Guidance on Addressing Air Quality, Greenhouse Gas Emissions, and Energy for WSDOT Projects

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1. OVERVIEW

This guidance describes the process WSDOT recommends for evaluating air quality (conformity and mobile source air toxics), greenhouse gas emissions, and energy in project documentation to meet NEPA, SEPA, and Clean Air Act requirements. These three analysis types are addressed together because they use the common tools and inputs.

This guidance provides "how-to" meet the policy requirements discussed in the Air Quality, Greenhouse Gas, and Energy chapter of WSDOT's Environmental Manual. While this information covers most circumstances, it does not cover every possibility. For unusual circumstances or questions, contact the WSDOT headquarters air quality staff.

Use the Air Quality, Greenhous Gas Emissions, and Energy Discipline Report Template to document the project analysis.

1.1. What this Guidance Covers

Because the qualitative analysis for air quality, energy, and greenhouse gas emissions use the same tools and inputs, this guidance covers the following elements of the environment together:

- Air quality
  - Conformity
  - MSATs
- Energy
- Greenhouse gas emissions

1.2. Analysis Process

The general process for addressing air quality, greenhouse gas emissions, and energy includes the following steps:

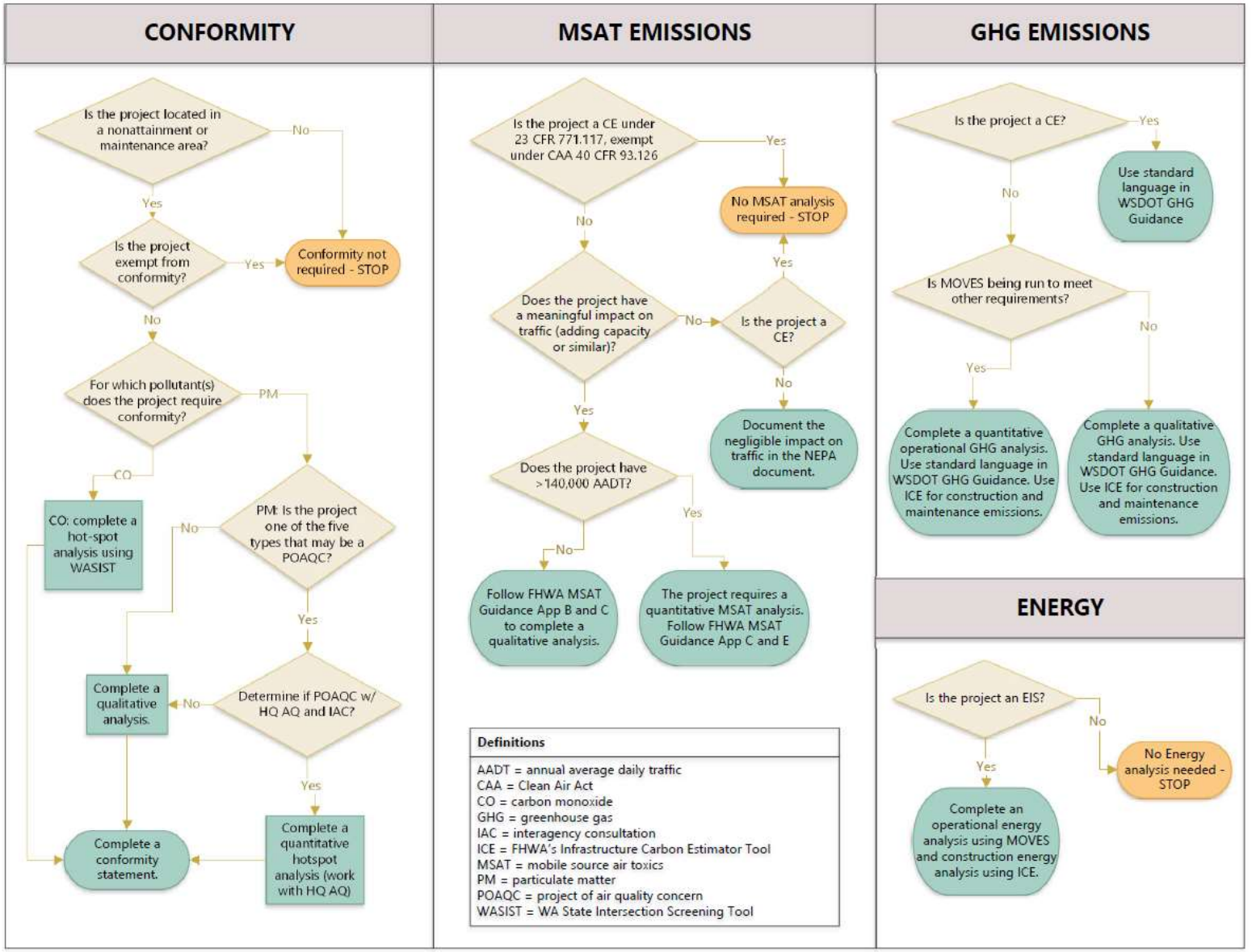
1. Identify the types of analyses needed.
2. Identify tools, inputs and parameters, and collect relevant information.
3. Conduct the analysis.
4. Describe the analysis and results.
5. Document the analysis process for the project record.

