> emissions reductions that will occur between 2002 and 2008 without the benefits of any post-1990 CAA measures. These are the non-creditable NO<sub>x</sub> reductions that occur over this period.

(D) Subtract the non-creditable VOC reductions calculated in Step C from the actual anthropogenic 2002 VOC inventory estimated in Step A. Subtract the non-creditable NO<sub>x</sub> reductions calculated in Step C from the actual anthropogenic 2002 NO<sub>x</sub> inventory estimated in Step A. These adjusted VOC and NO<sub>x</sub> inventories are the basis for calculating the target level of emissions in 2008.

(E) The target level of VOC and NO<sub>x</sub> emissions in 2008 needed to meet the 2008 ROP requirement is any combination of VOC and NO<sub>x</sub> reductions from the adjusted inventories calculated in Step D that total 18 percent. For example, the target level of VOC emissions in 2008 could be a 10 percent reduction from the adjusted

VOC inventory in Step D and an 8 percent reduction from the adjusted NO<sub>x</sub> inventory in Step D. The actual projected 2008 VOC and NO<sub>x</sub> inventories for all sources with all control measures in place and including projected 2008 growth in activity must be at or lower than the target levels of VOC and NO<sub>x</sub> emissions.

(3) Method 3: For all areas that have used Method 1 above (and therefore do not have a NO<sub>x</sub> target level of emissions for 2008) and must meet an additional reduction VOC requirement of 9 percent every 3 years after 2008 with NO<sub>x</sub> substitution allowed, following EPA's NO<sub>x</sub> Substitution Guidance. Each subsequent target level of emissions should be calculated as an emission reduction from the previous target.

(A) Estimate the actual anthropogenic base year NO<sub>x</sub> inventory in 2002 with all 2002 control programs in place for all sources.

(B) Using the same highway vehicle activity inputs used to calculate the actual 2002 inventory, run the appropriate emissions model for VOC and NO<sub>x</sub> in 2002 and 2008 (previously done in Step B in Method 1 for VOC but not necessarily for NO<sub>x</sub>) and 2011 with all post-1990 CAA measures turned off. Any other local inputs for I/M programs should be set according to the program that was required to be in place in 1990. Fuel RVP should be set at 9.0 or 7.8 depending on the RVP required in the local area as a result of fuel RVP regulations promulgated in June, 1990.

(C) Calculate the difference between 2008 and 2011 VOC emission factors calculated in Step B and multiply by 2002 VMT. The result is the VOC emissions reductions that will occur between 2008 and 2011 without the benefits of any post-1990 CAA measures. These are the non-creditable VOC reductions that occur over this period. Calculate the difference between 2002 and 2011 NO<sub>x</sub> emission factors calculated in Step B and multiply by 2002 VMT. The result is the NO<sub>x</sub> emissions reductions that will occur between 2002 and 2011 without the benefits of any post-1990 CAA measures. These are the non-creditable NO<sub>x</sub> reductions that occur over this period.

(D) Subtract the non-creditable VOC reductions calculated in Step C from the 2008 VOC target level of emissions calculated previously. Subtract the non-creditable NO<sub>x</sub> reductions calculated in Step C from the actual 2002 NO<sub>x</sub> inventory of emissions calculated in Step A. These adjusted VOC and NO<sub>x</sub> inventories are the basis for calculating the target level of emissions in 2011.

<sup>119</sup> These methods assume the use of EPA's on-road motor vehicle emissions model in all States other than California. All of the methods given here require the user to turn off all post-1990 CAA measures as part of the calculation. In EPA's current motor vehicle emissions model, MOBILE6.2, this is accomplished using the NO CLEAN AIR ACT command as described in the MOBILE6.2 User's Guide (found at <http://www.epa.gov/otaq/m6.htm>). Users of future versions of EPA's motor vehicle emissions model should consult the appropriate User's Guide for the version of the model they are using for instructions on what model command to use. For California nonattainment areas, the current motor vehicle emissions model is EMFAC2002. Users modeling California nonattainment areas should consult with the EPA Regional Office for information on doing equivalent calculations in that model and in future versions.

