Scoping Guidelines for Project-Level Air Quality Analyses

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VDOT Virginia Department of Transportation

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APPENDIX:

1. Introduction

The Virginia Department of Transportation (VDOT) contracts consultant services for the preparation of environmental clearance documents that address a range of topics including air quality. This guide[1] addresses the preparation of the scope of work for any project-level air quality analysis to be conducted on behalf of VDOT or otherwise to be subjected to Department review and approval[2,3].

This guide[4] complements the Department "*Resource Document for Project-Level Air Quality Analyses for the Commonwealth of Virginia*" (Resource Document) and "*Template Report for Project-Level Air Quality Analyses*" (Template Report), which are listed as key references and reviewed in separate sections below. The application of these resources helps streamline the preparation of project-level air quality analyses and ensure that they will meet all applicable regulations and guidance and the needs of the Department.

This guide also includes a section on frequently asked questions (FAQs), which will be updated periodically as questions and comments are received.

2. General Requirements

The scope of work must specify tasks and/or sub-tasks that when completed may reasonably be expected to lead to the successful completion of the study, on the schedule and within the budget specified in the overall contract. Overall, while the scope of work should be concise, it must also provide sufficient detail to indicate that:

- Project-specific conditions and information have been appropriately reviewed.
- The proposed approach has been streamlined to the extent feasible for the type and scope of the project, degree of public and stakeholder interest expected, and level of National Environmental Policy Act (NEPA) document involved (see Sections 2.1 and 2.2).
- The proposed approach and level of analysis, including but not limited to modeling, analysis, consultation and documentation, will address as appropriate all applicable regulatory requirements and guidance specified by the Federal Highway Administration (FHWA)[5] and US

[1] This Guide in conjunction with the referenced Resource Document supersedes the previously existing (2009) Department "Consultant Guide" that specified requirements for the submission of an air quality protocol (scope) for review as well as other administrative or contractual requirements and also provided a limited set of technical data for the previous era of EPA models and associated guidance.

[2] The scope of work for air quality must meet all applicable requirements specified in the solicitation and contract. Nothing in this guide is intended to change any of those requirements.

[3] If the project does not involve the preparation of a scope of work for VDOT but review and approval by the Department of the final air quality report is expected, as may occur with local assistance projects, then the air quality modeling protocol (see Section 3.3) must still be prepared for Department review and approval.

[4] Copies of the Scoping Guidelines, Resource Document, and (currently in development) Template Report may be accessed on or via links provided on the VDOT website: http://www.virginiadot.org/programs/pr-environmental.asp.

[5] Additional information on FHWA guidance may be found at:
General: http://www.fhwa.dot.gov/environment/air_quality/
Guidance: https://environment.fhwa.dot.gov/projdev/impta6640.asp

Environmental Protection Agency (US EPA)[6].

2.1 Streamlining

Federal and Departmental objectives for streamlining project development and environmental clearance processes (including air quality analyses) apply and may be supported by the effective utilization of the following key resources:

- FHWA and VDOT resources for streamlining (programmatic agreements etc.)(see Section 3.5.1)

- VDOT Resource Document (see Section 3.5.2), including both:
  - Modeling inputs as specified or referenced in the Resource Document, which have already been subjected to inter-agency consultation for conformity (IACC), and
  - Streamlining and other protocols as specified in the Resource Document.

- VDOT template report for project-level air quality analyses (NEPA documentation) (see Section 3.5.3).

2.2 Treatment of Higher Profile or More Complex Projects

Notwithstanding the need for streamlining, the level of analysis and detail for modeling to specify in the scope of work may be greater for certain types of projects, as listed below. The level of analysis needed for the air quality analyses for such projects is typically determined by the Department on a case-by-case basis.

1. **Projects involving the preparation of an Environmental impact statement (EIS):** At the discretion of the Department, a minimum level of analysis or detail may be conducted for projects involving an EIS even if it would not be done for projects involving an environmental assessment (EA) or categorical exclusion (CE).

2. **Projects of greater interest to the public and other stakeholders**: A greater level of analysis or detail for air quality may be appropriate for projects that involve or may involve a greater degree of public and/or stakeholder interest, particularly if air quality is identified as a specific issue for that project. Close coordination with Department air quality staff is needed in these cases.

   and/or

3. **Projects that are relatively complex**: Projects that involve or may involve modeling of a relatively detailed or complex nature typically need to be addressed in greater detail in the scope of work. This includes projects for which:

   - Modeling for particulate matter (PM) and/or mobile source air toxics (MSATs) may be required.

[6] Additional information on EPA requirements and guidance may be found at:
Project-Level: http://www.epa.gov/otaq/stateresources/transconf/projectlevel-hotspot.htm
Conformity: http://www.epa.gov/otaq/stateresources/transconf/policy.htm
MOVES Model: http://www.epa.gov/otaq/models/moves/
Dispersion Models: http://www.epa.gov/ttn/scram/dispersion_prefrec.htm

- The development of traffic data and forecasts may be relatively complex, such as when:
  - Multiple sets of traffic forecasts must be applied, requiring steps to be taken to ensure consistency between the individual forecasts. This may occur for projects for which regional modeling is needed for MSATs in addition to separate corridor-specific forecasts for CO and/or PM. Additionally, for MSATs, the identification of affected links may be made particularly more complicated in cases in which the design year is greater than the horizon year of the approved long range transportation plan, i.e., greater than the horizon year of the current official network model for the region.
  - Traffic simulation results may be available, covering the project area and analysis years in whole or in part.
  - Drive cycles or operating mode distributions are to be applied for roadway links, instead of average speeds.

- Multiple alternatives and/or phasing of projects must be modeled. This may be further complicated if one or more alternatives involve off-network modeling (e.g., for park-and-ride, transit and/or inter-modal facilities) and/or nearby stationary sources, and/or if there are nearby major projects also being implemented with opening years in the same time frame.

Section 3.2 provides additional examples of potential challenges that may qualify a project as one that is relatively complex.