The following sections describe how to complete each of these activities.

2. IDENTIFY ANALYSES NEEDED

First, determine which analyses a project requires based on the project's characteristics. Conformity, mobile source air toxics, greenhouse gas emissions, and energy each have their own triggers, although some triggers are interrelated. The flow chart below, Exhibit 1, is also available as a standalone document on the Environmental guidance - Air quality, energy & greenhouse gas emissions webpage. The following sections are meant to provide more detail than the flowchart can to aid in determining what type of analyses a project requires.

Exhibit 1 – Air and Energy Analysis Triggers Flowchart



2.1. Criteria Pollutants

The Clean Air Act identifies six criteria pollutants: carbon monoxide, ozone, particulate matter, nitrogen oxides, lead, and sulfur dioxide. For each of these pollutants, EPA has established national ambient air quality standards (NAAQS). These standards are concentration limits for ambient air – outside air that the public has access to. If an area exceeds the limits, EPA may designate the area as being in nonattainment of the standard. Among other requirements, a nonattainment area must comply with conformity requirements that ensure that federal actions do not cause or contribute to a violation of the standard or impede the timely attainment of the standard. Once a nonattainment area's air quality has improved, EPA will redesignate the area as being in attainment and the area is required to have a maintenance plan in place for 20 years. During those 20 years, the area must continue to meet conformity requirements.

2.1.1. Operational Emissions – Conformity

A conformity demonstration is required for all non-exempt projects in maintenance or nonattainment areas. The analysis required depends on the pollutant and project features.

Progress through the following questions until you reach direction to stop or complete an analysis:

1. Is the project in a maintenance or nonattainment area?
   - ☐ No – no conformity needed. **Stop here.**
   - ☐ Yes – continue to next question.

2. Is the project exempt from conformity per 40 CFR 93.126, 40 CFR 93.128, or WAC 173-420-110?
   - ☐ Yes – no conformity needed. **Stop here.**
   - ☐ No – continue to next question.

3. For which pollutant(s) is the area in nonattainament or maintenance? More than one may apply.
   - ☐ Carbon monoxide (CO)
     - ➢ Complete a hotspot analysis using WASIST or the FHWA Categorical Hot-Spot Finding Tool, see section 3.
     - ➢ Include a conformity statement in project documents. See section 8 for the required language.
   - ☐ Particulate matter ($PM_{2.5}$, PM_{10}) – continue to next question.

4. For particulate matter, is the project one of the five types that may be a "project of air quality concern" (POAQC) (see 40 CFR 93.123(b)(1))?

- New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles
- Projects affecting intersections that are at Level of Service (LOS) D, E, or F with a significant number of diesel vehicles, or those that will change to D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project
- New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location
- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location
- Projects in or affecting locations, areas, or categories of sites that are identified in the $PM_{2.5}$ or PM_{10} applicable state implementation plan (SIP) or implementation plan submission, as appropriate, as sites of violation or possible violation. Note: Washington's current SIPs do not identify specific violation sites.

☐ No – the project is not one of these five types:
- ➢ Complete a qualitative assessment for the project, see section 6
- ➢ Include a conformity statement in project documents. See section 8.

☐ Yes – the project is one of these five types:
- ➢ Consult with the WSDOT headquarters air quality staff to navigate interagency consultation process to determine if a quantitative hotspot analysis is required.
- ➢ If the project requires a quantitative PM hotspot analysis, work with the headquarters air quality staff to work through the modeling procedures with the FHWA Air Resources Center, local FHWA office, and interagency consultation partners. Consultation partners must be engaged during the modeling process to approve modeling choices. WSDOT headquarters staff must be involved if a PM hot-spot analysis is conducted.

2.1.2. Operational Emissions – Emissions Burden

An emissions burden analysis is an estimation of a project's total operational emissions. No emissions burden analysis is required for criteria pollutants. In the past, if MOVES was being run for a project, WSDOT completed an emissions burden analysis for criteria pollutants. However, this level of analysis is not required and WSDOT no longer completes these analyses except in unusual circumstances. Consult with the WSDOT HQ air quality staff to determine if an emissions burden analysis may be needed.