(E) The target level of VOC and NO<sub>x</sub> emissions in 2011 needed to meet the 2011 ROP requirement is any combination of VOC and NO<sub>x</sub> reductions from the adjusted inventories calculated in Step E that total 9 percent. For example, the target level of VOC emissions in 2011 could be a 4 percent reduction from the adjusted VOC inventory in Step C and a 5 percent reduction from the adjusted NO<sub>x</sub> inventory in Step C. The actual projected 2011 VOC and NO<sub>x</sub> inventories for all sources with all control measures in place and including projected 2011 growth in activity must be at or lower than the target levels of VOC and NO<sub>x</sub> emissions.

(F) For subsequent 3-year periods until the attainment date, repeat the process for VOC. For subsequent 3-year periods, the adjusted NO<sub>x</sub> inventory should be based on the difference in NO<sub>x</sub> emissions during that 3-year period when all post-1990 CAA measures are turned off, subtracted from the previous NO<sub>x</sub> target level of emissions. For example, for 2014, take the difference in NO<sub>x</sub> emissions reductions that will occur between 2011 and 2014 without the benefits of any post-1990 CAA measures. This value is subtracted from the 2011 target level of NO<sub>x</sub> emissions calculated in Step D to get the adjusted NO<sub>x</sub> inventory to be used as the basis for calculating the target level of NO<sub>x</sub> emissions in 2014.

(4) Method 4: For all areas that have used Method 2 above (and therefore do have a NO<sub>x</sub> target level of emissions for 2008) and must meet an additional reduction VOC requirement of 9 percent every 3 years after 2008 with NO<sub>x</sub> substitution allowed, following EPA's NO<sub>x</sub> Substitution Guidance. Each subsequent target level of emissions should be calculated as an emissions reductions from the previous target.

(A) Using the same highway vehicle activity inputs used to calculate the actual 2002 inventory, run the appropriate emissions model for VOC and NO<sub>x</sub> in 2008 (previously done in Step B in Method 2) and 2011 with all post-1990 CAA measures turned off. Any other local inputs for I/M programs should be set according to the program that was required to be in place in 1990. Fuel RVP should be set at 9.0 or 7.8 depending on the RVP required in the local area as a result of fuel RVP regulations promulgated in June 1990.

(B) Calculate the difference between 2008 and 2011 VOC emission factors calculated in Step A and multiply by 2002 VMT. The result is the VOC emissions reductions that will occur between 2008 and 2011 without the benefits of any post-1990 CAA

measures. These are the non-creditable VOC reductions that occur over this period. Calculate the difference between 2008 and 2011 NO<sub>x</sub> emission factors calculated in Step A and multiply by 2002 VMT. The result is the NO<sub>x</sub> emissions reductions that will occur between 2008 and 2011 without the benefits of any post-1990 CAA measures. These are the non-creditable NO<sub>x</sub> reductions that occur over this period.

(C) Subtract the non-creditable VOC reductions calculated in Step B from the 2008 VOC target level of emissions calculated previously. Subtract the non-creditable NO<sub>x</sub> reductions calculated in Step B from the 2008 NO<sub>x</sub> target level of emissions calculated previously. These adjusted VOC and NO<sub>x</sub> inventories are the basis for calculating the target level of emissions in 2011.

(D) The target level of VOC and NO<sub>x</sub> emissions in 2011 needed to meet the 2011 ROP requirement is any combination of VOC and NO<sub>x</sub> reductions from the adjusted inventories calculated in Step E that total 9 percent. For example, the target level of VOC emissions in 2011 could be a 4 percent reduction from the adjusted VOC inventory in Step C and a 5 percent reduction from the adjusted NO<sub>x</sub> inventory in Step C. The actual projected 2011 VOC and NO<sub>x</sub> inventories for all sources with all control measures in place and including projected 2011 growth in activity must be at or lower than the target levels of VOC and NO<sub>x</sub> emissions.