Conversely, a project that does not involve an EIS, is not considered high profile or relatively complex (and does not involve project-specific IACC), and involves at most worst-case (screening) modeling for CO (and not detailed modeling for PM or MSATs) is considered relatively routine for air quality. The level of analysis and detail to be specified in the scope of work for such a project should therefore be relatively streamlined compared to those for higher profile or relatively complex projects.

3. Specific Requirements

In addition to the general considerations identified in the previous section, specific requirements for the scope of work apply as summarized below.

3.1 Key Elements of the Scope of Work

The scope of work should address the following key elements[7], as applicable:

- Potential Challenges or Issues *(see Section 3.2)*
- Air Quality Modeling Protocol *(see Section 3.3)*
- Project Description and Alternatives[8]
- Planned Approach for Generating Traffic and Planning Data and Information (see *Note 1*)

[7] As experience is gained with the new Scoping Guidelines, a template or example scope of work may be provided in the future as an appendix to these Guidelines.

[8] Summary information only as needed for scoping the air quality analysis, referencing as need more detailed descriptions that may be provided elsewhere. If the proposed scope for quality is part of an overall proposal for NEPA services in which the alternatives are already summarized in a separate section, then an additional and duplicative summary of the alternatives would not be needed within the air quality scope.

- Current conformity status of the project *(if applicable)*
- Pollutants or pollutant classes to be assessed (*including the potential for streamlining per Section 3.5.1*)[9]:
  - Carbon Monoxide (CO)
  - Fine Particulate Matter ($PM_{2.5}$)[10]
  - Mobile Source Air Toxics (MSATs)
  - Greenhouse Gases (GHGs)[11]
- Indirect Effects and Cumulative Impacts (IECI)[12]
- Construction Activities[13]
- Mitigation[14]
- Deliverables (see *Note 2*)
- Optional Addendum (see Section 3.4)

Notes:

(1) The scope of work typically includes the following key terms for the section on traffic and planning data:

- *For projects in which consultants are to provide the traffic data and forecasts needed for the air quality assessment: the consultant will generate the data and forecasts (including any post-processing for air quality modeling purposes) using only qualified personnel (typically traffic engineers or transportation planners) consistent with the requirements of the VDOT Resource Document (Protocol 2.6.3.1).*

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[9] Unless directed otherwise by VDOT Air Quality staff, do not propose modeling or an analysis for any pollutant that is not needed to meet an applicable regulatory requirement or is not specified in FHWA guidance for NEPA analyses.

[10] An assessment for $PM_{2.5}$ is not required if the applicable national ambient air quality standard (NAAQS) for the current maintenance area in northern Virginia is revoked as proposed by EPA. On March 23, 2015, EPA issued a proposed rule (80 FR 15340) on "*Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements*" that stated, in part: "… *EPA is proposing to revoke the 1997 primary annual standard because the EPA revised the primary annual standard in 2012*". At the time of preparation of this update of the Scoping Guidelines, EPA has not yet finalized that proposed revocation. If and when it does, then the associated project-level ("hot-spot") air quality analysis requirements as specified in the federal transportation conformity rule would no longer apply. See: https://www.gpo.gov/fdsys/pkg/FR-2015-03-23/pdf/2015-06138.pdf

[11] Typically GHG analyses are not expected unless and until applicable federal guidance is issued, with the sole exception that, as a Department policy, a qualitative analysis is typically expected for projects involving an EIS. An example of a qualitative GHG analysis is provided with the Department Template report for air quality (see Section 3.5.3 for additional information on the template report). Once applicable federal guidance for GHG analyses is issued, the Department Resource Document and these Scoping Guidelines will be updated as appropriate.

[12] Typically a brief qualitative analysis is all that is expected for IECI for air quality.

[13] If the $PM_{2.5}$ NAAQS is revoked as proposed (as noted above), and associated conformity requirements thereby eliminated, the associated conformity requirement to assess construction emissions would also no longer apply. In any case, typically analyses of construction emissions are not required given EPA's five –year criterion See: https://www.gpo.gov/fdsys/pkg/CFR-2014-title40-vol20/xml/CFR-2014-title40-vol20-sec93-123.xml

[14] Historically, mitigation has not been needed in Virginia for air quality, but the scope should address the topic if there is a possibility that it will be needed.

- *For projects for which the Department will supply the traffic: the consultant will specify in detail the data and forecasts needed for the air quality analysis. This includes review for completeness and QA/QC for any traffic data collection needed for that purpose.*
- *The consultant will subject all traffic data and forecasts to thorough QA/QC review and ensure that all traffic data and forecasts are consistent internally (if different traffic forecasts are supplied for each pollutant) and with other traffic data and forecasts developed for the project for design purposes. In particular, if a quantitative MSATs analysis is to be conducted, the consultant will ensure that the identified traffic impact areas are reasonably consistent between the MSATs analysis and the traffic impact area(s) identified in the project design process (or otherwise provide a clear explanation for any notable differences.*
- *The consultant will also obtain or generate as appropriate all design information needed for the air quality analysis, including all geometric data (including road grades) and information needed to model the base and all future year alternatives as applicable. This includes any nearby or affected facilities (including plans for future improvements) to be modeled as part of the air quality analysis for any pollutant, e.g., nearby intersections for the CO or PM2.5 analyses and nearby links for an MSATs analysis.*

(2) The scope of work typically includes the following key terms for the section on deliverables:

- *The deliverables will include:*
    a) Draft and Final Traffic Request/ Specification for the Air Quality Analysis (including any traffic and activity data collection and analysis),
    b) Draft and Final Air Quality Modeling Protocol,
    c) Draft and Final Air Quality Technical Report, and Draft and Final air quality section of the main NEPA document.
    d) An electronic archive as detailed below.

    The draft and final air quality report will include an Executive Summary designed to be excerpted with minimal editing for inclusion in the draft main NEPA document or otherwise provide a ready basis for the summary air quality assessment to be included in that document.

    The Department template air quality report or equivalent (or Consultant template report) will be applied.