2.1.3. Construction Emissions

An air quality discipline report and the air quality section of an EA or EIS should include a qualitative discussion of the criteria pollutants effects from construction. The discussion should discuss fugitive dust and associated best management practices. See the air quality greenhouse gas, and energy discipline report template on our Environmental guidance - Air quality, energy & greenhouse gas emissions web page for standard language.

2.2. Mobile Source Air Toxics (MSAT)

WSDOT follows FHWA's 2016 Interim Guidance on Mobile Source Air Toxics.

Mobile source air toxics (MSATs) are a subgroup of hazardous air pollutants identified by EPA as having significant contributions from mobile sources. The current MSATs are

- 1,3-butadiene,acetaldehyde
- acrolein
- benzene
- diesel particulate matter (diesel PM)
- ethylbenzene
- formaldehyde
- naphthalene
- polycyclic organic matter (POM)

From time to time, this list is modified based on new information. Consult FHWA's Interim Guidance on Mobile Source Air Toxics for the most current list of pollutants.

2.2.1. Operational Emissions

Answer the following questions to determine the type analysis needed:

1. Is the project a CE under 23 CFR 771.117 or exempt under 40 CFR 93.126?
   - ☐ Yes – no consideration needed. **Stop here.**
   - ☐ No – continue to next question.

2. Does the project have a meaningful impact on traffic (does it add capacity or have similar effects)?
   - ☐ Yes – continue to next question.
   - ☐ No – briefly document the negligible impact on traffic in the project documentation. **Stop here.**

3. Does the project have average daily traffic volumes over 140,000?

- ☐ No – follow FHWA MSAT Guidance App B and C to complete a qualitative analysis. See section 6.
- ☐ Yes – the project requires a quantitative MSAT analysis. Follow FHWA MSAT Guidance App C and E. See section 5 for more information.

2.2.2. Construction Emissions

For projects requiring an MSAT analysis, MSAT emissions should be briefly mentioned in the qualitative construction emissions description of an air quality discipline report and environmental documentation. See the Air Quality, Greenhous Gas Emissions, and Energy Discipline Report Template for suggested language.

2.3. Greenhouse Gas Emissions (GHG)

The type and detail of a greenhouse gas analysis is based on the level of environmental documentation. Use the check list below to help determine the appropriate level of analysis and documentation.

2.3.1. Operational Emissions

Operational emissions refer to the emissions released from the traffic using the project roadway, i.e., the tailpipe emissions of the vehicles on the road.

1. Is the project a CE?
   - ☐ Yes – use the appropriate standard language. See Section 8.2. **Stop here.**
   - ☐ No – continue to the next question.

2. Is the project being documented with an EA or EIS?
   - ☐ No – if the project has documentation (SEPA checklist or NEPA DCE), qualitatively describe the project's effects on operational and construction emissions. Refer to the standard language provided in section 8.2. **Stop here.**
   - ☐ Yes – continue to the next question.

3. Is MOVES being used to meet other requirements (e.g., MSATs or Energy)?
   - ☐ Yes –
     - ➢ Complete a quantitative operational GHG analysis using MOVES. Use the same inputs as other analyses.
     - ➢ Incorporate the standard language provide in section 8.2 into the project's discipline report and environmental documentation.
   - ☐ No –
     - ➢ Complete a qualitative operational GHG analysis.
     - ➢ Incorporate the standard language provided in section 8.2 into the project environmental documentation.

2.3.2. Construction Emissions

Construction emission are the emissions released in the construction of the project and may include the "embodied emissions" in the construction materials, as well as emissions from construction equipment.

Include GHGs in the discussion of construction effects.

1. Is the project a CE?
   - ☐ Yes – no discussion needed. **Stop here.**
   - ☐ No – continue to the next question.

2. Is the project being documented with an EA or EIS?
   - ☐ No – if the project has documentation, briefly qualitatively describe the project's effects on operational and construction emissions. See section 8.2 for standard. **Stop here.**
   - ☐ Yes – use FHWA's Infrastructure Carbon Estimator (ICE) tool to estimate construction and maintenance greenhouse gas emissions. The tool is available on the Minnesota DOT Greenhouse Gas Emissions Analysis website. ICE is not appropriate for all project types (e.g., large bridges); if an alternate method is needed, coordinate with the WSDOT headquarters air quality staff.

2.4. Energy

An energy analysis addresses the project's energy use and effects on energy supply. These analyses are only completed for projects being documented with an EIS. Occasionally, projects are documented with an EIS for specific concerns; these projects may have different needs for addressing energy. Consult with the WSDOT headquarters air quality staff in these cases.

2.4.1. Operational Energy Use

For projects at the EIS level, complete an operational energy analysis using MOVES. See section 5 for more information on MOVES analyses.

2.4.2. Construction Energy Use

For projects at the EIS level, use FHWA's ICE tool to estimate construction energy requirements. The tool is available on the Minnesota DOT Greenhouse Gas Emissions Analysis website.

