Part 1970 – ENVIRONMENTAL
Subpart O –Miscellaneous Resources

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Part 1970 – ENVIRONMENTAL
Subpart O –Miscellaneous Resources

§ 1971.701 Emergency Procedures.

(a) Purpose. This subpart establishes guidance to staff of Rural Housing Service, Rural Business-Cooperative Service, and Rural Utilities Service (collectively referred to as the "Agency") regarding the implementation and use of emergency procedures of NEPA. Emergency procedures should only come into play when the proposed action is necessary to control the immediate impacts of the emergency.

(b) Authority. The authority to invoke emergency procedures can be found in the Council on Environmental Quality (CEQ) Implementing Procedures for the National Environmental Policy Act (NEPA) of 1969, as amended (40 CFR parts 1500-1508). Emergencies are addressed at § 1506.11

(c) Policy. The Agency will only invoke emergency procedures when it is necessary to ensure the immediate health and safety of people. In no event shall any staff delay an emergency action necessary for the preservation of human life for the purpose of complying with the provisions of this instruction or the CEQ regulations. When an emergency makes it necessary to take an action that could have signification environmental impacts, but there is not time to complete the normal NEPA environmental review process, then the Agency can consult with the CEQ about alternative arrangements. Actions taken under emergency procedures are limited to those actions necessary to control the immediate impacts of the emergency only.

(d) Responsible Parties.

(1) Administrator. The Administrator will ensure compliance with this subpart within their respective program areas.

(2) Agency staff. The Agency staff will carry out emergency procedures when applicable by taking any necessary action to preserve human life and safety and then in a timely manner bringing it to the National Office and EES Director's attention. Agency staff will document the emergency and any associated actions taken before NEPA could be completed. Agency staff will also coordinate with environmental staff moving forward to ensure only true emergency actions are taken and any alternative arrangements agreed to with CEQ are completed.

(3) EES Director. The EES Director will be the main point of contact with CEQ when necessary.

(4) Environmental staff. The Environmental staff at both the National and State Office levels will provide guidance and training on this subpart, as well as provide assistance during an emergency event and determination of how to proceed. Environmental staff will assist in creating alternative arrangements with CEQ when necessary and ensuring that emergency actions are properly limited.

(5) State Director. Within a State Office's jurisdiction, the State Director will make the final determination that an emergency has occurred.

(e) Definitions.

(1) Emergency: A sudden or unexpected event that involves an immediate or imminent threat to public health or safety. This includes natural disasters, catastrophes, or events such as storms, floods, fires, earthquakes, tsunamis, or volcanic action. It also includes man-made disasters such as large-scale civil unrest, sudden hazardous material and chemical spills, explosions, or acts of war or terrorism. Gradual and progressive deterioration or lack of proper maintenance does not qualify as an emergency. Imminent collapse or damage, due to lack of proper maintenance, is not an emergency. An actual collapse is required for it to be an emergency.

(f) Initiation of Emergency Procedures. When an emergency exists that makes it necessary to take urgent action before preparing a NEPA analysis and documentation in accordance with the provisions of 7 CFR part 1970 (regulations), the Agency shall follow this procedure:

(1) Agency staff will take any and all actions necessary to control the immediate impacts of the emergency that are urgently needed to mitigate harm to life, property, or important natural, cultural, or historic resources. When taking such actions, Agency staff shall take into account the probable environmental consequences of these actions and mitigate foreseeable adverse environmental effects, to the extent practicable.

(2) Agency staff shall document in writing the determination that an emergency exists, the State Director's concurrence as necessary, and describe the actions taken at the time of the emergency, for any actions taken under paragraph (1) of this section.

(3) Beyond actions taken under paragraph (1), when any emergency circumstance makes it necessary to take any action without significant environmental impact and without observing the provisions of the regulations, contact the National Office for how to proceed.

(4) Beyond actions taken under paragraph (1), when any emergency circumstance makes it necessary to take an action with significant environmental impact without observing the provisions of the regulations, contact the National Office for consultation with CEQ about alternative arrangements.

(5) Other proposed actions remain subject to NEPA analysis and documentation in accordance with the regulation.

§ 1971.702 Global Climate Change.

In its updated regulations implementing the National Environmental Policy Act (NEPA), the Agency stated that it "will use the NEPA process, to the maximum extent feasible, to identify and encourage opportunities to reduce greenhouse gas (GHG) emissions caused by Federal actions that would otherwise result in the emission of substantial quantities of GHG" (7 CFR § 1970.4(g)). Courts have found that federal agencies must assess carbon dioxide (CO_2) emissions and other climate change impacts in environmental review documents prepared under NEPA (see *Center for Biological Diversity v. National Highway Traffic Safety Administration*, 508 F.3d 508 (9th Cir. 2007). The initial ruling was vacated and modified to allow the agency to prepare either a supplemental environmental assessment or a full environmental impact statement, 538 F.3d 1172 (9th Cir. 2008)). Further, on December 18, 2014, the Council on Environmental Quality (CEQ) issued revised draft guidance "to provide federal agencies direction on when and how to consider the effects of greenhouse gas (GHG) emissions and climate change in their evaluation of all proposed federal actions in accordance with NEPA and the CEQ Regulations Implementing the Procedural Provisions of NEPA (CEQ Regulations)." The 2014 revised draft guidance replaced draft guidance that had been issued in 2010. Both the draft and revised draft guidance can be found at: https://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance. Note that the guidance, in addition to being a draft, is not a rule or regulation. The guidance does not substitute for any law, regulation, or

other legally binding requirement and is not legally enforceable. In light of these policies and directives, this Agency guidance provides background information on GHG emissions and the science of climate change, as well as a discussion of the potential environmental impacts of climate change. It also summarizes the CEQ revised draft guidance, including specific excerpts relating to development and use of a GHG analysis in the NEPA process, and describes how the CEQ guidance might apply to Agency actions subject to NEPA. The final section lists additional resources available online.

(a) Overview of Climate Change.

(1) Science of Climate Change. The CEQ revised draft climate change guidance summarizes the science of climate change as follows (footnotes omitted): It is now well established that rising global atmospheric GHG emission concentrations are significantly affecting the Earth's climate. These conclusions are built upon a scientific record that has been created with substantial contributions from the United States Global Change Research Program (USGCRP), formerly the Climate Change Science Program, which informs our response to climate and global change through coordinated Federal programs of research, education, communication, and decision support. Studies have projected the effects of increasing GHGs on water availability, ocean acidity, sea-level rise, ecosystems, energy production, agriculture and food security, and human health.

(2) Based primarily on the scientific assessments of the USGCRP and the National Research Council, the Environmental Protection Agency (EPA) has issued a finding that the changes in our climate caused by increased concentrations of atmospheric GHG emissions endanger public health and welfare. Adverse health effects and other impacts caused by elevated atmospheric concentrations of GHGs occur via climate change. Broadly stated, the effects of climate change observed to date and projected to occur in the future include more frequent and intense heat waves, more severe wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea-level rise, more intense storms, and harm to water resources, agriculture, wildlife, and ecosystems.

(3) GHG Emissions. Information related to this overview comes primarily from EPA's climate change website at epa.gov/climatechange/ghgemissions/sources (accessed August 2015). GHG are gases in the Earth's atmosphere that absorb radiated energy and cause the temperature of the atmosphere to rise. There are two

definitions that are useful in an analysis of GHG emissions: Global warming potential (GWP) is a measure of the total energy that a gas absorbs over a particular period of time (usually 100 years), as compared to CO_2. This measure allows a comparison of the relative impacts of various GHG on climate. Methane, for example, has a global warming potential of 25, which means that a unit of methane potentially contributes to global warming at a rate that is 25 times greater than from a unit of CO_2. Global warming potential values can be found at 40 CFR 98 (Subpart A, Table A-1). CO_2-equivalent (CO_2-e) is a measure that describes, for a given mixture and amount of GHG, the amount of CO_2 that would have the same GWP, when measured over a specified timescale (generally, 100 years). The CO_2-e of a gas is derived by multiplying the amount of the gas to be emitted by its GWP. The CO_2-e provides a common metric to assess and compare the climate change impacts of human actions. GHGs may be naturally occurring or anthropogenic, and include CO_2, ozone, methane, nitrous oxide, and several halogenated substances that contain fluorine, chlorine, or bromine (including chlorofluorocarbons [CFC]). Of the total GHG emissions in the States in 2013, 82 percent were CO_2, 10 percent methane, five percent nitrous oxide, and three percent were fluorinated gases. Even though fluorinated gases are emitted in small quantities, they are potent GHGs and are sometimes referred to as high GWP gases.

(4) There are several sources of GHG emissions in the United States: Electricity production (31 percent of 2013 GHG emissions) - approximately 67 percent of our electricity comes from burning fossil fuels, mostly in the form of coal and natural gas. Transportation (27 percent of 2013 GHG emissions) - GHG emissions from transportation primarily come from burning fossil fuel in cars, trucks, ships, trains, and planes. Over 90 percent of the fuel used for transportation is petroleum based, which includes gasoline and diesel. Industry (21 percent of 2013 GHG emissions) - GHG emissions from industry primarily come from burning fossil fuels for energy as well as GHG emissions from certain chemical reactions necessary to produce goods from raw materials. Commercial and Residential (12 percent of 2013 GHG emissions) - Greenhouse gas emissions from businesses and homes arise primarily from fossil fuels burned for heat, the use of certain products that contain GHG, and the handling of waste. Agriculture (nine percent of 2013 GHG emissions) - GHG emissions from agriculture come from livestock such as cows, agricultural soils, and rice production. In addition, some land

management actions (e.g., forest practices) can act as a source of carbon emissions as well as a sink (absorbing CO_2 from the atmosphere). In 2013, land uses, including forestry, were found to offset 13 percent of GHG emissions from other sources.

(5) Climate Change Impacts. Information related to climate change impacts came from a review of the general literature, including EPA climate change and Intergovernmental Panel on Climate Change (IPCC) websites. Scientific research has linked increasing GHG concentrations in the atmosphere to a range of ongoing and potential changes in global climate, including rising surface temperatures, changes in snow and ice cover, rising sea levels, changes to hydrology, changes in precipitation regimes, changes to ecosystems, and a possible increase in extreme weather events.

(6) All of the potential climate change impacts are likely to affect human societies across the globe. Potential impacts of climate change on societies and communities, as identified by the 2014 Intergovernmental Panel on Climate Change Report and available at www.ipcc.ch/report/ar5/wg2, include: Increased flooding of river systems, combined with water scarcity in already dry regions. Even in high-latitude regions, where precipitation will likely increase, the increase in extreme precipitation events could lead to reduced raw water quality and pose risks to drinking water quality. Risk of reduced river water quality in areas of reduced precipitation exists because of extended periods of low flow, and in areas of increased precipitation, because of an increase in surface runoff (especially in heavy downpours). Impacts on food supply exist as plants face increasing heat and water stress (e.g., affecting agricultural crop yields). Drier areas, in particular, may also face an increased risk of a long fire season. Plant hardiness zones may shift northwards, consistent with changes in surface temperatures and growing seasons. Impacts on food security because of changes in productivity associated with changes in precipitation, temperature, and the occurrence of disease are also likely. While the overall impact is likely to be negative, individual locations may experience beneficial changes. Human health impacts also exist, including a greater likelihood of injury and death because of more intense heat waves and fires, increased risks from foodborne and waterborne diseases, risks of under-nutrition in poorer regions, and generally increased risks of vector-borne diseases. Damage to infrastructure and coastal communities from sea level rise, storm surges, and heavy downpours combined with an ongoing pattern of intensive development in coastal areas are likely.

(7) While these impacts are global in nature, disadvantaged communities face greater risks. Within the United States, this is especially true for American Indian and Alaska Native communities that face climate-related risks to their traditional ways of life. Observed and future impacts from climate change threaten access to traditional foods such as fish, game, and wild and cultivated crops for many Native Americans. A significant decrease in water quality and quantity because of a variety of factors, including climate change, also affects drinking water, food, and cultures. Impacts are likely to be especially severe in Alaska, where declining sea ice and thawing permafrost are already causing significant impacts to Native communities. For example, relocation of tribal and indigenous communities in coastal locations causes loss of community structure and culture, health impacts, and economic decline, further exacerbating impoverishment in tribal communities.

(b) CEQ Revised Draft Climate Change Guidance. As noted above, the 2014 revised draft guidance replaced draft guidance that had been issued in 2010. Both the draft and revised draft guidance can be found at: www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance. Agency staff are encouraged to read the entirety of the CEQ guidance document and are also cautioned to ensure the revised draft guidance has not been superseded since this Agency exhibit was prepared.

(1) Overview. CEQ noted that the guidance “is designed to provide for better and more informed Federal decisions regarding GHG emissions and effects of climate change consistent with existing NEPA principles.” Analyzing the proposed action’s climate impacts and the effects of climate change relevant to the proposed action’s environmental outcomes can provide useful information to decision makers and the public and should be very similar to considering the impacts of other environmental stressors under NEPA. The guidance will help ensure that Federal agencies’ “analyses of GHG emissions and climate change in an [environmental assessment (EA)] or an [environmental impact statement (EIS)] are useful by focusing on assessing those proposed actions that involve emissions, or that have a long lifespan such that a changing climate may alter the environmental consequences associated with the proposed action.” Further, “CEQ expects that agencies will continue to consider potential GHG emissions and climate impacts when applying an existing [categorical exclusion (CE)] or when establishing a new CE.” Specifically, federal agencies should consider:

(i) the potential effects of a proposed action on climate change as indicated by its GHG emissions; and

(ii) the implications of climate change for the environmental effects of a proposed action.

(iii) Federal agencies "continue to have substantial discretion in how they tailor their NEPA processes to accommodate the concerns raised in this guidance…so long as they provide the public and decision makers with explanations of the bases for their determinations." With respect to considering the impacts of the proposed action, the guidance states:

(A) In light of the difficulties in attributing specific climate impacts to individual projects, CEQ recommends agencies use the projected GHG emissions and also, when appropriate, potential changes in carbon sequestration and storage, as the proxy for assessing a proposed action's potential climate change impacts. This approach allows an agency to present the environmental impacts of the proposed action in clear terms and with sufficient information to make a reasoned choice between the no-action and proposed alternatives and mitigations, and ensure the professional and scientific integrity of the discussion and analysis.

(iv) With respect to the impacts of climate change, the guidance states that the "analysis of impacts on the affected environment should focus on those aspects of the human environment that are impacted by both the proposed action and climate change." It also states: "Climate change effects should be considered in the analysis of projects that are located in areas that are considered vulnerable to specific effects of climate change, such as increasing sea level or other ecological change, within the project's anticipated useful life."

(v) Overall, the revised draft guidance:

(A) Discusses direct, indirect, and cumulative impacts analysis of a proposed action's reasonably foreseeable emissions and effects;

(B) Highlights the consideration of reasonable alternatives and points to the need to consider the short-term and long-term effects and benefits in the alternatives analysis and mitigation to lower emissions;

(C) Recommends that agencies use 25,000 metric tons of CO_2-equivalent GHG emissions on an annual basis as a reference point to determine when GHG emissions warrant a quantitative analysis taking into account available GHG quantification tools and data that are appropriate for proposed agency actions;

(D) Recommends that an agency select the appropriate level of action for NEPA review at which to assess the effects of GHG emissions and climate change, either at a broad programmatic or landscape-scale level or at a project- or site-specific level, and that the agency set forth a reasoned explanation for its approach;

(E) Counsels agencies to use the information developed during the NEPA review to consider alternatives that are more resilient to the effects of a changing climate; and

(F) Advises agencies to use existing information and tools when assessing future proposed actions, and provides examples of some existing sources of scientific information.

(2) Specific Excerpts Relating to GHG Analysis in the NEPA Process. CEQ makes specific recommendations in its revised draft guidance regarding the consideration of climate change in NEPA reviews. Below is an overview of the CEQ revised draft guidance to all federal agencies with respect to the use of traditional NEPA tools and key elements of the GHG impact analysis. Additional resources that may help Agency staff are identified in Section V of this Agency guidance.

(3) Scoping and Other NEPA "Tools"

CEQ notes that scoping, as well as incorporation by reference, using available information, and development of programmatic NEPA reviews are traditional NEPA tools that can be used to "effectuate integrated decision-making, avoid duplication, and focus the NEPA review." These are discussed below.

(i) Agencies should use the scoping process to review the nature, location, timeframe, and type of project to help determine if climate change issues are specifically related to the proposed action and, if warranted, to help set reasonable spatial and temporal boundaries for the assessment. Scoping can help an agency determine whether climate change considerations warrant emphasis, detailed analysis, and disclosure, and provide a basis for an agency determination whether a detailed consideration of emissions is appropriate for a proposed action. Scoping will allow agencies to focus on aspects of climate change that may lead to changes in the impacts, sustainability, vulnerability, and design of the proposed action and alternative courses of action.

(ii) Incorporation by reference may be useful in considering GHG emissions and climate change impacts on a proposed project; particularly relevant are reports on climate change impacts on water resources, ecosystems, agriculture and forestry, health, coastlines, and arctic regions in the United States (www.globalchange.gov/browse/reports).

(iii) Agencies should rely on available information, such as the ongoing efforts to address the impacts of climate change on human health and vulnerable communities in particular, such as children, the elderly, and the poor (e.g., environmental justice concerns). For more information on the Federal Interagency Working Group on Environmental Justice, see www.epa.gov/environmentaljustice/interagency/index.html.

(iv) Finally, with respect to long-range energy, transportation, and resource management actions, agencies may decide it would useful and efficient to provide a combined analysis of GHG emissions or climate change effects in a programmatic analysis and then incorporate that analysis into future NEPA reviews. Such a review may also serve as an effective vehicle to describe agency efforts to adopt sustainable practices for energy efficiency, GHG emission avoidance or reduction, etc.

(4) Considering the Impacts of the Proposed Action. Federal agencies should consider the extent to which a proposed action and its reasonable alternatives contribute to climate change through GHG emissions and take into account the ways in which a changing climate over the life of the project may alter the overall environmental implications of such actions. The following excerpts are from the CEQ revised draft guidance on the subject of analyzing impacts of proposed actions.

(i) Projected Emissions and Sequestration - CEQ recommends agencies use the projected GHG emissions and also, when appropriate, potential changes in carbon sequestration and storage, as the proxy for assessing a proposed action's potential climate change impacts.

(ii) Direct and Indirect Impacts and Connected Actions - When assessing direct and indirect climate change effects, agencies should take into account impacts of the proposed action – including 'connected' actions – subject to reasonable limits based on feasibility and practicality. In addition, emissions from activities that have a reasonably close causal relationship to the Federal action, such as those that may occur as a predicate for the agency action (often referred to as upstream emissions) and as a consequence of the agency action (often referred to as downstream emissions) should be accounted for in the NEPA analysis.

(iii) Cumulative Impacts - After identifying and considering the direct and indirect effects, an agency must consider the cumulative impacts of its proposed action and reasonable alternatives, although CEQ does not expect that an EIS would be required based on cumulative impacts of GHG emissions alone.

(iv) Consideration of Short- and Long-Term Impacts - Agencies should take into account both the short- and long-term effects and benefits based on what the agency determines is the life of a project and the duration of the generation of emissions.

(v) Land Management Practices - It is important to recognize that land management practices such as prescribed burning, timber stand improvements, fuel load reductions, scheduled harvesting, and grazing land management can result in both carbon emissions and carbon sequestration. For such vegetation management practices, NEPA analyses should include a comparison of net GHG emissions and carbon stock changes that would occur with and without implementation of the anticipated vegetation management practice. The analysis should take into account the GHG emissions (biogenic and fossil), carbon sequestration potential, and the net change in carbon stocks that are relevant in light of the proposed actions and timeframes under consideration.

(vi) Applicable Emission Targets - When discussing GHG emissions, it can be helpful to provide the decision maker and the public with a frame of reference. To provide a frame of reference, agencies can incorporate by reference applicable agency emissions targets such as Federal, state, tribal, or local goals for GHG emission reductions to provide a frame of reference and make it clear whether the emissions being discussed are consistent with such goals.

(vii) Rule of Reason and Proportionality - Agencies should be guided by a ‘rule of reason’ in ensuring that the level of effort expended in analyzing GHG emissions or climate change effects is reasonably proportionate to the importance of climate change related considerations to the agency action being evaluated. This concept of proportionality is grounded in the fundamental purpose of NEPA to concentrate on matters that are truly significant to the proposed action.

(viii) An agency must present the environmental impacts of the proposed action in clear terms and with sufficient information to ensure the professional and scientific integrity of the discussion and analysis.

(ix) Analysis Tools - An agency’s determination regarding the type of analysis – quantitative or qualitative – to be prepared for any proposed action should also be informed by the tools and information available to conduct the analysis. GHG estimation tools have become widely available and are already in broad use not only in the Federal sector, but also in the private sector, state and local governments, and globally. If tools or methodologies are available to provide

the public and the decision-making process with information that is useful to distinguishing between the no-action and proposed alternatives and mitigations, then agencies should conduct and disclose quantitative estimates of GHG emissions and sequestration.

(x) Cost-Benefit Analysis – Monetizing costs and benefits is appropriate in some, but not all, cases and is not a new requirement. A monetary cost-benefit analysis need not and should not be used in weighing the merits and drawbacks of the alternatives when important qualitative considerations are being considered. When an agency determines it appropriate to monetize costs and benefits, the Federal social cost of carbon, which multiple Federal agencies have developed and used to assess the costs and benefits of alternatives in rulemakings, offers a harmonized, interagency metric that can provide decision makers and the public with some context for meaningful NEPA review. When using the Federal social cost of carbon, the agency should disclose the fact that these estimates vary over time, are associated with different discount rates and risks, and are intended to be updated as scientific and economic understanding improves.

(xi) 25,000 Metric Ton Reference Point - Providing a detailed quantitative analysis of emissions regardless of the quantity of emissions is not in keeping with the rule of reason or the concept of proportionality. In considering when to disclose projected quantitative GHG emissions, CEQ is providing a reference point of 25,000 metric tons of CO2-e emissions on an annual basis below which a GHG emissions quantitative analysis is not warranted unless quantification below that reference point is easily accomplished. This is an appropriate reference point that would allow agencies to focus their attention on proposed projects with potentially large GHG emissions.

(xii) Alternatives - If a comparison of a range of reasonable alternatives based on GHG emissions, and any potential mitigation to reduce emissions, would be useful to advance a reasoned choice among alternatives and mitigations, then an agency should compare the levels of GHG emissions caused by each alternative— including the no-action alternative —and mitigations to provide information to the public and enable the decision maker to make an informed choice.

(xiii) Mitigation - Agencies should consider reasonable mitigation measures and alternatives as provided for under the existing regulations to lower the level of the potential GHG emissions. The quality of that mitigation – including its permanence, verifiability, enforceability, and additionality – should be carefully evaluated. In cases where mitigation measures are designed to address the effects of climate change, the agency's final decision should identify those mitigation measures, and the agency should consider adopting an appropriate monitoring program.

(xiv) Evolving Information - Agencies should remain aware of the evolving body of scientific information and its clarification of climate impacts at a more localized level.

(xv) Impacts of Climate Change - Climate change effects should be considered in the analysis of projects that are located in areas that are considered vulnerable to specific effects of climate change, such as increasing sea level or other ecological change, within the project's anticipated useful life.

(c) Application to Agency Financial Assistance Actions. The discussion in this section relates to the types of Agency actions that might impose or be affected by climate change impacts and the type of impact analysis that might be required in an Agency NEPA document.

(1) Relevant Agency Actions/Proposals/Projects. In furtherance of the recommendations in the CEQ revised draft guidance, the Agency should focus on those proposals that either involve GHG emissions or have a sufficient lifespan such that a changing climate may affect the implemented action in the future. Several types of applicant projects for which Agency financial assistance may be provided would involve GHG emissions. In addition, some applicant projects may be proposed for flood-prone areas or areas that could be adversely affected by extreme weather, necessitating consideration of GHG impacts. In particular, the Agency should consider the extent to which the impacts of potential GHG emissions warrant consideration for the following types of proposals for financial assistance:

(i) Energy generation or transmission, in particular new electric generating facilities (i.e., from the combustion of fossil fuels) that release primarily CO_2, but also small amounts of methane and nitrous oxide. Gas fired combustion turbines are also a concern because of the impacts of natural gas extraction such as from hydraulic fracturing.

(ii) Projects with significant electricity usage (i.e., require the burning of fossil fuels), which would result in both direct emissions from major project operations and indirect emissions associated with a facility's use of energy (e.g., from electricity produced by a power plant offsite and used by the proposed facility to power equipment).

(iii) Transportation and infrastructure-related projects and projects with significant transportation and related infrastructure requirements, which can result in increased emissions levels from passenger cars and trucks and from the combustion of gasoline and diesel fuels.

(iv) Projects generating, treating, or disposing of large quantities of waste (e.g., landfills, biorefineries).

(v) Projects involving large-scale land clearing or conversion activities (agriculture, mining, land or vegetation management activities).

(3) In the instance where the Agency determines that evaluating the effects of GHG emissions from a proposed action would not be useful to the decision-making process and the public to distinguish between alternatives and mitigations, CEQ guidance indicates that agencies document this rationale.

(4) In the case of applications for Agency financial assistance, an Agency decision could result in GHG emissions in the commercial, residential, and agricultural sectors. These actions could contribute to GHG emissions through use of construction vehicles, increased personal vehicle use, the generation of organic waste (and transport and disposal at landfills, which generate methane), and through the release of fluorocarbons through servicing of and leakage from air conditioning and refrigeration systems equipment.

(5) The emission levels of these Agency projects would depend on the size of the project. Most, however, would not be expected to be high enough to warrant detailed analysis, and may even be so small as to not warrant consideration at all in the NEPA document.

(6) For other applications for Agency financial assistance, an Agency decision could result in GHG emissions in the energy production, transportation, or industry sectors. In particular, Agency financial assistance decisions related to large energy generation or transmission projects could result in GHG emission levels above the reference point of 25,000 metric tons of CO_2-e annually and could necessitate the development of a quantitative GHG analysis for the NEPA document (see discussion below on conducting a quantitative analysis).

(d) Scoping.

(1) In accordance with the CEQ revised draft guidance, agencies should refrain from prematurely dismissing climate change issues as “outside the scope” of the analysis and use the interdisciplinary team and other sources to identify potential cause-effect relationships between the proposal and climate change. However, agencies should also refrain from prematurely assuming that NEPA documentation for every proposal must include a climate change discussion.

(2) The Agency should rely on the traditional scoping process to determine whether consideration of GHG emissions and climate change impacts is relevant to the proposed action or in distinguishing between alternatives and the extent of analysis required. The Agency should be guided by the rule of reason to ensure that the type and level of analysis is commensurate with the anticipated level of GHG emissions and their potential environmental effects, and that these effects are deserving of study.

(3) Determining whether there is a cause-effect relationship is the first step in identifying a potential issue. Consider whether some element of the proposal will result in direct, indirect, or cumulative effects on GHG emissions or the carbon cycle and the direction of effects (e.g., increase, decrease, or combination of both). The Agency also needs to take into account the impacts of any connected actions as that term is defined in the CEQ NEPA-implementing regulations (see 40 CFR § 1508.25).

(4) The CEQ revised draft guidance identifies what is not an appropriate basis for deciding whether to consider climate impacts under NEPA:

(i) [M]any agency NEPA analyses to date have concluded that GHG emissions from an individual agency action will have small, if any, potential climate change effects. Government action occurs incrementally, program-by-program and step-by-step, and climate impacts are not attributable to any single action, but are exacerbated by a series of smaller decisions, including decisions made by the government [footnote omitted]. *Therefore, the statement that emissions from a government action or approval represent only a small fraction of global emissions is more a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether to consider climate impacts under NEPA* (emphasis added). Moreover, these comparisons are not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations. This approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make relatively small additions to global atmospheric GHG concentrations that collectively have huge impact.

(e) Affected Environment. Because most GHG emissions tend to be well-mixed globally, the affected environment should be discussed broadly using a global, national, and regional (i.e., beyond land-based boundaries) framework to provide context for the analysis of potential GHG impacts from the proposed action.

(1) In describing the affected environment, the Agency should describe the current and expected future state of the affected environment based on climate change information (e.g., the anticipated changes in precipitation, temperature, frequency and severity of storms, sea level, floods, and droughts during the period of the proposed action). The discussion should be commensurate in scope and depth with the discussion of current climate conditions.

(2) The Agency should focus especially on the particular impacts of climate change on areas that may be vulnerable to specific effects such as sea-level rise, where this may affect the design of the action or the selection among alternatives, as well as on sensitive populations and environmental resources. As such, potential

vulnerable populations should be identified and described as part of the affected environment; these might include environmental justice communities, especially American Indian and Alaska Native peoples who have a special spiritual and cultural link to their environment; communities using subsistence farming or fishing practices; or communities located in coastal areas that could be impacted by sea level rise. Which communities are included depend on the proposed project location.

(3) Information regarding the estimated changes in climate conditions on a regional basis can be found in reports and information found on the USGCRP website (www.globalchange.gov). EPA also includes a description of the types of climate change impacts expected within the United States., broken out by region, on its climate change website (www.epa.gov/climatechange/impacts-adaptation). Additionally, peer-reviewed literature discussing regional climate change impacts may be available for the area being considered.

(f) Effects of a Proposed Project on Climate Change. For all Agency financial assistance decisions, the level of detail and coverage of GHG emissions and climate change will vary for both the type of NEPA document (EA or EIS) and the type of proposal.

(1) The analysis should evaluate air quality conditions (i.e., status with regard to National Ambient Air Quality Standards) and potential GHG emissions from sources and activities associated with project construction and operation. In addition to consideration of the traditional criteria pollutants, air conformity reviews, visibility impairment in Prevention of Significant Deterioration Class I areas, etc., the emission of CO_2 and other GHGs is an important air quality issue. Consequently, discussions related to the consequences of CO_2 and other GHG emissions should be included within the context of air quality issues in NEPA reviews. Many reliable tools and methods exist today and are widely available for Agency use in estimating GHG emissions. In general, the process for evaluating GHG emissions in NEPA documents should follow the same process used for evaluating cumulative impacts discussed in subparts 1970-A and 1971.705. The estimated level of GHG emissions can serve as a reasonable proxy for assessing potential climate change impacts and provide decision makers and the public with useful information for a reasoned choice among alternatives. For EAs, calculating

direct CO_2-e need not be complex and potential emission source information is identified in this guidance. For EISs, more in-depth analyses and consideration of indirect CO_2-e emissions may be needed. The extent of the analysis should be commensurate with the quantity of projected GHG emissions.

(2) Consistent with the CEQ revised draft guidance, the Agency should employ the rule of reason in conducting an analysis that is proportional to the quantity of projected GHG emissions and their resulting impacts. In addition, the Agency should:

(i) Incorporate Agency emissions targets, such as applicable federal, state, tribal, or local goals for GHG emission reductions, to provide a frame of reference, and discuss whether expected emissions are consistent with such goals.

(ii) Consider both short-term and long-term effects and benefits of the proposed action based on the life of the project and the duration of generation of emissions; such consideration is also appropriate in the analysis of alternatives and mitigation measures.

(iii) Analyze potential GHG emissions and climate change effects to maximize opportunities to adjust alternatives and mitigation to develop more resilient and sustainable proposed actions.

(3) Based on the metric identified by CEQ, projects that are likely to emit more than 25,000 metric tons of CO_2-e on an annual basis should be analyzed quantitatively and evaluated for what those GHG contributions mean in the context of local, regional, and national GHG emissions, and compliance with any regulatory standard or national goal, such as an executive order. These projects are likely to be classes of actions that normally require an EIS (e.g., large-scale power plants). In such cases, the Agency should evaluate GHG emissions associated with the energy requirements of a proposed action, the conservation potential of its alternatives, and mitigation opportunities, and use this as a point of comparison between reasonable alternatives. The CEQ guidance also highlights that the reference point is not a substitute for a determination of significance under NEPA, as described in 40 CFR 1508.27. Note that

a quantitative analysis may also be warranted for slightly lower emission levels if quantification is easily accomplished (e.g., using readily available tools and appropriate input data). For proposals normally evaluated in an EA, the Agency may consider the GHG emissions as a factor in discussing alternative uses of available resources.

(4) With respect to cumulative impacts, it is not possible to determine the cumulative impact on global climate from emissions associated with any number of particular projects. However, where a proposed project would be anticipated to emit relatively large amounts of GHG (e.g., large-scale power plant), the following may be appropriate:

(i) Quantify the expected annual and total emissions from the project, where possible, using already generated data from air quality analyses - cumulative emissions should be estimated over the life of the project;

(ii) Provide context for these numbers by comparing to other emission sources (e.g., individual, regional, national, global), as well as to applicable Agency emission targets (e.g., national or state) (see also discussion on climate change action plans below);

(iii) Discuss measures to reduce GHG emissions, including consideration of reasonable alternatives; and

(iv) Qualitatively discuss the link between such GHG emissions and climate change.