- *Electronic archive: All scoping and report files as listed above will be delivered in original MS Office format as well as portable document (pdf) format. All modeling files (input and output) and related data and information will also be delivered, including:*
    a) All files used for emission and (as applicable dispersion) modeling, including files for EPA emission and dispersion models as well as any third-party or vendor software that were applied for the project,
    b) All spreadsheet, GIS and other files used in the analysis, and
    c) All traffic and design information (e.g., PDFs of plans) on which the modeling was based.

3.2 Identification of Potential Challenges and Issues

The scope of work should include a brief section in which any aspects of the proposed analysis that may be particularly challenging and/or may become an issue are identified. A reference should also be

provided to the task or subtask (if any) in which the issue and proposed resolution may be addressed in more detail. The intent of this section is to identify any challenge(s) early in the project development process so that proactive steps may be taken as appropriate to mitigate or avoid them. Further:

- If the project involves an EIS, is higher profile and/or relatively complex (per Section 2.2), this requirement is that much more necessary.
- If no particular challenges or issues have been identified, the scope of work should include a statement to that effect.

In addition to the examples provided in Section 2.2, potential challenges and issues that may be identified in this section include:

- IACC is being proposed for the project:
    - To consult on the proposed use of models, methods, assumptions or data not specified in or consistent with the Resource Document, and/or
    - As a discretionary option, if the project is considered high profile.

- Challenges with traffic, emission and/or dispersion modeling inputs and/or approach:
    - Selection of the best or most appropriate approach for generating traffic and/or activity forecasts, especially for high profile/complex projects that involve modeling for multiple pollutants, multiple alternatives and/or phasing.
    - Selection of appropriate modeling years, especially if traffic is not available for the anticipated year of peak emissions and/or a nearby project is opening at or near the same year.
    - Design year extending beyond the horizon year of the currently available regional network model, and regional modeling is needed, e.g., for MSATs.
    - Inputs for emission or dispersion modeling that are substantively different from those specified in the VDOT Resource Document are being proposed.
    - Determining or obtaining specific modeling inputs.
    - Selection of dispersion model[15], especially for a high profile or complex project for which modeling of particulate matter is proposed.

- Challenges or questions about streamlining options:
    - Regarding the potential applicability for the project of programmatic agreements and/or categorical finding.
    - Regarding possible exempt status. For example, the project may appear to qualify for an exemption under safety given available studies that identify safety as an issue and the proposed improvements may reasonably be expected to result in improvements in safety, but it is not clear to what extent the project may be cleared on that basis alone.
    - Regarding whether a specific change or changes in modeling input(s) or approach would meet the definition of a "substantive change" as specified in the Department Resource Document and referenced in this guide.

[15] At the time of preparation of this update of the Scoping Guidelines, EPA has not yet finalized a proposed rule that, in part, would eliminate the CALINE3 series of models. If EPA finalizes the rule as proposed, then only AERMOD may be applied. See: *Revision to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches To Address Ozone and Fine Particulate Matter*, published in the Federal Register on July 29, 2015 (80 FR 45340) (https://www.gpo.gov/fdsys/pkg/FR-2015-07-29/pdf/2015-18075.pdf)

- Changes to applicable regulations or guidance:
    - For example, the conformity status for the region in which the project is located may change in the course of the project, or an update to federal regulations or guidance may be pending that would affect the proposed approach for the study.

- Project schedule:
    - Potential challenges in timing for delivery of key modeling inputs (e.g. traffic)
    - Uncertainty in the amount of time to allow for consultation, particularly for high profile and/or complex projects.

3.3 Air Quality Modeling Protocol

The scope of work must include a task to develop an air quality modeling protocol (AQM protocol), which is simply an overview or summary of the final proposed modeling and analysis approach based on the latest project information (i.e., updated or final traffic forecasts and design details)[16]. The intent of the AQM protocol is two-fold:

1) to finalize the modeling approach as outlined in the initial scope (which is typically relatively general) using updated/final traffic data and forecasts and design information developed in the course of the study, and
2) to provide a means to gain consensus with FHWA on the proposed approach, if and as needed.

Key factors to consider in developing the AQM protocol include:

- *Prerequisite for Modeling & Analysis*: The AQM protocol must be reviewed and approved by VDOT Air Quality staff typically before any detailed modeling or analysis is initiated for the project.
    - Once the contract has been executed, and traffic data and forecasts and design information for the project have been obtained and reviewed in detail by the consultant, the consultant will prepare the AQM protocol for submittal to VDOT Air Quality staff for review and approval.
    - In some cases, if time is of the essence (e.g., if the development of final traffic forecasts has been delayed), and if so directed by VDOT Air Quality staff, it may be reasonable to proceed with modeling for one pollutant (e.g., worst-case modeling for CO) based on preliminary traffic and design information while waiting for final traffic forecasts needed to determine the level of analysis required for another pollutant (e.g., PM or MSATs).
        - In these cases, the AQM Protocol should still be prepared for review and approval by VDOT Air Quality staff but should note that a contingent approach (proceeding with analysis of one pollutant while waiting for final traffic forecasts for one or more other pollutants) is being proposed in the interests of time.
        - An updated AQM Protocol should be provided for VDOT Air Quality staff review and approval when the final traffic forecasts are received.
- *Format*: The AQM protocol should follow the outline provided in section 3.1 for the scope of work[17]. If this format was applied with the original scope, as is typically the case, then the AQM

[16] For local assistance projects for which the requirement to provide a scope of work to the Department is not applicable, an AQM protocol should still be developed and submitted to the Department for review and approval.