3. CO HOTSPOT ANALYSIS

A CO hotspot analysis estimates the CO concentration in a localized area. For the purposes of transportation conformity, we calculate the concentration at intersections affected by the project. Intersections that pass screening with the Washington State Intersection Screening Tool (WASIST) or the FHWA Categorical Hotspot Finding tool require no additional analysis.

3.1. Approved Modeling Tools

The Washington State Intersection Screening Tool (WASIST) is approved for hot-spot analysis throughout the state and addresses a wide variety of intersection types. WASIST is available for free from WSDOT. Contact WSDOT headquarters air quality staff to receive a copy of the tool. WASIST includes built-in help information.

FHWA has released a Carbon Monoxide Categorical Hotspot Finding tool that satisfies project-level conformity requirements for eligible projects.

Intersections that pass screening with one of these two tools require no additional analysis.

3.2. Identify Inputs and Parameters, Collect Relevant Information

Transportation conformity regulations require analysis of all intersections affected by the project within nonattainment or maintenance areas that are Level of Service (LOS) D, E, or F in the Existing or Design Year. "Affected intersections" have at least a 10 percent increase in volumes or a degradation of LOS to D or worse with the project. (Choosing the top three intersections by volume and LOS is no longer an option.)

Obtain intersection data from the project office to identify those intersections requiring a hot-spot analysis. Use FHWA's Categorical Hotspot Tool or WASIST to analyze the affected intersections. When the total predicted one-hour CO concentrations (standard is 35 ppm) are less than the eight-hour CO standard (9 ppm), no separate eight-hour analysis is necessary.

If an intersection does not pass the screening analysis, contact the WSDOT headquarters air quality staff for further assistance.

4. PM HOTSPOT ANALYSIS

Because of the complexity of PM hotspot analysis, if this analysis is required, coordination with the local FHWA office and the FHWA Air Resources Center will be required, as will

ongoing approvals from the interagency consultation partners. For these reasons, all PM hotspot work must be closely coordinated with the WSDOT headquarters air quality staff.

Detailed information on conducting a PM hotspot analysis is available in EPA's Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas.

In documentation for projects determined not to need a quantitative PM hotspot analysis, include a description of the consultation process, materials prepared to support the determination, and a conformity statement.

5. MOVES ANALYSIS (MSAT, GHG, AND ENERGY)

EPA's Motor Vehicle Emissions Simulator (MOVES) estimates emissions for criteria pollutants, MSAT emissions, greenhouse gases, as well as energy use. These analyses can be conducted simultaneously by ensuring the appropriate pollutants and processes are simultaneously checked. Thus, if the analyses are done at one time, adding a pollutant or category of pollutant to a MOVES analysis just requires selecting additional pollutants within the MOVES model and summarizing the additional pollutant results.

5.1. Identify Inputs and Parameters, Collect Relevant Information

MOVES consists of two parts, the graphical user interface where model parameters are selected and the database where project specific inputs are uploaded.

Exhibit 2 identifies the user selections for a typical project run spec. For other purposes, other choices may be appropriate. Run spec choices should be documented in the discipline report. See the Air Quality, Greenhous Gas Emissions, and Energy Discipline Report Template for recommended format.

Exhibit 3 lists the input files required to run MOVES and identifies recommended sources for each file. Identify document sources in the discipline report. See the Air Quality, Greenhous Gas Emissions, and Energy Discipline Report Template for recommended format.

Additional information on using the MOVES model is available on EPA's MOVES website. The FHWA Air Resources Center can answer questions. As part of the project documentation review process, WSDOT headquarters air quality staff will review model inputs and outputs.

Exhibit 2 – MOVES Runspec Selections

Navigation Panel	Parameters – sample selections
Description	• Document the purpose of each run
Scale	• Model – Onroad/Offroad • Domain/Scale – County/Project • Calculation Type – Inventory/Emission Rates
Time Spans	• Time Aggregation Level – Hour • Year – Existing/Opening/Design • Months – typically all months • Days – Weekdays/Weekends • Hours – typically all hours
Geographic Bounds	• Region – County • State – Washington • Counties – one county at time, may need multiple counties, depending on project location
On Road Vehicle Equipment	• All applicable vehicle and fuel combinations
Road Type	• Road Type – Urban Restricted/Urban Unrestricted/Rural Restricted/Rural Unrestricted
Pollutants and Processes	• Pollutants – depend on analysis • Processes – depend on analysis
Manage Input Data Sets	• Specify input database
Strategies	• No selections needed
General Output	• Units of Mass – grams • Energy - joules, an • Distance – miles • Activity – Distance traveled
Output Emissions Detail	• No selections needed
Advanced Performance Measures	• No selections needed