(5) Following the CEQ revised draft guidance, the Agency should recognize the scientific limits of its ability to accurately predict climate change effects, especially of a short-term nature, and not devote effort to analyzing wholly speculative effects. A qualitative discussion would be more appropriate in these cases. Attempting to make a direct link between specific climatological changes (or the environmental impacts of climate change) to a particular project or emissions is difficult to isolate and understand, and is not useful to the NEPA analysis.

(g) Quantitative Analysis.

(1) A quantitative analysis will likely involve modeling of some type. Possible steps involved in the modeling effort are outlined below; potential models and protocols are also identified.

(i) Define the boundary

(ii) Identify emission sources

(iii) Select an emissions calculation approach/tool

(iv) Using attainable data for assessing emissions, estimate the direct and indirect emissions associated with the project and consider associated land use changes

(v) Report emissions, data, and assumptions

(2) Direct emissions might include stationary generation of energy, on-road fuel combustion, manufacturing processes, fugitive emissions, or on-site waste disposal. Indirect emissions might include purchased electricity, raw material processing, offsite waste disposal, or energy to transport source materials (e.g., water).

(h) Potential Models and Protocols.

(1) EPA Models

(i) Measuring Greenhouse Gas Emissions from Transportation (MOVES, NONROAD and MOBILE models (available at: www.epa.gov/oms/climate/measuring)

(ii) Greenhouse Gas Emissions Model, Medium and Heavy Duty Vehicle Compliance (available at: www.epa.gov/otaq/climate/gem)

(iii) Waste Reduction Model, to help track and report GHG emissions reductions from different waste management practices (available at: epa.gov/wastes/conserve/tools/warm/index)

(2) U.S. Community Protocol (many sectors and US emissions factors); information available at: icleiusa.org/tools/ghg-protocols)

(3) IPCC Guidelines for National GHG Inventories (high level energy, industrial processes, waste, agriculture); more information is available on IPCC Task Force on National Greenhouse Gas Inventories website (http://www.ipcc-nggip.iges.or.jp/)

(i) Qualitative Analysis. When the Agency determines that a GHG analysis would be useful for decision-making but a quantitative analysis is not appropriate, the Agency should conduct a qualitative analysis and explain the basis for doing so. For example, a qualitative analysis may be appropriate if there are no available data or if the cost or practicality of obtaining and calculating data is too high. Such an analysis should still be informative, however, and include a discussion of the type and source of emissions, the timing and duration of emissions, and a discussion of proportionality. A qualitative cumulative effects discussion could also incorporate a summary of local, regional, or national climate change scientific assessments to recognize overall climate change effects expected as a result of all contributions to climate change. For example, the Agency can recognize that global climate change may affect human health and that there are uncertainty and unknown risks associated with global climate change. However, it will not be possible, and it is not expected, that the effects of a particular project or multiple projects can be specifically attributed to those effects. Given the nature and scope of most Agency actions, qualitative approaches would likely be most appropriate when a GHG/climate change analysis is called for.

(1) Proposals with short life cycles may not need to address long-term climate change impacts, and the Agency need not address global climate changes that are not relevant to the area or scope of the proposed action. For example, discussing the impact of sea-level rise is unlikely to be relevant to an inland project, although the potential for changes to weather patterns such as more violent storms could be relevant. Projected climate change impacts include air temperature increases, sea level rise, changes in the timing, location, and quantity of precipitation, and increased frequency or extreme weather events such as heat waves, droughts, and floods, which can impact society and ecosystems in a broad variety of ways, as discussed previously (e.g., influence agricultural crop yields, affect human health, cause changes to forests and other ecosystems, or even impact our energy supply). The impacts would be based on:

(i) The nature and severity of projected climate change effects over the next several decades, for the particular region in which the project is located.

(ii) Potential environmental effects of the Proposed Action and No Action Alternatives, as described and analyzed in the NEPA document.

(2) A description of the types of climate change impacts expected within the United States, broken out by region, is provided by EPA on its climate change website (www.epa.gov/climatechange/impacts-adaptation). This same website also explores adaptation efforts by region that may be relevant and useful in an Agency NEPA analysis.

(3) For detailed information about the potential impacts of climate change, visit the USGCRP website (http://www.globalchange.gov).

(j) Relationship to Climate Change Action Plans.

(1) Climate-related impacts are occurring across regions of the country and across many sectors of the U.S. economy. Although climate change is a global issue, many critical actions to address GHG emissions have been initiated at the regional and state levels. Many state and local governments are already preparing for the impacts of climate change through planning for the changes that are expected to occur ("adaptation") and through the development of climate change action plans. Climate change action plans typically lay out the institutional and policy structure, including specific policy proposals or planning processes, which will be used to develop and implement a climate change mitigation strategy.

(2) Staff should identify whether a climate change action plan is available for the applicable county, state, or region of a given proposal. If available, a review of the plan can both provide useful information in analyzing the Agency proposal as well as help put the Agency proposal in the context of the action plan through identification of the following:

(i) Regional and local climate risks and vulnerabilities

(ii) Baseline GHG emissions

(iii) Goals and targets, and

(iv) Potential mitigation actions.

(3) CEQ also recommends including in NEPA documents applicable Federal, state, tribal, or local goals for GHG emission reductions as a frame of reference to decision makers:

(i) [W]hen discussing GHG emissions…it can be helpful to provide the decision maker and the public with a frame of reference.

(4) To provide a frame of reference, agencies can incorporate by reference applicable agency emissions targets such as applicable Federal, state, tribal, or local goals for GHG emission reductions to provide a frame of reference and make it clear whether the emissions being discussed are consistent with such goals.

(k) Other Resources. The following sources of information could be useful for GHG and climate change analyses:

(1) Environmental Protection Agency.

(i) Climate Change, Impacts by Region and Sector http://www.epa.gov/climatechange/index.html

(ii) http://www.epa.gov/climatechange/ghgemissions/ [emissions data for global, national and facility level]

(2) U.S. Global Change Research Program.

(i) U.S. Global Change Research Program: http://www.globalchange.gov

(A) Provides link to *Climate Change Impacts in the United States: The Third National Climate Assessment*, released by USGCRP in May 2014, which provides a comprehensive and authoritative report on climate change and its impacts in the U.S. The report can be explored interactively at: http://nca2014.globalchange.gov.

(3) Intergovernmental Panel on Climate Change [international body for the assessment of climate change).

(i) http://www.ipcc.ch/index.htm - with links to assessment, special, and methodology reports [http://ipcc.ch/publications_and_data/publications_and_data_reports.shtml]

(ii) Intergovernmental Panel on Climate Change Report (2014), available at http://www.ipcc.ch/report/ar5/wg2/.

(4) Other Federal Agency Guidance or Resources.

(i) National Oceanic and Atmospheric Administration, sea level rise viewer, climatic data center

(A) Sea Level Rise Viewer - illustrates the scale of potential coastal flooding for various amounts of sea level rise. More information and access to the viewer is available at: http://coast.noaa.gov/digitalcoast/tools/slr

(B) National Climatic Data Center (NCDC); website includes climate information (e.g., 2015 Climate Report), historical weather data, extreme weather, data access, etc. Available at: http://www.ncdc.noaa.gov/.

(ii) Nuclear Regulatory Commission - *Staff Guidance for Greenhouse Gas and Climate Change Impacts for New Reactor Environmental Impact Statements*, COL/ESP-ISG-026, Attachment 1. August 2014. Available at: http://pbadupws.nrc.gov/docs/ML1410/ML14100A157.pdf (Attachment 1); entire report available at: http://pbadupws.nrc.gov/docs/ML1334/ML13347A915.html

(iii) U.S. Forest Service - *Climate Change Considerations in Project Level NEPA Analysis.* January 13, 2009. Primarily concerns land use actions and climate change mitigations, but includes relevant information for assessing climate change impacts on baseline environmental conditions and implications for the vulnerability of the affected environment. Available at: http://www.fs.fed.us/emc/nepa/climate_change/includes/cc_nepa_guidance.pdf.

(5) Sample Federal Agency EISs (with discussion of climate change and GHG emissions)

(i) U.S. Department of Energy, FutureGen Environmental Impact Statement, DOE EIS-0394, November 2007: http://www.netl.doe.gov/technologies/coalpower/futuregen/EIS/

(ii) U.S. Department of the Interior, Minerals Management Service, Outer Continental Shelf Oil & Gas Leasing Program: 2007 - 2012, Final

(iii) Environmental Impact Statement, April 2007: http://www.mms.gov/5-year/2007-2012FEIS.htm

§ 1971.703 Air Quality.

(a) Background. This subpart provides guidance to staff of Rural Housing Service, Rural Business and Cooperative Service, and Rural Utilities Service (collectively referred to as the "Agency") regarding the implementation and integration of air quality considerations into all Agency programs environmental reviews as part of the NEPA process. Effective analyses and disclosure are required to comply with various statutes and guidance documents. The Clean Air Act (CAA) and its amendments mandate requirements for managing air quality across the nation. This instruction document will focus primarily on the requirements found in CAA Title I, "Provisions for Attainment and Maintenance of National Ambient Air Quality Standards" and Title III, "Air Toxics". While greenhouse gases and their impacts on global climate change are also considered under the authority of the CAA, a separate section addresses this topic; see Staff Instruction 1971.702).

(b) Authority.

(1) Clean Air Act, 42 U.S.C §§ 7409, 7410, 7502-7514, 7571-7574. The CAA requires establishment of National Ambient Air Quality Standards (NAAQS) and designation of areas based on achievement of these standards. It also requires preparation of a State Implementation Plan for Air Quality (SIP). In Section 176(c) of the CAA, federal agencies must demonstrate that their actions conform to these SIPs (or the Tribal or Federal equivalent of a SIP). The CAA also requires emission limits to be controlled and regulated through permit requirements set by states or Tribes.

(2) NEPA, 42 U.S.C. §§ 4321 *et seq*., requires federal agencies to analyze and document the potential environmental impacts of major federal actions significantly affecting the quality of the human environment.

(3) Environmental Protection Agency (EPA) Conformity Regulations ("Conformity Rule"), 40 CFR Part 93. The Conformity Rules ensure that actions taken by federal agencies do not interfere with a state's plan to meet national standards for air quality. A demonstration of conformity is required per Section 176(c) of the CAA.

(4) EPA Air Quality Permit Regulations, 40 CFR Parts 70 and 71. The New Source Review and Title V permit programs requires that industrial sources install sufficient emission control technology when new facilities are constructed or existing facilities undergo significant modifications.

(5) EPA Air Toxics Regulations, 40 CFR Part 60. The CAA requires EPA to identify industrial sources for 189 toxic air pollutants and to require sources to reduce emissions of these pollutants by installing pollution control technology or implementing process changes. In most cases, EPA sets performance-based emission limits rather than requiring specific control technology.

(6) EPA General Conformity Guidance: Questions and Answers (www3.epa.gov/airquality/genconform/documents/gcgqa_940713).

(c) National Ambient Air Quality Standards.

(1) The EPA is required to promulgate NAAQS for certain classes of pollutants, called the "criteria pollutants" under the CAA. For each criteria pollutant, the EPA sets primary and secondary standards. Primary standards are intended to protect human health, including the health of sensitive populations such as children, the elderly, and people with pre-existing cardiovascular or respiratory disease. Secondary standards are intended to protect public welfare by preventing visibility impairment; protecting animals, crops, and buildings, etc. The CAA also requires EPA to periodically review the effectiveness of these standards and update them as necessary.

(2) EPA maintains a website which lists the current standards as well as the status of geographic areas in meeting those standards. This website is known as the "EPA Greenbook" and can be found here: www3.epa.gov/airquality/greenbook. The six criteria pollutants for which EPA sets standards are shown in the table below; however the Greenbook should be checked for currency as the standards are subject to change.

Pollutant	**Primary/Secondary**	**Standard/Time Period**
Carbon monoxide (CO)	Primary	9 ppm (8-hour) 35 ppm (1-hour)
Lead (Pb)	Both	0.15 µg/m^3 (3-month)
Nitrogen dioxide (NO_2)	Primary	100 ppb (1-hour)
	Both	53 ppb (Annual)
Ozone (O_3)*	Both	0.075 ppm (8-hour)
Particulate Matter (PM)		
$PM_{2.5}$	Primary	12 µg/m^3 (Annual)
	Secondary	15 µg/m^3 (Annual)
	Both	35 µg/m^3 (24-hour)
PM_{10}	Both	150 µg/m^3 (24-hour)
Sulfur Dioxide (SO_2)	Primary	75 ppb (1-hour)
	Secondary	0.5 ppm (3-hour)

*Because ozone is not directly emitted from sources, compliance with ozone requirements is usually achieved by limiting emissions of nitrogen oxides (NO_x) and volatile organic compounds.

(3) Attainment, Nonattainment, and Maintenance Areas. After promulgating each NAAQS, EPA then designates geographic areas in accordance with their status of compliance with each NAAQS. Designations are usually based on county boundaries, are specific to each criteria pollutant, and can be found in the EPA Greenbook (www3.epa.gov/airquality/greenbook). The designation classes are as follows:

(i) Attainment Area. An attainment area is a geographical area where the levels of all criteria pollutants meet current NAAQS. Monitored air quality data within the geographic area indicate no current or recent violations of the NAAQS.

(ii) Nonattainment Area. This is an area where monitored air quality data indicate that the concentration of one of more of the six criteria pollutants is higher than the limits set by the NAAQS. Emission limits of the criteria pollutants are developed by individual states and approved by EPA in SIPs.

(iii) Maintenance Area. These are areas that have previously been designated as nonattainment areas by EPA but have since come into compliance with all NAAQS and have been re-designated by EPA as maintenance areas. An area generally remains in maintenance status for 20 years following redesignation. Emission limits to ensure maintenance of the NAAQS are developed by states and approved by EPA in Maintenance Plans.

(d) State Implementation Plans. SIPs are descriptions of air quality measurements, atmospheric modeling, state-adopted emission regulations, and programs to address air quality issues and fulfill the state's responsibilities under the CAA. The CAA requires each state to develop a SIP and submit it to EPA for approval. SIPs will implement state programs, emission limits (often called emission budgets) and permit requirements for major and minor sources of emissions, including stationary and area sources and transportation systems (including on-road and non-road emissions). Most states, in essence, develop multiple SIPs that are specific to certain areas and pollutants. There are also different types of SIPs for nonattainment areas, maintenance areas, and attainment areas. When reviewing an Agency project for compliance with a SIP, Agency staff should ensure the most recent EPA-approved applicable SIP is used.

(e) General and Transportation Conformity. Section 176(c) of the CAA states that no agency of the federal government shall provide financial assistance or approval for any activity which does not conform to the SIP. The assurance of conformity is an affirmative responsibility of the head of each agency. Conformity to the SIP means that federal actions, assistance, or approvals shall not cause or contribute to a new NAAQS violation, increase the frequency or severity of existing violations, or delay timely attainment of the NAAQS or any interim milestones in the SIP. Therefore, federal agencies are required per the CAA to demonstrate that any financial assistance, approvals, or permits conform to the applicable SIP. This process is known as a "conformity determination." It is important to note that although the conformity

determination may be combined with the NEPA process, it is a separate requirement per the CAA. Conformity determinations are usually appended to any resultant NEPA document. The NEPA process cannot be completed until the conformity determination is also complete. Per EPA regulations, a demonstration of conformity to the SIP must be done in nonattainment and maintenance areas. A conformity demonstration is not required in attainment areas, although emission disclosure may still be necessary under NEPA.

(1) Transportation Conformity. This is a specific program within EPA's conformity regulations that limits the conducting of conformity determinations for roadway and transit projects to the Federal Highway Administration (FHA) or the Federal Transit Administration (FTA). If the Agency participates in jointly funding a road or transit project in a nonattainment or maintenance area with either FHWA or FTA, the required conformity determination will be conducted by FHWA or FTA. Please note, however, that the Agency may not fund any project until the conformity determination process is complete.

(2) General Conformity. The conformity determinations conducted by the Agency will be done under EPA's General Conformity Rule, found at 40 CFR Part 93 Subpart B. This Rule applies to all federal agencies except FHWA and FTA.

(3) Applicability Analysis. The General Conformity Process begins with an "applicability analysis" whereby the Agency must determine how and to what degree the Conformity Rules apply. To do this, the Agency must determine the following factors:

(i) Nonattainment/Maintenance Status: EPA's Greenbook (www3.epa.gov/airquality/greenbook) is the definitive resource for determining the air quality status of an area.

(A) If the action occurs within the boundaries of a nonattainment or maintenance area, the General Conformity Rule applies.

(B) If the action occurs in an attainment area, the General Conformity Rule does not apply and no conformity determination is necessary.

(ii) Exemptions. The General Conformity Rule allows for exemptions for emissions that are not reasonably foreseeable, will not result in an increase in emissions, are below de minimis limits, are the result of emergency actions, are included in stationary source air permits, are for routine maintenance and repair of existing structures, or are included in a transportation conformity determination undertaken by FHWA or FTA. See 40 CFR 93.153(c) for a complete list of exempted activities.

(iii) De Minimis Limits. If the direct and indirect emissions associated with the action will occur in a nonattainment or maintenance area and are not specifically exempted by rule, the Agency must establish whether they are below the General Conformity Rule’s de minimis limits. The de minimis limits represent a level of emissions that EPA has determined will have only de minimis impacts to the air quality of an area and are thus exempted from the General Conformity Rule. EPA has established de minimis limits for each criteria pollutant and these limits depend on the severity of the air quality problem of the area. If the total annual net emissions of the project (direct and indirect) are below the de minimis limits, a conformity determination is not necessary. To evaluate if the net emissions of the action are below the de minimis limits, an emission inventory must be prepared by the applicant or applicant’s consultant. The de minimis limits are depicted in the table below and can be found at 40 CFR 93.153(b).

Pollutant/Status	Tons per year	Special Notes
Ozone (VOC, NO_x)		
Serious Nonattainment	50	
Severe Nonattainment	25	
Extreme Nonattainment	10	
All Other Nonattainment and Maintenance	100	Unless in Ozone Transport Region, where VOC is 50.*
CO, SO_2 and NO_2		
All Nonattainment	100	
Maintenance	100	
PM_{10}		
Serious	70	
All Other Nonattainment and Maintenance	100	
$PM_{2.5}$		
All Nonattainment and Maintenance	100	
Lead (Pb)		
All Nonattainment and Maintenance	25	

*The Ozone Transport Region is defined by the CAA and includes the states of ME, NH, VT, MA, RI, CT, NY, NJ, PA, DE, MD and DC Metropolitan Statistical Area.

(iv) Inclusion in the SIP. If the net emissions from the action are in a nonattainment or maintenance area, are not exempt by rule, and are above the de minimis limits, the Agency must determine if the emissions are specifically included in the EPA-approved SIP for the area. At this point, it is necessary to consult with the State air quality agency responsible for SIP development to confirm if the project is included in the EPA-approved SIP. If emissions from the project were considered when the SIP was developed and are included in it, the project can be found to conform to the SIP. Very large infrastructure projects often have line-item emission budgets included in SIPs but smaller projects are often aggregated into emission categories. Small projects, or projects unknown to the state at the time of SIP development, are generally not included in the SIP and will require the Agency to complete the conformity determination process.

(4) Conformity Determination Process. If, after completing the applicability process as described above, the Agency determines that the Conformity Rule applies to the action, the following steps outline the process to conduct an emissions inventory and make a conformity determination.

(i) Analysis Years. The Conformity Rule contains explicit instructions concerning appropriate analysis years for making conformity determinations. Note that the analysis years required by the Conformity Rule and the reasonably foreseeable horizon for NEPA analysis may not coincide. According to 40 CFR 93.159(d), conformity determinations must include emission analyses for the following years:

(A) The attainment year as specified in the SIP, or the last year of the Maintenance Plan;

(B) Any year identified in the SIP with emission budgets; and

(C) The year of expected maximum emissions from the project.

(ii) Emissions Inventory. Estimates of all reasonably foreseeable emissions (direct and indirect) related to the action must be prepared for each analysis year for each criteria pollutant for which the area is designated as nonattainment or maintenance.

Note that analysis years may be different for each criteria pollutant of concern. Inventories must be computed and compared to baseline emissions for each year in order to arrive at an estimate for net emissions. All emission sources related to the action must be analyzed, including construction and operational emissions. For stationary and area sources, emissions can be estimated using emission factors contained in EPA's Compilation of Air Pollutant Emission Factors (AP-42, www3.epa.gov/ttn/chief/ap42/index) unless more accurate information, such as stack test data, is available. For mobile sources, non-road and on-road emissions can be estimated using the EPA modeling tool, MOVES (www3.epa.gov/otaq/models/moves/index). For emission analysis requirements, see 40 CFR 93.159. Net emissions are obtained by comparing estimated project emissions from the estimated "no action" scenario emissions for each analysis year. Subtracting baseline "no action" emission estimates from the total "action" emission estimates for each analysis year yields expected net emissions from the project. If the net emissions from the project for all analysis years for each criteria pollutant of concern are below the de minimis limits, no further analysis is necessary since, per EPA rule, emissions under the de minimis level will not adversely impact the area's air quality and are thus exempt from conformity determinations. Documentation of this result will conclude the conformity process.

(iii) Determination of Conformity. If the net emissions for any analysis year for any criteria pollutant of concern are above the de minimis limits, the Agency must continue the conformity determination process. There are several options to ensure that net emissions conform to the SIP:

(A) The state air quality agency confirms that emissions from the project are specifically included as a line-item in the latest, EPA-approved SIP. (This may be the case for large infrastructure projects.)

(B) The state air quality agency confirms that current emission budgets in the SIP can accommodate the estimated net emissions from the project. (This may be the case for smaller projects where emissions may have been foreseen in aggregated emission estimates used in SIP development.)

(C) The emission can be fully offset by implementation of control measures to reduce emissions. Any control measures must result in emission reductions in the analysis years; a written commitment from the implementing party is required and should be part of the environmental record for the action as well as included in any Agency letter of commitment. If the “offset option” is used, EPA regulations require offsetting of the total net emissions from the project, not just the emissions above the de minimis limits (40 CFR 93.158(a)(2)).

(D) Air quality modeling and dispersion analysis confirms that the estimated project emissions are not expected to cause or contribute to a NAAQS violation.

(E) The state air quality agency commits in writing to revise the SIP in order to include the project. Agency action cannot be finalized until the SIP is revised and subsequently approved by EPA. Note that this process typically takes years and is not recommended as a course of action for the Agency.

(iv) Public Review Requirements.

(A) Per EPA regulations at 40 CFR 93.156, draft general conformity determinations must be made publicly available for comment for a minimum of 30 days. The draft determination must be circulated via public notice in a newspaper of general circulation and should be sent directly to stakeholders such as the state air quality agency and EPA. Generally, the conformity determination would be included in the draft NEPA document and would be noticed concurrently.

(B) All relevant comments received must be addressed in the final conformity determination issued by the Agency.

(C) The final determination must be noticed in a newspaper of general circulation within 30 days of finalization. Copies of the final determination will be provided to stakeholders such as EPA and the state air quality agency.

(5) NEPA and Conformity Analyses.

(A) The conformity process is a separate analysis to meet specific requirements of the CAA. However, it may be combined with the NEPA process.

(B) A conformity analysis is only required for the proposed action, not for any alternatives under consideration. Nonetheless, an emissions inventory for any alternatives may be recommended to meet NEPA disclosure requirements and may be a useful tool in distinguishing the environmental impact between alternatives.

(6) The Agency may not conclude the NEPA process until the conformity analysis is complete.

(f) Air Quality Permits. The CAA established several permitting programs designed to carry out the goals of the Act. Some of the programs are directly administered by EPA but most are carried out by states, local agencies, and approved Tribes. The permitting process is usually done concurrently with the NEPA process. While it is not necessary in most cases for the permits to be issued prior to finalization of NEPA documents, permit applications should be in process and the associated air quality analysis included in the NEPA document. Issuance of permits should be a requirement of any commitment letters issued by the Agency.

(1) Title V Operating Permits. Title V of the CAA requires all major sources of air emission, as well as some minor or “area” sources, to obtain and operate in compliance with a permit. In most cases, EPA has delegated permit issuance to state air quality agencies. Some Tribes have also received delegation for permit issuance. The default threshold to be defined as a major source is 100 tons per year for any air pollutant. However, lower thresholds may apply in nonattainment areas.

(2) New Source Review Permits. New Source Review (NSR) permits apply when factories, industrial boilers, power plants, and other stationary sources are built or modified. These permits are often referred to as “preconstruction permits.” NSR permits specify what construction activity is allowed, emission limits, and operational restrictions. EPA establishes the basic permitting requirements, but states usually develop unique NSR requirements appropriate for the air quality issues within the state. State permitting requirements must be included in an EPA-approved SIP to be valid. There are three types of NSR permit (sources may have to meet one or more of these requirements):

(i) Prevention of Significant Deterioration (PSD). These permit requirements apply to major sources in areas that are in attainment for the NAAQS. PSD permit program requirements include installation of best available control technology, an emission analysis, and an opportunity for public involvement.

(ii) Nonattainment NSR. These permits are required for major sources in areas that do not meet one or more of the NAAQS. Nonattainment NSR permits are customized for the nonattainment area and pollutant of concern. All Nonattainment NSR permit programs must require the installation of the Lowest Achievable Emission Rate technology along with emission offsets and must provide an opportunity for public involvement.

(iii) Minor Source Permits. The Minor NSR permit program is for pollutants from stationary sources in nonattainment or maintenance areas that do not meet the emission threshold to be considered a major source and thus do not require either a PSD or Nonattainment NSR permit. Minor Source Permits generally contain permit conditions intended to limit emissions such that the emission source will not interfere with attainment or maintenance of the NAAQS.

(3) Class I Areas. Class I areas are federal lands of special natural, scenic, recreational, or historic value such as national parks, monuments, wilderness areas, etc. These areas receive special protection under Section 162(a) of the CAA, which is enforced through air quality permit programs.

(i) Any new construction or major modification of a stationary source located within 100 kilometers (62 miles) of a Class I area must consult with the Federal Land Manager of the Class I resource (40 CFR 51.307).

(ii) If the source could adversely impact a Class I area, the land manager of the area may recommend denial of the air quality permit (although the permitting body makes the final decision).

(iii) A list of Class I areas can be found at 40 CFR Part 81.

(g) Hazardous Air Pollutants.

(1) Background. Hazardous Air Pollutants (HAP), also known as "air toxics," are pollutants which are not subject to the NAAQS but are of concern due to the potential impact to human health and the environment. Exposure to certain levels of HAPs can cause difficulty in breathing, nausea, or other illnesses. Many HAPs are persistent bioaccumulative toxics, which means they remain in tissues long after exposure and can build up in organisms. They can persist for many years in the environment after their initial emission, and can travel thousands of miles before depositing onto land or water resources. The majority of HAPs come from anthropogenic sources, such as industrial smokestacks, dry cleaners, print shops, motor vehicle exhaust, etc.

(i) The CAA requires EPA to regulate emissions of HAPs from specific, defined sources. (These are separate requirements from the emission restrictions of the six criteria pollutants discussed above, although some elements, such as lead, may be a criteria pollutant as well as a HAP.)

(ii) The list of regulated HAPs contains 189 individual or compounded chemicals identified in the CAA and can be found at www3.epa.gov/ttn/atw/orig189.

(iii) EPA has published a list of the regulated source categories, which must implement stringent control technology (Maximum Achievable Control Technology, or MACT), which is achieved through the development and enforcement of EPA's National Emission Standards for Hazardous Air Pollutants (NESHAPs).

Note that NESHAPs apply to emission limits and not ambient air quality. NESHAP/MACT enforcement is generally through pre-construction permitting at the state level. Current NESHAP/MACT standards are found in 40 CFR Part 63.

(2) NEPA Considerations. There are no ambient air quality standards for HAPs and thus treatment in NEPA documents will be limited to assurances that appropriate preconstruction permits are or will be obtained as well as disclosure of emissions, in some cases.

§ 1971.704 Sole Source Aquifers.

(a) Sole Source Aquifer.

(1) EPA defines a sole or principal source aquifer as an aquifer that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas may have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend on the aquifer for drinking water. For convenience, all designated sole or principal source aquifers are referred to as "sole source aquifers" (SSAs). A SSA designation is one tool to protect drinking water supplies in areas where there are few or no alternative sources to the ground water resource and where, if contamination occurred, using an

alternative source would be extremely expensive. The designation protects an area's ground water resource by requiring EPA to review certain proposed projects within the designated area. All applicant proposals receiving federal funds are subject to review to ensure that they do not endanger the water source.

(2) All applicant proposals that have the potential to contaminate a designated SSA or adversely affect an SSA recharge area are subject to EPA review. If the project lies within or will affect a SSA or its recharge area as designated by EPA, the Agency must contact the appropriate EPA regional office to determine if a review is necessary. Examples of federally-funded projects that EPA has reviewed under the SSA protection program include, but are not limited to, public water supply wells and transmission lines, wastewater treatment facilities, construction projects that involve management of stormwater, and projects funded through Community Development Block Grants. Attach the results of the EPA’s review and any and all correspondence to the environmental review document.

(3) The EPA may develop Memoranda of Understanding (MOUs) with the Agency (agreements between the EPA and the Agency in a specific state) to establish review responsibilities under the SSA protection program and to list categories of applicant proposals that should or should not be referred to EPA for review. MOUs help to ensure that projects that pose serious threats to ground water quality are referred to EPA, while removing the need for the Agency to consult with the EPA for categories of projects that they have determined will not negatively impact SSAs. This may be a useful, time-saving tool for states that have large SSAs; National Office Environmental Staff will assist any State Environmental Coordinator wishing to develop a MOU.

(4) Pursuant to Section 1424(e) of the Safe Drinking Water Act (Pub. L. 93-523), no commitment for federal financial assistance may be entered into for any project which EPA determines may contaminate the SSA so as to create a significant hazard to public health.

§ 1971.705 Cumulative Impact.

See Exhibit E

§ 1971.706 Noise.

(a) Authority.

(1) The Housing Act of 1949 (Public Law 81-117) sets a national goal of “a decent home and suitable living environment for every American family,” and instructs all federal agencies involved in housing to exercise their functions consistent with this objective in order to encourage and assist “the production of housing of sound standards of…livability… for adequate family life,” and “the development of well-planned, residential neighborhoods.”

(2) The Housing and Urban Development Act of 1965 (Pub.L. 89–117, 79 Stat. 451) directed agencies “to determine feasible methods of reducing the economic loss and hardships suffered by homeowners as a result of the depreciation in the value of their properties following the construction of airports in the vicinity of their homes.”

(3) The Housing and Urban Development Act of 1968 (Pub.L. 90–448, 82 Stat. 476) then reaffirmed the goals of the Housing Act of 1949.

(4) Federal Aid Highway Act of 1970 (Pub.L. 91–605, title I, December 31, 1970, 84 Stat. 1713) requires that noise control be part of the planning and design for all federally-aided highways.

(5) The Noise Control Act of 1972 (P.L. 92-574, 86 Stat. 1234, 42 U.S.C. § 4901 - 42 U.S.C. § 4918) directed all Federal agencies to administer their programs in ways which reduce noise pollution.

(6) 14 C.F.R. Part 150, Airport Noise Compatibility Planning ensures that Federal agencies do not promote incompatible land uses around public use airports.

(7) US Department of Housing and Urban Development (HUD) Departmental Regulation 24 C.F.R. Part 51B established HUD’s noise policy, including setting standards for acceptable noise levels.

(8) Guaranteed Rural Rental Housing Program (7 C.F.R. part 3565, Subpart F) states that multifamily properties must meet the standards contained under 7 C.F.R. part 1924, subpart A.

(9) Planning and Performing Construction and Development (7 C.F.R. part 1924, subpart A).

Subpart A states that manufactured home sites, rental properties, and subdivision shall not be subject to any adverse influences of adjacent land uses, including heavily traveled highways, airport runways, railroad, or fire hazards and other areas subject to recognizably intolerable noise levels. Furthermore, it states that through the use of site design techniques predictable undesirable site noise should be tolerated to as close to clearly acceptable levels as predictable. It directs Agency staff to HUD-PDR-734 *Noise Assessment Guidelines*.

(b) Definitions.

(1) Ambient noise level means the sound pressure level at a given location.

(2) Day-night Average Sound Level (L_{dn} or DNL) is a 24-hour sound average after the addition of 10 dB to nighttime sounds from 10 p.m. to 7 a.m. in order to reflect an increased human sensitivity to nocturnal noise. This is the standard Federal metric for determining cumulative noise exposure.