[17] With the exception of the specification of deliverables.

protocol would effectively be the original scope updated using the latest project information. It may be written in summary or bullet-point format for this purpose.
    - If the original scope did not for some reason follow the outline in Section 3.1 or was not originally developed for VDOT review and approval (which may occur with local assistance projects), the AQM protocol should be developed following that outline.
- *Potential Challenges*: The AQM protocol must highlight any potential challenges or issues and their proposed resolution.
- *VDOT Resource Document*: The AQM protocol should refer to the VDOT Resource Document as the source for modeling inputs, and otherwise highlight any proposed exceptions.
- *Streamlining*: The AQM protocol must document the proposed application (if any) of the available resources for streamlining (see Section 3.5.1).
- *Traffic and Design Information*: The consultant must obtain all traffic and design information needed to finalize the modeling analysis and approach, and the AQM Protocol should include a summary of available design and traffic information for the project as needed for screening purposes, i.e., to determine the level of analysis appropriate for the air quality study using the resources for streamlining identified in Section 3.5.1. The summary should include:
    - Traffic:
        - Design year average daily traffic (ADT) and truck percent.
        - Congested speeds, if available.
        - For projects subject to conformity requirements for PM: Build/No-Build diesel truck and bus volumes.
        - Additional information for off-network facilities, if applicable, e.g., for park-and-ride lots, or, for PM analyses, truck terminals.
    - Design Information:
        - Number of lanes (through, turning and auxiliary)
        - Skew angles for intersections and grade separations.
        - Average Road grades
        - Posted speeds
        - For arterial-freeway grade separations and interchanges, the distance between from the nearest edge of the travel lanes of the freeway to those of the immediately adjacent intersection(s) on either side of the freeway.

      <u>Notes for Traffic and Design</u>:
      1) *Terms of programmatic agreements and FHWA categorical findings are subject to change over time. In such cases, additional and/or different information from what is listed above may be needed. Refer to the current agreements and/or finding as appropriate for the specific information needed.*
      2) *Copies of detailed traffic data and forecasts and plans as needed for the air quality analyses should be attached or otherwise made available to supplement the summary tables and exhibits.*

- For projects involving an EIS, or are otherwise higher profile or complex, the AQM protocol will typically be subjected to review and comment by FHWA with the intent of gaining early consensus on the proposed modeling and analysis approach for this project. Note, on occasion and at the discretion of the Department, an FHWA review may be initiated relatively early in the process, e.g., with the preparation of the initial scope.

Finally, for context, the need for an AQM protocol in addition to the initial scope of work arises from the fact that the data and information (particularly traffic forecasts and design details) needed to prepare a detailed scope of work are typically very limited for the project at the time that the initial scope of work is prepared. Once those needed details become available in the course of the study, the initial scope of work can be revisited and refined as needed (with the AQM Protocol).

- Note, on occasion, changes in applicable regulations, guidance and/or models may occur, or changes in the development of alternatives and/or the selection of a preferred alternative in the course of the study may occur that would also require an update to the scope of work. Such changes or updates, if substantive, may result in changes in decisions on what would be the best or the most appropriate approach for the modeling and analysis for the project.
- If there are no substantive changes from the original scope, the modeling approach as originally proposed (or with minor changes) may be used as the basis for the AQM protocol. This may occur for example with a minor project for which it was expected that the project can be screened using a programmatic agreement, which can only be confirmed once traffic forecasts are received.

3.4 AQM Protocol Summary Tables (Optional Addendum)

The Appendix to this Guide provides templates for a set of summary tables that may be completed and provided as an addendum to the AQM Protocol. The tables provide a standard format for project-related data and information and are intended to both facilitate the review process and support decision-making on the models, methods and assumptions/data to be applied in the analysis. Even if they are not completed for the AQM Protocol, they may serve as a checklist for what is to be included in it. The tables are:

Table 1: General project information (project identification, location etc.).

Table 2: General approach for the emission and air quality analysis, including which of the programmatic agreements and FHWA categorical finding (if any) may be invoked.

Table 3: Details as needed on the proposed emission and air quality modeling approach.

3.5 Application of Key Resources

The scope of work should reference and apply as appropriate the following resources[18]: 1) Resources for Streamlining, 2) VDOT Resource Document, and 3) VDOT Template Report for project-level air quality analyses. Each is reviewed in turn below.

3.5.1 FHWA and VDOT Resources for Streamlining

In keeping with federal and Department objectives for streamlining environmental clearance processes and associated air quality analyses:

1. Review each of the resources presented in the sub-sections below for potential application for the proposed project, and

[18] Documents maintained by the Department may be accessed from or via the VDOT website at: http://www.virginiadot.org/business/environmental.asp.

2. If any are determined to be eligible for application for the proposed project, clearly identify their proposed application in the scope of work (and AQM Protocol as applicable) along with the technical basis, i.e., how the project would meet the specified technical criteria.

Resources for streamlining currently available include: FHWA-VDOT programmatic agreements, the FHWA categorical finding for CO, VDOT Resource Document protocols and Appendix L criteria for assessing projects for fine particulate matter, and the list of exempt projects from the federal transportation conformity rule.

3.5.1.1 FHWA-VDOT Programmatic Agreements

The Department working with the Federal Highway Administration (FHWA) has executed a number of programmatic agreements[19] that help streamline the environmental clearance process. At present, the following programmatic agreements executed by the Department address the preparation of project-level air quality analyses:

- *Programmatic Agreement for Project-Level Air Quality Analyses for Carbon Monoxide (2016)*: This agreement establishes technical criteria for determining whether project-specific modeling for carbon monoxide will be needed. The current agreement is based on templates developed in the 2015 NCHRP study "*Programmatic Agreements for Project-Level Air Quality Analyses*"[20].

- *No-Build Analysis Agreement for Air and Noise Studies (2009)*: This agreement provides guidance and criteria for determining whether a no-build scenario must be modeled for carbon monoxide.

- *Procedures for Updating Air Studies When New Planning Assumptions Become Available (2004)*: This agreement provides guidance for determining if and when an update is needed to an existing air quality analysis.

Notes:

(1) Unless specifically excluded in the text of the agreement, programmatic agreements executed by the Department may also be applied for local assistance projects. In these cases, appropriate documentation of the application of any programmatic agreement should be included with the air quality analysis or review prepared in support of the NEPA documentation for the project.

(2) Key elements of the agreements have been incorporated to the extent feasible in Department protocols specified in the Resource Document. This not only provides some redundancy, it also serves to effectively extend the applicability of key terms in the agreements that were originally developed for purposes of NEPA only to projects located in areas that are also subject to conformity rule requirements.