Exhibit 3 – MOVES input files and common sources

Input File	Data Source
Age Distribution	Ecology – Number of vehicles at different ages, use the same distribution for all analysis years unless the project is affecting vehicle adoption rates
Average Speed Distribution	Project traffic data – Calculated for each vehicle class and speed combination for each hour and road type
Day VMT	Ecology – Fraction of VMT on weekdays and weekends
Fuel	Ecology or defaults – fuel characteristics and supply
Hour VMT	Project traffic data – VMT by hour
I/M	Ecology – WA's inspection and maintenance program has ended. Inputs should reflect this.
Meteorological Data	Default
Month VMT	Ecology – VMT fraction for each month of the year
Ramp Fraction	Default or Project traffic data
Road Type Distribution	Project traffic data – Fraction of each vehicle class' VMT distributed on each roadway type. Unless there is project specific info indicating otherwise, use the same distribution on all roadway types.
Source Type Population	Project traffic data – Vehicle population by source type, can be based on highest daily volume in the project area and distributed to source types.
Vehicle Type VMT	Project traffic data – VMT by vehicle types, HMPS or MOVES

6. QUALITATIVE OPERATIONAL ANALYSIS

All projects at the EA or EIS level require an air quality analysis. Projects that do not require a quantitative analysis can be evaluated with a qualitative analysis.

Depending on project features, a qualitative analysis likely needs to discuss criteria pollutants, MSATs, and GHGs. Different project features trigger qualitative analyses for each pollutant type. Refer to Section 2: Identify Analyses Needed to determine the level of analysis your project requires.

6.1. Criteria Pollutants

If the project area is in attainment for all criteria pollutants, conformity analysis is not required and this category of pollutants can be addressed qualitatively.

If the project is being documented in an EA or EIS, include the following information in a criteria pollutant qualitative discussion:

- ☐ History of attainment for the project area
  - Was it previously a nonattainment and maintenance area?
  - If so, when did the maintenance requirements expire?

- ☐ Current air quality monitoring design values from the nearest monitor
  - Contact the operator of the monitoring station (local clean air agency or Ecology) to get the design values (not just the highest values). The design values may not include all monitored values due to exceptional events (usually wildfire fires).

- ☐ Briefly discuss how the project is likely to affect air quality, such as:
  - Will the project reduce congestion and thus lower emission rates?
  - Will the project move the roadway closer to or farther away from sensitive receivers in the area (medical facilities, schools, etc.)?

- ☐ Briefly discuss the expected future trends of criteria pollutant emissions due to improving vehicle technology.

6.2. Mobile Source Air Toxics

Per FHWA guidance, Projects with Low Potential MSAT Effects require a qualitative assessment. Include the following information in your discussion:

- ☐ Compare, in narrative form, the expected effect of the project on VMT, traffic volumes, vehicle mix, or routing of traffic and the expected changes in MSAT for the project alternatives, including no-build, based on VMT, vehicle mix, and speed. Refer to FHWA MSAT Guidance, Appendix B for example language.

- ☐ Include FHWA's text on national trend data projecting overall reductions in emissions due to stricter engine and fuel regulations issued by EPA.

- ☐ Include FHWA's standard discussion of information that is incomplete or unavailable for a project specific assessment of MSAT impacts, in compliance with the Council on Environmental Quality (CEQ) regulations (40 CFR 1502.22(b)). This information should be copied directly from the FHWA MSAT Guidance website.

6.3. GHG Emissions

It is WSDOT policy that all EA and EIS documents address greenhouse gas emissions. For projects that do not warrant a quantitative GHG analysis, include a qualitative analysis and use the standard language provided in section 8.2.

7. CONSTRUCTION ANALYSIS

All EA and EIS projects require an analysis and discussion of construction effects. See template for standard language.

7.1. Criteria pollutants and MSATs

Criteria pollutants should be considered qualitatively, including a description of fugitive dust. As needed, MSAT emissions should be included in this qualitative analysis.

- ☐ Compare, in narrative form, the expected effect of the project on construction traffic volumes, or routing of traffic and the associated changes in emissions and energy consumption for the project alternatives, based on available data.

- ☐ Include a list of possible mitigation measures. See the Air Quality, Greenhous Gas Emissions, and Energy Discipline Report Template for standard measures.

7.2. Greenhouse Gases and Energy

For EIS-level projects, energy and GHGs should be quantitatively analyzed using the FHWA ICE tool, version 2.0. The tool is available on the Minnesota DOT Greenhouse Gas Emissions Analysis website.

8. DESCRIBE THE ANALYSIS AND RESULTS

An air quality or energy discipline report should adequately describe the project, background, analysis process, and results while remaining as clear and concise as possible. The purpose of NEPA is to disclose project effects, document compliance with other environmental regulations, and support good decision making.