(3) Decibel(dB) is a logarithmic unit of measurement that expresses the magnitude of a physical quantity (usually power or intensity) relative to a specified or implied reference level.

(4) Duration means the temporal nature (continuous vs. intermittent) of sound.

(5) Frequency means the rate at which a sound source vibrates or makes the air vibrate. Frequency is measured in Hertz (Hz). Frequency can also be classified as high (“sharp”), low (“dull”), and moderate.

(6) Future noise level is the ambient noise level plus the noise level from the new or proposed source.

(7) Intensity means the magnitude and strength of noise.

(8) Noise is unwanted sound that interferes with normal activities such as sleeping, conversation, or recreation; causes actual physical harm; or has adverse effects on mental health.

(9) Noise Sensitive Area means an area where noise interferes with the area's typical activities or uses. Examples include parks, wildlife refuges, cultural and historic sites, recreational areas, and residential, educational, health, and religious sites and structures.

(10) Noise Sound Assessment is a process for determining noise impacts as created by the U.S. Department of Housing and Urban Development.

(11) Plainly audible means any sound that can be detected by a person using his or her unaided hearing faculties. As an example, if the sound source under investigation is a portable or personal vehicular sound amplification or reproduction device, the enforcement officer need not determine the title of a song, specific words, or the artist performing the song. The detection of the rhythmic base component of the music is sufficient to constitute a plainly audible sound.

(12) Sound Level means the quantity in decibels measured with an instrument satisfying requirements of American National Standard Specification for Type 1 Sound Level Meters S1.4-1971.

(c) Sources of Noise Generation. The two main categories of noise are community noise and job-related noise. Job-related noise is regulated by the Occupational Safety and Health Administration (OSHA) and, and while the Agency requires its borrowers to comply with all relevant OSHA standards, it does not conduct any evaluations of this noise in the course of the environmental review process. The other category, community noise, refers to the combination of multiple sources of noise which may result in an overall unacceptable level for those living, working, or recreating in the area. The main contributors to community noise come from the transportation sector and include sources like highways, railroads, and airports. Not only is their construction loud, often requiring noisy equipment like jackhammers, but once constructed they have the potential to contribute near-constant emissions of noise to surrounding areas. Community noise may also come from the construction and operation of industrial facilities, such as manufacturing plants and wind turbines. The consideration of this type of noise is required for all environmental reviews.

(d) Potential for Adverse Impacts.

(1) Numerous environmental factors determine the level or perceptibility of sound at a given point of reception. These factors include: distance from the source of sound to receptor; surrounding terrain; ambient sound level; time of day; wind direction; temperature gradient; and relative humidity. The characteristics of a sound are also important determining factors for considering it as noise. The amplitude (loudness), frequency (pitch), impulse patterns and duration of sound all affect the potential for a sound to be a noise. The combination of sound characteristics, environmental factors and the physical and mental sensitivity of a receptor to a sound determine whether or not a sound will be perceived as a noise. This guidance uses these factors in assessing the presence of noise and the significance of its impacts. It relies upon qualitative and quantitative sound evaluation techniques and sound pressure level impact modeling presented in accepted references on the subject.

(2) Noise is considered to be a biological stressor. By its very definition it may inhibit the ability to perform basic human activities, including sleep and talking, and at its worst it is capable of causing serious health problems. Excessive exposure to noise may cause an increase in heart rate, blood pressure, respiration, blood vessel constriction, and muscle tenseness, in addition to contributing to the development and aggravation of stress-related conditions such as high blood pressure, coronary disease, ulcers, colitis, and migraine headaches. Prolonged exposure to high levels of noise can also lead to birth defects, low-birth weights, susceptibility to viral infections and toxic substances.

(3) Noise can also cause a decrease in property value. This has been an especially prevalent issue around airports and highways, prompting several pieces of legislation aimed at preventing such detrimental economic impacts, including the Housing and Urban Development Act of 1965.

(e) Evaluation. During the course of the Agency’s NEPA environmental review process, the applicant or the applicant’s consultant must consider any potential noise issues that may result from the location of the project. Proposed commercial or industrial projects must be evaluated to determine the level of noise the construction and operation of their facilities will contribute to any noise-sensitive areas such as residences, schools, hospitals, churches, parks, wildlife refuges, etc. Concurrently, proposals for housing and similarly noise-sensitive

projects must be evaluated to determine if their surroundings produce an unacceptable level of noise. The Agency has adopted and follows the noise impact analysis standards and procedures developed by the U.S. Department of Housing and Urban Development (HUD) and detailed in “Noise Abatement and Control” (24 C.F.R. 51, Subpart B).

(1) When certain criteria are satisfied, the need to undertake a noise impact analysis at any level is eliminated. These criteria are as follows:

(i) The site is contained within an area in which local zoning provides for the intended use, and

(ii) The Applicant’s operational plan incorporates appropriate best management practices for noise control for all facets of the construction and operation.
In these cases, the environmental review document should provide evidence to demonstrate that both criteria have been met.

(2) If a noise impact analysis is still required, all facets of the construction and operation that produce noise should be included, such as land clearing activities (chain saw and other equipment operation), drilling, equipment operation for excavating, hauling or conveying materials, pile driving, steel work, material processing, product storage and removal. Land clearing and construction may generate only temporary noise at the site whereas the ongoing operation of a facility would be considered permanent noise.
An analysis may be required for various phases of the construction and operation of the project to assure that adverse noise effects do not occur at any phase. To calculate the sound generated by equipment operation, one can consult the manufacturers’ specifications for sound generation, available for various types of equipment. Another option for calculating the sound generated by equipment is to make actual measurements of sound generated by similar equipment elsewhere. For projects near airports or highways, noise analyses prepared by another agency, such as a state/local body, the airport operator, or a highway department may be available. This information should be used whenever possible.

(3) Agency environmental staff will assist the applicant in developing a noise impact analysis if it is determined necessary, though it is the responsibility of the applicant to provide the required data.

(4) When conducting a noise impact analysis using the *Noise Assessment Guidelines*[1], all military/civilian airports within 15 miles of the project, all significant roads within 1000 feet, and all railroads within 3000 feet must be considered.

(i) The *Guidelines* requests the user to answer the following questions:

(A) How much noise is a site exposed to?

(B) What types of activities are being affected and how severely?

(C) Is it reasonable to redesign the site to relocate noise sensitive activities?

(D) And, if not, how much protection can be provided through various attenuation measures?

(ii) The following data should be supplied by the applicant prior to beginning a noise assessment:

(A) Location of outdoor noise sensitive uses relative to the noise source;

(B) Location of buildings containing noise sensitive activities;

(C) Location of other buildings, particularly ones which might serve to shield sensitive buildings or areas from the noise source; and, https://www.hudexchange.info/onecpd/assets/File/Noise-Guidebook-Chapter-5.pdf

(D) Design and construction features of buildings, particularly features such as use of central air conditioning which could provide noise reduction benefits by permitting windows to be kept closed.

(iii) To determine the noise level of transportation routes, the following additional types of data should be supplied by the applicant in order to analyze the site and its environs:

(A) Number and type of vehicles;

(B) Operational data, including the speed and the daytime/nighttime split; and,

(C) Conditions where the vehicles are operated, e.g., freely flowing traffic versus stop and go, level versus hilly, welded railroad track versus bolted railroad track, etc. If this information is not available, the *Guidelines* also contain model figures.

(5) While the Environmental Protection Agency has set a maximum exposure goal at an Ldn of 55dB, for new construction and substantial improvement, if the overall site exposure is an L_{dn} of 65dB or less, the project is considered to be acceptable and noise will not be considered to be an extraordinary circumstance. If the exposure level is over 65dB L_{dn}, alternative locations or noise attenuation methods must be considered and any noise mitigation measures should be included in the environmental review document.

(6) Potential sources of information:

(i) Noise Pollution Clearinghouse (http://www.nonoise.org/index.htm)

(ii) US Environmental Protection Agency (EPA) (http://www.epa.gov/air/noise.html)

(iii) Local Federal Aviation Administration (FAA) offices (http://www.faa.gov/about/office_org/headquarters_offices/arp/regional_offices/)

(iv) (4) State Department of Transportation (DOT) offices (http://www.fhwa.dot.gov/webstate.cfm) for information

(v) US Department of Housing and Urban Development (https://www.hudexchange.info/resource/313/hud-noise-guidebook/)

(f) Mitigation. Mitigation refers to actions that will be taken to reduce the effects of noise or the noise levels on a receptor.

(1) The most desirable method for mitigating high noise exposure is to avoid the placement of noise-producing sources near or in noise-sensitive areas, or vice versa. If the site is large enough, this

may be accomplished by relocating the project to a different part of the site that allows for more distance between the noise source and sensitive areas. The work charts in the *Noise Assessment Guidelines* can be used to determine how far away the noise source should be located from the receptor.

(2) For construction and industrial projects, measures can be taken to reduce the sounds of operations:

(i) Reduce noise frequency and impulse noise at the source of generation by:

(A) Replacing back-up beepers on machinery with strobe lights (subject to other requirements, e.g., OSHA and Mine Safety and Health Administration, as applicable);

(B) Using appropriate mufflers to reduce the frequency of sound on machinery that pulses, such as diesel engines and compressed air machinery;

(C) Changing equipment: using electric motors instead of compressed air driven machinery; using low speed fans in place of high speed fans; and,

(D) Modifying machinery to reduce noise by using plastic liners, flexible noise control covers, and dampening plates and pads on large sheet metal surfaces.

(ii) Reduce noise duration by:

(A) Limiting the number of days of operation, restricting the hours of operation and specifying the time of day and hours of access and egress can abate noise impacts; and,

(B) Limiting noisier operations to normal work day hours may reduce or eliminate complaints.

(iii) Reduce noise sound pressure levels by:

(A) Moving processing equipment during operation further from receptors;

(B) Substituting quieter equipment (example - replacing compressed air fan with an electric fan could result in a 20 dB reduction of noise level);

(C) Using mufflers selected to match the type of equipment and air or gas flow on mechanical equipment;

(D) Ensuring that equipment is regularly maintained;

(E) Enclosing processing equipment in buildings;

(F) Erecting sound barriers such as screens or berms around the noise generating equipment or near the point of reception;

(G) Phasing operations to preserve natural barriers as long as possible; and,

(H) Designing enclosed facilities to prevent or minimize increases above ambient levels.

(3) When relocating the project is impossible, and the above measures will not eliminate the noise problem, the next alternative that should be considered is the placement or construction of a barrier, such as a wall, berm (earthen walls), or another building, between the noise source and the noise-sensitive area. Barriers may be effective sources of mitigation for at or below ground level noise sources. They should be both high and long enough to fully break the line of sight between the noise source and the receiver. Using another building may be the cheapest and most aesthetically pleasing option for the applicant.

(4) For noise-sensitive projects, the least desirable option is to incorporate noise attenuating measures in the buildings themselves. Because this will not protect any outdoor areas, this should be used only if no other options exist. Noise attenuation construction measures generally fall into the following four categories:

(i) Reducing the total area of windows or other acoustically weaker building elements;

(ii) Sealing off “leaks” around windows, doors, and vents;

(iii) Improving the sound attenuating qualities of small building elements such as doors, windows, etc.; and,

(iv) Improving the sound attenuating properties of major building elements such as roof and wall construction. Interior spaces may be designed to provide “dead” spaces such as corridors and closets that will act as buffer zones. Additionally, something as simple as adding adequate weather stripping can have a significant noise reducing effect.

(5) Any sound attenuation or other mitigation measures to be taken to reduce or eliminate adverse effects from unacceptable noise levels should be fully documented in the environmental review.

§ 1971.707 Visual Impact Assessments.

(a) Purpose. This subpart provides guidance to staff of Rural Housing Service, Rural Business-Cooperative Service, and Rural Utilities Service (collectively referred to as the “Agency”) regarding the implementation and use of visual impact assessments for NEPA documents. This section addresses general visual impacts of an action; additional guidance on potential visual impacts to cultural or historical properties, as considered under Section 106 of the National Historic Preservation Act, is found in Subpart H. The focus of this section is on documenting the existing visual resources and visual quality within a proposed area of impact, and assessing how a proposal might affect the visual landscape.

(b) Authority. The authority to asses visual impacts can be found in the National Environmental Policy Act (NEPA) of 1969, as amended, and its implementing regulations at 40 CFR parts 1500-1508. Section 101 of NEPA specifically calls on federal agencies to assure “…aesthetically and culturally pleasing surroundings”.

(c) Policy. To the extent possible and where appropriate, the Agency will consider the visual impacts of its proposed actions. It is important to understand the intrinsic visual and aesthetic characteristics of the affected area where a project is occurring, and how the project may affect those characteristics, taking into account the viewer’s aspect.

(d) Definitions.

(1) Intactness: The visual integrity of the natural and built landscape of the immediate environment and its freedom from encroaching elements.

(2) Unity: The visual coherence and compositional harmony of the viewshed, which consists of all natural and built features found within the normal view range.

(3) Viewshed: The surface area visible from an observer's viewpoints or series of viewpoints.

(4) Visual Character: The landscape features, natural appearing or otherwise, that form the overall impression of an area.

(5) Vividness: The visual power or importance of the landscape components as they combine.

(e) Visual Impact Assessment Procedures. Any assessment that the applicant chooses to use is acceptable, as long as it is reasonable and fully explained in the NEPA documentation. The specific visual impact assessment used can vary and should be tailored to each project. The goal of this analysis is to determine what, if any, impact, this project will have on viewers when looking at or from the area. This is a very subjective concept and early, open communication with the affected community is very important. Visual resources will vary greatly with each project and location, as will the level of concern of the resource or its components. A general 4 step analysis is presented here:

(1) Identify the proposed project and boundaries of the area of impact for the project.

(2) Take an inventory of the existing visual resources and identify any viewer groups.

(3) Analyze the existing visual quality of the area. Make sure to consider the sensitivity of the viewer groups. What are the viewers doing in that area? For example, are they simply driving by the viewshed or is this an area they go to specifically for the viewshed qualities. Viewer sensitivity will be affected by both the activity occurring around it and the awareness of the viewers.

(4) Evaluate the predicted visual impacts of the project.

(5) The area of impact for the project will generally be anything in view of the project. The analysis could also be tiered and analyzed in separate aspects, if preferred. Separating the analysis by viewer groups, viewer activity or location may be appropriate for projects where the potential impact to the viewshed may vary.

(6) The community where the project is occurring is a good resource for information on the viewer groups and the existing visual resources. Having open dialogues with the local community can help identify the information necessary for visual analysis quickly and efficiently. The focus of the analysis should be on the potential impacts, and the extent of change caused by the project.

(7) The quality of a viewshed is determined by its vividness, intactness, and unity. The visual qualities of an area are comprised of all the features of the area. This includes landforms, vegetation, water surfaces, and cultural modifications (any physical change caused by human activity). When assessing the quality of a viewshed one should consider what the viewer groups are using the area for and how long the current quality has existed. For example, hiking in an area provides a much different experience from driving through that same area on a highway. Hiking allows the viewers to see details better and changes may be more noticeable. When driving on a highway at high speeds details may not be as noticeable but changes to the larger viewshed may still have impacts. In this example the quality of hiker's and driver's viewshed perspectives could be very different and treated differently in an analysis.

(8) Other federal agencies have comprehensive visual resource assessment processes that can be reviewed for assistance on a specific project. Some of those agencies include the Federal Highway Administration (FHWA), U.S. Forest Service (FS), and the Bureau of Land Management (BLM). Out of these, BLM and FS are both land management agencies so they focus more on classifying and analyzing the land. Federal Highways focuses more on impacts of a project, since they are not a land management agency.

(f) Resources.

(1) BLM Visual Resource Management System
http://www.blm.gov/wo/st/en/prog/Recreation/recreation_national/RMS.html

(2) FHWA Visual Assessment
https://www.environment.fhwa.dot.gov/guidebook/results.asp?selSub=82

(3) FS Scenery Management System
http://72.41.119.75/Library/Scenery_Management/SMS_Handbook%20(Reduced%20and%20Oriented).pdf

§ 1971.708 Transportation.

(a) Definitions.

(1) Accident Potential Zone is an area at military airfields which is beyond the Clear Zone. The standards for the Accident Potential Zones are set out in Department of Defense Instruction 4165.57, "Air Installations Compatible Use Zones," November 8, 1977, 32 CFR part 256. There are no Accident Potential Zones at civil airports.

(2) Run*way Clear Zones and Clear Zones are areas* immediately beyond the ends of a runway. The standards for Runway Clear Zones for civil airports are established by FAA regulation 14 CFR part 152 and described in FAA Advisory Circular 150/5300-13. The standards for Clear Zones for military airfields are established by DOD Instruction 4165.57, 32 CFR part 256.

(3) Regionally significant project is defined as those that have a direct impact on a regional transportation system, such as activity centers, malls or other large retail complexes, sports venues, and transportation terminals. The definition also includes access points to the interstate highway system or principle arterial roadways. (14 CFR 450.104)

(4) Sensitive Projects include residential areas, schools, playgrounds, hospitals, and other such projects to which a change in transportation may cause an especially negative impact on human safety.

(b) General Transportation Concerns. All activities proposed by the Agency must be evaluated for their interactions with all relevant transportation sectors. While the majority of Agency projects will have no or minimal transportation concerns, some projects have the potential to cause a significant change to, or be significantly impacted by, the traffic patterns or other transportation activities in their surrounding areas. This is a concern due to the potential stresses the project may place on, or have placed on it, by transportation infrastructure; the environmental impacts that may occur should construction or modification be required; and the potential risks to human health and safety inherent in placing modes of transportation and humans in close proximity to each other. The following questions should be considered when conducting an environmental review:

(1) Will this project cause an increase in traffic in the surrounding area during construction and/or operation?

(i) If so, what is the magnitude of the increase?

(ii) What time(s) of day would traffic increases occur? Will traffic increase during a peak time of day? Peak hours are usually defined as 6–9 A.M. and 3-6 P.M., and 11 A.M.-2 P.M. on weekends (different peak periods may be specified if the peak traffic in the area occurs at a different time of day).

(iii) Where will the increase be and how far away from the site or sensitive area will it extend?

(iv) Can the current infrastructure support the increase?

(2) Will hazardous materials be involved?

(i) If the project will handle, store, or produce hazardous material, will vehicles carrying hazardous wastes travel through or past sensitive areas?

(ii) For sensitive areas (e.g., schools, hospitals, nursing homes), will vehicles carrying hazardous material regularly travel past the areas?

(iii) Potential sources of information that may be used to answer the questions above include:

(A) County Highway Departments

(B) State Departments of Transportation

(C) Federal Highway Administration

(D) Metropolitan or regional planning organizations

(E) Environmental Protection Agency (EPA)’s hazardous waste site databases

(F) Any Traffic Impact Studies or Assessments that have been conducted for other nearby projects

(3) Additionally, the project should also be analyzed from a regulatory viewpoint. The project must be able to receive all proper permissions and permits from any applicable federal, state, or local agencies. For regionally significant projects, it may be

necessary to consult with the applicable metropolitan/regional planning organization or State Department of Transportation (see 23 CFR Part 450).

(c) On-Road Transportation. For projects that will generate a significant increase in traffic, some state transportation departments may require a Traffic Impact Study (TIS), which is a detailed assessment that analyzes the impacts of a proposed development on the surrounding transportation network and any nearby communities based on relevant data. These assessments must account for traffic capacity, signalization, and safety, and can vary in complexity and level of detail according to the type, size, and location of the proposed development. They are usually prepared prior to the issuance of an access permit by a state department of transportation or the Federal Highway Administration (FHWA). For smaller projects, these are usually conducted by a state department of transportation, and by a traffic engineering firm for larger ones. The Institute of Transportation Engineers (ITE) lists the general threshold for the requirement of a TIS as the generation of more than 100 peak hour trips (100 inbound and 100 outbound) in adjacent streets; however, state and local governments may use their discretion to determine an acceptable threshold. A project is most likely to trigger a TIS if it has a driveway on or adjoins a state highway. If a TIS or similar assessment is conducted, it should be included in the environmental documentation.

(d) Railroads. Projects that will utilize railroads for the transportation of supplies or products will need to be evaluated for their potential impacts to railroad infrastructure and community health and safety. Additionally, sensitive projects need to be evaluated for their proximity to railroads. Beyond the noise concern (which is addressed in Section 1971.706) railroads can pose a safety hazard to both pedestrian and vehicular traffic. The potential risk of children accessing railroads should be evaluated. Projects intending to pass utilities under a railroad bed will need to ensure that the proper permissions are received. Potential information sources for addressing these issues include:

(1) Federal Railroad Administration

(2) Federal Transit Administration (for impacts to/from transit projects)

(3) State Departments of Transportation

(4) Railroad owners

(5) Freight companies

(e) Air Transportation. Any projects that propose to erect solar arrays or a tall structure such as an elevated water storage tank, communications tower or a transmission pole, or that will emit steam or smoke should be evaluated for their proximity to airports due to the potential to interfere with airport and aircraft communication, navigation, and surveillance facilities.

(1) In accordance with 14 CFR Part 77.9, if requested by the FAA, or if the project proposes any of the following types of construction or alteration, a notice must be filed with the FAA for:

(i) Any construction or alteration that is more than 200 ft. above ground level at its site;

(ii) Any construction or alteration that exceeds an imaginary surface extending outward and upward at any of the following slopes:

(A) 100 to 1 for a horizontal distance of 20,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (iv) of this section with its longest runway more than 3,200 ft. in actual length, excluding heliports;

(B) 50 to 1 for a horizontal distance of 10,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (iv) of this section with its longest runway no more than 3,200 ft. in actual length, excluding heliports;

(C) 25 to 1 for a horizontal distance of 5,000 ft. from the nearest point of the nearest landing and takeoff area of each heliport described in paragraph (iv) of this section.

(iii) A notice does not need to be filed for the construction or alteration of any object that will be shielded by existing structures of a permanent and substantial nature or by natural terrain or topographic features of equal or greater height, and will be located in the congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation;

(iv) For projects that propose to construct or modify an airport or helipad, FAA must be contacted for

(A) Any public use airports listed in the Airport/Facility Directory, Alaska Supplement, or Pacific Chart Supplement of the U.S. Government Flight Information Publications;

(B) A military airport under construction, or an airport under construction that will be available for public use;

(C) An airport operated by a Federal agency or the DOD.

(D) An airport or heliport with at least one FAA-approved instrument approach procedure.

(v) FAA's Notice Criteria Tool may be used to determine whether or not an official notice must be filed. This screening tool can be found at https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm.

(2) Projects to construct or expand a solar energy project on or near an airport should follow the guidance below from the FAA (in accordance with Interim Policy, Federal Aviation Administration Review of Solar Energy System Projects on Federally Obligated Airports (Federal Register Vol. 78, p. 63247, October 23, 2013)):

(i) For projects on a federally-obligated airport, the sponsor must request FAA review and approval before construction begins. This includes the intent to permit airport tenants, including federal agencies, to build solar installations.

(ii) Projects on an airport that is not federally-obligated or located outside the property of a federally-obligated airport are strongly encouraged, but are not required, to contact FAA and request their review and approval.

(3) If the project is 2,500 feet from a civilian airport or within 15,000 feet of a military airport, the environmental documentation should demonstrate that the project is not within an Accident Potential Zone or a Runway Protection Zone/Clear Zone. Potential sources for information for addressing these issues include:

(i) State Departments of Transportation

(ii) FAA

(iii) Airport owners

(iv) Local governments (For Municipal Airports)

(f) Water Transportation. Projects involving the transportation of supplies or products to and from the site via water should be investigated for their impacts on water traffic and infrastructure in the area, with any such anticipated changes documented in the environmental file. Of specific concern are modifications to waterways and/or the construction of docking structures which may involve dredging and the subsequent disposal of dredged materials. Additionally, the project must be able to obtain all necessary permits required from the U.S. Coast Guard, the U.S. Army Corps of Engineers, and any other state or local agencies that regulate water transportation. Any correspondence with these agencies must be included in the environmental documentation. Potential sources for information for addressing water transportation include:

(1) State Departments of Transportation

(2) U.S. Army Corps of Engineers

(3) U.S. Coast Guard

§ 1971.709 Coastal Zone

(a) Authority.

(1) The Coastal Zone Management Act (CZMA) (16 U.S.C. § 1451-1465) was enacted to encourage coastal states, Great Lake states, and United States territories and commonwealths (collectively referred to as coastal states) to develop comprehensive management programs (CMPs) to manage and balance competing uses of and impacts to coastal resources. Thirty-five coastal states are eligible to participate in the Federal coastal management program. Thirty-four of the eligible states have Federally-approved CMPs; Alaska voluntarily withdrew in 2011.

(2) The CZMA emphasizes the primacy of State decision-making regarding land and water uses within State coastal zones. Section 307 of the CZMA (16 U.S.C. §1456) requires Federal actions having reasonably foreseeable effects to uses or resources of State coastal zones to be consistent with the enforceable policies of a State’s Federally-approved CMP. The Federal consistency requirements of the CZMA are incentives for states to join the national coastal management program and are intended to facilitate cooperation and coordination between states and Federal agencies.

(3) The Office for Coastal Management, within the National Oceanic and Atmospheric Administration's (NOAA's) National Ocean Service (NOS), interprets the CZMA and oversees the application of the CZMA Federal consistency regulations; advises and provides training to coastal states, Federal agencies, tribes, and others; and mediates CZMA-related disputes. A lead state agency is assigned to coordinate their state’s CMP and Federal consistency reviews (referred to as “the State agency” in this section).

(4) The CZMA establishes substantive and procedural obligations that Federal agencies must follow. The CZMA Federal consistency provisions and implementing regulations found at 15 CFR Part 930 establish different standards, procedures, and timeframes for different types of activities. The CZMA sets out four categories of Federal actions subject to CZMA review: 1) activities conducted by or on behalf of Federal agencies (also referred to as “Federal agency activities”), 2) activities authorized by Federal licenses or permits, 3) Outer Continental Shelf plans, and 4) Federal assistance to state and local governments. The Rural Housing Service, Rural

Business-Cooperative Service, and Rural Utilities Service's (collectively referred to as the "Agency") actions may fall within the first and the last categories only. The last category contains Agency actions that provide financial assistance to State and local governments, with all other Agency actions belonging to the Federal agency activities category.

(5) The consultation process described below, as established by the regulations listed above, is also subject to Executive Order 12372, "Intergovernmental Review of Federal Programs."

(b) Definitions.

(1) "Any coastal use or resource" means any land or water use or natural resource of the coastal zone. Land and water uses, or coastal uses, include, but are not limited to, public access, recreation, fishing, historic or cultural preservation, development, hazards management, marinas and floodplain management, scenic and aesthetic enjoyment, and resource creation or restoration projects. Natural resources, or coastal resources, include biological or physical resources that are found within a State's coastal zone on a regular or cyclical basis. Biological and physical resources include, but are not limited to, air, tidal and non-tidal wetlands, ocean waters, estuaries, rivers, streams, lakes, aquifers, submerged aquatic vegetation, land, plants, trees, minerals, fish, shellfish, invertebrates, amphibians, birds, mammals, and reptiles, etc.

(2) "Associated Facilities" means all proposed facilities which are specifically designed, located, constructed, operated, adapted, or otherwise used, in full or in major part, to meet the needs of a Federal action (e.g., activity, development project, or assistance), and without which, the Federal action, as proposed, could not be conducted.

(3) "Coastal Management Program (CMP)" includes, but is not limited to, a comprehensive statement in words, maps, illustrations, or other media of communication, prepared and adopted by the State setting forth objectives, policies, and standards to guide public and private uses of lands and waters in the coastal zone.

(4) "Coastal State" means a State of the United States in, or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes. The term also includes Puerto Rico, the Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, the Trust Territories of the Pacific Islands, and American Samoa.

(5) "Coastal waters" in the Great Lakes area refers to the waters within the territorial jurisdiction of the United States consisting of the Great Lakes, their connecting waters, harbors, roadsteads, and estuary-type areas such as bays, shallows, and marshes; and in other areas, it refers to those waters, adjacent to the shorelines, which contain a measurable quantity or percentage of sea water, including, but not limited to, sounds, bays, lagoons, bayous, ponds, and estuaries.

(6) "Coastal zone" means the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal States, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The zone extends, in Great Lakes waters, to the international boundary between the United States and Canada and, in other areas, seaward to the outer limit of State title and ownership under the Submerged Lands Act (43 U.S.C. 1301 et seq.), the Territories and Insular Possessions Act of March 2, 1917, (48 U.S.C. 749), the Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America, as approved by the Act of March 24, 1976 (48 U.S.C. 1801 et seq.), or section 1 of the Act of November 20, 1963 (48 U.S.C. 1705), as applicable. The zone extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters, and to control those geographical areas which are likely to be affected by or vulnerable to sea level rise. Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers, or agents.

(7) “Development project” means a Federal agency activity involving the planning, construction, modification, or removal of public works, facilities, or other structures, and includes the acquisition, use, or disposal of any coastal use or resource.

(8) “Effect on any coastal use or resource” means any reasonably foreseeable effect on any coastal use or resource resulting from a Federal agency activity, license, permit, or assistance (including all types of activities subject to the Federal consistency requirement under this part.) Effects are not just environmental effects, but include effects on coastal uses. Effects include both direct effects which result from the activity and occur at the same time and place as the activity, and indirect (cumulative and secondary) effects which result from the activity and are later in time or farther removed in distance, but are still reasonably foreseeable. Cumulative effects are effects resulting from the incremental impact of the Federal action when added to other past, present, and reasonably foreseeable actions, regardless of what person(s) undertake(s) such actions. Effects may include activities that are considered to be beneficial, such as environmental restoration.

(9) “Enforceable policy” means State policies which are legally binding under State law through constitutional provisions, laws, regulations, land use plans, ordinances, or judicial or administrative decisions, by which a State exerts control over private and public coastal uses or resources, and which are incorporated in a State’s Federally-approved CMP.

(10) “Enforceable to the Maximum Extent Practicable” means that a Federal agency activity is fully consistent with the enforceable policies of the State’s CMP unless Federal legal requirements prohibit full consistency. This ensures that Federal agencies are able to meet their legally authorized mandates, even though the activity may not be consistent with the State’s enforceable policy.

(11) “Estuary” means that part of a river or stream or other body of water having unimpaired connection with the open sea, where the sea water is measurably diluted with fresh water derived from land drainage. The term includes estuary-type areas of the Great Lakes.

(12) “Federal consistency” is a CZMA provision that Federal actions that have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone (also referred to as coastal uses or resources, or coastal effects) should be consistent with the enforceable policies of a coastal State’s Federally approved CMP.

(13) "State Agency" refers to the lead state agency that is assigned to coordinate their state's CMP and Federal consistency reviews.

(c) CZMA Compliance for Federal Agency Activities. In complying with the CZMA, there are three courses of action that the Agency may take for Federal agency activities: (1) submit a consistency determination (CD); (2) do nothing where no effects are found and a negative determination is not required; or (3) submit a negative determination.

(1) Consistency Determinations

(i) Activities which are conducted by the Agency (or contractors on its behalf) are subject to the requirements of Subpart C of the CZMA Federal consistency regulations. When an activity conducted by the Agency has reasonably foreseeable coastal effects, the Agency must provide a consistency determination to the State agency at least 90 days prior to the action or the point in its decision-making process where the Agency has committed to taking the action. Please note that Federal agency activities involving development projects inside the boundaries of a State's coastal zone are always deemed to have coastal effects.

(ii) The consistency determination must be based on an evaluation of the enforceable policies of the State that would apply to the activity. Where a state does not provide an on-line listing of its enforceable policies, the Agency should contact the State agency to request that the applicable enforceable policies be identified. State contacts for CZMA Federal consistency reviews can be found on the Office for Coastal Management Federal consistency website at https://coast.noaa.gov/czm/consistency/. Early consultation and coordination are objectives of the CZMA; a phone call or email to a State agency prior to developing a consistency determination provides an opportunity for State agency reviewers to become familiar with the project and better informs the consistency determination.

(iii) The required contents of consistency determinations are specified at 15 C.F.R. § 930.39(a). A consistency determination should include:

(A) Contact information for a project representative, including their name, title, mailing address, email address, phone and fax number;

(B) Location of the project (provide map), project start date and duration, a detailed description of the proposed activity and its associated facilities, their coastal effects, and comprehensive data and information sufficient to support the effects determination; and

(C) A brief statement indicating whether the proposed activity will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the State CMP. A Federal agency must be fully consistent with the enforceable policies of State CMPs unless Federal law, by express prohibition or its operation, would prohibit the agency from compliance with the State enforceable policies. If Federal law prohibits the Agency from fully complying with State enforceable policies, the consistency determination shall identify those provisions in Federal law that would be contravened by compliance.