[19] Under protocols 3.2.3 and 4.2.3 established in the VDOT Resource Document, the Department at its discretion may apply programmatic agreements relating to air quality and the FHWA categorical finding for CO either individually or together (without one limiting the utility of the other in clearing projects) for projects located anywhere in Virginia.

[20] ICF International, Zamurs and Associates LLC, and Volpe Transportation Systems Center, "*Programmatic Agreements for Project-Level Air Quality Analyses*", NCHRP 25-25 (78), 2015. http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3311

3.5.1.2 FHWA Categorical Finding for Carbon Monoxide

The federal transportation conformity rule at 40 CFR 93.123(a)(3)[21] provides an option for the US Department of Transportation (US DOT), in consultation with EPA, to make a categorical hot-spot finding for CO based on appropriate modeling. In February 2014, the FHWA implemented a new categorical finding for CO[22], which they developed in consultation and cooperation with EPA. The FHWA categorical finding is to be applied as appropriate for projects located in Virginia, with documentation included with the report for air quality and included with the electronic files for the project archive. More information on the federal finding may be found at:

> FHWA Carbon Monoxide Categorical Hot-Spot Finding:
> *http://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance/cmcf/*

The FHWA categorical finding includes a web-based tool that enables project-specific information to be entered and the results obtained online. It is available at:

> FHWA Carbon Monoxide Categorical Hot-Spot Finding Tool:
> *http://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance/cmcf/tool.cfm*

In general, analyses that apply the FHWA Hot-Spot Finding Tool to show that the proposed project would qualify for the FHWA categorical finding must include a copy of the finding printed directly from the website in the documentation for the air quality analysis. An electronic copy of the finding should also be included with the electronic records for the project.

3.5.1.3 VDOT Project Assessment Criteria for Projects of Potential Air Quality Concern for $PM_{2.5}$

If transportation conformity requirements apply for fine particulate matter[23], the proposed project should be assessed using the criteria specified in Appendix L of the VDOT Resource Document for projects of potential air quality concern.

3.5.1.4 Exempt Projects

The proposed project should always be reviewed against the list of exempt projects specified in the federal transportation conformity rule (40 CFR 93.126[24]). Check with Department air quality staff if you

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[21] See https://www.gpo.gov/fdsys/pkg/CFR-2015-title40-vol20/xml/CFR-2015-title40-vol20-sec93-123.xml. Excerpt (40 CFR 93.123(a)(3)): *DOT, in consultation with EPA, may also choose to make a categorical hot-spot finding that (93.116(a) is met without further hot-spot analysis for any project described in paragraphs (a)(1) and (a)(2) of this section based on appropriate modeling. DOT, in consultation with EPA, may also consider the current air quality circumstances of a given CO nonattainment or maintenance area in categorical hot-spot findings for applicable FHWA or FTA projects.*

[22] See: http://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance/cmcf/.

[23] As noted previously, EPA has proposed but, as of the date of completion of this document, not yet finalized a rule to revoke the applicable NAAQS for which the northern Virginia is in maintenance and therefore subject to transportation conformity requirements for fine particulate matter. If that NAAQS is revoked by EPA as they have proposed, then an assessment of $PM_{2.5}$ is not required for the air quality analysis and should not be included in the scope. See: https://www.gpo.gov/fdsys/pkg/FR-2015-03-23/pdf/2015-06138.pdf

[24] See: https://www.gpo.gov/fdsys/pkg/CFR-2015-title40-vol20/xml/CFR-2015-title40-vol20-sec93-126.xml

are uncertain about the possible exempt status of a project, and/or raise the question in the list of potential challenges and issues to be included in the scope of work or its transmittal (see Section 3.2).

3.5.2 VDOT Resource Document

The VDOT Resource Document provides a comprehensive summary of models, methods and assumptions/data for application as appropriate in air quality analyses for projects located in Virginia. It specifies Department protocols that serve in part to streamline analyses and also criteria for assessing potential projects of air quality concern for particulate matter. Application of the Resource Document in the development of the scope of work and in the air quality analysis helps minimize the time and cost for completing analyses including the development of modeling inputs and associated quality assurance/control activities.

The draft version of the Resource Document and associated online data repository were subjected to IACC (for areas that were subject to conformity requirements) before being finalized. Therefore, if conformity applies for the project, and no substantive changes are being proposed to the models, methods and/or assumptions/data specified in the Resource Document, the requirements for IACC for the project may be satisfied simply by reference to the IACC on the Resource Document rather than being done on a project-specific basis. The Resource Document provides template text for that purpose. Therefore:

- NEPA Applications: For proposed projects subject to NEPA only (and not transportation conformity), the typical process for completing air quality analyses is to simply apply the models, methods, and assumptions/data specified in the Resource Document and appropriately reference it in the air quality analysis (NEPA documentation) for the project. This is the most common application of the Resource Document.

- Conformity Applications *Without* Substantive Changes to the Models, Methods and/or Assumptions Specified in the Resource Document: If the proposed project is subject to transportation conformity requirements, and the models, methods and assumptions specified in the Resource Document are proposed to be applied without substantive change, the same process applies as outlined above for NEPA purposes except that the IACC to which the Resource Document was subjected must be referenced in the air quality analysis for the project. Template text is provided in the Resource Document for that purpose. Project-specific IACC is not required in these cases.

- Conformity Applications *With* Substantive Changes to the Models, Methods and/or Assumptions Specified in the Resource Document: If the proposed project is subject to conformity and changes of a substantive nature are being proposed, IACC may be required. See Sections 3.5.2.1 and 3.5.2.2 for more guidance for these cases.

As a general practice, therefore, and as a guide for preparation of the scope of work:

- The Resource Document should serve as the primary source for all models, methods, assumptions and data (as well as any Department protocols) to be applied in the analysis, and should be referenced as such in the scope of work and ultimately in the air quality report to be prepared for the proposed project, and

- For projects subject to transportation conformity requirements, the IACC that was conducted on the Resource Document must be referenced in the documentation for the air quality analysis to satisfy the EPA regulatory requirement for IACC on models, methods and assumptions/data for those pollutants. The Resource Document provides template text for this purpose.