WSDOT recommends using our Air Quality, Greenhous Gas Emissions, and Energy Discipline Report Template as the backbone for all air and energy discipline reports. This template includes the required sections (although not all reports will require all sections), standard language, and instructions. Refer also to Section 6 of this guidance on Qualitative Assessments for a descriptions of background language to include.

8.1. Discipline Report sections

The points below summarize what should be covered in each section of an air quality, greenhouse gas, and energy discipline report. 'Right-size' sections to the project.

- **Summary** – Summarize key elements of the report's purpose, study approach, existing condition, and operational and construction effects of all alternatives (existing, no build, and build alternative(s)) for each of the areas of study. If a common pollutant is not addressed, briefly explain why (i.e., the area is no longer under a maintenance plan and conformity is no longer required for the pollutant).

- **Project Description** – Describe the project, including the location, scope, alternatives, anticipated construction time frame, year of opening, and design year. Provide an overview of traffic projections with and without the project.
    - If MSATs need to be addressed, identify sensitive receivers within about 500 feet of the project.

- **Study Approach** – Include an overview of regulations the project must meet, including what analysis are required, or not, and why. Identify study approach and models used, including analysis years, study area and how it was determined, data sources, information collected, and model run spec selections.
    - If interagency consultation was required for PM emissions, include any determinations made and attach any final documents provided to the consultation partners as an appendix.
    - For quantitative analysis, providing model details in an appendix is acceptable.

- **Affected Environment** – Provide a concise description of the existing setting for the area affected by all alternatives. Identify any sensitive receptors in the study area (schools, medical facilities, etc.). The information included should have a bearing on possible impacts, mitigation measures, and on the selection of an alternative and be pertinent to the air quality analysis.
    - For project documents that address GHGs, include the standard affected environment language provided in section 8.2.
    - If the project is required to address MSATs, include FHWA language (Incomplete data text can go in an appendix).

- **Existing Conditions** – Identify existing pollutant levels and energy use, including recent design values for criteria pollutants as available.

- **Project Effects** – Describe operational, construction, and indirect effects for each pollutant type. Discuss pertinent project features that affect emissions, such as changes in VMT and travel distances.
    - Tables showing emissions and VMT for existing, year of opening (if analyzed), and design year
    - MSATs – include required language from FHWA's MSAT Guidance
    - GHGs – modify the standard project effects provided in section 8.2 to fit the project features

- **Conformity Statement –** If the project is required to demonstrate conformity for CO or particulate matter, include a conformity statement. See section 8.2 for language.

- **Measures to Avoid or Minimize Effects** – If the project meets conformity requirements, or does not have to demonstrate conformity, include a statement that mitigation is not required because no adverse significant impacts from the project. Identify fugitive dust best management practices that WSDOT will use. There are no thresholds for significance for energy or GHGs.

- **Conclusion** – The conclusion should summarize the results of the analysis and discuss any environmental considerations as a result of the analysis.

- **References** – List all references. Include any references not commonly available with electronic files submitted**.**

- **Appendix** – Use the appendix to provide detailed technical documentation for the project as needed. Include the following as relevant:
    - WASIST screen shots
    - FHWA CO tool screen shots
    - Descriptions of MOVES inputs and processing
    - Documentation of modeling decisions or consultations – emails or meeting notes showing who was involved in any decisions
    - List of electronically provided files

8.2. Greenhouse Gas Standard Language

Use the following text to describe greenhouse gas emission and the project effects.

8.2.1. SEPA Checklist and NEPA DCE Sample Project Language

The following language is recommended for SEPA and NEPA documentation.

- If the project has no change in traffic
    - "Because the project will not change traffic, operational greenhouse gas emissions are not expected to change. Construction greenhouse gas emissions will result primarily from fuel used in construction equipment."

- If the project is expected to improve traffic flow or reduce congestion
    - "The project is expected to improve traffic flow, which should reduce operational greenhouse gas emissions. Construction greenhouse gas emissions will result primarily from fuel used in construction equipment."

- If the project is expected to add traffic to the roadway
    - "The project is expected increase traffic flow [describe in one sentence how; for example, adding lane]. This may result in a small increase in operational greenhouse gas emissions. However, the data needed to quantitatively evaluate greenhouse gas emissions for this project are not available. Construction greenhouse gas emissions will result primarily from fuel used in construction equipment."

8.2.2. EA and EIS Standard Language

EA and EIS documentation should be coordinated with WSDOT headquarters air quality staff.

The text to include in an EA or EIS consists of two sections: affected environment and project effects. The affected environment text can should remain relatively consistent

between projects, with the addition of any relevant local information (Exhibit 4). The project specific description should accurately represent WSDOT's best understanding of the project's contribution to greenhouse gas emissions (Exhibit 5). This text should be included in the discipline report and in the cumulative effects section of the environmental documentation.