(iv) State agencies may not reject a consistency determination as being insufficient if the content requirements of 15 C.F.R. § 930.39(a) have been met. A consistency determination can be submitted to a State agency either within an ER/EA or via Exhibit 0-6, Attachment 1, Template Consistency Determination letter. Where an ER/EA is used to convey the consistency determination, the CZMA consistency determination should be identified as such within the document and provided to the State agency. A finding of no significant impact under NEPA is not dispositive of whether an activity may have reasonably foreseeable effects to the coastal uses or resources of a state’s coastal zone.

(v) If an emergency situation prevents complete adherence to the approved CMP, the deviation will be the minimum necessary to address the emergency. The Agency will consult with the State agency to the extent that the exigent circumstance allows and will attempt to seek State agency concurrence prior to addressing the exigent circumstance.

Once the circumstance has passed, the Agency will provide the State agency with a description of its actions and their coastal effects.

(vi) If the Agency determines that an application will not be approved, it must immediately notify the applicant and the State agency.

(2) No Effects/No Action. If the Agency believes that an activity has no reasonably foreseeable effects to coastal uses or resources of the coastal zone, there is no obligation of the Agency to comply with the CZMA unless the submission of a negative determination is required by 15 C.F.R. 930.35 (see below).

(3) No Effects/Negative Determinations. CZMA compliance may be required even if there are no effects under certain circumstances where the submission of a negative determination to the State agency is required. If a State agency has listed the activity in its CMP as subject to CZMA review, the Agency must submit a negative determination (see 15 C.F.R. § 930.35). State lists are posted on the Office for Coastal Management website. <https://coast.noaa.gov/czm/consistency/states/>. Negative determinations must also be submitted for activities which are similar to those for which consistency determinations have been previously submitted but are found to have no effects; and for projects for which a no effects conclusion was reached in the preparation of a consistency determination. If the Agency believes it may have been too over-cautious in submitting CDs for a specific Federal action in the past, it may wish to contact the State agency to ensure that they agree that the CDs were in fact not necessary, and thus submitting negative determinations for the same or similar actions would not be necessary.

(4) A negative determination must contain a brief description of the activity, its location, and the basis for the Agency’s determination that the activity will not have reasonably foreseeable effects on coastal uses or resources of the State’s coastal zone (see Exhibit F, Attachment 2, Template for Negative Determination). Like consistency determinations, negative determinations must be submitted at least 90 days prior to an agency taking or committing to taking an action.

(5) The State agency is not required to respond to a negative determination.

(d) CZMA Compliance for Federal Financial Assistance to State and Local Governments.

(1) A separate subpart, Subpart F, of the CZMA Federal consistency regulations applies to Federal financial assistance to state and local government agencies and other public entities such as academic institutions. It is the responsibility of the state or local applicant to show compliance with the CZMA. Federal funds may not be released to the applicant until CZMA compliance is satisfied.

(2) CZMA compliance is required for all Federal assistance to state and local applicant activities that are listed by the State in their CMP for CZMA review. State lists can be found on the Office for Coastal Management website at https://coast.noaa.gov/czm/consistency/states/.

(i) If the assistance activity is not listed by the State in the CMP, no further action is required.

(ii) If the assistance activity is listed, the applicant shall submit the application along with a brief evaluation of any reasonably foreseeable coastal effects and their consistency with the enforceable policies of the State's CMP to the state clearinghouse, if one has been established, for State agency review in accordance with procedures established pursuant to Executive Order 12372, "Intergovernmental Review of Federal Programs." If no state clearinghouse exists, the application may be submitted directly to the State agency. A template request for review letter is included in Exhibit F, Attachment 3 that can be used by the applicant if desired.

(3) A State agency may decide to review for consistency a proposed activity that is not listed in the CMP and for which they have not received a consistency review request, but that is either within the coastal zone or outside of the coastal zone but within the described geographic area that will have reasonably foreseeable coastal effects. If a concern exists regarding the potential for the State agency to request to review an activity not listed in the CMP, an applicant may wish to preemptively contact the State agency and inform them of the project in order to avoid a delay in the review process.

(4) Financial assistance for activities that are not consistent to the maximum extent practicable with the enforceable policies of the approved State CMP may only be approved by the State agency upon a finding by the Secretary of Commerce that such activity is consistent with the purposes of the CZMA or is necessary in the interest of national security.

(5) If the Agency determines that an application will not be approved, it must immediately notify the applicant and the State agency.

(e) State CZMA Reviews.

(1) For Federal agency activities, a State agency has 60 days to complete its review of consistency and negative determinations. With notice to the Agency, a State agency can extend its review an additional 15 days after which no further extension is allowed unless agreed to in writing by the Agency. This agreement should be signed by both parties, refer to a specific end date, and should not require a later event or condition to be satisfied.

(2) For the review of Federal financial assistance activities to state and local governments, a State agency review of assistance applications must be completed within the timeframe specified for its intergovernmental review process established pursuant to Executive Order 12372.

(3) The State agency is responsible for securing necessary review and comment from other state, regional, or local government agencies and, where applicable, the public. Thereafter, only the State agency is authorized to comment officially on a proposed Federal action.

(4) If a concern exists that the State agency may object to the proposed Federal action, the applicant should cooperate with the State agency during the period that the State agency is reviewing the activity to develop conditions that, if agreed to during the State’s agency consistency review period and included in the Agency’s approval, would allow the State agency to concur with the Federal action.

(5) There are four possible outcomes of a State agency review:

(i) A State agency may concur with the activity. Once a concurrence is issued, the review process is complete and final. The environmental compliance obligations pursuant

to the CZMA have been met. No further action is required. A State agency may not withdraw a concurrence.

(ii) A State agency may issue a conditional concurrence. State agency conditions must pertain to the effects of the project and enforceable policies pertaining to those effects. The applicant will then modify the applicable plan, project proposal, or application to the Agency pursuant to the State agency's conditions. If the Agency or the applicant does not find the State agency's conditions acceptable, the State agency will be notified immediately. If the Agency does not approve the revised application (containing the State agency's conditions), the State agency will be immediately notified. If there is no agreement with the conditions, the conditional concurrence is treated as an objection.

(iii) If a State agency does not act within the timeframe for issuing a decision, there is a presumptive concurrence. Once a presumptive concurrence occurs, no further CZMA review is available to the State agency.

(iv) A State agency may issue an objection. Depending on the type of activity, an objection may have different consequences.

(A) For Federal agency activities, if a State agency objects to a negative determination, the Agency shall consider the State agency's effects arguments. If the Agency is persuaded as to the State agency's position that there are reasonably foreseeable effects from the activity, the Agency shall submit a consistency determination to the State agency. If the Agency continues to believe that there are no coastal effects, the Agency may proceed with the activity.

(B) If a State agency objects to a consistency determination, the Agency shall consider the State agency's basis for objecting. The Agency may not proceed with the activity unless it continues to find that the activity is consistent to the maximum extent practicable with the enforceable policies of a State's CMP. Before proceeding over a State agency's

objection, the Agency shall notify the State agency with an explanation as to why the activity is consistent to the maximum extent practicable with the enforceable policies of the State's CMP.

(C) For Federal financial assistance to state and local government agencies, a State agency objection may be appealed to the Secretary of Commerce by the applicant. Federal funds may not be released unless the Secretary overrides the State agency's objection. Appeals to the Secretary of Commerce are not available to Federal agencies.

(f) Evidence of Compliance. The proposed project's environmental documentation should disclose whether the project is within or will have reasonably foreseeable coastal effects, and whether the proposed activity meets the enforceable policies of the CMP. The results of a State agency's CZMA review, any applicable correspondence, and a copy of the consistency determination, negative determination, or consistency review request (as applicable) will be included in the environmental documentation and considered in completing the environmental findings for the proposal.

(h) Mediation. Mediation may be used to resolve Federal consistency disputes and allow Federal actions to proceed. In the event of a serious disagreement between the Agency and a State agency, either party may request that the Secretary of Commerce mediate the dispute. Informal mediation may be conducted through the Office for Coastal Management. Participation in mediation by the Secretary or the Office for Coastal Management is voluntary and non-binding.

§ 1971.710 Costal Barriers.

(a) Authority. The Coastal Barrier Resources Act (CBRA) of 1982 (16 U.S.C. 3501 et seq.) protects undeveloped coastal barriers and related areas by prohibiting direct or indirect Federal funding that might support development in these areas. Congress declared that it is the purpose of this Act to minimize the loss of human life, wasteful expenditure of Federal revenues, and damage to fish, wildlife, and other natural resources associated with the coastal barriers along the Atlantic and Gulf coasts and along the shore areas of the Great Lakes. CBRA restricts future Federal expenditures and financial assistance that have the effect of encouraging development of coastal barriers by establishing the John H. Chafee Coastal Barrier Resources System (CBRS)

and by considering the means and measures by which the long-term conservation of these fish, wildlife, and other natural resources may be achieved. The Coastal Barrier Improvement Act (CBIA) of 1990(42 U.S.C. 4028) reauthorized the CBRA; expanded the CBRS to include undeveloped coastal barriers along the Florida Keys, Great Lakes, Puerto Rico, and the U.S. Virgin Islands, and added a new category of coastal barriers to the CBRS called “Otherwise Protected Areas” (OPAs). The Secretary of the Interior, through the U.S. Fish and Wildlife Service (FWS), is responsible for administering CBRA and maintaining the maps that depict the CBRS. The CBRS consists of two types of units: System units and OPAs. For subsections (c) and (d) below, CBRS refers only to System units.

(b) Definitions.

(1) “Act” refers to the CBRA of 1982, the CBIA of 1990, and subsequent amendments.

(2) “Coastal Barrier Resource System” means a defined set of geographic units and associated aquatic habitat located along the Atlantic, Gulf of Mexico, Great Lakes, U.S. Virgin Islands, and Puerto Rico coasts that are identified and generally depicted on the maps on file with the Secretary of the Interior.

(3) “Otherwise protected areas (OPAs)” are undeveloped coastal barriers that are generally within the boundaries of an area established under Federal, State, or local law, or held by a qualified organization, primarily for wildlife refuge, sanctuary, recreational, or natural resource conservation purposes.

(4) “System unit” means any undeveloped coastal barrier, or combination of closely-related undeveloped coastal barriers, included within the CBR S established by Section 4 of the Act.

(5) “Undeveloped coastal barrier” means a depositional geologic feature (such as a bay barrier, tombolo, barrier spit, or barrier island) that is subject to wave, tidal, and wind energies, and protects landward aquatic habitats from direct wave attack, and all associated aquatic habitats including the adjacent wetlands, marshes, estuaries, inlets, and nearshore waters; but only if such features and associated habitats contain few manmade structures and these structures, and man’s activities on such features and within such habitats, do not significantly impede geomorphic and ecological processes.

(c) Principles of the CBRA.

(1) The Act restricts any new Federal financial assistance within the CBRS which includes loans, grants, guarantees, insurance, payment, rebate, subsidy, or any other form of direct or indirect Federal assistance. Some examples of federally-assisted activities prohibited include construction or purchase of any structure, appurtenance, facility, or related infrastructure; any project to prevent erosion or otherwise stabilize any inlet, shoreline, or inshore area (with certain exceptions); and the construction or purchase of any road, airport, bridge, boat landing facility, or causeway.

(2) The Act does not prohibit development in CBRS units by private owners willing to develop their properties without the benefit of any Federal financial assistance.

(3) An overwhelming number of properties in CBRS units are in floodplains. The Act prohibits the provision of Federal flood insurance coverage for new construction or substantial improvements of structures located within the System. If an existing insured structure is substantially improved or damaged, the Federal flood insurance policy will not be renewed.

(4) Only Federal financial assistance in the form of Federal flood insurance is prohibited in OPAs.

(d) Implementation Procedures.

(1) In those States having coastal barriers within the System, each application for financial assistance, as well as the proposed disposal of real property, will be reviewed to determine if it is located within System units or OPAs as identified on FWS’s official CBRS maps, and, if so, whether the action must be denied or whether it meets the Act's criteria for an exception (see below). If any uncertainty exists regarding the location within System units or OPAs, FWS will be consulted. The official CBRS maps and an interactive CBRS Mapper are available on the FWS website at http://www.fws.gov/ecological-services/habitat-conservation/coastal.html.

(2) The Act lists six categories of exceptions to the limitations on Federal expenditures and financial assistance within the CBRS. No exception may be implemented, however, without first consulting with the FWS (generally designated to the field offices of the FWS). After consultation with the FWS, the Agency may make Federal expenditures or financial assistance available within the System for:

(i) Any use or facility necessary for the exploration, extraction, or transportation of energy resources which can be carried out only on, in, or adjacent to coastal water areas because the use or facility requires access to the coastal water body;

(ii) The maintenance of existing channel improvements and related structures, such as jetties, and including the disposal of dredge materials related to such improvements;

(iii) The maintenance, replacement, reconstruction, or repair, but not the expansion, of publicly owned or publicly operated roads, structures, or facilities that are essential links in a larger network or system;

(iv) Military activities essential to national security;

(v) The construction, operation, maintenance, and rehabilitation of Coast Guard facilities and access thereto; and

(vi) Any of the following actions or projects, but only if the making available of expenditures or assistance therefore is consistent with the purposes of this Act:

(A) Projects for the study, management, protection and enhancement of fish and wildlife resources and habitats, including, but not limited to, acquisition of fish and wildlife habitats and related lands, stabilization projects for fish and wildlife habitats, and recreational projects.

(B) The establishment, operation, and maintenance of air and water navigation aids and devices, and for access thereto.

(C) Projects under the Land and Water Conservation Fund Act of 1965 (16 U.S.C 4601-4 through 11) and the Coastal Zone Management Act of 1972 (16 U.S.C. 1452 et seq.).

(D) Scientific research, including but not limited to aeronautical, atmospheric, space, geologic, marine, fish and wildlife and other research, development, and applications.

(E) Assistance for emergency actions essential to the saving of lives and the protection of property and the public health and safety, if such actions are performed pursuant to Sections 305 and 306 of the Disaster Relief Act of 1974 (42 U.S.C. 5145 and 5146) and Section 1362 of the National Flood Insurance Act of 1968 (42 U.S.C. 4103) and are limited to actions that are necessary to alleviate the emergency.

(F) Maintenance, replacement, reconstruction, or repair, but not the expansion (except with respect to U.S. route 1 in the Florida Keys), of publicly owned or publicly operated roads, structures, and facilities.

(G) Nonstructural projects for shoreline stabilization that are designed to mimic, enhance, or restore natural stabilization systems.

(3) The Agency will not provide financial assistance for any activity to be located within the CBRS unless such activity meets the criteria for an exception listed above.

(4) For activities in the System meeting one or more of the exceptions listed above, the Agency will consult with FWS and request concurrence that the exception criteria are met.

(i) The following information will be provided:

(A) A detailed description of the action and its location;

(B) A description of the affected environment within the System and the impacts of the proposed activity;

(C) The applicable exception criteria and how it applies to the proposed activity; and

(D) The Agency's analysis of how the proposed activity is consistent with the purpose of the CBRA (for exceptions listed under 2(vi) above).

(ii) Should the FWS concur in the exception criteria being met, that portion of the environmental assessment relating to compliance with the Act shall be completed and the corresponding documentation attached. If the proposed project will result in adverse impacts to the barrier resources that cannot be satisfactorily mitigated, an Environmental Impact Statement will be prepared.

(iii) Should the FWS not concur, contact the National Office Environmental Staff for assistance. FWS does not have a veto authority, thus if the Agency has determined that a proposed expenditure is consistent with the CBRA, the proposal may be approved, but the liability remains on the Agency to ensure compliance.

§§ 1971.711 - 1971.750 [Reserved]

Exhibits - A, B, C, D, E and F

oOo

General_Conformity_Flowcharts

Exhibit A: Applicability Analysis

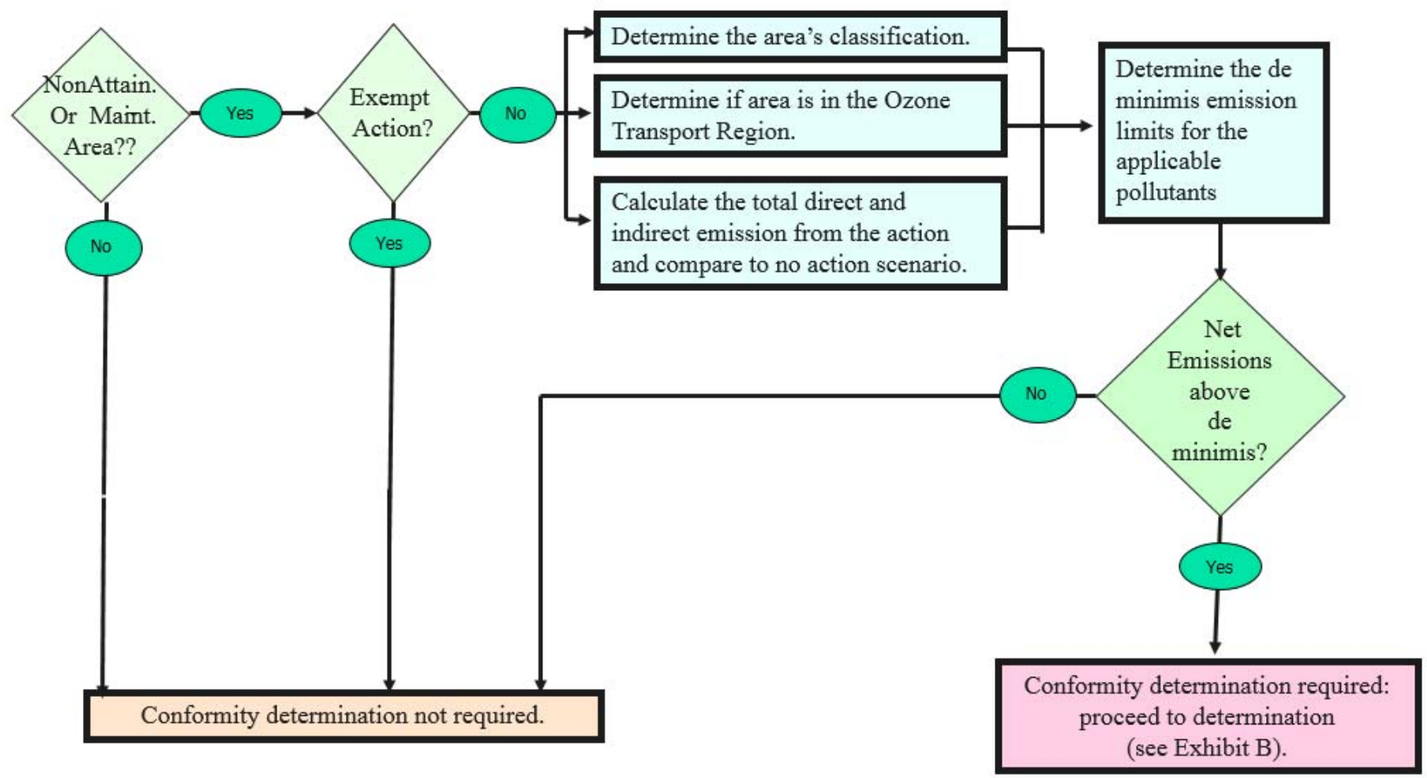
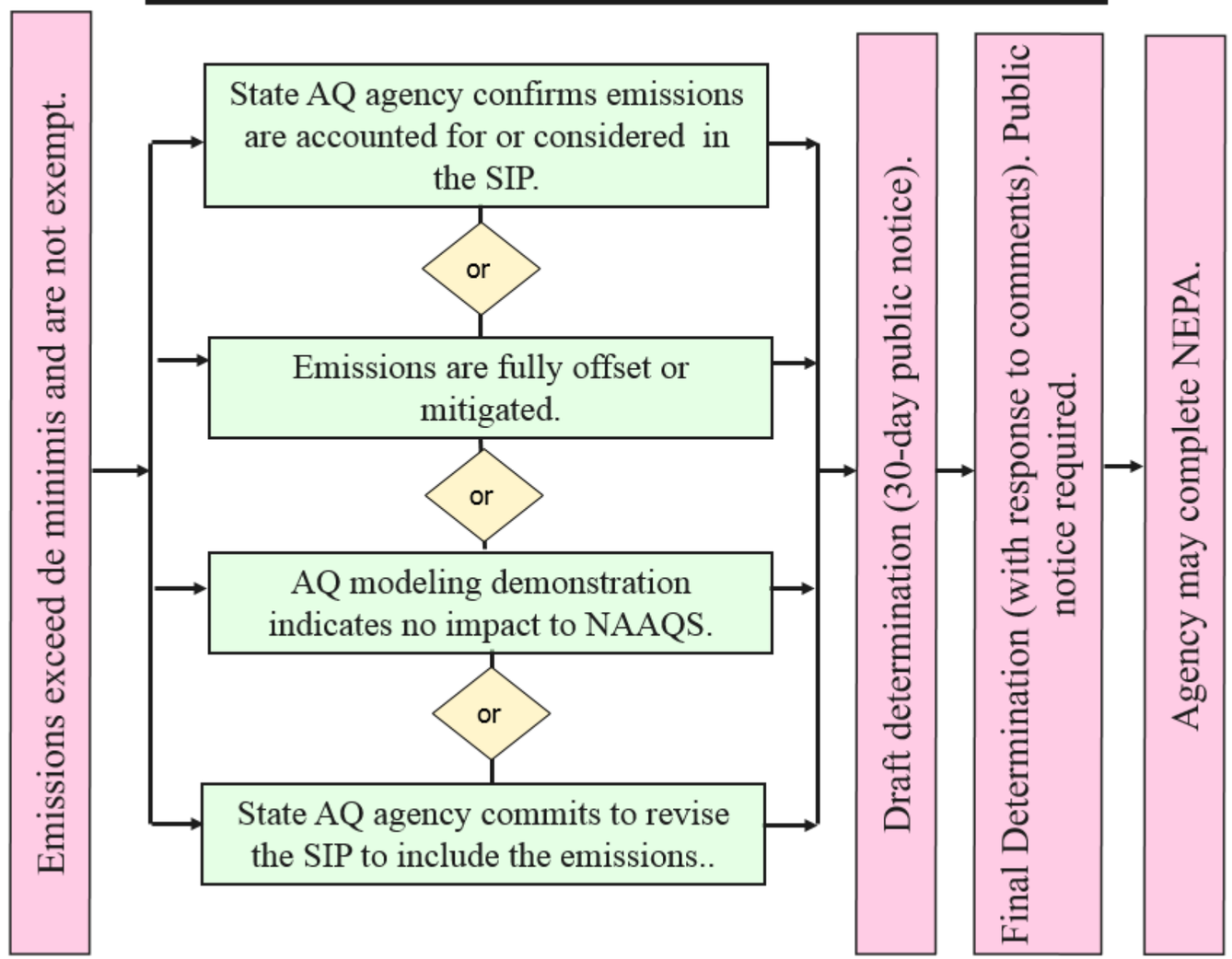


Exhibit B: Conformity Determination



Guidance for Preparing an Alternative Evaluation Study

1.0 INTRODUCTION

The USDA Rural Development (RD), which includes Rural Housing Service, Rural Business-Cooperative Service, and Rural Utilities Service (collectively referred to as the Agency), requires electric applicants to submit proposal development studies when applying for financial assistance for classes of electric generation and transmission projects that require preparation of an Environmental Assessment (EA) or Environmental Impact Statement (EIS). These studies are the Alternative Evaluation Study (AES), as described in this exhibit, the Site Selection (Exhibit C) and Macro-Corridor Studies (Exhibit D).

The objective of the three studies is for the applicant to demonstrate that they have considered reasonable technical and geographical alternatives to meeting the purpose and need of the proposed action. Each report should be concise with sufficient detail for the Agency to independently evaluate the alternatives under consideration and understand the rationale as to why a particular alternative does or does not meet the applicant’s stated purpose and need.

The AES documents the applicant’s process to evaluate and identify a proposal that will reasonably and economically meet the purpose and need. The Agency developed this exhibit to help the applicant to conduct and document the AES and Agency staff to review the AES and incorporate the AES results into the appropriate Agency NEPA document.

Sliding Scale Approach

Because each proposal represents a unique set of circumstances and impacts, there is no single way to prepare the AES. While this guidance generally describes the level of detail that might be needed to support an EIS, the applicant can adapt this guidance to the proposal’s particular circumstances, including those that would support an EA. When conducting a AES for a proposal with an EA, the Agency encourages applicants to use a sliding-scale approach when determining how many reasonable alternatives to identify and analyze and the depth of analysis to provide for each alternative. In general, when completing an EA for a proposal with heightened technical controversy about potential environmental impacts or with greater potential for significant environmental impacts, the applicant may need to identify and analyze more alternatives. Conversely, when a proposed action has smaller potential impacts, the applicant will have less need to consider alternatives in significant detail.

1.1 Background and Purpose of an AES

If an applicant determines that additional generation or transmission capacity may be needed, the Agency requires that the applicant complete an evaluation of reasonable alternatives designed to meet the projected need. A meeting should be scheduled with Agency staff to discuss possible solutions. The evaluation of alternatives requires engineering review in addition to environmental review.

The purpose of the AES is to provide the applicant's rationale for its proposal and why that proposal is the best means of solving the problem. Specifically, the AES will identify the applicant's purpose and need for action and the technological means to meet the purpose and need (i.e, building a new power plant, connecting a new transmission line to the grid to bring power from where it is generated to where it is needed, etc.). All of the technologies will be identified in the AES. The AES will not identify the specific locations on the ground where these technologies would be constructed. Information regarding site location is the subject of Exhibit C: Site Selection Study (for generation projects) and Exhibit D: Macro-Corridor Study (for transmission projects). Specific location information should not be included in the AES unless it is part of a combined report with the Site Selection or Macro-Corridor Study.

1.2 Role in Environmental Review Process

The results and findings of the AES (and Site Selection and Macro-Corridor Studies) will serve as the foundation for a more detailed NEPA analysis. The studies provide information to the public and agencies to support their participation in the process of determining the scope of environmental review. The studies must be conducted and accepted by the Agency prior to the commencement of scoping. The AES should explain each technology alternative in sufficient detail so that interested agencies and the public can generally understand each alternative. The AES should explain which alternative is considered best for fulfilling the purpose and need for the project and clearly explain why certain alternatives are unacceptable or less than optimal.

The AES documents the applicant's decision-making process to identify a proposal that meets the purpose and need. Applicants should schedule a meeting with the Agency to present the decision making process and receive input from the Agency as to whether the proposal is reasonable. The AES should be completed and provided to the Agency. The Agency will provide feedback on the purpose and need and whether the range of technological alternatives is appropriate. The AES is part of proposal development and the Agency's scoping phase of the environmental review process. The AES is also part of the scoping documents made available to affected federal, state, and local agencies and the interested public.

See also Exhibit D-7 (*Public Meeting Guidance*) for more information on scoping activities, including provisions to make the scoping documents available for agency review and public inspection.

The AES should make clear which alternatives are reasonable and thus warrant detailed evaluation in the Agency NEPA document (e.g., EIS, EA), and those that the applicant believes are infeasible due to timing constraints, unacceptable consequences, technological, environmental or economic constraints, or a combination. The AES should also make clear whether locational alternatives need to be identified and evaluated in a separate siting study for generation or for transmission (Site Selection or Macro-Corridor Study).

Agency environmental staff will use the information provided in the AES (and follow-on studies) to identify and evaluate a range of reasonable alternatives in the NEPA document. The Council on Environmental Quality's (CEQ) NEPA regulations state that the comparative analysis of alternatives, including the proposed action, is the "heart" of an EIS (40 CFR 1502.14).

1.3 History of Guidance Documents

This guidance updates and finalizes previous efforts by the Agency to issue guidance. These previous efforts include:

- *Pre-EIS Report Guidance* (Exhibit F-4, dated September 2007) - to assist applicants in preparing a single consolidated report to include the AES, Site Selection Study, and Macro-Corridor Study all in one document. This guidance included a suggested format for a consolidated report and it did not include any information specific to transmission/macro-corridors.
- *Guide for Preparing the Alternatives Evaluation and Site Selection Study for New Generation Projects* (December 1, 2003 included in document header, file name includes July 2007 date) – including a detailed outline for the AES and Site Selection Study, and a placeholder (but no information included) for a Macro-Corridor Study.
- *Guidelines for the Preparation of a Siting Study or a Macro-Corridor Study* (Part III, Exhibit A; no date) – specific to Site Selection and Macro-Corridor Studies and used in developing exhibits C and D.

Note that while the current guidance documents (i.e., Exhibits B, C, and D) promote preparation of the AES, Site Selection Study and Macro-Corridor Study as three separate reports, applicants have the option to combine them into one consolidated report.

1.4 Organization of the Exhibit

The remaining sections of this Exhibit are organized as follows:

- Roles and responsibilities
- Applicability, with respect to the types of Agency activities that could trigger an AES
- Development, use and general content of an AES;
- Example outlines of how a AES might be formatted for an electric generation project and a transmission project; and
- Narrative of how to handle other types of Agency special projects that may need an AES.

2.0 ROLES AND RESPONSIBILITIES

2.1 Agency NEPA Support Staff

If the Agency requires an applicant to submit environmental information, such as an AES, the Agency will assist the applicant by outlining the types of information and analyses required, independently evaluating the information submitted, and making environmental documents available to the public for review and comment in a timely manner.

2.2 Applicants

Applicants requesting Agency financial assistance are responsible for identifying the purpose and need for the proposal and developing reasonable alternatives that meet their purpose and need while considering environmental outcomes. The applicant is responsible for preparing the AES to assist the Agency throughout the environmental review and decision-making process and documenting the AES results according to the format and standards provided by the Agency in this guidance document.

Prior to undertaking the AES, the applicant should contact the Engineering Branch of the Office of Loan Origination and Approval, as appropriate. The Engineering and Environmental Staff should also be contacted to obtain the current status of environmental laws and regulations and Agency environmental requirements. A meeting between the applicant and these parties can be an effective way to exchange that information. Agency staff will identify the appropriate engineering and environmental procedures that must be followed and which submittals will be required by the Agency. If the applicant intends to use a consultant to conduct the AES, the consultant should be included in the initial meetings.

2.3 Contractors/Consultants

Applicants may employ a design or environmental professional or technical service provider (e.g., contractor) to assist them in preparation of their environmental review documents, including the AES.

Others

Other federal, state and local agencies, as well as the general public, will review and provide comments on the AES as part of the NEPA scoping process.

3.0 APPLICABILITY

As soon as the applicant has identified a need to construct an electric generation or transmission project for which it plans to seek financial assistance from the Agency, it should contact the appropriate Agency division to determine the project's classification pursuant to 7 CFR 1970. If the project is classified as one requiring an EIS (and in some cases for those requiring an EA), RD will set up a meeting with the applicant and Office of Loan Origination and Approval and the Engineering and Environmental Staff to discuss the proposed project and submittal requirements.
Under the NEPA regulations at 7 CFR 1970, only one electric program proposal is subject to the requirements of Subpart D (Compliance with NEPA – EISs),and it will trigger preparation of an AES (and possible follow-on Site Selection Study):

- Electric Generation. 1970.151(b)(4) "New electric generating facilities, other than gas-fired prime movers (gas-fired turbines and gas engines) or renewable systems (solar, wind, geothermal) with a rating greater than 50 average MW, and all new associated electric transmission facilities".
- There is one electric transmission proposal which under 7 CFR 1970 would require an EA, but which would also trigger the need for an AES and likely a Macro-Corridor Study (this proposal is neither categorically excluded nor requires an EIS; see 1970.101(b)):
- Electric Transmission. (Electric transmission facilities of 230 kV or more nominal operating voltage and 25 miles or more in line length.)

4.0 DEVELOPMENT/USE – GENERAL CONTENT

4.1 Level of Detail

The AES provides the applicant's purpose and need for the proposal and describes alternative methods that could be employed to meet that need. The AES must describe the alternatives in sufficient detail to allow for public review and understanding and explain which alternative is considered the best for fulfilling the applicant's need for the project and why, as well as why other alternatives are unacceptable or less than optimal.

The AES should make clear which alternatives are open to the applicant in the future and those that the applicant believes have been foreclosed due to timing constraints, unacceptable consequences, technological, environmental or economic constraints, or a combination of the above.

The Agency recognizes that there may be changes in the status of some of the alternatives. The applicant should report and document these changes as they occur. This documentation will eventually be included in the EIS or EA, so applicants are urged to maintain up-to-date documentation of the status of each alternative.

4.2 Types of Alternatives to be Addressed.

CEQ's NEPA regulations require a rigorous exploration and objective evaluation of all reasonable alternatives, including the no action alternative. CEQ's guidance states that for EISs, reasonable alternatives include those that are practical or feasible from a common sense, technical, and economic standpoint. An EIS need not discuss every unique alternative when an unmanageably large number is involved. A failure to consider alternatives that seem reasonable to others would affect the credibility of an otherwise adequate NEPA review.