- If federal conformity requirements apply for fine particulate matter, the proposed project should be assessed using the criteria specified in Appendix L of the VDOT Resource Document for projects of potential air quality concern for fine particulate matter[25].

Note: Public consultation in the context of NEPA public involvement is typically addressed separately from IACC. Public consultation conducted pursuant to NEPA and the transportation conformity rule is usually completed on the overall NEPA document rather than on individual topic areas such as air quality.

3.5.2.1 Process for Review and Approval of Exceptions to the Models, Methods and Assumptions Identified in the Resource Document

If any departures from or exceptions to the models, methods and assumptions/data specified in the Resource Document are anticipated for a proposed analysis, then:

1. Clearly identify in the scope of work (or AQM Protocol as applicable) the proposed departures or exceptions and their basis or rationale, and whether they should be considered "substantive changes"[26] as defined in the Department Resource Document, and

2. If conformity applies, and the proposed departures or exceptions are considered to be substantive for the pollutant(s) for which conformity applies, then project-specific IACC should be included as a separate line item in the scope of work with an associated schedule and budget. Related activities including attendance at meetings, preparation of materials including papers, exhibits and presentations, and developing written responses to comments should also be included.

All proposed changes of a substantive nature and any project-specific IACC must be reviewed and approved by the Department before being implemented. If the project is subject to conformity requirements, careful consideration and coordination with the Department is required before any models, methods or assumptions/data that are substantively different from those specified in the Resource Document are selected.

[25] See Appendix L of the Resource Document for project assessment criteria for projects of air quality concern for fine particulate matter ($PM_{2.5}$).

[26] The term "substantive change" is defined in the Resource Document as follows: "*For project-level air quality analyses conducted to meet conformity requirements and/or for purposes of NEPA, a substantive change is defined here as one that would significantly affect the modeling results and/or the analysis to the degree that it would change a finding, determination or conclusion that all applicable requirements for the air quality analysis for the project would be met and the project cleared. For analyses involving project-specific dispersion modeling for any pollutant(s) for conformity purposes, this includes whether the project would pass the applicable conformity test(s).*"

3.5.2.2 Process for Discretionary Election of Project-Specific Inter-Agency Consultation for Conformity (IACC)

On a discretionary basis, if the project is subject to conformity, the Department may elect to conduct IACC even if the models, methods and assumptions proposed are consistent with the Resource Document. In these cases:

1. Unless otherwise directed by VDOT Air Quality staff, base the main scope of work, budget and schedule on application of the Resource Document without the additional and discretionary IACC, and

2. Present the proposed discretionary IACC as an option in the scope of work with an associated schedule and budget, highlighting that it is being proposed as discretionary, and noting the basis or rationale for the proposed election, e.g., the project involves an EIS, is higher profile and/or is more complex as described in Section 2.2.

Any project-specific IACC of a discretionary nature must specifically be reviewed and approved by the Department before being implemented.

Note: Projects located in areas that are in attainment of the applicable national ambient air quality standards and/or otherwise are not subject to EPA federal transportation conformity rule requirements are not typically subjected to IACC, even on a discretionary basis.

3.5.3 Department Template Report for NEPA Documentation for Project-Level Air Quality Analyses

Application of the Department template report for project-level air quality analyses is intended to benefit quality control, facilitate the review and approval process, and minimize costs[27]. The template report should be refined as needed for each project, addressing the following points:

- Update project-specific sections as needed, including but not limited to: project description, modeling inputs, modeling results, etc.

- Note which of the available resources for streamlining, e.g., FHWA-VDOT Programmatic Agreements, were applied (if any) for the project.

- If conformity applies for pollutant(s) assessed in the project-level analysis, reference the IACC conducted on the Resource Document using the template text provided in the Resource Document for this purpose. If project-specific IACC is conducted, it should be summarized in the report with details (meeting notices, minutes, email etc.) provided in an appendix.

- Reference the Resource Document as appropriate for the selection of models, methods and assumptions/data for the analysis as well as any exceptions (and associated project-specific IACC) as

[27] The Department template is in development and is being based upon a generic version that was developed originally under the National Highway Cooperative Research Program (NCHRP). See: The Louis Berger Group Inc., "*Templates for Project Level Analysis Using MOVES, CAL3QHC/R, and AERMOD*", NCHRP Project 25-25 Task 71, 2012. *Direct link:* http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP25-25(71)_Template.pdf

applicable.

- Ensure references to applicable regulations and guidance (which are subject to change) are current.

- Ensure the Executive Summary is concise and designed to be excerpted for inclusion into the overall NEPA document.

4. Frequently Asked Questions

What are the Department focus areas for review for the scope of work?

Focus areas for reviews include:

- Any challenges or issues:
    - Including those identified for the project per Section 3.2.

- Conformity Status:
    - Has the project been correctly identified as one located in an area either subject to or not subject to conformity requirements, and the project scope adjusted accordingly?[28]

- Inter-Agency Consultation for Conformity (IACC):
    - If the project is located in an area subject to conformity requirements:
        - Is project-specific IACC proposed or will it be handled by reference to the Resource Document, which has already completed the requisite IACC?
    - If IACC is proposed, is there a possibility that the project schedule would be delayed due to that added consultation?

- Appropriate use of the available resources for streamlining (Section 3.5.1):
    - Have the applicable programmatic agreements, categorical finding and VDOT Resource Document (App. L) criteria for projects potentially of concern for $PM_{2.5}$ been considered for application as appropriate?
    - Is project-specific modeling being proposed that would be unnecessary given the streamlining options?
    - Exempt status:
        - Has the project been checked against the list of exempt projects specified in the federal transportation conformity rule?
        - Is safety part of the project purpose and need statement to be included in the NEPA document? Were safety issues identified in a study conducted for the project and will they be addressed as part of the planned improvements for the project?

- Appropriate use of the Resource Document:
    - Has the Resource Document been appropriately considered in developing the modeling approach (including the application of Department protocols) and selection of data?