It should be noted that effects of an individual transportation project on greenhouse gas emissions are closely tied to changes in VMT resulting from the project. While efficiency improvements (reducing congestion) do provide a greenhouse gas benefit, the magnitude of these improvements are minor when considering overall project analysis area emissions.

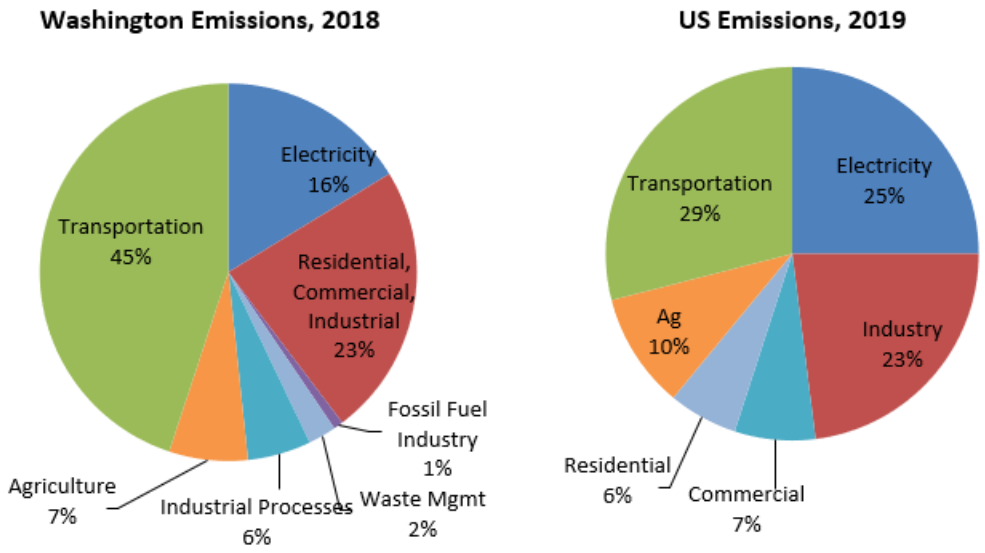
In the sections below – gray highlighted areas indicate text to be adapted to the project. Updated pie charts in Excel are available from WSDOT headquarters air quality staff.

Exhibit 4 – Greenhouse Gas Affected Environment Text

Vehicles emit a variety of gases during their operation; some of these are greenhouse gases (GHGs). The GHGs associated with transportation are carbon dioxide (CO_2), methane, and nitrous oxide. Any process that burns fossil fuel releases CO_2 into the air. Carbon dioxide makes up the bulk of the emissions from transportation.

Vehicles with internal combustion engines are a significant source of greenhouse gas emissions and contribute to global climate change primarily through the burning of gasoline and diesel fuels. National estimates show that the transportation sector (including on-road vehicles, construction activities, airplanes, and boats) accounts for about 27 percent of total domestic CO_2 emissions. However, in Washington State, transportation accounts for nearly half of GHG emissions because the state relies heavily on hydropower for electricity generation, unlike other states that rely on fossil fuels such as coal, petroleum, and natural gas to generate electricity. The next largest contributors to total GHG emissions in Washington are fossil fuel combustion in the residential, commercial, and industrial sectors at 23 percent and electricity consumption at 16 percent. Exhibit A shows the gross GHG emissions by sector, for Washington State and nationally.

Exhibit A – GHG Emissions by Sector, Washington State (2018) & National (2019)



What efforts are underway to reduce greenhouse gas emissions in Washington State?
WSDOT is working with many partners to reduce transportation sector greenhouse gas emissions. Three elements affect to the GHG emissions from transportation sources: vehicle efficiency, distance traveled, and the carbon content of the fuel. Each of these elements has different 'levers' that can be used to reduce them and different entities can have the ability to affect these levers. For example, for vehicle efficiency, the federal government sets vehicle efficiency standards and drivers choose how efficiently to operate individual vehicles.

WSDOT is working to move the 'levers' that we can affect. This includes operating our highways efficiently through efforts like ramp metering and incident response efforts to quickly clear incidents. We are working with our partners to improve active transportation and public transportation facilities, including providing grants to local agencies. In collaboration with other agencies, WSDOT is planning for future electric vehicle charging infrastructure and managing grants to increase the availability of charging infrastructure along highway corridors. We are collaborating with partners across the state on multimodal transportation planning.