The AES should identify alternatives that respond to the underlying purpose and need under a variety of reasonably foreseeable circumstances, including technology alternatives. The AES should also identify and briefly discuss alternatives that were considered but dismissed from detailed evaluation and why an alternative is not reasonable. The method for identifying, evaluating and comparing, and determining which alternatives are carried forward for further consideration should be presented in a manner that is clear to the reader.

For new electric generation proposals, alternatives might include power purchases, load management, energy conservation, or other technologies. For transmission proposals, an insufficient supply of electrical energy or reliability concerns in an area may be addressed by constructing a new transmission line, constructing new generation capacity, purchasing power from other utilities, wheeling power via another utility's system, or reducing load in an area through load management or energy conservation. Consideration should also be given to voltage stability and thermal limits.

No Action Alternative

The No Action alternative must be considered in an EIS and an EA. It provides a baseline against which impacts of the other analyzed alternatives can be compared. It should be noted that the no action alternative does not necessarily mean doing nothing. Rather, the no action alternative often involves maintaining or continuing the "status quo." For new proposed projects, the no action alternative means that the proposed action would not take place. For proposed changes to an ongoing activity, the "no action" alternative can mean continuing with present plans. The no action alternative may not be a reasonable alternative. Alternatively, the no action alternative may constitute the only alternative to the proposed action (e.g., to fund or not fund the project). In such cases, the no action alternative may include several sub-alternatives consisting of those reasonably foreseeable courses of action available to the applicant if the Agency denies its application and funding.

Agency staff may have difficulty describing the no action alternative because that alternative may not be reasonable when a need for power in the region of interest has been demonstrated. In such a situation, doing nothing would mean significant consequences to people living in the region of interest as the power system becomes unreliable because of inadequate generating capacity. CEQ's NEPA guidance states that where a choice of no action by the agency would result in predictable actions by others, this consequence of the no action alternative should be included in the analysis. Staff know that regulatory authorities (e.g., State Public Utility Commissions, in conjunction with any regional transmission operator and electrical reliability council) would take action to meet the need for power before the grid became unstable. As a result, the staff should also discuss what other steps might be taken to address the need for power in the No Action alternative description.

4.3 General Organization and Formatting

Information, particularly when comparing alternatives, should be presented in comparative form to help sharply define the issues and provide a clear basis for choice. Use of easy-to-follow tables and figures/maps/graphics, where appropriate, will help summarize data, show comparisons and correlations, enhance understanding, and facilitate the reader's access to the information. Technical terms should be clearly defined. In general, the writing should be clear, concise, and in plain language so it is readily understandable to the lay person. The AES must contain enough information to allow Agency staff, decision-makers, and the public to evaluate the differences among alternatives. Other presentation suggestions include:

- Ensure graphics and tables inform the reader and are easy to read;
- Highlight key data and findings presented in tables and graphs;
- Use maps and drawings to depict all features that are needed to understand the project, location and potential impacts. Provide directional arrows and scale indicators.

<u>Lessons Learned</u>

The importance of clear writing and presentation of information is a significant lesson the Agency has learned from reviewing past studies, and is consistent with the guidelines provided above. Specific areas in need of clear presentation, as identified by Agency staff, include:

- The selection process for an alternative technology and the supporting information must be transparent.
- The AES must clearly define the values used for identifying a technology.

4.4 Information and Data Needs and Resources

Special studies that may be conducted and used in support of the purpose and need, and the results of which are referenced or included as an appendix to the AES, are typically prepared by the applicant or its contractor. Example studies (state or region specific) might include: Power Requirements Study, Integrated Resource Plan, Transmission Improvement Planning Study, Electric Transmission Infrastructure Needs, Reliability Enhancement Study, Peak Load Information, Load Forecast Report, and Regional Incremental Generation Outlet Study.

5.0 SUGGESTED AES FORMAT/OUTLINE: ELECTRIC GENERATION.

The Agency recognizes that the content for the AES will vary depending on whether the proposal is one for electric generation or transmission. The example outline presented below is for electric generation and is targeted to the level of detail that would be appropriate for an EIS. With appropriate alteration, including a reduced level of detail as guided by the sliding scale approach (see Section 4.2), this outline can be suitably altered to assist applicants in preparing a AES for proposals requiring an EA.

The following sections of this guidance outline the suggested format of the AES for electric generation. The numeric headings may be changed to suit the applicant's document headings.

Executive Summary

- Provide a brief description of the applicant and its member distribution cooperatives.
- Briefly summarize the current generation resources available to the applicant (generation capacity and purchased power contracts).
- Summarize the results of the latest approved load forecasts for the applicant and its members, and, if applicable, the forecasts for the power pool or region with which the applicant is associated.
- Briefly describe any unusual circumstances that have resulted in the need for additional power.
- Summarize the results of the Alternatives Analysis.

Introduction

- Purpose: Describe the Agency requirement for the AES, the statutory reference for such, and purpose of the AES. Address the role the AES plays in the overall environmental review process (environmental review requirements), and how the information is used in the EIS itself. The AES should serve as the applicant's rationale as to why the proposal is being sought, and why it is the best means of solving the problem.
- Agency/Applicant Roles
- Describe the Agency's role in review, coordination and data/information requests.
- Describe the applicant's responsibilities in the loan application process and the Agency's role in review, coordination and data/information requests.
- Format and content of document
- Describe the format and content of the document.

Profile of Applicant

- Briefly describe the applicant, including:
  - History of applicant
  - Identify member cooperatives
  - Map of service area that depicts the service area served by its members
  - Customer base (types and total number of consumers served); if possible, place customer base in these or similar categories: residential, commercial, industrial, governmental, agricultural

Purpose and Need for Action (as they apply)

Provide a succinct statement of the applicant's purpose and need for the proposal, including relevant legislation where appropriate. What is the need to be met, why is it occurring, and how would the proposal meet the need? This section should provide the principal underlying data and information to justify the need for action. In some cases, the need may be legislatively driven. The following elements support the applicant's purpose and need:

Demand/Load Forecast

If more than one forecast has been submitted to the Agency based on changed conditions, summarize both and explain the factors that prompted the change in demand. The forecast would consist of:

- Summary of the latest Power Requirements Study (PRS) - identify date and status of latest PRS submitted, and describe any special forecasts prepared for separate consumer loads (seasonal, certain sector, e.g., irrigation);
- Summary of historic and projected load growth; depict information on a graph; differentiate between seasonal (winter and summer peak demand) and sectoral characteristics as appropriate;
- A graph depicting annual energy consumption;
- A table showing historic and forecast peak demand and energy growth rates in percentages over five-year periods;
- A table depicting projected loads, projected capacity requirements, existing capacity and projected capacity deficits over a 10-year period.

Planning History

Summarize the applicant's resource planning history with the Agency, applicable power pools, and state agencies.

Existing Resources

Identify what resources the applicant currently utilizes to meet the requirements of its members. Include the following:

- Existing generation resources. Identify applicant's existing generation resources in both narrative and tabular format; differentiate between fuel types, capabilities (e.g., base load, intermediate load, peaking), and type of ownership; provide share in percentage and capacity for co-owned facilities;
- Existing purchase contracts. In narrative and tabular format, identify the amount and duration of both long- and short-term contracts;
- Existing demand side management. Identify load control and conservation programs currently being implemented by members; identify any distributed generation resources used by members for load control; summarize the effects of these measures in a table (demand reduction resulting from these measures);
- Incremental upgrades. Identify any current or planned generation upgrades that would affect current capacity ratings; identify any planned or anticipated de-rating of generation resources below their current capacity output;
- Power pool member resources. If the applicant is a member or participant in a power pool or other regional system, describe the current status of the pool or regional system in terms of capacity, reserves, trends in member usage; include a discussion and table depicting reserve margins in MW and percentage; if available, include a summary of forecasted resources including demand, generation capacity mix, and any additions of generation or transmission resources;
- Transmission system constraints. Briefly describe what transmission facilities are available to the applicant (owned and co-owned), and what (if any) constraints are in the system that would affect the applicant's ability to obtain purchased power from sources both within and outside the regional transmission grid;
- Characteristics of energy needs. Summarize the results of the most recently submitted Integrated Resource Plan; identify the type of load for which capacity additions are needed and the season which the load is projected to serve; include a load duration curve as necessary.

Need Summary

Summarize results of 3.1 through 3.3.

Load Management Alternatives (as they apply, including new marketing programs)

- Describe pending and future load management and energy conservation and efficiency programs being considered or implemented by members (availability, feasibility, compatibility);
- Wherever possible, provide quantitative estimates of the benefits and energy/cost savings gained by these programs. Compare these benefits to the projected needs;
- Describe what would be necessary to increase conservation or manage load (e.g., consumer education, incentives, technical assistance), what resources would be required, and what is a reasonable estimate of the maximum load reduction achievable.

Major topics to be addressed include load control programs, interruptible loads, benefit/cost and new marketing programs. Energy efficiency options can be discussed/compared with respect to technical feasibility, cost effectiveness, environmental capability, capability of fulfilling purpose and need, and other factors as appropriate.

Consideration of Technological Alternatives (as they apply.)

This section addresses alternative means of meeting the stated purpose and need. The information provided should allow the reader to clearly understand the particular alternative, its relative strengths and weaknesses, its availability or abundance within the service area, and any technological, environmental, operational (including permitting), or economic constraints/benefits. The applicant then uses this information to provide a rationale as to the suitability of a given alternative in meeting the purpose and need.

Information included in this section should complement the information provided in the previous section.

5.1 No Action Alternative

Identify the no action alternative; see also discussion of no action alternative in Section 4.2 of this exhibit.

5.2 Renewable Energy Sources (including fuel cells and cogeneration.)

Renewable energy sources include non-combustible resources (e.g., wind, solar, hydropower, geothermal) and combustible resources (e.g., biomass, biogas); focus on the state-of-the-art in these technologies, and cite appropriate and current supporting data and information; discuss the applicant’s current, pending or proposed renewable energy resources, including current and expected capacities; describe the potential for renewables in the applicant’s service area in terms of wind power class, solar capability, geothermal resources, hydropower capability, and biogas/biomass availability, both in magnitude and location.

- Evaluate those renewable energy sources that are feasible both within and outside the applicant's service territory. Provide an explanation for those sources that are not feasible within the applicant service territory. Examples could include wind turbines, solar, low-head hydro, landfill methane powered internal combustion (IC) engines and battery energy storage systems.
- Discuss any current, pending or proposed development of renewable energy sources by the applicant or its members including the amount of capacity expected and the timing of the additions.
- Compare the expected capacity additions from these sources to the applicant's projected needs.

5.3 Distributed generation

- Discuss current, pending, or planned development of distributed generation capacity by the applicant or its members, including the amount of capacity expected and the timing of the additions;
- Discuss the feasibility of installing distributed generation capacity by the applicant or its members. Examples could include micro-turbines, IC engines, fuel cells and battery energy storage systems);
- Compare the amount and timing of these capacity additions with the applicant’s projected needs.

5.4 Repowering/Uprating of Existing Units

- Discuss the potential for re-powering or up-rating current applicant-owned generation above current capacity outputs;
- If proposed or feasible, describe the type of generation and the amount of capacity to be gained;
- Compare the benefits from this alternative with the applicant’s proposed action.

5.5 Participation in another company's generation project (or joint owned projects)

- Describe any efforts to participate in current or proposed (development of new) generation with other utilities or private companies;
- Compare the benefits from this alternative with the applicant's proposed action.

5.6 Purchased Power/Power Purchase Agreements

- For generation projects the Applicant is required to issue a Request For Proposals to determine if there are reasonable sources of available power that may not require the construction of a new project.
- Review 7 CFR 1719.254 (www.usda.gov/rus/electric/regs/2007/1710), "Alternative Sources of Power";
- Discuss the options evaluated, including current market conditions, potential risks, and any existing constraints;
- Describe the Request for Proposal (RFP) issued by the applicant, and
- Compare the results of the purchased power versus the self-build option (see Section 5.7).

5.7 Centralized station generation/self-build options (e.g., coal, oil, natural gas, nuclear)

The following sub sections apply to central station projects versus distributed generation from the previous section (5.3). Fuel sources include oil, natural gas (simple and combined cycle combustion turbines and microturbines), and for baseload coal, pulverized coal, supercritical pulverized coal, circulating fluidized bed (CFB), and integrated gasification combined cycle (IGCC); while not strictly falling in this category, nuclear power should also be addressed in this section.

Oil

- If the applicant has installed oil-fueled generation capacity, discuss the feasibility of capacity additions.

Natural gas

- If the applicant has installed gas-fueled generation capacity, discuss the feasibility of capacity additions;
- The discussion on combustion turbines should include simple-cycle units for peaking capacity and combined-cycle units for intermediate-load or base-load capacity;
- If intermediate-load or base-load capacity is needed, discuss the feasibility of converting existing simple-cycle units into combined-cycle units.

Coal

- If the applicant has installed base-load coal-fueled generation capacity, discuss the feasibility of capacity additions;
- If the installation of additional base-load generation capacity is an option, discuss and compare the benefits of both pulverized and fluidized bed units;
- The discussion of fluidized bed technology should include the potential of burning coal mine wastes and other combustible wastes (e.g., tires) if appropriate;
- Compare the benefits from this alternative with the applicant's proposed action.

Nuclear

- If the applicant has installed base-load nuclear generation capacity, discuss the feasibility of capacity additions.

5.8 New Transmission Capacity.

This alternative assumes that the transfer of available and economical generation capacity from outside sources is constrained by inadequate transmission capacity. Discuss the feasibility of building additional bulk transmission in order to utilize this available generation capacity.

5.9 Technological Alternatives Summary.

Summarize results of Sections 5.1 through 5.8.

Evaluation of Load Management and Technological Alternatives

- Evaluate and compare the alternatives regarding the capability of meeting the purpose and need criteria (use tabular format for comparison, e.g., plant type, capacity, baseload operation, environmental permitability, cost effectiveness, fuel cost stability, reliability, commercial availability);
- Identify alternatives eliminated from consideration and the reasons why they were eliminated;
- Conclusion, including identification of alternatives carried forward for consideration in the NEPA document;
- Reference to follow-on site selection or macro-corridor study for identification of siting or locational alternatives as appropriate.

Bibliography/References

Appendices [placeholder for additional information, such as glossary, special studies conducted, maps, site photographs, and other graphic material, as appropriate, to a given study]

6.0 SUGGESTED AES OUTLINE FORMAT/OUTLINE: TRANSMISSION STUDIES

Executive Summary

1. Introduction

- o Purpose: Describe the Agency requirement for the AES, the statutory reference for such, and purpose of the Report. Address the role the report plays in the overall environmental review process (environmental review requirements), and how the information is used in the EIS itself. The AES should serve as the applicant's rationale as to why the proposal is being sought, and why it is the best means of solving the problem.
- o Overview of the Applicant/Utilities
- o Agency/Applicant Roles
  - Describe the Rural Utilities Services' role in review, coordination and data/information requests.
  - Describe the applicant's responsibilities in the loan application process and the Agency' role in review, coordination and data/information requests.
- o Format and content of document
  - Describe the format and content of the document.

2. Purpose and Need for Action (as they apply) [load growth, performance needs/maintain reliability, generation]

- o Overview of Existing Transmission System(s) – if more than one utility/company involved
- o Improvement Planning Study (e.g., TIPS)
- o Regional Need (regional system studies and analyses, e.g., transmission improvement planning study, TIPS/update, transmission projects report, capacity expansion (Cap X 2020 Vision study)
- o Evaluation of near-term transmission needs
- o Reliability and its measures (e.g., community reliability needs, timing) - increased/improved reliability
- o Voltage levels/voltage sags [improving voltage stability to meet current and future load demands]
- o Generation outlet [facilitating development of new generation in the region, including renewable resources, e.g. wind]
- o Need Summary

3. Alternatives

- No Action Alternative. See also discussion of no action alternative in Section 4.2 of this exhibit.
- Demand Side Management Alternatives, including load management, conservation, reactive power supply.
- Rebuild Existing Distribution System
- On-Site Generation
- Underground versus Overhead Construction
- New Transmission Alternatives (new transmission system options, voltage stability and thermal limit analyses, transmission demand and energy loss analyses, electrical performance issues, cost analysis/issues)

4. Evaluation of Alternatives

- Evaluation/Comparison of Alternatives
- Alternatives Eliminated from Consideration
- Conclusion/Alternatives Carried Forward for Consideration in NEPA Document
  - Alternative requiring additional study to select an on-the-ground route location (provide link to separate, follow-on macro-corridor study that is subject of another exhibit).

5. Required Permits and Approvals

6. Bibliography/References

7. Appendices [placeholder for additional information, such as glossary, references, special studies conducted, maps, site photographs, and other graphic material, as appropriate, to a given study]

Guidance for Preparing a Site Selection Study

1.0 INTRODUCTION

Rural Development (Agency) requires applicants to submit preliminary studies when applying for financing assistance for classes of electric generation or transmission projects that require preparation of an Environmental Assessment (EA) or Environmental Impact Statement (EIS). These studies are the Alternative Evaluation Study (AES - see Exhibit B), the Site Selection Study (SSS), which is the subject of this exhibit, and the Macro-Corridor Study (Exhibit D).

The National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental issues into their decision-making processes by considering the environmental impacts of proposed actions and reasonable alternatives. The objective of the three studies is for the applicant to examine and demonstrate consideration of all reasonable alternatives to meeting the purpose and need, both technological and locational. The studies do not have to be long, but should include sufficient detail for the Agency to independently evaluate the alternatives under consideration and understand the rationale as to why a particular alternative does or does not meet the applicant’s stated purpose and need.

This guidance does not cover the critical first task of energy generation planning – that is whether additional energy generation is needed; this issue is addressed in the Alternative Evaluation Study guidance (Exhibit B). Instead, this guidance addresses the processes required to site a new generation facility once the need has been established. This guidance has been developed to help the applicant in conducting and documenting the SSS and Agency staff in reviewing the study and incorporating the study results into the appropriate Agency NEPA document.

1.1 Purpose and Need for Site Selection Study

The purpose of a SSS is to identify areas that appear to be suitable for siting a new electric generation facility based on regulatory, environmental, engineering, and economic constraints. Such a study is conducted to determine what potential power plant siting locations are available for a particular facility and how to identify those locations to avoid or minimize potential environmental, social, cultural, and economic impacts. Using an overview approach, the study includes the development of siting criteria to identify siting opportunities (suitable areas) and eliminate potentially unacceptable areas (i.e., constraints) from consideration early in the process to avoid or minimize problems, delays, and unnecessary expense in the more advanced phases of the project.

While the AES identifies the initial problem (e.g., electric generation need) and identifies and evaluates the best solutions for addressing the problem and meeting the Applicant's need, the SSS identifies potential locations where a new power plant could be constructed. Specifically, it identifies the study area within which a new plant could be built based on the purpose and need and develops potential siting locations for the new plant within that study area. It provides information on environmental, social, cultural, and engineering factors for each of the siting locations within the study area.

1.2 Role in Environmental Review Process

The results and findings of the AES, SSS and MCS are some of the earliest project documents to be submitted to the Agency and will serve as the foundation for a more detailed NEPA analysis. The information used in these studies will be used throughout the environmental review process for the project. These studies will be cited as references in the resulting Agency NEPA document as appropriate.

Ideally, the AES should be completed first and provided to the Agency to get feedback on the purpose and need and whether the range of technological alternatives is appropriate. However, all of the studies collectively support the Agency scoping process. They are part of the proposal development and the Agency scoping phase of the environmental review process. They are also part of the scoping documents made available to affected federal, state, and local agencies and the interested public.

The purpose of the studies in the environmental review process is to provide information to the public to support their participation in determining the scope of the environmental review and commenting on the feasibility of the applicant's proposed plans. The studies must be conducted and accepted by the Agency prior to the commencement of scoping. Information contained in the SSS should be adequate to allow the Agency, other participating agencies, and the public to independently evaluate the alternative site locations.

Because a power plant facility may be located on public land, especially in the West (e.g., many solar and wind energy projects are currently being developed on land managed by the Bureau of Land Management) and require permitting from multiple federal agencies, one or more federal agencies also may participate in the environmental review process as a cooperating agency. Cooperating agencies on past electric generation projects have included the Bureau of Land Management, Bureau of Indian Affairs, National Park Service (NPS) and Fish and Wildlife Service (FWS) (all within the Department of Interior), the Forest Service (within the Department of

Agriculture), the Army Corps of Engineers (within the Department of Defense), and the Environmental Protection Agency (EPA).

Additional State Review Requirements

The SSS may also support permitting and state and federal environmental reviews. Local and state governments will likely require permits for the construction of a new generating facility. Permitting aspects are important to address, especially in regards to the necessary jurisdictions and departments give construction permit approvals.

Some State Public Utility Commissions or Public Service Commissions (PUCs/PSCs) and other authorities which issue power plant siting permits have developed their own siting processes to ensure that a need for a new facility exists and that site selection has minimal effect on the state's environmental, cultural, and socioeconomic resources. Many states require consideration of alternatives to the primary proposal. Some have specific instructions that the utility must follow. Siting authorities are typically interested in siting and non-generating alternatives when these are relevant. If there is an environmental review process or project approval process in the state where the project would be constructed, the Agency will work with the appropriate state agency(s) to ensure that the format for the joint environmental review satisfies both Agency and state requirements.

1.3 Organization of the Exhibit

The remaining sections of this exhibit are organized as follows:

- Roles and responsibilities
- Development of the SSS
- Methodology and approach
- Lessons learned
- General quality and readability
- Public involvement program
- Sample outline for a SSS

2.0 ROLES AND RESPONSIBILITIES

2.1 Agency Environmental Staff

If the Agency requires an applicant to submit environmental information, such as a SSS, the Agency will assist the applicant by outlining the types of information and analyses required, independently evaluating the information submitted, and making environmental documents available to the public for review and comment in a timely manner.

2.2 Applicant

An applicant requesting Agency financial assistance is responsible for identifying the purpose and need for the proposal and developing, if necessary, reasonable alternatives that meet that purpose and need while considering environmental outcomes. The applicant is responsible for conducting the SSS to assist the Agency in the environmental review and decision-making process and for documenting the study results according to the format and standards provided by the Agency in this guidance document.

Prior to undertaking the study, the applicant should contact the Office of Loan Origination and Approval. The Engineering and Environmental Staff (EES) should also be contacted to obtain the current status of environmental laws and regulations and Agency environmental requirements. A meeting between the applicant and Agency staff has been shown to be an effective way to exchange information. Agency staff will identify the appropriate engineering and environmental procedures that must be followed and the submittals required by the Agency. If the applicant intends to use a consultant to conduct the SSS, then the consultant should be included in these initial meetings.

2.3 Contractors/Consultants

An applicant may employ a design or environmental professional or technical service provider (e.g., contractor) to assist in preparation of its environmental review documents, including the SSS. For example, given the usefulness of applying Geographic Information System (GIS) technology to power plant siting, an outside consultant trained in GIS may be necessary, depending on the extent of the applicant’s in-house capabilities.

2.4 Federal, State, and Local Agencies

Other federal, state, and local agencies, as well as the general public, will have the opportunity to review and provide comments on the SSS during the NEPA scoping process. Their input is also important during the early phases of the siting process, particularly that of the environmental resource agencies in helping to identify siting opportunities and constraints, and they should be invited to participate.

In addition to their role in document review and participation in the development of siting criteria, federal agencies may participate as a cooperating agency (see Section 1.2) or a licensing authority (NRC for nuclear power plants), and state PUCs/PSCs or siting boards/authorities may also be involved in the permitting of large-scale power plants. In many instances, the state siting authority has developed its own siting criteria and methods for siting power plants. Similarly, nuclear power plants must satisfy applicable NRC site suitability requirements.

3.0 DEVELOPMENT OF THE SITE SELECTION STUDY

3.1 Scope and Applicability

Under the Agency NEPA regulations at 7 CFR 1970, Subpart D, Agency proposals subject to the requirements of Subpart D (Compliance with NEPA – EISs) relating to electric generation and transmission projects, are ones that would trigger preparation of an AES and possible follow-on SSS or MCS.

3.2 Level of Detail

Because each applicant proposal represents a unique set of circumstances and impacts, the preparation of a SSS does not reduce to a single formula. While this guidance is generally targeted toward the level of detail to support an EIS, applicants can adapt the guidance to the particular circumstances presented by each proposal, including those that would trigger an EA. Requirements for preparing an EA are less specific than for EISs, and the level of detail required for an EA, including the number of alternative generation sites to be considered and evaluated, is less than for an EIS. As a general guide for EAs, applicants are encouraged to use a sliding-scale approach when determining how many alternatives to identify and analyze, and the depth of analysis to provide for each alternative. EAs that address proposals where there is heightened technical controversy surrounding potential environmental impacts, or where there is otherwise greater potential for significant environmental impacts from the proposed action, may need to identify and analyze more alternatives than other EAs.

Conversely, the smaller the impacts of the proposed action, the less need there is to consider alternatives in significant detail. In other words, where a proposal falls on the sliding scale will affect the number of siting locations to be evaluated.

3.3 GIS as a Siting Tool

GIS software provides tools to manage, visualize, and analyze geographic data. Land management issues, such as power plant siting, are spatial in nature, and there is a natural benefit to using GIS technology in the decision-making process. Typically, these efforts involve a complex combination of siting issues including physiographic setting, sensitive environmental and cultural resources, land ownership, land use designations and existing infrastructure. On the most basic level, GIS provides a way to visualize information in a spatial context using an interactive map. Layers of different information, such as land ownership, protected environmental resources, and existing infrastructure can be superimposed on a map and linked to items on the map for easy access and queries.

While public web map services have made basic mapping functionality and common data layers available to practically everyone who connects to the Internet, more sophisticated GIS technology enhances the methods that electricity providers use to consider variables in siting processes for new generating facilities. Using GIS technology, a wide range of siting criteria can be spatially integrated and used to compile a comprehensive suitability map that takes into account multiple planning factors.

Server technology and basic online GIS services allow users to bring in a wide variety of data sources and to examine all types of data relationships associated with power plant siting tasks. Other benefits of GIS include a means for accessing and sharing related geographic data within an organization and externally with its stakeholders. GIS information-sharing tools include publishing static paper-based and electronic maps and interactive digital maps distributed by e-mail, webcast, free desktop viewers, and the Internet. These methods allow rapid and detailed communication with stakeholders at all phases of the planning process. There are many advantages to using GIS to support planning and decision making activities and most applicants involved in energy and transmission planning use these tools. Investments in software, data, and training will improve planning efforts.

Because of the map overlay and analytical operations available in GIS software, they are excellent tools for conducting site screening and evaluation. In fact, GIS has been applied toward site selection for nuclear and coal-fired power plants since the 1970s. GIS based approaches to site evaluation typically utilize the overlaying of several map themes (data layers) to arrive at a composite suitability map.

This site screening procedure assumes the development of a regional database of various screening criteria. Once a set of sites is identified, it is possible to construct GIS databases for the sites with more resolute and detailed information to support site-specific applications. The results of these applications can then be used to help differentiate the suitability of individual sites.

Applicants should consider using GIS (data, analysis and modeling techniques) to identify and evaluate possible sites for a new power plant. A variety of GIS solutions are available for power generation and transmission services, and applicants should select one that best suits their needs.

3.4 Legal and Permitting Issues

Utilities are typically required to obtain approvals from a variety of federal and state agencies prior to constructing an electric generation facility. During development of the SSS, permitting and regulatory requirements should be reviewed to identify jurisdictional authority at the federal and state level. A preliminary list of regulatory requirements, including agencies with permitting or approval authority and the necessary permits/approvals should be included in the study.

States have their own special role in permitting of power plants. Utilities must apply for and obtain a “certificate of public need” (name varies by state) for new generating capacity. Utility proposals for new generation are submitted to a state siting authority. The state siting authority is most often the regulatory utility commission (PUC/PSC), although many states have a separate siting authority that may include officials from other affected state agencies.

Many states also have an Energy Commission (e.g., California) or Siting Board (e.g., Florida) that issue “certifications” for energy facilities as defined by the various state energy siting acts. The certifications are typically facility-wide, covering almost every aspect of the facility as an all-in-one license, and are the sole state, regional, or local license required for construction and operation of the certified facility. As such, the state pre-empts the issuance of any other type of permit for the facility, except for local zoning and building. Certifications are intended to protect the public health and environment, but they must also balance this protection with the benefits to the public of a ready and reliable source of energy. Furthermore, a certification may be granted for the life of the facility. Two example approaches are provided below.

- In some states, a Siting Coordination Office (SCO) within the state department of environmental protection (DEP) acts as the process administrator and coordinator for certification (licensure) of steam electric or solar power plants of a certain size (e.g., 75 megawatts or larger). The SCO would coordinate with other DEP Divisions (e.g. Water Resources Management, Waste Management, Air Resources Management, State Lands) as well as with other State Agencies (e.g. Department of Transportation, fish and wildlife conservation commission, public service commission, Department of State, Department of Community Affairs, Department of Agriculture and consumer services), regional agencies (e.g. water management districts, regional planning councils), local governments, federal agencies (e.g. EPA, NPS, FWS), community and environmental organizations, and the general public.

- In other states, a separate energy board or commission has the statutory responsibility for licensing plants of a certain size (e.g., 50 megawatts and larger) and the plant's related facilities such as transmission lines, fuel supply lines, water pipelines, etc. The energy commission may serve as a one-stop permitting process that could also be coordinated with a State Environmental Quality Act review (e.g., State "Little NEPA") and include opportunities for public participation. In some instances, the Energy Commission's license/certification would subsume all requirements of state, local, or regional agencies otherwise required before a new plant is constructed. The Energy Commission would coordinate its review of the facility with the federal agencies that will be issuing permits to ensure that the Energy Commission certification incorporates conditions of certification that would be required by various federal agencies.

3.5 Public Involvement

Public involvement is a necessary and desirable part of the site selection process and enables the applicant to consult with and include interested and affected public, agencies, and other stakeholders. Stakeholders should be involved early, substantively, and frequently in the site selection process. Potential stakeholders include internal stakeholders (applicant's own engineers, environmental specialists, real estate specialists, etc.) as well as external stakeholders who include federal, state and local officials, public interest groups, and the general public in the vicinity of the individual sites under consideration. The public involvement process provides a means by which the public's questions and concerns can be identified in advance of the decisions, so that those decisions can consider and reflect the views of the public to the extent possible. Members of the public living in the site areas can provide valuable input to the applicant that could affect the choice of sites or the ultimate design or use of a site.

The recommended approach emphasizes interaction directly with agencies, independent experts, and stakeholders to: (1) make applicants aware, at relatively little cost, of areas where major environmental, engineering, and regulatory/legal conflicts could exist and (2) narrow the realm of potential sites in an efficient and effective manner. Coordination with federal, state, and local agencies and other key stakeholders should begin in the early phases to make them aware of the proposal, obtain their input on issues or areas of concern, and determine the necessary permits that must be obtained along with other regulatory requirements.

Agency consultation and stakeholder interaction serves to balance the interests of agencies, affected landowners and other stakeholders in a manner that minimizes potential impacts and meets project objectives. Community outreach efforts should build on existing relationships and interactions between the applicants and the public. Various public participation tools and techniques are available to provide information to the relevant stakeholders and receive input on site selection at each step in the process. These tools may be modified or updated as needed during the course of project development and include: websites, stakeholder notification, news releases/newsletters, handout questionnaires, voluntary public meetings and siting workshops or open houses, as well as required public hearings. The specific nature and timing of an applicant's public involvement activities should be developed in concert with its siting plans. <u>It is important that all federal, state, and local agency contacts and any public meetings be documented and provided to the Agency for inclusion in the administrative record for the proposal.</u>

4.0 METHODOLOGY AND APPROACH

4.1 Introduction

Various site alternatives must be evaluated and the analysis presented so the proposed location(s) for new generation are optimally sited based on engineering, environmental, and economic criteria. As described below, these analyses should use a phased approach, starting at a 'macro' level and then refining the analysis to narrow alternatives to a limited 'final' set of proposed sites for generation. At each stage, the applicant should identify the factors or criteria used to narrow down the set of sites being considered.

4.2 Identification of Basic Site Selection Study Requirements

Technical and engineering considerations drive the earliest stages of project decision-making and the identification of site alternatives. Applicants and other project participants should meet and identify the necessary technical requirements of the proposal at the outset of the siting process. These may include, but are not limited to: (1) approximate schedule for site development, (2) number and type of generating units and the ultimate generating capacity which the sites would be required to support, (3) the approximate acreage required for minimum site development, including fuel and reactant storage, onsite water storage, and waste disposal, (4) constraints resulting from the location of the load center, and (5) access to necessary resources, such as fuel, water (e.g., cooling water supply for coal and nuclear), transportation and transmission networks, and an adequate and available workforce to support project construction and operation. (Note: Certain factors may be irrelevant for a particular project while some projects may require consideration of other concerns, but in general, the above factors are applicable to all types of electric generation facilities).