[28] As noted previously, EPA has proposed to revoke the 1997 annual primary NAAQS for fine particulate matter for which northern Virginia has been in maintenance. If the proposed revocation is finalized as proposed, then the associated conformity requirements would no longer apply. See: https://www.gpo.gov/fdsys/pkg/FR-2015-03-23/pdf/2015-06138.pdf

- Are exceptions to the models, methods and assumptions presented in the Resource Document being requested? If so, are the exceptions substantive enough to warrant project-specific IACC?
- Are all key inputs for modeling appropriately addressed (e.g., background concentrations, meteorological data, road grades, traffic forecasts etc.)?

- Level of Analysis:
  - Appropriate to the project and level of environmental clearance document
  - Limiting modeling to what is needed to meet regulatory requirements, with regard to the pollutants, years, scenarios (build, no-build), and number of runs.

- Traffic Forecasts:
  - Planned approach
  - Source (Consultant or Department)

- Is the final report to be based on the Department template for NEPA documentation?

Will the Department provide traffic forecasts for the analysis?

Only if specified in the contract. It should not be assumed for the scope of work for the air quality analysis.

Will the Department provide related plan information such as average road grades for the analysis, especially for roadways that are not part of the project but may be affected?

Only if specified in the contract. It should not be assumed for the scope of work for the air quality analysis.

Are there any limitations on vendor or interface models acceptable to the Department?

The modeling results must be acceptable to the FHWA and US EPA, and therefore as standard practice must meet requirements of 40 CFR Part 51 Appendix W for regulatory application[29]. Analyses based on software that does not meet these requirements may not be accepted by the Department. Models to be applied for regulatory purposes are addressed in the Resource Document.

Does the Department have a preference for which model is applied for PM (AERMOD or CAL3QHCR)[30]?

Not at this time. As we gain experience in applying the new models, a preference may emerge if there are substantial differences in the time and cost for completing air studies, if issues arising with regard to differences in the modeling results, etc.

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[29] See: *Revision to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches To Address Ozone and Fine Particulate Matter*, published in the Federal Register on July 29, 2015 (80 FR 45340) (https://www.gpo.gov/fdsys/pkg/FR-2015-07-29/pdf/2015-18075.pdf).

[30] At the time of preparation of this update of the Scoping Guidelines, EPA has not yet finalized a proposed rule that, in part, eliminates the CALINE3 series of models. If EPA finalizes the rule as proposed, then only AERMOD may be applied.

Should both models (AERMOD and CAL3QHCR) be run for PM[31]?

Not typically, and not unless both budget and time have been specifically allocated for this purpose in the contract. Running both models would typically increase the time and cost for air analyses, which is unacceptable on a routine basis.

For projects for which modeling was conducted using vendor interface software (that executes EPA regulatory models), do you really need input and output files in the format for the EPA regulatory models in addition to those for the vendor interface software?

Yes. The deliverables must include all modeling files, both for original regulatory models as well as the interface models if applied. For example, if a vendor or other third-party model is applied for modeling PM using AERMOD, the modeling files to be delivered include all input and output files for both the interface software as well as for AERMOD. This is necessary as the Department may not have the same vendor or other third-party interface software, but does have the regulatory models from EPA.

Does the Department have requirements for modeling greenhouse gases and/or energy?

For greenhouse gases, the Department policy is to provide a qualitative analysis only (no modeling) for projects involving an EIS. Template text is provided for this purpose in the Department template report for NEPA documentation. If the project does not involve an EIS, no analysis is provided for greenhouse gases.

For energy, the Department does not require qualitative or quantitative analyses. This policy does not vary with the level of NEPA document.

Can you provide a copy of the spreadsheet tables used for the summary for the scope of work?

The spreadsheet tables are embedded in the appendices in this report. Double-click on the tables and they should open.

The project is in an area currently subject to federal transportation conformity requirements but does not appear to be included (or is included but not with the same scope or schedule) in the currently conforming transportation plan and program. How should the report address this need?

Within the air quality report, simply state that the project is in an area subject to conformity requirements and therefore must be included in a currently conforming transportation plan and program before being implemented per 40 CFR 93.114 and 40 CFR 93.115. The project status in the currently conforming plan and program must still be addressed in the NEPA document.

[31] *Ibid.*

5. Department Contacts

Any questions or comments relating to scopes or AQM Protocols for specific projects should be directed to the appropriate staff in the Air Quality Section, Environmental Division:

Name	Title	Email	Phone
Jim Ponticello	Air Quality Program Manager	jim.ponticello@vdot.virginia.gov	(804) 371-6769
Christopher Voigt*	Environmental Engineer Senior	christopher.voigt@vdot.virginia.gov	(804) 371-6764
Dan Grinnell	Environmental Specialist Senior	daniel.grinnell@vdot.virginia.gov	(804) 371-2614

** Author of this guide, to whom suggestions for updates should be directed.*

Mailing Address & Fax:
VDOT Environmental Division
1401 East Broad Street
Richmond, VA 23219
Fax: (804) 786-7401

Appendix:

Optional Template Tables for the Air Quality Modeling Protocol

TABLE 1: PROJECT IDENTIFICATION AND BACKGROUND *(SAMPLE FORMAT; REFINE AS NEEDED)*

VDOT Contract-Task Order: Project UPC(s): Project Title: Project Website:	**<#>** **<#>** <As listed on VDOT IPM/CEDAR> *<http://____ >*
Project Location: Map of Overall Project Area:	<___ County, Northern Virginia> <See attached map showing the project area including locations of populations, businesses, other institutions, & any air quality monitors>
Route: *From:* *To:*	<#> - <Roadway or Facility Name>
Project Description/Scope: Ultimate Concept: Phasing:	<Widening from x to y lanes, new x-lane road on new location, inter-modal facility etc.> <Same as the preferred alternative> or <Specify>, <Not funded in LRTP> <na> or <Phase 1 to address: ... > <Phase 2: ...>
Scheduled Advertisement for Construction: Scheduled Completion Date (Open to Traffic): Design Year (Default: Ad Year + 22):	<Month Year> <Month Year> <Year>
Project status in the regional transportation plan and program (as applicable):	*<na>, or <The project as currently scoped is included in the <Year> LRTP & FY Y1-Y2 TIP, listed as UPC or ID# ___.* *The referenced Plan & TIP are posted on the following websites: http://_____>*