What is WSDOT's Approach to Climate Change at the Project-Level?
In our work to date, we have found that the differences in GHG emissions between project alternatives are typically small and closely follow changes in VMT. WSDOT believes that transportation GHG emissions are best addressed at the region, state, and transportation systems level where multiple projects can be analyzed in aggregate. We recognize that most current plans at these broader levels do not yet provide the emissions analysis that would put our proposed transportation improvements in a larger context. We also recognize the public's interest in these issues and the need to disclose GHG emissions at the project level for major public projects. For these reasons, our approach includes conducting project-specific analysis that can be done now and referencing planning level information when it becomes available.

Exhibit 5 – Project Effects on Greenhouse Gas Emissions

How will the proposed transportation improvements effect GHG emissions?
[If a quantitative analysis was done, include those results here in a table. Include the VMT from alternatives in addition to emissions, as that should be part of the discussion of the project effects.]

State and federal investments in transportation projects are made to improve current conditions of the multi-modal transportation network. The proposed type: ferry, highway, rail, transit, multi-modal project contains several features that will increase/decrease GHG emissions. This project will: [examples of potential project effects]

- Reduce stop and go conditions
- Improve roadway speeds to a moderate level
- Improve intersection traffic flow to reduce idling
- Create safer and efficient freight movement
- Expand transit options for travelers (provide better connections to transit)
- Expand active transportation options for travelers (provide better connections to non-motorized transportation infrastructure)
- Improve safety by reducing collisions, thereby reducing congestion when there is an incident
- Reduce VMT by providing a more direct route [this must be backed up with clear analytical results]
- Increase roadway capacity to accommodate the area's growing population. This may/will increase VMT and GHGS

How will project construction contribute to GHG emissions?
Project construction contributes to greenhouse gas emissions both in the processes to manufacture and transport construction materials, i.e., embodied emissions, and in the equipment used on site. Estimating embodied emissions is a relatively new field; tools and data sources are still evolving rapidly. [If this project has done something new/different – other than using ICE – describe that effort]. Maintenance activities over the life of the project will also contribute emissions; yet good maintenance practices can extend the life of a project.

Construction of the project is currently planned to last number of year years from 20xx to 20xx. Project construction and production of materials used in the Project Name project will release greenhouse gases. Construction and embodied emissions are estimated to be about Emissions Quantity metric tons. Maintenance emissions are estimated to be about Emissions Quantity metric tons.

How will this project minimize emissions while under construction?
This project will take a number of steps to reduce emissions during construction. The project traffic plan includes detours and strategic construction timing (like night work) to continue moving traffic through the area and reduce backups to the traveling public to the extent possible. WSDOT will seek to set up active construction areas, staging areas, and material transfer sites in a way that reduces standing wait times for equipment. WSDOT will work with our partners to promote ridesharing and other commute trip reduction efforts for employees working on the project. [If the project is actively seeking lower carbon materials, make a statement to that effect as well.]

8.3. Conformity Statement Language

A conformity statement outlines the specific conformity requirements and succinctly addresses how the project meets each requirement. Exhibit 6 includes sample introductory text and lists the requirements. Address each of the bullets below in the project documentation to show that the project meets conformity requirements. Provide citations as necessary.

Exhibit 6 – Conformity Statement Language

Because the [name of] project lies within a [identify pollutant] maintenance area, the project must comply with the project-level conformity criteria of the EPA Conformity Rule and with WAC Chapter 173-420.

The [MPO name] must include regionally significant projects the maintenance areas in their approved MTP and federally approved TIP. The regional conformity analysis was reviewed by the consultation partners and FHWA, as documented in [document name].

As stated in 40 CFR Part 93, the following criteria must be met when determining project conformity. A brief summary of the project's conformity to the State Implementation Plan is discussed with each criterion:

- The conformity determination must be based on the latest planning assumptions (40 CFR Part 93.110). [Project info]
- The conformity determination must be based on the latest emission estimation model available (40 CFR Part 93.111). [Project info]
- The project must come from a conforming transportation plan and program (40 CFR Part 93.114). [Project info]
- There must be a current conforming plan and a current conforming TIP at the time of project approval (40 CFR Part 93.115). [Project info]
- The project must not cause or contribute to any new localized CO or violation in CO and PM_{10} nonattainment or maintenance areas (40 CFR Part 93.116). [Project info]
- The FHWA project must comply with control measures in the applicable implementation plan (40CFR Part 93.117). [Project info]

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9. DOCUMENT THE ANALYSIS

In addition to describing the analysis process and results in the discipline report and project environmental document, the analysis documents should be saved together. This is particularly important for more complicated modeling processes. Each alternative will have a unique set of documents. The documentation could include any of the following as relevant:

- Traffic data files showing what was received from the project office and how the modeling inputs were derived
- MOVES modeling files
    - Input spreadsheets
    - Output summaries
    - Input and output databases
    - MOVES run specs
- WASIST modeling files
- ICE Spreadsheet tool
- Any additional data sources, spreadsheets, and source documents