Siting of renewable energy projects such as wind, solar, and geothermal must also consider the availability of the renewable resource. Unlike fossil or nuclear fuels that can be stored and shipped to a wide variety of locations, renewable energy resources are immobile, and the location of the resource drives the location of the project. For example, in the case of wind energy, wind farms must be sited where the wind resources are economically viable. As site-specific resources, renewable energy resources are also highly dependent on the availability of infrastructure, like transmission lines, to reach remote sites. These conditions can make the siting of renewable energy projects particularly challenging.

4.3 Determination of Study Area

One of the first steps in any siting project is the identification and description of the study area. A study area may be a group of states, a state, a group of counties within a state or adjacent states, or any other geographic area. The size of the study area should be sufficient to allow evaluation of areas with differing environmental, engineering, and regulatory constraints. The study area should be small enough so that the expenditure of substantial resources is not necessary in evaluating siting potential within the area, but large enough to include an adequate number of alternative sites. The SSS should define the boundaries of the study area and explain the basis for its selection.

The study area may also be referred to as the region of interest (ROI), or the geographic area within which the site must be located. In general, the ROI would derive from the applicant's pre-existing fundamental business decisions on the economic viability of the new facility, the market for the facility's output, and the general geographic area where the facility should be deployed to serve its market; this typically translates into the applicant's service area.

4.4 Resource Data Collection and Evaluation

An important part of the site selection process is to collect resource data to support the opportunities and constraints analysis, as well as the later stages of site selection where more detailed information is gathered for the smaller number of sites that are still being considered. The recommended approach, particularly in the early phases, emphasizes the use of existing data (including GIS data). Data would include study area resources that would likely be affected by power plant construction, maintenance, and operation. Data for resources within the study area should be readily available from environmental management agencies and state and local governments. The majority of resource data should be publicly available on the web, and the collection of new field data is not usually required until later phases of the study. Data should also be available in a format to support preparation of GIS resource maps for the various resource categories evaluated. The resource data collected should be described in the SSS and resource maps provided where appropriate.

4.5 Site Reconnaissance and Surveys

In general, the purpose of field reconnaissance (overflights, windshield surveys, site walkovers, on-site investigations) is to verify findings of the suitability mapping or literature reviews (i.e., confirm desktop evaluation), collect additional data, update the current land use of a site (to identify presence of any new features not identified in resource database), and identify any other previously unknown features or constraints that may affect site suitability, including visual impacts/aesthetics.

Reconnaissance can occur early in the process to help provide an overview of the general land uses, land cover and environmental conditions in the siting area, especially if satellite imagery of an area is limited. More often, field reconnaissance data are collected in the later phases of site identification and preferred site selection to support resource quantification and site refinement. Gathering more detailed and location-specific data helps provide a more accurate characterization of a particular site and support a quantitative evaluation and comparison of alternative sites.

Collection methods include field visits, engineered surveys, property ownership information procurement, and consultant data services such as onsite soil borings, archaeological reviews, and ecological surveys. As a quality check, reconnaissance-level information (e.g., information from overflights) can be examined once a final set of sites has been identified to ensure that no exclusionary or avoidance criteria appear which were not identified in previous steps. More detailed on-site survey work would likely be limited to the final set of alternative sites carried forward to the NEPA document and conducted as part of the NEPA process. In some instances, detailed on-site surveys may be limited to only the preferred alternative. Detailed on-site surveys would be designed to provide verification of critical site suitability characteristics, based on published data and reconnaissance-level information. Such surveys would provide additional differentiation among sites and provide the basis for an issue-by-issue analysis that will allow the applicant to identify the cost and environmental tradeoffs associated with developing each of the alternative sites.

A description of field reconnaissance activities conducted in support of the SSS should be documented in the study, along with the results.

4.6 Identification of Opportunities and Constraints

The site selection process should be accomplished in phases to systematically narrow the number of alternatives. In the first analysis, suitable areas (opportunities) should be identified for siting and unsuitable areas (constraints) should be identified and excluded or avoided. The study should clearly identify and describe the opportunity and constraint criteria developed for the proposal. The criteria classifications include opportunity, avoidance, and exclusion areas associated with each resource as appropriate.

The identification of siting opportunities and constraints is typically based on an analysis of land use/land cover to identify features that support site requirements (potential siting opportunities) and siting (e.g., environmental and engineering) constraints. Additionally, opportunity and constraint areas should be mapped for the study area.

In subsequent phases of the siting process, tighter environmental and engineering constraints can be applied to further narrow potential siting areas. Information that should be analyzed and included in the SSS includes data on the acreage of a particular criterion (e.g., National Forest land, prime farmland, critical habitat) that can be affected by the project compared to county or regional acreage for that criterion, potential short- and long-term impacts, and potential to mitigate any adverse impacts. Other information may be desirable for some criteria.

4.6.1 Siting Opportunities

Siting opportunities include the identification of areas where power plant construction is consistent with the current land use, has a reduced likelihood of adverse impacts, and results in more efficient plant operation and management. In some cases these areas may not be identified until the first set of primary constraints (e.g., exclusion and avoidance areas) have been identified and mapped. Other opportunities may present themselves at the outset, such as the potential for expansion at an existing generating facility. Existing sites should be examined to see if sufficient land and resources exist to support facility expansion. Other opportunities may include development at another industrial site owned by the applicant or another party that has been previously developed and used for a purpose other than electric generation. These sites offer potential siting opportunities as they are already disturbed ecologically and are typically characterized as industrial land use. They may also have an existing infrastructure (including transportation and transmission networks) to help meet plant requirements. The use of these sites would avoid or minimize new disturbance, thereby reducing the potential level of project-related impacts to undisturbed (greenfield) natural and cultural resources.

Nuclear and renewable energy projects may want to consider alternative sites in proximity to existing transmission lines. As mentioned previously, renewable energy projects such as wind and solar are location-specific and highly dependent on the availability of the resource and infrastructure, like transmission lines, to reach remote sites. Proximity to two or more transmission systems (i.e. 500 kV lines) is also important for nuclear power plants due to the large generating capacity of the plants and the need for transmission redundancy.

Early coordination with key stakeholders may provide input that results in the identification of additional siting opportunities in order to avoid certain areas.

4.6.2 Siting Constraints

The most fundamental siting constraints relate to the physical and environmental characteristics of the site. Physical conditions on a potential site, including variations in topography, local ecology and land cover, influence the structural and mechanical limits of project designs and affect the cost and viability of a proposal. Other limits for site selection include the links between related facilities. For example, tie-in locations for existing transmission lines are at set locations, therefore these areas cannot be avoided. Instead, planners must make trade-offs between project attributes and site characteristics.

Environmental, socioeconomic, engineering, and economic constraints must be identified in order to determine the desirability and feasibility of siting within the study area. Although all constraints may be identified initially, they are not all applied simultaneously. Primary constraints, which depend on the proposal and the study area, are identified first. As explained in the following sections, more restrictive constraints, which require increasing levels of detail, can be applied in phases to systematically narrow possible proposal locations. Therefore, at this preliminary level of review, not all resources need to be identified to the extent required for final site selection. Additional agency and stakeholder input, field surveys and analysis will be conducted later, as part of the federal and state environmental review processes, and can be used as part of the decision process to select the preferred plant site.

Environmental Constraints

Primary environmental constraints include but are not limited to the factors identified below. These factors are divided into two general categories:

1. Those designated as “unacceptable” that would make siting in that area virtually impossible (e.g., regulatory restrictions that prohibit development or impacts that would be potentially significant); and
2. Those designated as undesirable (due to conflicts with existing land use, development, or land features) and should be avoided when other feasible alternatives exist; these may be referred to as Avoidance Areas or Risk Resources, and would result in a site having low suitability.

The impact of a particular constraint varies with each proposal, each siting area, the feasibility of mitigation, etc. The constraints presented below should be interpreted as general guidelines and modifications should be applied when necessary, although the majority of areas identified below would be applicable to all types of power plants.

Unacceptable Siting Areas

- Critical Habitat (or known location/reproductive areas for Threatened and Endangered Species)
- Historic/Archeological Districts
- Sites listed on, or eligible for listing on, the National Register of Historic Places
- Congressionally designated Wilderness Areas
- Air Quality (Class I Areas) (mainly applicable to coal-fired plants because of air emissions)
- National Parks and Monuments
- Wild and Scenic Rivers

Undesirable Siting Areas/Avoidance Areas

- Important farmland, rangeland, and forestland
- Wetlands
- Floodplains
- National forests
- Cultural sites
- Air Quality (e.g., class II, non-attainment areas) (coal-fired plants primarily)

Other Environmental Constraints

Other environmental constraints that should be considered include Indian Reservations (Bureau of Indian Affairs, www.bia.gov), National Wildlife Refuges (U.S. Fish and Wildlife Service, www.fws.gov), and National Parks and National Natural Landmarks (National Park Service, www.nps.gov); and state and local restrictions. Applicants must comply with state regulations that are more restrictive than federal regulations. Additionally, state and local land use plans and zoning and building codes should be considered.

Built Environment

Avoidance Areas include setback areas, population centers, hazardous facilities, airports, and mining operations. The location of buildings and their uses must be considered when siting a new power plant. In general, sensitive facilities such as residential areas, schools, hospitals, community facilities and sites listed on the National Register of Historic Places will be avoided to the extent possible. In addition, reviews must consider that the Federal Aviation Administration (FAA) governs the height of structures including cooling towers or smokestacks within certain zones near airports. Radar and other electronic signals can also interfere with wind turbines.

- Areas surrounding other federal or federally regulated facilities, e.g., military installations (Department of Defense – Army, Air Force, Navy); Federal Communications Commission and National Aeronautics and Space Administration. Their respective website links include: www.defense.gov; http://www.defense.gov/RegisteredSites/RegisteredSites.aspx [links DoD websites including Army, Air Force, Navy]; www.fcc.gov; www.nasa.gov.

- Mineral Resources: Power plants generally avoid aggregate resources and mining areas; they affect the development potential of such resources. In the case of nuclear power, proximity to a hazardous activity (e.g., blasting for mineral resources) can be a potential safety hazard on a nearby nuclear facility in the event of an accident at the hazardous facility (accident-cause criterion).

- Population Centers: Nuclear power plants must be located a certain distance from major population centers to minimize health and safety impacts to the public in the event of an accidental radionuclide release at the nuclear plant.

The sensitivity of these other environmental constraints varies considerably with each proposal and one or more of these factors may not be a constraint to siting for some proposed energy generation projects.

Engineering and Economic Constraints

Engineering and economic considerations vary with each project. In general, reviews should evaluate geotechnical considerations such as topography (prevalence of steep slopes which present construction, erosion and maintenance problems), foundation material, and seismic potential for the study area. Additional evaluation factors include, but are not limited to: type of cooling system, water availability and quality, construction in wetlands or marshes or floodplains, fuel supply and transport, emission control systems, access roads, and the presence of existing infrastructure (including other utilities) or other development. In the case of a nuclear facility, potential reservoir/ultimate heat sink requirements are an additional engineering consideration. Biomass projects may be concerned with fuel transport and storage, depending on the type of fuel used. Wind turbines require setback distances from roads, structures, and residences, and large amounts of land for multiple turbine projects to reduce wake effects on turbine performance. As mentioned previously, the selection of wind energy project sites is driven by the fixed location of the resource itself (wind).

Socioeconomic Issues

Socioeconomic issues should also be included in siting considerations through preliminary evaluation of such factors as the available labor force (for remote sites), potential project impact on community facilities and services, and public reaction to the proposal.

Nuclear power plants, in particular, have significant workforce requirements, many with specialty skills (for both construction and operation) that could result in a large in-migrating population (workers and their families) with potentially significant impacts on the local community and its existing infrastructure (e.g., roads, traffic) and services (e.g., schools, hospitals, law enforcement and fire protection).

The applicant may be able to estimate public acceptance of the proposal by examining such factors as opposition to past power plant facilities and the level of activity of environmental groups in the area. Local sites that have special value to area residents (e.g., recreational areas) should also be considered in examining siting constraints. While public acceptance is not an environmental factor that must be addressed in a NEPA document, strong public opposition and challenges can lead to lengthy delays and added cost. For that reason, an assessment of public reaction can be an invaluable planning aid.

Another element that should be considered in siting is the potential impact of the project on minority and low income populations (environmental justice). In comparing sites, this principle is evaluated on the basis of whether any disproportionate impacts to these communities are significantly different when comparing one site to another.

Siting in Sensitive Areas

Every effort should be made to select a site that minimizes the potential for impact to environmentally sensitive (potentially unacceptable) areas. However, if there is no practicable alternative to siting in a sensitive area, this must be well documented. For example, wind projects are often proposed to be located in sensitive and isolated environments, such as pristine mountain ranges or coastal waters, where the location-specific energy resource is found and can make siting of renewable projects difficult. Note that siting in a sensitive area will also likely result in the need to conduct additional studies and prepare additional documentation for the federal agency with authority over this resource. For example, unavoidable and potentially significant impacts to a high value coastal area would require a coastal zone consistency determination, and impacts to wetlands would require permitting from the U.S. Army Corps of Engineers (Section 404 permit) and a Least Environmentally Damaging Practicable Alternative (LEDPA)) analysis that the Site Selection Study would also be used to support.

Future Actions and Potential Cumulative Impacts

Future actions in the study area, including other generation projects that are either proposed or under construction that may affect siting, should also be considered in the siting process, depending on the location and timing of such actions. Consideration of such projects could result not only in the identification of additional opportunities or constraints not otherwise considered, but also the potential for cumulative impacts within a particular corridor that should be evaluated and compared against the total impacts from other alternatives.

GIS as Suitability-Constraint Mapping Tool

The opportunity and constraints identification process typically involves mappable information that can be greatly facilitated by using GIS as a means to manage the information. GIS tools available today allow the resources to be mapped and combined with aerial photography or satellite imagery (such as Google Earth) to support the identification of suitable areas for locating a new power plant. Using GIS (e.g., GIS opportunity and constraint model), each resource area can be mapped as an opportunity (suitable area) or constraint (avoidance area or exclusion area). These maps, referred to as “suitability maps”, associate geo-referenced features, land cover types or land uses with the likelihood of potential impacts from the proposed generating facility.

4.7 Opportunities/Constraints Analysis

The SSS should encompass a general survey of siting considerations that includes not only constraints to development, but also opportunities for siting (suitable siting areas). It is important that the SSS be well documented and that areas determined to be potentially unacceptable and eliminated from further consideration, are identified along with the reasons for their unacceptability.

The initial stage of the analysis should consider a broad area, e.g. a state, region, service area, or portion thereof, and use an opportunities and constraints analytical model, incorporating GIS technology where possible to facilitate the analysis.

Obvious areas of avoidance that would immediately limit the study area (e.g., mountain ranges, fault zones or other geologic hazards, large tracts of public land set aside for parks, refuges, historic landmarks, grazing, monuments, etc., large urban or industrial areas) should be considered first. Evaluation criteria to be used in further screening should also be identified and depicted on overlay maps as necessary. The result of this initial phase should be a map depicting broad areas of suitability and non-suitability.

Based upon project requirements and the results of the initial constraints analysis, potential siting areas can be identified that avoid unacceptable areas. The applicant may even be able to select potential sites at this early stage, based on best judgment of economic, technical and environmental constraints at a macro-level analysis. In general, these siting areas will depend on such factors as availability of suitable topography, water and fuel supply availability, and transmission line requirements. Both positive and negative aspects of each alternative should be presented. Siting areas should be large enough to allow latitude in specifically locating the project, but not so broad as to be meaningless. They should be generally homogeneous in character, and may be as small as 100 acres or as large as 100 square miles, depending on the size of the original study area and the number of primary constraints identified. Topography and land use characteristics largely determine appropriate siting areas and in the case of renewable energy projects, the fixed location of the resource itself (e.g., wind) is the primary driver.

Criteria that might be used to determine potential siting areas would typically include proximity to natural gas pipelines (for combustion turbine and combined cycle projects); electric transmission lines and water sources; and transportation systems for fuel (e.g., coal) or project component delivery (e.g., nuclear), such as barge, rail or truck; and waste disposal sites (e.g., coal). Specific steps in this phase might include:

- Define a distance (radius) from the intersection of these criteria where potential sites will be identified.
- Identify all natural gas pipelines of appropriate size and capacity within the study area.
- Identify all electric transmission lines (minimum voltage) within the study area.
- Identify all water sources capable of supplying the needs of the facility. Sources could include streams, reservoirs, lakes, underground aquifers and municipal or industrial wastewater treatment plants.
- Identify any existing electric generation facilities that could accommodate additional units.
- Identify the criteria used to identify areas excluded from consideration. These areas could include but are not limited to Ozone Nonattainment Areas and Class I Air Quality Areas (e.g., for coal-fired plants), National Parks and Forests, National Wildlife Refuges and Management Areas, Military Reservations, State Lands and Recreational Areas.
- Depict the above areas on maps.

The project opportunity and constraint criteria to be used in the analysis will vary with each project and additions or deletions may be necessary to accurately portray the characteristics of the siting areas. The applicant should select criteria based on resources and study area characteristics that provide favorable or unfavorable attributes for locating the new generating facility.

During the opportunity and constraint mapping process, appropriate federal, state, and local agencies should be contacted to inform them of the proposal and siting study and solicit input such as that regarding any errors or omission on the constraint map.

4.8 Alternative Site Selection, (Comparative) Analysis and Refinement

After siting areas are identified, the applicant may apply more stringent criteria to help narrow the set of sites to a few recommended sites to carry forward in the NEPA analysis. Depending on the size of the siting areas and how many potential sites are initially identified, the narrowing down of sites may require more than one step to reach a reasonable number of sites to carry forward (e.g., potential sites to candidate sites to preferred and alternative sites). A more detailed analysis of constraints and the mitigation potential of possible adverse impacts may be used to reduce the number of feasible sites. This requires the collection of more detailed (location-specific) data throughout the process. Deferring this level of data collection until a smaller area and number of alternative sites are identified significantly reduces data acquisition efforts and costs. The applicant should identify the factors or criteria considered in each phase to reduce the set of sites down to the final set.

The final phase of the process includes a more refined assessment of each remaining site and a comparative analysis among sites to identify the preferred site and alternative sites. Plant layouts should be developed for each site so that site-specific impacts can be evaluated and compared among sites. Use of a comparative table or matrix is the preferred way to illustrate the results of the evaluation process. In addition to the comparison table, the study should describe each of the final set of sites and the basis for selection of the preferred and alternative sites. Ideally, the preferred site would be carried forward as the Agency’s proposed action in the Agency NEPA document. However, in some instances, the preferred site may not be known until the NEPA process is underway.

A suggested outline for a SSS following a three-phased siting approach is provided in this document. It includes detailed annotations relating to the specific activities that might be conducted during each of the three phases.

Finally, note that NEPA does not require a certain number of alternatives (sites) to be evaluated, but does require an examination of “all reasonable alternatives,” one of which would be the preferred alternative. Fewer alternatives are generally more appropriate for an EA than an EIS, but a better rule of thumb is the greater the number and extent of impacts, the greater the number of alternatives that may need to be analyzed. It is important that the applicant identify the factors considered in eliminating alternatives deemed to be unreasonable. A clear, detailed presentation is essential in evaluating the reasonableness of the recommended sites. Evidence of sufficient data gathering in obtaining comparative information on the alternatives is also a primary concern.

4.9 Assigning of Weights and Values

Due to the complexity of the information involved in power plant siting and because of the difficulty in defining some criteria (e.g., socioeconomic factors) quantitatively, some methodologies assign weights in an attempt to consider criteria subjectively. **If this method is used, the weights must be assigned based on regionally-appropriate stakeholder input. All of the rationale for the assigned weights must be provided to the Agency.**

One method is to quantify how effectively a criterion is met by assigning a high numerical value to a low estimated potential impact of the facility on that criterion at a given site. This method results in the more suitable or favorable sites (i.e., resulting in less impact) getting the higher value. Similarly, a low numerical value would indicate a greater potential for impact and therefore a less suitable site with respect to that particular criterion. For example, a potential site for a coal-fired plant located near a Class I or non-attainment area would be assigned a lower suitability value for air quality than a site that was located in a Class II area, assuming no other limiting conditions were present. Each proposed site can be rated on a scale of 0 to 100, for instance, for each criterion used in each step of the siting process, or at least the most important environmental, socioeconomic/land use and engineering criteria. Whether this or a similar method is used, the results can be summarized in a table. It should be noted that the site with the best (most favorable) overall score is not necessarily the best site. The information presented allows easy comparison of potential sites, but any decision concerning recommended sites should take into account factors obscured in the process of assigning subjective values.

In evaluating the tradeoffs between suitability criteria, it is necessary to assign a relative importance to each criterion used to evaluate sites. The relative importance of the criteria may be reflected as a numerical weight value.

Assignment of weights is a sensitive issue in siting because the opinions and value judgments as to the relative importance of individual criterion vary with the perspectives of the individual stakeholder or group. There are a number of techniques for assigning importance weights to criteria. The Delphi Method is a traditional method developed to obtain the most reliable consensus among a group of experts by a series of questionnaires interspersed with controlled feedback. The process offers a structured method of consultation that may reduce bias and allow groups of individuals as a whole to resolve a complex problem. This method has been used in recent nuclear power plant siting studies.

While an applicant may have flexibility in determining how and which values and weights are assigned in a site selection study, all activities, including how values are assigned and the definition of each value must be clearly described and documented in the SSS. In addition, the determination of values relating to engineering requirements should involve appropriate utility representatives.

4.10 Accepted Published Methodologies

A review of relevant literature reveals numerous siting-related reports developed by industry, industry associations, state siting authorities (PUCs/PSCs), or federal agencies. However, the majority of these address siting considerations or challenges rather than documenting a set methodology to be followed. These resources are nonetheless useful.

One power plant siting methodology that has been published and is in use today is that developed by EPRI for nuclear power plant siting (in support of early site permitting but also license applications). The EPRI methodology has also been adopted to support the siting of a coal-fired plant in at least one instance. It makes use of a phased siting approach, consistent with that presented in this guidance, and is briefly summarized below. In addition, a potential alternative to the traditional phased approach – which considers the use of volunteer sites in power plant siting – is also discussed.

The EPRI Siting Guide describes a four-step selection process involving sequential application of exclusionary, avoidance, and suitability criteria, as well as incorporation of preferences (or weighting factors) that are applied to the suitability criteria. The exclusionary, avoidance and suitability criteria address the full range of considerations important in nuclear power facility siting. These include health and safety, environmental, socioeconomic and land use, and engineering and cost. The siting criteria encompass construction, operations, transportation, and accident conditions.

Resources:

EPRI Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit Application 2002 EPRI (www.epri.com). A search for EPRI publications, by research area and key word ("siting") identified the following potentially useful EPRI reports which are available at no charge:

NRC's Environmental Standard Review Plan for New Site/Plant Applications (NUREG-1555, updated July 2007). Available at: http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1555/. In concert with the EPRI Siting Guide for Nuclear Power Plants referenced previously, NRC has developed guidance for NRC staff responsible for reviews for new nuclear power plants. It identifies key information that needs to be included in the Environmental Report, including over 200 pages of detail relating to the comparison of alternatives and a general site selection process overview (e.g., minimum requirements/phases).

5.0 LESSONS LEARNED

To gain approval, a new generating facility proposal should be developed through a process open to participation by all interested parties and with systematic attention to a broad range of alternatives. The importance of the process is supported by the Agency's review and development of past site selection projects. Specific factors, as identified by Agency staff, include:

- Identify a list of key items to be included in the study.
- The site selection process needs to be transparent.
- Determination of the study area (method and basis for decision) must be clearly explained.
- Applicants should provide a clear explanation why areas are added or eliminated from consideration.
- Exclusion areas should be based on law/regulation and not regional/local pressure or desirability.
- The SSS must include a constraint analysis with values clearly provided; the determination of values in a constraints analysis relating to engineering requirements should involve appropriate utility representatives.
- Applicants should list general resource areas to be addressed in a constraints analysis, including engineering constraints, and include flexibility for regional issues.

6.0 GENERAL QUALITY AND READABILITY

The effort to produce a quality, readable document enhances the entire siting process and the NEPA process it supports. Reviewers are more likely to focus on the most significant issues when presented with clear and accurate information. Decision-makers can better understand the identification, evaluation, and comparison of alternatives when the siting process and resulting analysis is presented with clear, accurate and complete information.

Documents should be written to inform the public using precise and concise plain language. The applicant should use plain language descriptions that accurately portray the complexity of issues, provide sufficient rationale to support conclusions, and define technical terms that may be unfamiliar to the public/stakeholders. A glossary is helpful if many specialized terms are used.

Graphics and Data Treatment

Information, particularly when comparing alternative sites, should be presented in comparative form to help sharply define the issues and provide a clear basis for choice. Use of easy-to-follow tables and figures/maps/graphics, where appropriate, will help summarize data, show comparisons and correlations, enhance understanding, and facilitate the reader’s access to the information. Technical terms should be clearly defined. In general, the writing should be clear, concise and use plain language so it is readily understandable to the lay person. The study must contain enough information to allow Agency staff, decision-makers, and the public to evaluate the differences among alternatives. Other presentation suggestions include:

- When available, quantifiable data on important resources (i.e., potential siting constraints) should be included in the text and in tables. Quantitative site characteristics that could be displayed in a tabular format include but are not limited to, the following factors:

    - Air quality parameters (e.g., available air quality increments for regulated pollutants and/or existing concentrations of these pollutants);
    - Proximity to Class I areas;
    - Proximity to major population centers;
    - Stream flows or well yields for potential sources of water;
    - Water quality parameters (e.g., suspended and dissolved solids, pH, calcium, magnesium, sodium);

- o Amount of land or percentage of area classified as important farmland, rangeland or forestland; and
- o Proximity to other areas of concern (e.g., historic sites, sensitive receptors).

- Highlight key data and findings presented in tables and graphs;
- Include a table displaying alternative site characteristics. A table displaying the potential sites and their ability to meet the siting criteria will allow the reader to quickly compare the alternatives. The table should concisely summarize the alternatives by delineating their key characteristics. Specifically:

  - o The study should contain at least one comparative table which illustrates the extent to which the alternative site areas meet the siting criteria. Depending on the complexity of the table, it may be necessary to present environmental concerns and engineering/economic concerns in separate tables. When there are several recommended alternatives, a table comparing the main differences between the recommended alternative sites is advisable. Grouping the recommended sites together on the original table should also allow easy comparison of these sites. Similarly, if the screening process consists of a series of evaluations to narrow the set of reasonable alternatives, a progression of tables can be very helpful in summarizing the evaluation process.

  - o Note that information presented in tabular format does have certain limitations with respect to accuracy and completeness. The assumptions, definitions, and estimations used in developing the table should be clearly explained in the narrative portion of the text. The table should be useful in narrowing the number of alternative sites being considered. However, because of the limitations inherent in the information presented (in a table or on a map), no final recommendations should rely too heavily on the apparent conclusions depicted in the table (or map). The small differences between sites that may be obscured in a table (or map) can be important factors in recommending which sites are carried forward for further evaluation.

- Make sure graphics and tables inform and do not confuse the reader. Summary graphics and tables may also be used to help summarize key findings based on a more detailed analysis that is included in an appendix.

- Use maps, drawings, aerial imagery, and photography to depict all features that are needed to understand the project's siting options and impacts. Use of visual imagery (e.g., GIS mapping results, satellite and aerial imagery using Google Earth) and photographs (e.g., from site reconnaissance of specific sites) are particularly effective in a SSS to show steps in the process and the outcome. Such imagery also offers an effective means to communicate with stakeholders, giving added transparency, allowing for a rapid assessment of issues and potential impacts, and providing a clear analytical mechanism for comparing values/results. GIS mapping tools allow for the easy generation of such imagery.
- The study should present alternatives objectively. Presenting a broad range of alternatives is important not only in a NEPA analysis, but also to support an individual state's permitting process that may also require alternatives to accompany the siting proposal. Intervenors and public advocates may develop alternatives if the applicant does not. Regardless of regulatory requirements, an objective presentation of alternatives advances the credibility of the applicant and the proposal.

The issues involved in siting generation facilities are often complex and varied. The type of plant and the limiting environmental, engineering, economic, and regulatory constraints of the study area determine the relative importance of each criterion. For example, water resources are important in siting both coal-fired and nuclear facilities, but air quality would be a concern only with coal-fired plants. Siting constraints may vary significantly for different generation projects.

7.0 PUBLIC INVOLVEMENT PROGRAM

The goal of public involvement is to engage affected parties and share information. This helps to identify potential environmental impacts and mitigation measures, and allows the public to review and comment on proposals under consideration by the Agency. The nature and extent of public involvement will depend upon the public interest, complexity, sensitivity, and potential for significant impacts of the proposal.
Public involvement is a necessary and desirable part of the site selection process and enables the applicant to consult with and include interested and affected public, agencies and other stakeholders in the decision process. The applicant's public involvement activities should be developed in concert with its siting plans.

Note that the public involvement program outlined below is encouraged for applicants to implement as part of the site selection process. The Agency will also conduct public involvement activities in the NEPA process. Public scoping officially begins with the issuance of the Notice of Intent to prepare an EIS and starts the formal public involvement process for the project. Scoping is an early and open process conducted by the Agency during the environmental review process to identify significant issues to be evaluated in the NEPA document. Scoping will include public meetings to allow all stakeholders to obtain more detailed information about a proposal, including the alternative sites put forward for consideration and evaluation in the NEPA document, and to express their concerns directly to the parties involved, Scoping meetings can help define potential impacts and help the Agency improve its understanding of the public's concern. Public involvement is a necessary and desirable part of the site selection process and enables the applicant to consult with and include interested and affected individuals (or stakeholders) in the decision process. The public involvement process provides a means by which the public's questions and concerns (if they exist) can be identified in advance of the decisions, so that those decisions consider and reflect the views of the public to the extent possible.

7.1 Identification of Stakeholders

The first step to involve the public is to identify the stakeholders (people and organizations) who may be affected by, or have some other interest in, the project. The identification process can be complex due to clearance/approval required from various agencies that have stakes in the process.

Stakeholder involvement can help ensure valuable input and transparency in the process and minimize future opposition in final selection of the most suitable site. Key stakeholders may include:

Federal, State, Local Government: Federal, state, and local agencies that would be issuing necessary permits and approvals in accordance with environmental regulations (e.g., U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, State Historic Preservation Office), or certificate of need permits (e.g., State PUCs/PSCs).

Federal (Cooperating Agency): If the project occurs on federal land or could affected protected lands, a variety of federal agencies that, depending on the circumstances, could be involved in the siting process, including participation as a cooperating agency. These include, but are not limited to, the Federal Energy Regulatory Commission, U.S. Department of Energy, U.S. Department of Interior and other regulatory and land management agencies.

Airport Authorities: Power plants with high structures (e.g., cooling tower, smokestack, wind turbine) located near an airport or airfield must obtain a clearance from the airport or authorities before construction of towers. In some cases, electric generation projects require a permit from the airport authorities before construction of the project.

Interested Public: The interested public may include residents/property owners that live in the study area and could be directly affected by the project, including those that live on, adjacent to, or near the siting areas being considered.

Environmental Groups: This group includes national, state and local environmental and public interest groups that are interested in the potential environmental impacts of the project, whether they are directly affected or not.

Note that the above list includes only external stakeholders. Internal stakeholders are members of an applicant's internal siting team, including engineers, environmental specialists, real estate (land acquisition) specialists, etc.

7.2 Agency and Jurisdiction Meetings

Applicants are encouraged to conduct agency and jurisdiction meetings at the beginning of the siting process, prior to the official start of public scoping under NEPA, to help identify affected agency jurisdictions and potential agency roles and involvement in the siting process (e.g., cooperating agency, permitting). Such early meetings serve to balance the interests of the agencies in a manner that helps minimize potential impacts and meet project objectives. The applicant (and RUS/Agency) also may present preliminary siting areas to solicit input regarding issues of concern with a particular area and agency permitting requirements. Such an early exchange assists in refining those alternatives and determining the level of analysis necessary to address the issues relevant to the proposed project alternatives.

Note that agency meetings may also be required as part of the state utility commission's certificate of need permitting process.

It is important that all agency and jurisdictional meetings be documented and provided to the Agency for inclusion in the Administrative Record. Also, note that any meetings conducted during siting and prior to the scoping process do not replace, but rather support, the public scoping process under NEPA.