TABLE 2: OVERALL SCOPE *(SAMPLE FORMAT; REFINE AS NEEDED)*

NEPA Document:	<CE, EA or EIS>
Purpose & Need:	<summary statement>
Number of Alternatives:	<Three- See link for descriptions and figures: link>
Preferred Alternative:	<Alt.1: Widen from x to y lanes from Termini 1 to Termini 2>
Air Quality Attainment Status:	<Nonattainment for ozone; Maintenance for PM2.5>
Preliminary Screening:	
Exempt categories that may apply for the project :	<None>
Federal Categorical Finding for CO:	<Not applicable based on preliminary traffic forecasts *<reference>*>
FHWA-VDOT Programmatic Agreement for CO:	<Applicability TBD following receipt of updated plans and/or traffic forecasts, expected by *<date(s)>*> or <Not applicable based on preliminary traffic forecasts *<reference>*>
FHWA-VDOT Agreement for CO Study Updates:	<Not applicable as no prior study>
FHWA-VDOT Agreement for CO No-Build Scenarios:	<Not applicable based on NEPA Document type)>
Project of Air Quality Concern for PM2.5? (*Per VDOT Resource Document, App.L Criteria & EPA Guidance*):	<TBD when traffic received, but expect it will ***not*** be a POAQC for PM2.5 based on the criteria specified in App.L of the VDOT Resource Document, given that heavy trucks are prohibited on the facility.>
Department Protocols (VDOT Resource Document):	<2.2.2, Project in grace period for: <MOVES update>, <Reg.change> etc.> <2.3.1, n/a as no prior study to update> <2.6.4, Modeling based on average speeds; no microsimulation.> <2.9.1, No nearby stationary sources to consider.> *<etc.>*
Overall Approach for the Air Quality Analysis:	
Key Challenges (if any):	<EIS, High Profile and/or Relatively Complex project>, <IACC proposed as EIS, but not required since Resource Document data being used>, <Delays in receving traffic forecasts may delay the IACC & Air Q. Study.>
CO:	<TBD when traffic forecasts received, but planning worst-case screening>
PM:	<TBD when traffic forecasts received, but modeling *not* planned as not expected to be a POAQC as noted above>
MSATs:	<TBD when traffic forecasts received, but expect qualitative analysis only. Do not expect to meet FHWA thresholds for quantitative analyses.>
Greenhouse Gases:	<Qualitatve analysis only for projects involving an EIS (per Dept. policy), otherwise not conducted unless and until applicable federal guidance is issued.>
Indirect Effects and Cumulative Impacts:	<Qualitative assessment>
Consultation:	
Public:	<Covered by the standard NEPA Process.>
Inter-Agency (Conformity):	<na>, <Covered by reference to the Resource Document and its consultation.>, ***<Project-specific inter-agency consultation will be required for modeling inputs not covered in the Resource Document, as follows: <specify>>***

TABLE 3: MODELING DETAIL *(SAMPLE FORMAT; REFINE AS NEEDED)*

<See Section # of the attachment for details>	
Source of Traffic for Air Quality Modeling:	**<VDOT or consultant *<name firm>*>**
Status:	<Summary traffic available now, with update due by *<date>*>
CO:	**<Cleared with FHWA-VDOT Programmatic Agreement> or <Federal CF>, or <Hot-Spot Analysis proposed (worst-case modeling)>**
Models:	<EPA: MOVES and CAL3QHC>(*Note version numbers)*
Interface Software:	*<Name (Version#)* for *<EPA Model>*>
Scenarios:	<Build Alternatives ___, No-Build as applicable>
Modeling Year(s):	<Year(s)>
Number of Modeling Runs:	<#, details>
Project area for analysis or analyses:	<See attached map/exhibit.>
Construction Emissions (Conformity):	<Not included as the EPA five-year criterion is not met.>
Exceptions to Resource Document:	<***No exceptions*** *to models, methods and assumptions in the Resource Document are required>* ***or*** *<Exceptions needed: <list>>*
PM2.5:	**<Not a project of air quality concern, based on preliminary traffic forecasts>, or <Hot-Spot Modeling proposed>**
Models:	<EPA: MOVES and CAL3QHCR (or AERMOD)><Note versions>
Interface Software:	*<Name (Version#)* for *<EPA Model>*>
Scenarios:	<Build Alternatives ___, No-Build as applicable>
Year(s) of Peak Emissions:	<20xx>
Basis if not the Project Opening Year:	<na: the opening year is the year of expected peak emissions>
Modeling Year(s):	<Year(s)>
Number of Modeling Runs:	<#, details>
Project area for analysis or analyses:	<TBD but expected will be limited to that shown on attached map.>
Nearby Sources:	<na>
Construction Emissions (Conformity):	<Not included as the EPA five-year criterion is not met.>
Mitigation:	<TBD but expect not required.>
Exceptions to Resource Document:	<***No exceptions*** *to models, methods and assumptions in the Resource Document are required>* ***or*** *<Exceptions needed: <list>>*
MSATs:	**<Qualitative or Quantitative MSATs>**
Models:	<EPA: MOVES><Note versions>
Scenarios:	<Build Alternatives ___, No-Build>
Modeling Years:	<Years>
Number of Modeling Runs:	<#/year, and total, for Build (Preferred Alt)-No Build>
Project area for analysis or analyses:	<See attached map/exhibit.>
Exceptions to Resource Document:	<***No exceptions*** *to models, methods and assumptions in the Resource Document are required>* ***or*** *<Exceptions needed: <list>>*
Greenhouse Gases:	<Qualitatve analysis only for projects involving an EIS, otherwise not applicable until FHWA issues official guidance>
Indirect Effects and Cumulative Impacts:	<Qualitative assessment, based on the VDOT template>