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GHG Emissions and Climate Change in Environmental Reviews

ESSENTIAL FINDINGS

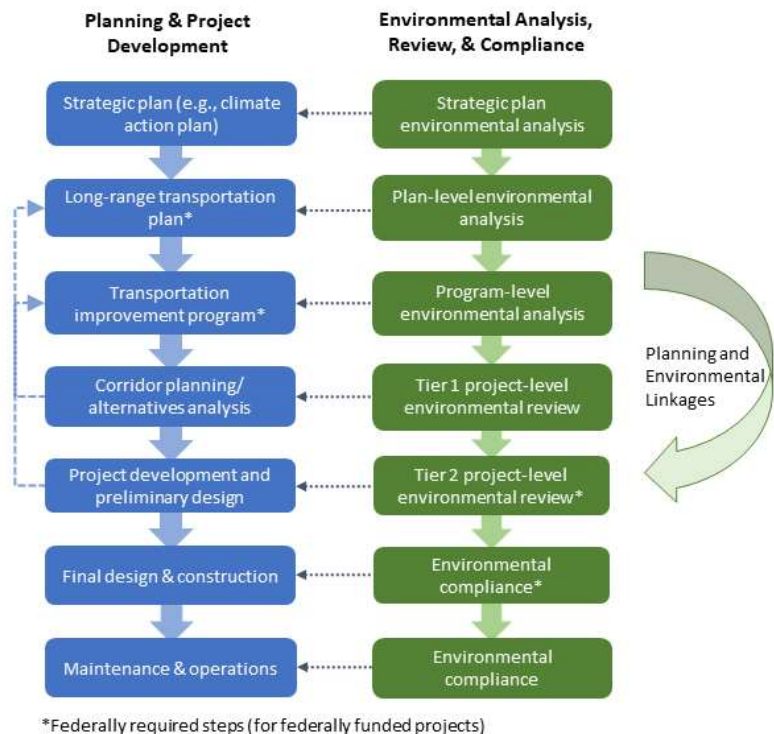
[NCHRP WebResource 3: GHG Emissions and Climate Change in Environmental Reviews](#) was produced as part of NCHRP 25-64: "Considering Greenhouse Gas Emissions and Climate Change in Environmental Reviews: Resources for State DOTs" to support state departments of transportation (DOTs) and partner agencies with resources and approaches for addressing greenhouse gas (GHG) emissions and climate change effects in transportation environmental reviews. The WebResource is a guide that provides resources suitable for responding to the latest federal guidance at the time of publication, as well as state-level requirements.

The guide is designed to help transportation agencies respond to the increasingly urgent need to reduce emissions contributing to global climate change, as well as to improve the resilience of the nation's transportation system in the face of climate change. The guide describes existing requirements and guidance, available tools and methods, and examples from practice. The guide includes sample outlines for sections of an environmental document and discusses implementation considerations.

Environmental Review Context

Environmental review accompanies the process of planning, selecting, designing, and implementing transportation projects. Pursuant to the National Environmental Policy Act (NEPA), environmental review is required for actions (specific projects) that are federally funded, need federal approval, or use federal property. Some states also have their own environmental review requirements. While many projects are subject to Categorical Exclusions requiring minimal analysis, other, typically larger or more impactful projects may require an Environmental Assessment or Environmental Impact Statement requiring more detailed analysis and documentation of effects, including GHG emissions and climate change effects.

Environmental reviews are typically done during the project development process before the project proceeds to final design and construction. While at this point there are still some decisions made that can affect GHG emissions or climate change effects related to a project, many of the major decisions (e.g., modal priorities, design standards) are made earlier in the planning process. Federal guidance supports the incorporation of information from planning and programmatic GHG and climate change analysis (e.g., associated with a long-range or corridor transportation plan) into project-level environmental review. This guide discusses how information from earlier planning stages could be brought into consideration during NEPA or state-level environmental review.



Steps of transportation planning and environmental review.