(E) Repeat entire process for subsequent 3-year periods until the attainment date.

#### Appendix B to Preamble—Glossary of Terms and Acronyms

ACT—Alternative Control Techniques  
 ARTBA—American Road and Transportation Builders Association  
 BACT—Best Available Control Technology  
 BART—Best Available Retrofit Technology  
 CAA—Clean Air Act  
 CAAAC—Clean Air Act Advisory Committee  
 CADCS—Clean Air Development Communities  
 CAIR—Clean Air Interstate Rule  
 CERR—Consolidated Emissions Reporting Rule  
 CFR—Code of Federal Regulations  
 CMAQ—Congestion Mitigation and Air Quality  
 CMSA—Consolidated Metropolitan Statistical Area  
 CO—Carbon Monoxide  
 CTG—Control Technique Guideline  
 DOT—Department of Transportation  
 EMFAC—Emissions FACTors (a mobile emissions model)  
 ESRP—Emissions Statement Reporting Program  
 CTG—Control Technique Guidelines  
 EGUs—Electricity Generating Units

EPA—Environmental Protection Agency  
 FIP—Federal Implementation Plan  
 FMVCP—Federal Motor Vehicle Control Program  
 HON—Hazardous Organic NESHAP  
 ICR—Information Collection Requirement  
 I/M—Inspection and Maintenance Area  
 km—Kilometers  
 LADCO—Lake Michigan Air Directors Consortium  
 LAER—Lowest Achievable Emission Rate  
 MACT—Maximum Achievable Control Technology  
 MCR—Mid-course Review  
 MPO—Metropolitan Planning Organization  
 MSA—Metropolitan Statistical Area  
 NAA—Nonattainment Area  
 NAAMS—National Ambient Air Modeling Strategy  
 NAAQS—National Ambient Air Quality Standards  
 NAMS/SLAMS—National Air Monitoring Stations/State and Local Air Monitoring Stations  
 NAS—National Academy of Sciences  
 NCore—National Core Monitoring Stations  
 NESHAP—National Emission Standards for Hazardous Air Pollutants  
 NO<sub>x</sub>—Nitrogen Oxides  
 NO<sub>y</sub>—Reactive Oxides of Nitrogen  
 NPRM—Notice of Proposed Rulemaking  
 NSR—New Source Review  
 NTAA—National Tribal Air Association  
 NTTAA—National Technology Transfer Advancement Act of 1995  
 OMB—Office of Management and Budget  
 OTAG—Ozone Transport Assessment Group  
 OTR—Ozone Transport Region  
 PAMS—Photochemical Assessment Monitoring Stations  
 PM—Particulate Matter  
 PM<sub>2.5</sub>—Fine Particulate Matter  
 PM<sub>10</sub>—Particulate Matter Having a Nominal Aerodynamic Diameter Less than or Equal to 10 Microns  
 ppb—Parts per Billion  
 ppm—Parts per Million  
 PSD—Prevention of Significant Deterioration  
 psi—Pounds Per Square Inch  
 RACM—Reasonably Available Control Measures  
 RACT—Reasonably Available Control Technology  
 RFASA—Regulatory Flexibility Act Screening Analysis  
 RFP—Reasonable Further Progress  
 RIA—Regulatory Impact Analysis  
 ROG—Reactive Organic Gases  
 ROP—Rate of Progress  
 RPOs—Regional Planning Organizations  
 RVP—Reid Vapor Pressure  
 SBA—Small Business Administration  
 SCR—Selective Catalytic Reduction  
 SIPs—State Implementation Plans  
 SO<sub>2</sub>—Sulfur Dioxide  
 TAR—Tribal Authority Rule  
 TAS—(Treatment in the Same Manner as a State "Treatment as State")  
 TEA—21—Transportation Equity Act for the Twenty-first Century  
 TIPs—Tribal Implementation Plans  
 tpy—Tons Per Year  
 TSP—Total Suspended Particulates  
 TTN/SCRAM—Technical Transfer Network/Support Center for Regulatory Air Models