7.3 Public Meetings

Applicants are encouraged to conduct public meetings during the siting process, prior to the official start of public scoping under NEPA. The Agency suggests submitting material for review prior to the meeting, in addition to providing contact information for the Agency and the role the Agency will likely take in the process. These early meetings are valuable in promoting public participation throughout the process, encouraging information sharing, identifying potential concerns and issues outside of a permitting process, identifying potentially affected landowners, helping to develop public mailing lists, etc.

Community outreach efforts should build on existing relationships and interactions between the applicants and the public. Public meetings offer a means to provide project siting information to the relevant stakeholders and receive input on site selection at each step in the process. In particular, informal meetings that follow a workshop or open house format help to encourage one-on-one exchanges with stakeholders. The applicant (and RUS/Agency) may present preliminary siting areas to solicit input regarding issues of concern with a particular area. Such an early exchange assists in refining those alternatives as well as determining the level of analysis necessary to address the issues relevant to the proposed project alternatives. In particular, affected agencies and members of the public who live in the study area can provide valuable input to the applicant that could affect the choice of sites or the ultimate design or use of the site. Note that public meetings may also be required as part of the state utility commission’s certificate of need permitting process.

It is important that any public meetings be documented. Also, note that any meetings conducted during siting and prior to the scoping process, do not replace, but rather support the public scoping process under NEPA.

8.0 SUGGESTED SSS FORMAT/OUTLINE.

The following items should accompany or be part of the SSS:

- Maps of potentially unacceptable and undesirable areas within the study area's geographic boundaries.
- List of all siting criteria used
- List of preparers and their discipline
- List of all Federal, state and local agencies contacted and any meetings held
- List of references
- Summary of information obtained
- List of maps and recommended alternative siting areas
- Description of the methodology used for arriving at the recommended area
- Set of USGS 7-1/2' topographic quadrangle maps for the recommended siting areas.

The Agency also recommends that the report contain an introduction and summary, description of the applicant and any other project participants, description of the study area, evaluation and summary of the results. All potential site areas considered should be identified, including those sites later dismissed from further consideration, along with the reasons for recommending or rejecting certain sites. A suggested outline for the SSS is provided below. Note that this outline illustrates a three-phased approach to siting and that certain topics which have not been discussed previously in the guidance include annotations to help with study development.

Executive Summary

I. Introduction

- o Basis for Study
- o Environmental Review Requirements
- o Environmental Review Process
- o Utility or Cooperative (identification/description)
- o Purpose and Need (briefly addressed with reference to Alternative Evaluation Study)
- o Required Permits and Approvals
- o Community Outreach and Public Involvement Process
- o Format and content of document

II. Technological Alternative(s) Under Evaluation

- o Results of Alternative Evaluation Study

III. Site Selection Process

- o Scope / Basic Project Requirements
    - o Describe the type of facility proposed, and appurtenant facilities critical to its operation, such as natural gas pipelines, water supply (including groundwater), fuel supply, waste disposal, transportation access, and transmission interconnection; also describe other factors evaluated, such as topography, elevation, and land availability.
- o Approach and Methodology – overview of phased approach
    - o Describe the phased approach used for site selection, and whether it was developed by the applicant or utilized commercially available analysis tools or methodologies; describe data inputs and where they were obtained; indicate if and when site visits were made; this guidance assumes a three-phase approach, as follows, but this may be modified in consultation with the Agency.

Note to RUS reviewers: Three phases are presented in the suggested outline; however, variations on this can be included, as appropriate (e.g., such as processes developed by EPRI and NRC for nuclear power plants, by Future Gen for clean coal, and others for various types of renewable energy plants).

- Phase I: Identification of Potential Sites/Site Areas

  - Study Area Definition

    - Define boundaries of the study area
    - Explain why area under consideration was selected

  - Opportunity and Constraint Mapping

    - Opportunity
    - Exclusion
    - Avoidance
    - Data Acquisition
    - Site Evaluation Methodology
    - Opportunity and Constraints by Resource Areas
    - Summary

    Depict the evaluation criteria to be used in further screening, as necessary, on overlay maps; examples include existing gas pipelines and transmission lines, water bodies, existing generation facilities, specific exclusion areas (criteria pollutant non-attainment areas, Class I Air Quality areas, national or state parks, forests, refuges, historic landmarks, military reservations, Tribal areas). The result of this initial phase should at minimum be a map depicting broad areas of suitability and non-suitability. Include variations for different types of generation (e.g., combustion turbine, renewable), to extent possible and appropriate.

  - Identification of Potential Sites/Areas
    Based on the criteria established in the previous section a reasonable number of potential siting areas should be identified. If a large number of potential sites have been identified, it may be appropriate to divide the sites into two or more groups (e.g., excellent, favorable, & marginal).

- Phase II: Identification of Candidate Sites (to be considered)

  - Suitability Analysis
  - Site Evaluation Methodology (criteria)
  - Site Reconnaissance (as it applies)
  - Summary

This phase takes the data and information compiled in Phase I and through quantitative and spatial analyses, produces a small set of candidate sites. Essentially, the areas of highest opportunity are further refined; identification of these sites should be based on physical features such as topography and elevation that determine a minimum usable acreage for the proposed facility, desired proximity to required supporting infrastructure such as transportation (roads, rail, barge), utility access (gas, electric transmission, water), fuel supply, and absence of identified avoidance or exclusion areas (formally designated lands, urban or residential areas, cemeteries, schools, parks, recreation areas, floodplains/wetlands, known threatened/endangered species locations or designated habitats, airports, cultural or historic sites, etc., that can be identified on available maps). Weighting, ranking or otherwise scoring the sites, and displaying the results in a comparative table, is recommended. Site reconnaissance could be conducted at the end of this phase to confirm the desktop evaluation and identify any previously unknown factors that may affect site suitability, including visual impacts/aesthetics. Include a brief summary description of each short-listed site, including the results of field reconnaissance. Reconnaissance can also be conducted in Phase III. Plot all candidate sites on 7.5-minute USGS maps. Present a summary of evaluations conducted for the candidate sites.

- Phase III: Comparative Analysis and Site Evaluation

  - Additional Site Screening/Site Refinement
  - Site Evaluation Methodology (criteria)
  - Evaluation of Sites and Comparative Analysis

    - New Generation
    - Fuel and Transmission Availability
    - Site Reconnaissance (verify desk-top findings, update current land use at sites, encourage use of GIS)
    - Ranking of Sites

  Evaluation to include information relating to site location (including topographic map), description, and associated facilities for each of the alternative sites evaluated.

- Selection of Alternative Sites to Carry Forward for Consideration in NEPA document

  - Sites eliminated from further consideration
  - Selection of proposed and alternative sites

  This final phase examines the short list resulting from Phase II, further refining the assessment of each and performing a comparative analysis among the sites. Identify any upgrades that would be necessary to utilize existing facilities or services. It may be prudent to conduct Phase I Environmental Site Assessments. Sites should be evaluated from the perspective of actual arrangement of the facilities; how would they be oriented, and does a site prevent a preferred or required orientation. Confirm how the actual site boundaries relate to existing facilities, land uses, or ownerships. Factors such as local wind patterns or other atmospheric conditions should be considered. Differential site development costs should be compared, including utility connections, transportation connections/access, water supply and discharge, land acquisition, permitting, etc. Again a comparative table or matrix should be used to illustrate the evaluation process. This phase results in the identification of alternative sites to carry forward to the NEPA document; the preferred site may also be identified at this time. There should be a reasonable number of alternatives to carry forward to the NEPA document. Describe in narrative format the final set of sites, and how they were selected.

Note: Evaluation of sites and selection of proposed and alternative sites should include sufficient site description information to support the description in the Agency NEPA document including: the identification of the proposed and alternative site locations, a description of the proposed and alternative sites; identification of the required facilities associated with the proposed and alternative sites (including any differences); and a topographic map that outlines the boundary of the proposed site and alternative sites, and other pertinent project features (e.g., electric and gas transmission lines). A map showing the proposed plant footprint and specific acreage requirements – for the proposed and the alternative sites - would help support alternative site impact evaluation and comparisons in the NEPA document.

IV. Project Description

As indicated in draft guidance, RUS recognizes that many project design decisions are still pending when the SSS is made available to agencies and the public. However, RUS recommends that as much detailed design information as possible be presented to the public, either in the SSS or at the scoping meeting(s), to ensure that the public has had an opportunity to comment on the range of possibilities and avoid stepping backward later in the NEPA process.

This section is a placeholder for additional details on the proposed project, to be provided at the time of scoping as details are known. Depending on the extent to which the proposed project has been defined at this stage, suggested contents could include technical requirements or project source term related information (necessary to help evaluate potential project impacts in the Agency NEPA document). Some of this information may also be discussed as part of project requirements in the beginning of Section III of the suggested outline. Possible content, to be tailored to the particular type of electric generation under consideration, might include:

Facility Equipment and Layout

- Identify the components of the proposed generation facilities including number of units.
- Identify the type(s) of fuel that will be utilized.
- Include a generic site layout, if available, and land requirements (short term construction and long-term operation, including any offsite features.
- Include an artist's rendering of the site or a photograph of a similar facility, if available.

Emission Controls

- Identify expected air emissions from the facility in table format.
- Identify proposed air quality emission controls.
- Describe basic operation of proposed emission control systems.

- Describe any chemical components, their delivery and on-site storage.
- Describe all associated waste byproducts and method of disposal.
- Compare proposed system with other available emission control systems.

Transmission Requirements

- Describe the on-site substation and associated transmission facilities.
- Describe any new transmission lines or substations needed to connect the facility to the grid.
- Describe all required modifications or upgrades to existing transmission lines or substations necessary to accommodate the output of the facility.

Fuel Use and Waste Disposal

- Describe the type and amount of fuel to be consumed at the facility.
- Describe the method of fuel delivery (e.g. natural gas pipeline or fuel tank truck).
- Identify any new gas pipelines or extensions of existing pipelines needed to serve the facility.
- Describe on-site fuel storage facilities.
- Describe waste handling facilities.
- Identify type and location of waste disposal facilities.

Water Supply and Wastewater Disposal

- Identify the water requirements of the facility by system including annual consumption.
- Identify the proposed and alternative sources of raw water for the facility.
- Describe system(s) used to obtain water for the facility (e.g., new water pipeline, underground wells, existing municipal water pipeline).
- Identify the type(s) and amount of wastewater that will be generated by the facility.
- Describe methods of treatment and disposal.

Operating Characteristics

- Describe the operating characteristics of the proposed units.
- Include type of operation, hours of operation, and availability factor.
- Discuss maintenance requirements

Noise

- Describe expected sources and levels of noise from construction.
- Describe expected noise levels from operation.
- Describe proposed methods of noise attenuation.

Transportation

- Describe the highway, railroad or water-based network that will be utilized in the construction and operation of the facility.
- Describe any upgrades required for the delivery of project components for construction or fuel for operation.
- Describe any new site access roads.
- Describe the impact of construction and operation on local traffic.

Project Schedule

- Discuss project schedule in both narrative and graphic formats.
- The discussion should include timeframes for regulatory approvals, design engineering, construction, startup and testing, and date of commercial operation.
- Include a listing of required permits and approvals.

Project Cost

- Present a cost comparison of the proposed alternative with the other potentially feasible alternative technologies considered.

Employment

- Discuss employment requirements during project construction.
- Discuss employment requirements during normal project operation.

V. References

VI. Appendices [placeholder for additional information, such as glossary, maps and other graphic material, supporting technical studies, detailed evaluation results, etc., as appropriate to a given study.]

Guidance for Preparing a Macro-Corridor Study (MCS)

1.0 INTRODUCTION

The National Environmental Policy Act (NEPA) requires federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of proposed actions and reasonable alternatives to those actions. The Agency may require applicants to submit preliminary studies for certain types of electric program projects that require preparation of an Environmental Impact Statement (EIS) or an Environmental Assessment (EA). The objective of the preliminary studies is for the applicant to identify the purpose and need for a proposed project and to identify and evaluate which alternatives meet the purpose and need. The program applicant completes these studies before the Agency initiates its NEPA process.

This guidance document does not cover the critical first task of corridor planning – that is whether new transmission line infrastructure is needed; information concerning this kind of preliminary study is addressed in the Alternative Evaluation Study (AES) guidance (see Exhibit B). This document, Exhibit D: Guidance for Preparing a Macro-Corridor Study (MCS), addresses the framework used to identify and locate potential siting corridors after the need for linear infrastructure has been determined. This guide was specifically developed for high voltage transmission line projects and as such the terminology and processes will be more applicable for this industry.

1.1 Organization of the Exhibit

The remaining sections of this exhibit are organized as follows:

- Roles and responsibilities
- Development and General Approach of the Macro-Corridor Study
- Methodology
- Lessons Learned
- General quality and readability
- Public involvement
- Sample outline for a macro-corridor study
- Three appendices,

  - Appendix 1 - Glossary of Key Terms
  - Appendix 2 - Information commercially available Geographic Information System (GIS) technologies
  - Appendix 3 - Sample Transmission Line Siting Methodology (GIS)

1.2 Purpose and Need for Macro-Corridor Study

The purpose of a MCS is to identify areas that appear to be suitable for siting electric transmission facilities based on regulatory, environmental, engineering, and economic constraints. Such a study is conducted to identify routing options for a particular line, and how those options might be planned to avoid or minimize problems, impacts, delays, and unnecessary expense in development of a proposed project.

While the AES identifies the initial problem (e.g., need for improved or new facilities) and identifies and evaluates the best solutions for addressing the problem and meeting the need, the MCS identifies where on the ground the linear infrastructure could be constructed. Specifically, it identifies the study area encompassing the end points of a proposed line and develops large corridor options for locating the facilities. It provides information on environmental, social, and cultural factors for the macro-corridor options within the study area.

1.3 Role in the Agency's NEPA Process

The Alternative Evaluation, Site Selection and Macro-Corridor Studies are the earliest preliminary studies submitted to the Agency and serve as the foundation upon which a NEPA analysis will be conducted. The information used in these studies will be used throughout the environmental review process for a proposed project.

Ideally, the AES should be completed first and provided to the Agency for analysis of the purpose and need and whether the range of technological alternatives is appropriate. Each preliminary study need not be of great length and should include sufficient detail for other agencies and the general public to independently evaluate the alternatives under consideration in relation to Agency's and the applicant's purpose and need. The documents are made available to affected federal, state, and local agencies and the interested public during the scoping process. Scoping is the early and open process for determining the scope of issues, including impacts, issues, and alternatives that will be addressed in a NEPA document.
The purpose of the studies is to provide information to the public and other agencies to facilitate their participation in determining the scope of the environmental review and to comment on the reasonableness of the applicant's proposed plans. The studies must be reviewed and accepted by the Agency prior to scoping. Information contained in the MCS should be adequate to allow other participating agencies and the public to independently evaluate the proposed linear corridor options.

<u>Other Federal Agencies</u>

Due to involvement of federal land management agencies, and the issuance of permits required from multiple federal agencies, one or more federal agencies may participate in the NEPA process. The agencies will determine cooperating and lead agency status, thereby clarifying the requirements of the preliminary studies and NEPA process.

Additional State Review Requirements

The MCS may also be used to support state permitting and environmental reviews. Many states have statues and regulations regarding the siting of linear infrastructure like electric transmission lines. State public utility commissions (PUC) and other authorities which regulate the issuance of electric transmission line siting permits may have developed their own siting processes to ensure that a need for the line exists and that the transmission route selected has minimal effect on the state's environmental, cultural, and socioeconomic resources. Many states require that alternatives to the applicant's preferred or proposed route be considered. Some have specific instructions that the utility must follow. If there is an environmental review or project approval process in the state where the project would be constructed, the Agency will make an effort to work with the appropriate state agencies to minimize duplication of effort.

2.0 ROLES AND RESPONSIBILITIES

2.1 Agency Environmental Staff

Agency Environmental Staff will assist the applicant by outlining the types of information and analyses required, independently evaluating the information submitted, and making environmental documents available to the public and other agencies for review and comment in a timely manner.

2.2 Applicants

Applicants requesting Agency funding subject to the Agency's Environmental Policies and Procedures are responsible for identifying their purpose and need for the proposed project and for developing reasonable alternatives that meet their purpose and need. The applicant is responsible for conducting the MCS to assist the Agency with the environmental review and decision-making process and for documenting the results consistent with the format and standards provided in this document.

Prior to conducting the MCS, the applicant should contact the appropriate Agency staff. For the electric program, this would be the Office of Loan Origination and Approval (OLOA). The Engineering and Environmental Staff (EES), a department in the Water and Environmental Programs which conducts environmental reviews for the electric program, also should be contacted to determine the likely NEPA requirements for the proposed project in accordance with 7 CFR 1970.

A meeting between the applicant and Agency staff has been shown to be an effective way to exchange information. The Agency will identify the appropriate engineering and environmental procedures that must be followed in addition to other required the submittals. If the applicant intends to use a consultant to complete the MCS, the consultant should be included in these initial meetings.

2.3 Contractors/Consultants

Applicants may employ an environmental professional or technical service provider (e.g., contractor) to assist in preparation of preliminary studies and other associated documents, including the MCS.

2.4 Public & Other Agencies

Other federal, state and local agencies, and the public, will have the opportunity to review and provide comments on the MCS during the scoping process. Their input also is important during the early phases of the siting process, such as to support information-gathering to identify siting opportunities and constraints. Various public participation tools and techniques are available to provide relevant information to stakeholders and receive input on corridor development at each step in the process. These tools include but are not limited to websites (project description, stakeholder notification, news releases), voluntary public meetings and corridor workshops or open houses, and required public meetings/hearings. **Public involvement, whether part of the formal scoping process or the applicant's outreach process must be captured and documented in the MCS.**

3.0 DEVELOPMENT AND GENERAL APPROACH OF THE MACRO-CORRIDOR STUDY

3.1 Terminology

Key terms used in transmission line siting are defined below. See also Appendix 1 for a complete glossary of terms as defined by Agency staff for purposes of this exhibit.

- Study Area: A geographic area to be assessed for siting the proposed action, within which the macro-corridor is sited. The study area may be a group of states, counties within a state, or adjacent states, etc. The size of the study area should be sufficient to allow evaluation of areas with differing environmental, engineering, and regulatory constraints. The study area should be small enough to encompass only feasible alternatives (engineering and cost considerations to meet purpose and need), but large enough to include an adequate number of alternative corridors. The boundaries allow for the development of all feasible corridors, provide the area necessary to account for potential impacts, and focus the study efforts to an area compatible with that used for the overall environmental analysis.
- Macro-Corridor: broad linear area of land within which the alternative corridors can be located for further study and comparison. This area encompasses the end points of a proposed transmission corridor and is located within the larger study area. The Macro-corridor may consist of one contiguous broad area within which many alternative corridors could be located or more than one broad linear area each providing an alternative corridor possibility (i.e., each macro-corridor could become a corridor alternative but much wider).
- Alternative Corridors: linear areas within a macro-corridor that are deemed most suitable for placement of the proposal when the natural environment, built (man-made) environment, and engineering requirements are considered. The width of the corridor must be large enough to allow latitude in specifically locating the transmission line but not so broad as to be meaningless.
- Route: a constructible right-of-way (ROW) within an alternative corridor.
- Preferred Route: most desirable or suitable location for a transmission line route.
- Siting: The process of determining the location for a proposed action, as conducted by an interdisciplinary siting team comprised of representatives from engineering, environmental, land acquisition, and other disciplines. Siting is a continual process of refinement from study area to macro-corridor to corridor to route.

The relationship of these terms is illustrated in Figure D-1 which shows the sequence of steps to be followed in siting a transmission line, beginning with identification of the study area and ending with selection of a preferred route.

Note that in the majority of cases, the MCS typically ends with identification of one or more macro-corridors, thereby signaling the beginning of scoping and the NEPA process. The final step, selection of the preferred corridor or route as identified by the Agency or applicant, would not be determined at the macro-corridor level but rather as part of the NEPA process. Regarding the intermediate steps - including the identification of alternative corridors and routes - their inclusion in the Macro-Corridor Study is project-dependent (e.g., may be appropriate for smaller-scale projects), and would be determined at the outset of the study. In general, however, these steps would also be deferred to the NEPA process.

3.2 General Approach

The MCS is a report of the preliminary transmission line siting process, prepared by an interdisciplinary team comprised of siting team members from engineering, environmental, land acquisition, and other disciplines.

The macro-corridor selection process should be accomplished in phases to systematically narrow the number of alternatives. In the first analysis, resource data are analyzed to identify suitable areas (opportunities) for siting and unsuitable areas (constraints) to be excluded or avoided. In further phases of the siting process, tighter environmental and engineering constraints can be applied to further narrow potential transmission corridors and corridor options as appropriate.

The study should clearly identify and describe the opportunities and constraints developed for the proposal. It is important that the MCS be well documented, including the reasons for excluding or avoiding certain areas. If there is no practicable alternative to siting in a potentially unacceptable area (e.g., sensitive area), this must be particularly well documented. Note that routing through a sensitive area will also likely result in the need to conduct additional studies and prepare additional documentation for the agency with authority over the sensitive resource.

The study primarily utilizes (1) existing data - either publicly available on the Internet or readily available from the resource agencies - and (2) interaction with agencies, independent experts, and stakeholders (e.g., tribes, landowners and members of the public with an interest in the project) to:

- make applicants aware, at relatively little cost, of areas where major environmental, engineering and regulatory/legal conflicts could exist; and
- reduce the realm of potential corridors in an efficient and effective manner.

Coordination with federal, state, and local agencies and other key stakeholders should begin in the early phases to make them aware of the proposal, obtain their input and determine the necessary permits that must be obtained along with other regulatory requirements.

3.3 Use of GIS in Macro-Corridor Siting

GIS has become a valuable decision-making tool in situations when data relevant to a decision include a spatial component. GIS software provides tools to manage, visualize, and analyze geographic data including: physiographic setting, sensitive environmental and cultural resources, land ownership, land use designations and existing infrastructure. Layers of different information, such as land ownership, protected environmental resources, and existing infrastructure are superimposed on a map, and information can be easily accessed and queried.

GIS tools available today allow the resources to be mapped and combined with aerial photography or satellite imagery (such as Google Earth) to support the identification of suitable areas for routing a new transmission line. RUS may require applicants to use GIS software in macro-corridor development (exceptions may be granted by Agency environmental staff on a case-by-case basis). GIS software can process high volumes of data and provide quality presentation of the processed data, such as in the form of site suitability maps in the early phases of transmission line siting. GIS models enable siting team members to use map overlays, spreadsheets, reports, and graphic illustrations to make more informed, objective, and defensible decisions.

Public web map services have made basic mapping functionality and common data layers readily available. However, more sophisticated GIS technology enhances the methods used to consider variables in transmission line siting processes. A variety of GIS solutions are available for power generation and transmission services, and applicants should select one that best suits their needs. Appendix 2 provides more information on commercially available GIS technologies, including those that can be downloaded for free.

3.4 Level of Detail (Sliding Scale Approach)

Because each applicant proposal represents a unique set of circumstances and impacts, the preparation of a MCS does not reduce to a single formula. While this guidance is generally targeted toward the level of detail that might be needed to support preparation of an EIS, it should be adapted to the particular circumstances presented by each proposal, including those that would trigger the preparation of an EA. As a general guide for EAs, applicants are encouraged to use a sliding-scale approach when determining how many alternatives to identify and analyze, and the depth of analysis to provide for each alternative. EAs that address proposals where there is heightened public controversy concerning potential environmental impacts, or where there is otherwise greater potential for significant environmental impacts from the proposed action, may need to identify and analyze the project at a higher level than other EAs.

4.0 METHODOLOGY

The basic steps in conducting a MCS are discussed below (see also Figure D-1). After an initial meeting with Agency staff to identify the necessary technical requirements and develop an appropriate scope, the steps include Study Area definition, resource data collection, and macro-corridor generation based on the identification and analysis of areas of opportunity and constraints.

As noted previously, the majority of the MCS document covers the siting process through identification of macro-corridors, with the identification of corridors and routes, including the preferred route, being deferred to the NEPA process. In particular, the preferred corridor or route, as identified by the agency or applicant/utility/project proponent, is <u>not</u> determined at the macro-corridor level.

4.1 Technical Requirements

At the outset of the transmission siting process, the applicant and other project participants should meet with the Agency to identify the necessary technical requirements of the proposal, including but not limited to: (1) the voltage, structure type, dimensions, ROW requirement and potential start and end points for transmission lines, (2) requirements for associated facilities, (3) special conditions or concerns associated with the project, (4) appropriate scope of study based on project scale, (5) use of GIS and appropriate software, and (6) approximate schedule for corridor development.

4.2 Definition of Study Area

Upon determination that a transmission line is needed (i.e., outcome of the AES), the first step is to identify and characterize the study area. A study area may be a group of states, a state, a group of counties within a state or adjacent states, or any other geographic area. The size of the study area should be sufficient to allow evaluation of areas with differing environmental, engineering and regulatory constraints. The study area should be small enough to encompass only feasible alternatives (i.e., based on engineering and cost considerations that meet the purpose and need), but large enough to include an adequate number of transmission macro-corridors. For example, if the AES identifies a 230 kV line needed to connect two towns 75 miles apart, the study area would not include another state 200 miles away.

The study area location should be identified in terms of political boundaries (e.g., counties) and geographic size (area and perimeter). General physical characteristics of the study area should also be described as well as other special considerations (e.g., those not necessarily found in a GIS database).

Satellite imagery and other publicly available data (including GIS) should provide a good overview of the general land uses, land cover, and environmental conditions in the study area.

4.3 Resource Data Collection

The next phase of the macro-corridor siting process is data collection to support the opportunities and constraints analysis. Resource data needs include study area resources likely to be affected by transmission line construction, maintenance, and operation. Data for resources within the study area should be readily available from environmental management agencies and state and local governments. Data should be in a format to support preparation of GIS resource maps for the various resource categories evaluated. See Appendix 2 for GIS resources relating to environmental resource and land use data and Appendix 3 for additional reference and contact information for various environmental resources. The resource data collected should be referenced in the MCS.

Physical features that should be briefly described include, but are not necessarily limited to:

- Physiography (topography/terrain)
- Geology (including fault zones)
- Land use/land cover (including public and other dedicated lands, agriculture, mining, forest, undeveloped, urban)
- Sensitive areas/wildlife resources (e.g., National Forests, National Wildlife Refuge, archaeological and historic sites on the National Register of Historic Places)
- Wetlands
- Cultural resources
- Hydrology (open water, streams, floodplains)
- Transportation corridors (major highways, rail, airports)
- Socioeconomic character (population)
- Recreation resources
- Existing transmission lines
- Other utility swaths

4.4 Identification of Opportunities and Constraints

In the next step in macro-corridor development, resource data are analyzed to identify suitable areas (opportunities) for siting and unsuitable areas (constraints) to be excluded or avoided. The study should clearly identify and describe the opportunity and constraint criteria developed for the proposal.

4.4.1 Siting Opportunities

Siting opportunities include the identification of areas within which transmission line construction would be more compatible with the current land use, have a reduced likelihood of additional impacts, and result in more efficient line operation and management. Potential opportunities include but are not limited to:

- Existing transmission line/utility corridors (for expansion, parallel potential)
- Transportation rights-of-way
- Industrial areas
- National Corridors, or
- Property boundaries.

The development of a macro-corridor should identify existing linear transportation (e.g., highway, rail) and utility corridors, including existing transmission lines and pipelines within the study area. Existing rights-of-way should be examined for possible use in locating a corridor, potential for expansion and rebuild/double-circuit opportunities.

Consideration of existing rights-of-way can expedite the siting process. Where possible and allowable, corridor locations should be adjusted to align with existing rights-of-way. By collocating new corridors with existing infrastructure, undeveloped locations may be avoided or minimized, thereby reducing the potential level of project-related impacts to undisturbed natural and cultural resources.

4.4.2 Siting Constraints

Constraints must be identified in order to determine the desirability and feasibility of siting throughout the study area. Siting constraints relate to the physical and environmental characteristics of the site itself (e.g., topography, conflicting land uses), as well as statutory, institutional, engineering, and economic constraints, that would serve as impediments to corridor designation. The MCS must include the rationale used to determine which siting constraints are considered and applied in the study.

Note that the primary constraints are identified first and then more restrictive constraints, which require increasing levels of detail, can be applied in later phases to systematically narrow the study area and form macro-corridors. Therefore, at the preliminary level of review, not all resources need to be identified to the extent required for final corridor selection. Additional agency and stakeholder input, field surveys and analysis will be conducted later, as part of the Federal and State environmental review processes, and will be used as part of the decision to select the preferred transmission line route. The sensitivity of constraints varies by proposal and, in some instances, one or more of these factors may be easily dismissed as a constraint to siting.

<u>Environmental Constraints</u>

Primary environmental constraints include but are not limited to the factors identified below. These factors are divided into two general sets:

1. Constraints designated as “unsuitable” that would make siting in that area virtually impossible (e.g., regulatory restrictions that prohibit development or potentially significant impacts); such areas may be referred to as “exclusionary areas;”
2. Constraints designated as undesirable (due to conflicts with existing land use, development, or resources) and should be avoided when other feasible alternatives exist; such areas may be referred to as avoidance areas or risk resources and are considered to have low suitability.

The impact of a particular constraint varies with each proposal, each siting area, the feasibility of mitigation, etc. The constraints presented below should be interpreted as general guidelines; modifications should be applied when necessary. Depending on the project and study area, sensitive areas (e.g., sites listed on the National Register of Historic Places/Historic Districts, known occurrences of threatened and endangered species or their critical habitat, wilderness areas, etc.) may be considered exclusionary or avoidance areas.

Exclusionary or Incompatible Siting Areas

- Areas that may not be crossed by corridors unless authorized by the appropriate official.
- Areas protected by legislation, regulation, administrative policy; severe physical constraint to transmission line construction, and operation and maintenance; or potential for significant impact (where reasonable mitigation is not possible)

Note that exclusion is not based on regional or local pressure, cost, or desirability.

Undesirable Siting Areas/High Risk/Avoidance Areas

- Critical Habitat (or known location/nest of threatened and endangered species)
- Wetlands
- National Wildlife Refuges
- Conservation Easements
- Congressionally-designated Wilderness Areas
- National Parks and Monuments
- Wild and Scenic Rivers
- Cultural Sites/known cultural resources (listed on or eligible for National Register of Historic Places)
- Historic/Archaeological Districts
- State Parks/Recreation Areas
- Other State and local restrictions
- National Trails
- Tribal lands

<u>Built Environment</u>

The location of buildings and their uses must be considered when siting a transmission line. Local, state, federal, and the National Electrical Safety Council (NESC) building setback requirements should be evaluated during the identification of potential alternative corridors.
Avoidance Areas include:

- Areas surrounding other federal or federally regulated facilities, e.g., military installations (Department of Defense – Army, Air Force, Navy); Federal Communications Commission and National Aeronautics and Space Administration.
- Airports
- Mining and Mineral Resources
- Sensitive receptor facilities such as residential areas, schools, hospitals, and community facilities; consider building density and planned developments.

Engineering and Economic Constraints

Engineering and economic factors also need to be considered when selecting a route. Such factors vary with each project and may include, but are not limited to:

- Topography (e.g. prevalence of steep slopes which present construction, erosion and maintenance problems),
- Transmission structure design, overall length, span limitations, number of angle structures,
- Number of times high voltage lines/railroads/highways must be crossed,
- Number of river, railroad and highway crossings,
- Non-spannable water crossings,
- Scenic highways,
- Gas pipelines,
- Presence of wetlands/marshes and floodplains,
- Need for access roads,
- Right-of-way limitations,
- Presence of existing infrastructure (including other utilities) or other development.

Environmental Justice

Another element that needs to be considered in siting is potential project impacts on minority and low income populations (environmental justice). In comparing macro-corridors, this principle is evaluated on the basis of whether any disproportionate impacts to these communities are significantly different when comparing one corridor to another.

Future Actions and Potential Cumulative Impacts

Future actions in the study area, including but not limited to planned utility and road construction projects and residential development should also be considered in the siting process, depending on the location and timing of such actions.

Consideration of such projects could result not only in the identification of additional opportunities or constraints not otherwise considered, but also in the potential for cumulative impacts within a particular corridor that should be evaluated and compared against the impacts of other alternatives. Cumulative impacts are impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes the action.

4.5 Opportunities/Constraints Analysis

The corridor selection process should be accomplished in phases to systematically narrow the number of alternatives. In the first analysis, the applicant should identify project opportunity and constraint criteria to use in the analysis based on resources and study area characteristics that provide favorable or unfavorable attributes for locating the transmission line. The selected opportunity and primary constraint areas should be mapped for the study area. In further phases of the siting process, tighter environmental and engineering constraints can be applied to further narrow potential transmission corridors and corridor options as appropriate. During the opportunity and constraint mapping process, appropriate Federal, state, and local agencies should be contacted to inform them of the proposal and siting study, and solicit input such as regarding any errors or omission on the constraint map. In addition, constraint areas or opportunities may be identified during the public scoping process.