Federal Policy and Guidance

The Council on Environmental Quality (CEQ) and U.S. DOT issue guidance and regulations to support NEPA implementation. CEQ issued interim guidance on consideration of GHG emissions and the effects of climate change in NEPA reviews in January 2023. The guidance recommends that agencies quantify a proposed action's projected GHG emissions or reductions for the expected lifetime of the action, considering available data and GHG-quantification tools. Agencies should also describe the affected environment for the proposed action based on the best available climate change reports and evaluate aspects of the human environment affected by the proposed action and by climate change. Agencies should consider whether the effects of climate change in association with the effects of the proposed action may result in disproportionately high and adverse effects on communities with environmental justice concerns.

State Policies and Current Practice

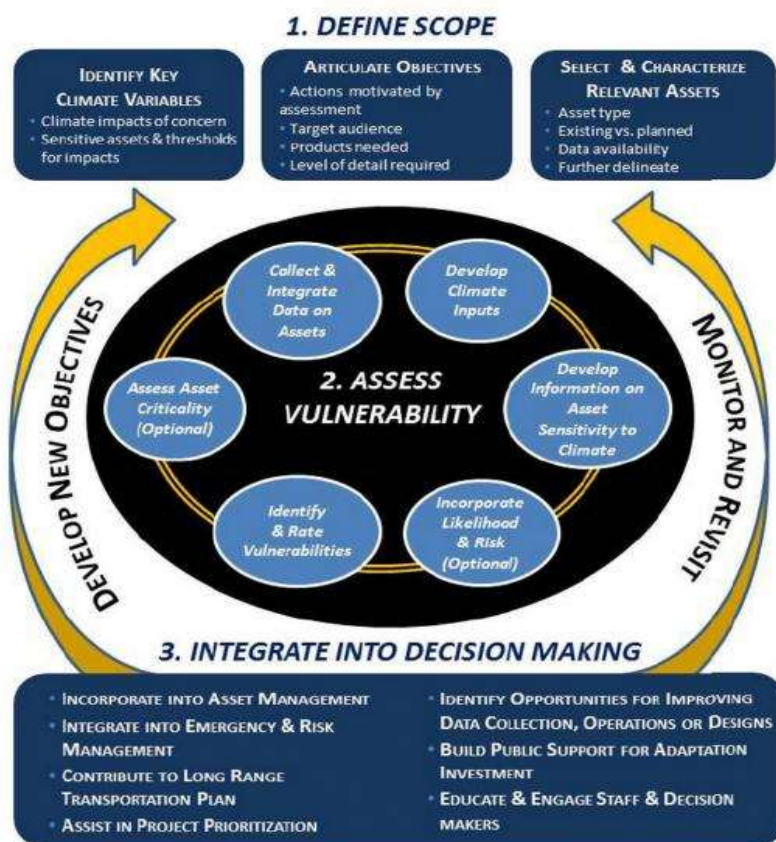
As of early 2023, at least 11 states had published specific written guidance on the circumstances under which GHG analysis is required in transportation project environmental reviews required under Federal and/or state law. At least four had published specific written guidance for addressing climate change effects in project environmental reviews. Other states have applied different approaches for considering these effects for some individual projects without having a formal policy. To date, there have been few or no instances of linking GHG, climate, and equity issues in environmental documentation.

GHG Emissions Analysis

A number of states have developed approaches to GHG emissions that involve quantifying emissions for at least the no-build and build alternatives for major projects (e.g., those requiring an Environmental Impact Statement or exceeding a certain traffic volume) while qualitatively discussing emissions effects for other projects that do not receive a Categorical Exclusion. Typically, travel demand models (used for forecasting traffic effects) are used in conjunction with an emissions model, such as the U.S. Environmental Protection Agency MOVES model, to estimate on-road emissions. Some states also quantify emissions associated with construction and/or maintenance by using the planning-level Infrastructure Carbon Estimator developed by the U.S. DOT. In a few cases, upstream or life-cycle emissions are reported.

Considering Climate Change Effects

"Climate change effects" can refer to both the impacts of climate change on a project and how other effects related to a project (e.g., flooding) may be affected by climate change. States have not yet developed a consistent approach to evaluating climate change effects, including equity considerations, in environmental reviews. Tools and methods for statewide, corridor, and project-level assessments—such as U.S. DOT's Vulnerability Assessment and Resilience Framework—have been evolving rapidly in recent years and this evolution is beginning to inform environmental review.



Vulnerability Assessment and Resilience Framework.
Source: U.S. DOT.