GIS is recommended for use in the opportunity and constraints analysis and to assist in the identification of macro-corridors for further consideration. Spatial data can be categorized for each resource based on the opportunity or constraint, and a GIS model can be applied to map the areas of opportunity and constraint (suitability layers) into a suitability map (term used if map developed using GIS). The suitability map associates geo-referenced features, land cover types or land uses with the likelihood of potential impacts from the proposed transmission line. Possible GIS siting model scenarios may include: (1) rebuilding or paralleling existing transmission lines, (2) parallel existing roads or other linear features, and (3) crossing undeveloped land (cross country).

The results of the opportunity and constraints analysis yields macro-corridors as opportunities (suitable areas) for locating the transmission line. These macro-corridors would be narrower than the original study area but still sufficiently wide to allow further route refinement in later phases.

The study should clearly identify and describe the opportunity and constraint criteria developed for the proposal.

4.6 Identification of Macro-Corridors for Consideration

Macro-Corridor identification is a detailed process that includes reviewing resource data, identifying route opportunities and additional constraints and consulting with local jurisdictions, public agencies, and other key stakeholders. Past methods of transmission siting involving only in-house expert judgment and interpretation have been criticized for not considering the perspective of external stakeholders. Partly in response to such criticisms, the industry has developed computer-based models (e.g., using GIS) that systematically identify transmission routes that have the least impact on surrounding landscapes and result in more logical and defensible decisions.

Use of existing digital data layers allow for quick identification of the most suitable locations for transmission lines in the project area. Development of macro-corridors can be derived from land cover/land use classification of satellite imagery and other off-the-shelf digital data. The industry has developed computer-based models (e.g., using GIS) that systematically identify transmission routes that have the least impact on surrounding landscapes and result in more logical and defensible decisions. The GIS Siting Model that is called Corridor Analyst identifies macro-corridors for transmission lines that minimize impacts to the built and the natural environment. In many cases, paralleling existing transmission lines or road rights-of-way can minimize impacts to these resources.
Based upon project requirements and the results of the initial opportunity and constraints analysis, least risk macro-corridor locations can be developed to target areas of opportunity and avoid areas of constraint. They are referred to as least risk because they identify the path(s) of greatest opportunity and least constraint within a macro-corridor and connect the proposed action’s end points. These least risk macro-corridors define the area where detailed data collection and analysis will occur in subsequent phases.

GIS software such as ArcGIS uses least risk path analysis algorithms included in the software to generate a composite suitability map, model paths within the macro-corridor and general proposed paths of opportunity for alternative transmission corridors. Perhaps the best known of the GIS models is that developed by EPRI-GTC; see Appendix 3 for a detailed description of this system.

Macro-Corridors within the study area serve as a useful guide for planning the general corridor within which the proposed transmission line might be constructed.

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Corridor width may vary from project to project. The scale of the proposed project, topography, and land use characteristics of the initial study area largely determine appropriate corridor widths. Depending on the project (length, large avoidance areas, etc.), a macro-corridor may be one large contiguous polygon with numerous corridor routes possible within the macro-corridor, or it can be several macro-corridors connecting the end points such that each macro-corridor could become an alternative corridor or route but be much wider. Specifically, the width of a macro-corridor may be several miles wide for some projects and appropriately be limited to the width of the ROW for others (based on constraints). In some cases, a state may have pre-determined a corridor width.

It is important to keep the macro-corridor wide enough to provide flexibility for further route definition that may occur during subsequent project siting activities. This approach allows for further investigation of issues and resource concerns within the identified corridors. Note that the wider widths associated with macro-corridors also allows for the possibility of co-locating other projects in the corridor, potentially reducing impacts to the surrounding area than if they were sited independently.

4.7 Assigning of Suitability Values

In order to locate macro corridors in the most suitable areas, suitability values could be developed to help evaluate and compare the alternative corridors

To evaluate the suitability of each corridor resulting from the opportunity and constraints analysis, each criterion is evaluated independently. Once a resource is identified, its features are rated with a numeric suitability value that characterizes the level of constraint or opportunity that is appropriate for the resource in relation to locating the transmission route. The rating system (numerical scale), can include positive and negative numbers (with positive numbers characterizing a resource risk, and negative numbers indicating an opportunity for siting). The rating system is typically designed to protect the most sensitive parts of the study area by identifying areas with the greatest potential for negative impacts, while highlighting areas best suited for construction of the line. Use of a rating (or suitability) scale provides one way of expressing preferences for one corridor over another.

While an applicant may have flexibility in determining which process and scale will be used to assign values in a transmission line siting study (especially dependent on the type of GIS model used), all activities, and the values assigned, must be clearly described and documented in the MCS.

4.8 Assigning of Weights

In evaluating the inevitable tradeoffs between suitability criteria, weights could be assigned a relative value (resource) in relation to potential effects of the proposed transmission corridor. The relative importance should be reflected as a numerical weight value. The assignment of weights is a sensitive issue in siting because the opinions and value judgments as to the relative importance of individual criteria vary with the perspectives of the individual stakeholder or group. There are a number of techniques for assigning importance weights to criteria and methods for developing criterion weight values. The Delphi Method is a traditional method developed to obtain the most reliable consensus among a group of experts by a series of questionnaires interspersed with controlled feedback. The process offers a structured method of consultation that may reduce bias and allow groups of individuals as a whole to resolve a complex problem. A second method, used in the EPRI-GTC model, is a decision-making process called the Analytic Hierarchy Process designed to help groups set priorities and make the best decision possible when both qualitative and quantitative aspects of a problem need to be considered. It reduces complex issues to a series of pair-wise comparisons and then synthesizes the results. This approach helps decision-makers arrive at the best solution while also providing a clear rationale for the decision reached.

The Agency requires stakeholder input to the weights assigned in the siting process. This necessitates meetings to share important information, identify special concerns and siting constraints, and participate in assigning weights to criteria used to evaluate and compare alternative corridors. Stakeholders and weights are regionally specific and must be identified in the region of the macro-corridor siting. The weighting process should be determined by a multi-disciplinary committee including industry representatives, subject matter experts (environmental and engineering), and other key stakeholders. Note that weights are rarely assigned and used in macro-corridor studies, given the requirement to involve stakeholders. However, when weights are used, the weighting process and an explanation of the weights assigned must be clearly described and documented in the MCS.

4.9 Macro-Corridor Analysis and Refinement

After the preliminary set of least risk macro-corridors are identified, the applicant and the Agency may apply more stringent criteria to systematically narrow the macro-corridors down to alternative corridors and ultimately to a few recommended corridors or routes. More detailed analysis of constraints and the mitigation potential of possible adverse impacts may be used to reduce the number of feasible corridors.

This requires the collection of more detailed (location specific) data throughout the process. Deferring this level of data collection until a smaller area and number of alternative corridors are identified significantly reduces data acquisition efforts and costs.

NEPA does not require a certain number of alternatives (corridors) to be evaluated, but rather an examination of “all reasonable alternatives,” including the preferred alternative and the no action alternative. Fewer alternatives are generally more appropriate for an EA than an EIS, but a better rule of thumb is the greater the number and extent of impacts, the greater the number of alternatives that may need to be analyzed. It is important that the applicant identify the factors considered in reducing the list of reasonable alternatives to the proposed corridors. A clear, detailed presentation is essential in evaluating the reasonableness of the recommended corridors. Evidence of sufficient data gathering in obtaining comparative information on the alternatives is also a primary concern.

Corridor route refinement would use site-specific resource information from resource specialists and allow continued public involvement. The opportunity and constraint criteria used to identify preliminary macro-corridors would be expanded upon as needed. Each route would be analyzed on a segment by segment basis using routing criteria developed through public/agency consultation process and using stakeholder input. Impacts would be evaluated and ranked, with ranking to reflect the relative impact a given route alternative has on resources compared to impacts of other alternatives. The total scoring would provide a relative indication of overall suitability of alternatives with respect to one another. Ultimately, a set of specific alternative routes (within each of the alternative corridors) would be identified, possibly including the preferred route (if known; sometimes the preferred alternative is not identified until the NEPA process is nearly complete).

Note that continued alternative corridor and route refinement typically extends into the NEPA process, where the final set of alternative routes would be analyzed in greater detail in the Agency NEPA document. As such, the desired outcome of the MCS would be the selection of a reasonable set of corridors, including macro-corridors that could become corridor alternative possibilities, for consideration in the Agency NEPA document. The outcome would be dependent on lands crossed, siting constraints for those lands, the level of detail regarding the nature and location of protected environmental resources present along the route, and the degree to which the constraints can be addressed or mitigated.

4.10 Field Reconnaissance and Surveys

In general, the purpose of field reconnaissance (overflights, windshield surveys, site visits) is to verify findings of the suitability mapping or literature reviews (i.e., confirm desktop evaluation), collect additional data, update the current land use of a specific corridor (to identify presence of any new features not identified in available resource databases), and identify any other previously unknown features or constraints that may affect site suitability, including visual impacts/aesthetics.

Reconnaissance can occur early in the process to help provide an overview of the general land uses, land cover, and environmental conditions in the preliminary macro-corridor(s), especially if satellite imagery of an area is limited. More often, field reconnaissance data are collected in the final phases of macro-corridor identification and preferred corridor selection to support segment generation, resource quantification, route delineation, and route refinement. Gathering more detailed, location-specific data helps provide a more accurate characterization of a particular corridor and support a quantitative evaluation and comparison of alternative corridors. Collection methods include field visits, engineered survey, property ownership information procurement, and consultant data services such as onsite soil borings, archaeological reviews, and ecological surveys. More detailed on-site survey work would likely be limited to the final set of alternative corridors carried forward to the NEPA document and conducted as part of the NEPA process. In some instances, detailed on-site surveys may be limited to only the preferred alternative.

A description of field reconnaissance activities conducted in support of the Macro-Corridor Study should be documented in the study, along with the results.

4.11 Legal and Permitting Issues

Utilities will be required to obtain approvals from a variety of federal and state agencies prior to constructing the proposal. During development of the MCS, permitting and regulatory requirements should be reviewed to identify jurisdictional authority at the federal and state level. A preliminary list of regulatory requirements, including agencies with permitting or approval authority and the necessary permits/approvals should be included in the study.

5.0 IMPORTANT CONSIDERATIONS

Important considerations learned by the Agency from the review and development of past macro-corridors include:

- The macro-corridor selection process needs to be transparent (clearly explained and open to participation by all interested parties).
- Provide a clear explanation why routes/areas are added or eliminated from consideration.
- Exclusion areas should be based on law/regulation and not regional/local pressure or desirability.
- The Macro-Corridor Study must include a constraint analysis with values clearly provided.
- The determination of values in a constraints analysis relating to engineering and right-of-way requirements should involve appropriate utility representatives.
- Use of weighting in the selection process must be accompanied by stakeholder input.
- A constraints analysis, must include regionally specific issues.

A quality, readable document enhances the entire siting process and the subsequent NEPA process it supports. Decision-makers can better understand the identification, evaluation, and comparison of alternatives when the siting process and resulting analysis is presented with clear, accurate, and complete information.

Documents should be written to inform the public using precise and concise plain language. Provide sufficient rationale to support conclusions and define technical terms that may be unfamiliar to the public/stakeholders. Use of a glossary is helpful if many specialized terms are used.

Graphics and Data Treatment

Information, particularly when comparing macro-corridors, should be presented in comparative form to help define the issues and provide a clear basis for decision making. Use of easy-to-follow tables and figures/maps/graphics, where appropriate, will help summarize data, show comparisons and correlations, enhance understanding, and facilitate the reader’s access to the information. Technical terms should be clearly defined. The study must contain enough information to allow Agency staff, decision-makers, and the public to evaluate the differences among alternatives. Additional suggestions include:

- Highlight key data and findings;
- Include a table of alternative corridor characteristics. The table should concisely summarize the alternatives by delineating their key characteristics. Specifically,

o The study should contain at least one comparative table which illustrates the extent to which the alternative corridors meet the suitability criteria. Depending on the complexity of the table, it may be necessary to present environmental concerns and engineering/economic concerns in separate tables. When there are several recommended alternatives, a table comparing the main differences between the recommended alternative sites is advisable. Presenting alternatives in the same order in all tables allows easy comparison of corridors.

o If the screening process consists of a series of evaluations to narrow the set of reasonable alternatives, a progression of tables can be very helpful in summarizing the evaluation process.

o Note that information presented in tables does have certain limitations with respect to accuracy and completeness. Subtle differences can be notated on the tables and explained in detail in the text.

- Use maps, drawings, aerial imagery, and photography to depict all features that are needed to understand the project's routing options and impacts. Use of visual imagery (e.g., GIS mapping results, satellite and aerial imagery) and photographs (e.g., from site reconnaissance along specific corridors) are particularly effective in a Macro-Corridor Study to show steps in the process and the outcome.
- Present alternatives objectively. An objective presentation of alternatives advances the credibility of the applicant and the proposal.

Applicants should take special care to ensure that the factors compared reflect the environmental and engineering considerations that are likely to be significant. The criteria included in the table will vary with each project, and additions and deletions may be required to accurately portray potential effects. Refer to previous sections in this exhibit on the identification of constraints for other potential constraints to include. Whenever possible and meaningful, constraints should be quantified by defining the criteria in terms of the number of resources affected (e.g., number of residences within the corridor, number of stream crossings) or in terms of the length or area of land involved (e.g., miles of important farmland crossed).

6.0 PUBLIC INVOLVEMENT PROGRAM

Public participation requirements are found throughout the CEQ's regulations for implementing NEPA (40 CFR Parts 1500-1508) and RD's NEPA Implementing Procedures (Part 1970). Both sets of regulations describe specific requirements for preparing EAs and EISs and state broad goals for public participation in the NEPA process. Public involvement is also a critical aspect of the National Historic Preservation Act (NHPA) Section 106 process (implementing regulations at 36 CFR Part 800),

and RD's NHPA implementing regulations (7 CFR Part 1901) which both require consultation with appropriate State Historic Preservation Officers (SHPOs) and Tribal Historic Preservation Officers (THPOs), and development of a plan to involve the public in assessing the effects of its undertakings on historic and cultural properties and to resolve any adverse effects on such properties (e.g., avoidance and mitigation). The type of public involvement will depend upon various factors including, but not limited to, the nature and complexity of the undertaking, the potential impact, the historic property and the likely interest of the public in historic preservation issues.

Consultation with agencies and in accordance with NEPA and the NHPA Section 106 requirements, in addition to public interaction beginning early in the siting process, provides the opportunity to balance the interests of agencies, affected landowners, and other stakeholders in an effort to minimize potential impacts and meet project objectives.

Public involvement is an important element in the route selection process. Obtaining public input early in this process provides an effective means of sharing important information, minimizing impacts to landowners and land use, and obtaining necessary project approvals. Such input should be sought from a range of stakeholders including federal, state, local agencies, tribes, landowners, etc., as well as any cooperating agencies that have been invited to participate.

Various public participation tools and techniques are available to provide relevant information to the relevant stakeholders and receive input on corridor development at each step in the process. These tools include but are not limited to: websites (project description, stakeholder notification, news releases), voluntary public meetings and corridor workshops or open houses, as well as required public meetings/hearings. <u>It is important that all federal, state, and local agency interaction/correspondence and public meetings be documented.</u>

7.1 Identification of Stakeholders

The first step to involve the public is to identify the stakeholders (people and organizations) who may be affected by, or have some other interest in, the project. Stakeholder involvement can help ensure valuable input and transparency in the process and minimize future opposition in final selection of the optimum route. Key stakeholders may include:

- Federal, state, and local agencies that would be issuing necessary permits or approvals in accordance with environmental regulations (e.g., U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, State Historic Preservation Office).

- State regulatory agencies, clearinghouses, and the PUCs.
- Cooperating federal agency, for those corridors that may impact federal land; these could include, but are not limited to, the Federal Energy Regulatory Commission, U.S. Department of Energy, U.S. Department of Interior.
- Indian Tribes as required by National Historic Preservation Act Section 106 and government to government consultation requirements.
- Department of Defense military installations
- Other utilities
- Transportation Authorities (rail, highway, airport)
- Landowners
- Local Jurisdictions/Communities - including municipal and county representatives (e.g., Chamber of Commerce) from each host county or town, as well as neighborhood/homeowners associations/residents from each development, that the project may cross.
- Environmental groups, including national, state, and local environmental groups and public interest groups that are interested in the potential environmental impacts of the project, whether they are directly affected or not.

Note that the above list is a list of external stakeholders. Internal stakeholders are members of an applicant’s internal siting team, including engineers, environmental specialists, real estate (land acquisition) specialists, etc.

Appendix 3 includes additional reference and contact information relating to external stakeholders.

7.2 Stakeholder Input in Weighting

If weighting is utilized in the macro-corridor development process, stakeholders should be actively involved in the weight assignment process. This necessitates meetings to share important information, identify special concerns and siting constraints, check accuracy of the resulting suitability maps, support route refinement, minimize impacts to landowners and land use, and participate in assigning suitability values and weights to criteria used to evaluate and compare alternative corridors.

The transmission siting process is often criticized for not considering the perspectives of the external stakeholders. Stakeholder participation in the assigning of weights to each criterion or data layer that is evaluated ensures that the stakeholders’ views are reflected in the consensus view of how important such variables are in the siting process. These weights and stakeholders are regionally specific and must be performed in the region of the macro-corridor siting.

The Agency requires that the use of weighting in the selection process must be accompanied by stakeholder input, and that such involvement must be documented in the study. It is also important that the weights be revisited and updated, if needed, for new projects to take into account possible changes in priorities.

SUGGESTED MACRO-CORRIDOR STUDY CONTENT AND FORMAT/OUTLINE.

The following items should accompany or be part of the Macro-Corridor Study:

- Map of study area
- Maps of potentially unacceptable and undesirable areas within the study area's geographic boundaries
- List of all siting criteria used
- List of preparers and their discipline
- List of all Federal, state, and local agencies contacted and any meetings held
- List of references
- Summary of reference information
- List of maps and recommended alternative corridors
- Description of the methodology used for arriving at the macro-corridors
- Set of USGS 7-1/2' topographic quadrangle maps for the recommended macro-corridors.

The Agency also requires a summary, description of the cooperative and any other project participants, description of the study area, evaluation, and summary of the results. All transmission corridors considered should be identified, including those later dismissed from further consideration, along with the reasons for recommending or rejecting certain transmission corridors. A suggested outline for the Macro-Corridor Study is provided below.

Executive Summary

1. Introduction

   - Basis for Study
   - Environmental Review Requirements
   - Environmental Review Process
   - Utility or Cooperative
   - Purpose and Need (briefly addressed with reference to Alternative Evaluation Study)
   - Required Permits and Approvals
   - Community Outreach and Public Involvement Process
   - Format and content of document

2. Technological Alternative(s) Under Evaluation

- Results of Alternative Evaluation Study (briefly addressed with reference to Alternative Evaluation Study)

3. Macro-Corridor Study Methodology

4. Study Area Definition/Determination

- Study Area Location and Characterization (this section will identify the study area location, include a general description of study area characteristics, and provide a listing of all resource areas to be considered/discussed in the document)

5. State Certificate of Need Corridors (if/where applicable)

- Development of Corridors
- Stakeholder Input
- Corridor Refinement

6. Macro-Corridor Development

- Regulatory Requirements
- Electrical System Planning Requirements
- Macro-Corridor Resource Review
- Opportunities and Constraints Identification/Suitability Analysis
- Stakeholder Input
- Potential Identification of Least Risk Macro-Corridors (including existing corridors)

7. Macro-Corridors Carried Forward for Consideration as Alternatives in the EIS

- Macro-Corridors Eliminated from Consideration
- Selection of Alternative Macro-Corridors
- Identification of Preferred Alternative (not necessary)

8. References

9. Appendices [placeholder for additional information, such as glossary, maps and other graphic material, weighting workshop results, public comments, etc., as appropriate to a given study.]

Figure D-1

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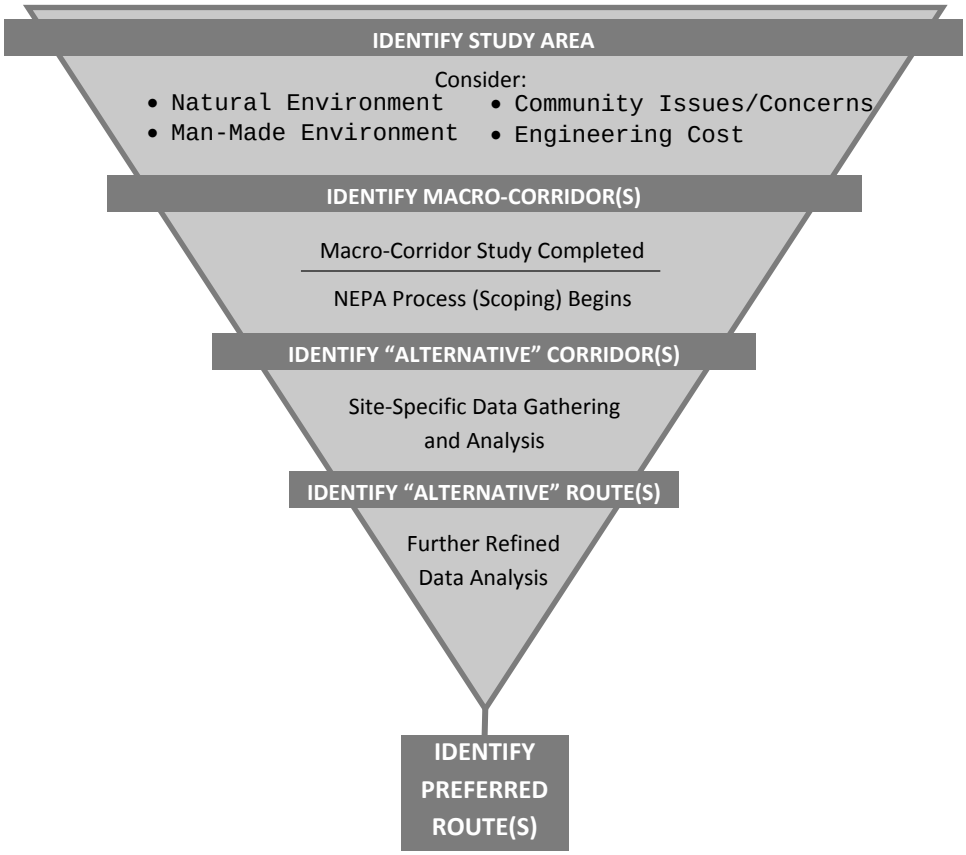

Appendix 1 Glossary of Terms

Alternative corridors: Linear areas within a macro-corridor that are deemed suitable for placement of the proposal when the natural environment, built (man-made) environment, and engineering requirements are considered. The width of the corridor must be large enough to allow latitude in specifically locating the transmission line but not so broad as to be meaningless.

Alternative: A reasonable way to resolve the identified problem or satisfy the stated purpose and need (see also 40 C.F.R. §1502.14).

Connected Actions: Closely related actions that automatically trigger other actions, cannot proceed unless other actions are taken previously or simultaneously, or are interdependent parts of a larger action and depend on the larger action for justification (see also 40 C.F.R. §1508.25(a)(1)).

Constraints (unsuitable, incompatible, high risk, Avoidance Areas): Areas having one or more physical, environmental, institutional or statutory impediments to corridor designation. Areas that may be crossed by corridors only if necessary, and if reasonable mitigation or avoidance of significant impacts can be obtained. Areas where the proposed action conflicts with existing land use, development, or resources. These areas should be avoided when other reasonable alternatives exist. In addition to resource and land use constraints, engineering and economic constraints must be considered (e.g., topography, span limitations, railroads/highway/river crossings, access roads, etc.).

Cooperating agency: Federal, tribal, or state government agencies with jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal for Federal action. The cooperating agency typically has a secondary role or approval for the proposal (permit, review, etc.). Responsible for review and participation in the development of the EIS (see also 40 C.F.R. §1501.6 and 1508.5).

Cumulative effects or impacts: The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (see also 40 C.F.R. § 1508.7).

Exclusion areas: Areas that may not be crossed by corridors unless authorized by the appropriate official (for example, governor, agency head, etc.). Exclusion is based on law/regulation/impact and not on cost, regional or local pressure or desirability.

Federal Action: A proposed federal undertaking that includes most things that a federal agency could prohibit, regulate, or provide a portion of the financing for, thereby requiring a NEPA-compliant analysis be performed (see also 40 C.F.R. § 1508.18 and 7 CFR 1970.8 Actions Requiring Environmental Review).

Interdisciplinary: A team or process involving multiple disciplines. For example, an interdisciplinary siting team involved in a macro-corridor study would be comprised of representatives from engineering, environmental, land acquisition, community outreach/public relations, and other disciplines.

Lead federal agency: The agency or agencies preparing or having taken primary responsibility for preparing the NEPA document (see also 40 C.F.R. §1501.5 and 1508.16).

Least-Risk Corridors (Optimal Path)**:** A linear area identifying the path of greatest opportunity and least constraint within a macro-corridor and connecting a proposed action's end points. Spatial data can be categorized for each resource based on the opportunity or constraint, and a geographic information system (GIS) model can be applied to map the areas of opportunity and constraint (suitability layers) into a suitability map. GIS software such as ArcGIS uses least-risk path analysis algorithms included in the software to generate a composite suitability map, model paths within the macro-corridor and generate proposed paths of opportunity for alternative transmission corridors.

Macro-Corridor: Broad linear area of land within which alternative corridors can be located for further study and comparison. This area encompasses the end points of a proposed transmission corridor and is located within the larger study area. The macro-corridor may consist of one contiguous broad area within which many alternative corridors could be located or more than one broad linear area each providing an alternative corridor possibility (i.e., each macro-corridor could become a corridor alternative but much wider).

No action alternative: The alternative where current conditions and trends are projected into the future without the proposed action (40 CFR § 1502.14(d)).

Opportunities: Areas within which transmission line construction would be more compatible with the current land use, or have a reduced likelihood of additional impacts, resulting in more efficient line operation and management. Potential opportunities include but are not limited to existing transmission line/utility corridors, transportation rights-of-way, industrial areas, National Corridors, or along property boundaries.

Proposed Action: A description of the intended actions to be taken by the applicant/utility/project proponent to allow alternatives to be developed and its environmental impacts analyzed (see also 40 CFR § 1508.23).

Purpose and Need: A statement that briefly states the underlying purpose and need for the agency to respond to in proposing the alternatives, including the proposed action. The statement should provide the foundation for the scope of alternatives to be assessed, taking into account both the applicant's and the agency's objectives and goals, and ultimately providing a justification for the expenditure of public funds (see also 40 C.F.R. §1502.13).

Reasonable Alternative: An alternative that is deemed possible after considering the cost, engineering, and regulatory environment.

Route: A constructible right-of-way within an alternative corridor.

Route or Corridor Refinement Meetings: Additional public meetings (typically after scoping meetings) that allow additional public review and input on corridor options. The information gained from such meetings may be used for additional data collection and analyses to support further route refinement and alternative route analysis, and help select a preferred route as well as an alternative route(s) for analysis in the Agency NEPA document.

Scoping: The early and open process for identifying interested members of the public, agencies with relevant expertise, cooperating agencies, necessary permits and compliance requirements, impacts, issues, and alternatives that will be addressed in a NEPA document. It requires involvement of Agency staff, members of the public, and other agencies in focusing the scope of the document. The purpose of scoping is to identify significant issues to be analyzed in depth, and eliminate those from detailed study determined not to be significant (see also 40 C.F.R. § 1501.7 and § 1508.27).

Siting: The interdisciplinary process of determining the location for the proposed action. Siting is a continual process of refinement from study area to macro-corridor to corridor to route.

Stakeholders: Federal, state, local agencies, tribes, landowners, general public, etc. with an interest in the proposed action.

Study area: A geographic area to be assessed for siting the proposed action, within which the macro-corridor is sited; may be a group of states, a state, a group of counties within a state or adjacent states, etc. The size of the study area should be sufficient to allow evaluation of areas with differing environmental, engineering and regulatory constraints. The study area should be small enough to encompass only feasible alternatives (engineering and cost considerations to meet the purpose and need), but large enough to include an adequate number of alternative corridors. The boundaries allow for the development of all feasible corridors, define the area necessary to account for potential impacts, and focus the study efforts to an area compatible with that used for the overall environmental analysis.

Suitability (compatibility)**:** The appropriateness of the proposed action to an area of land. Suitability can be determined by environmental, engineering, and economic analysis.

Suitability values (ratings/model criteria): A resource is identified and rated with a numeric suitability value that characterizes the level of constraint or opportunity that is appropriate for the resource in relation to the proposed action. The rating system is designed to protect the most sensitive parts of the study area by identifying areas with the greatest potential for negative impacts, while highlighting areas best suited for construction of the proposed action. Use of a rating (or suitability) scale provides a means of quantifying and comparing impacts of one corridor over another. RUS would accept both quantitative and qualitative methods for assigning suitability values as long as the methods for defining terms are clearly defined and transparently described.

Weighting: The relative importance of suitability values (resources) in relation to potential effects of the proposed action. The Agency requires stakeholder input into the weight assignment process. This input necessitates meetings with stakeholders to share important information, identify special concerns and siting constraints, as well as participation in assigning weights to criteria used to evaluate and compare alternative corridors. Stakeholders and weights are regionally specific and must be identified in the region of the macro-corridor siting. The weighting process should be designed by a multi-disciplinary committee including industry representatives, subject matter experts (environmental and engineering) and other key stakeholders.

Appendix 2: GIS and Transmission Related Resources

1.0 GIS Resources

One of the most widely used GIS platforms is ESRI's (Environmental Systems Research Institute) ArcGIS, a system that allows companies to easily author data, maps, globes and models on the desktop and serve them out for use on desktop, in a browser or in the field depending on the need. ArcGIS utilizes a database view (geodatabase data storage structure) where the data are stored in tables, easily accessed and able to be managed and manipulated to fit the terms of whatever work is being conducted.

Useful ESRI website links include:

ESRI GIS Electric

http://www.esri.com/industries/electric/index.html

ESRI Solutions for Power Generation and Transmission Services

http://www.esri.com/library/brochures/pdfs/gis-sols-for-power-generation.pdf

ESRI products include: ArcGIS, Desktop GIS (ArcGIS Desktop products include ArcInfo, ArcEditor, ArcView, Extensions (e.g., 3D Analyst Extension to use ArcScene or ArcGlobe tools for visualization simulation), Server GIS, Online GIS, Mobile GIS, and Developer Tools (ArcGIS web mapping); free viewing includes ArcGIS Explorer Desktop and ArcReader (for desktop), and ArcGIS Explorer Online and ArcGIS.com Map Viewer for use on the web [http://www.esri.com/products/index.html]

Other useful links to GIS applications include:

Map Analysis: Procedures and Applications in GIS Modeling. 2004. Online publication, Spatial Information Systems, Inc. Accessed at:

http://www.innovativegis.com/basis/MapAnalysis/Default.htm [Joseph K. Berry. 2004]

GeoCommunity GIS Viewing Tools: http://spatialnews.geocomm.com/features/viewers2002/

MapWindow: http://www.mapwindow.org/pages/overview.php
MapWindow is an open source "Programmable Geographic Information System" that supports manipulation, analysis, and viewing of geospatial data and associated attribute data in several

standard GIS data formats. MapWindow is a mapping tool, a GIS modeling system, and a GIS application programming interface (API) all in one convenient redistributable open source form.

Finally, examples of ways to share GIS data with broader audiences, including stakeholders, are identified below.

- Adobe Connect: example of internet webcast technology – effective means of sharing GIS technology with participants in various locations.
- ArcReader Project: ESRI ArcGIS publisher extension allows for export of GIS project to interactive map with similar, but more limited interface, than commercial desktop software. Users download and install the free ArcReader software from ESRI to view the map.
- GeoPDF files: Map2PDF is a second party ArcGIS extension available from TerraGo Technologies. It produces Adobe PDF files with extra enhancements that provide basic GIS function such as zooming, panning, turning layers on and off, and querying features. The files are viewed with Adobe Reader software with a free TerraGo extension.
- Interactive GIS Website: Examples include Google Maps API (develop web application that displays selected GIS information over standard Google Map display). ArcGIS Server is an ESRI product which allows a standardized map viewer similar to the desktop project to be rapidly published or, with programming, custom tools and capabilities can be added.
- Downloadable data: for stakeholders who have their own GIS systems and databases, provide data in non-proprietary format such as shape files, so that more applications can read it. Metadata should be produced for any GIS data being distributed.
- Keyhole Markup Language (kml): The kml format (or kmz for larger or more complex information) can also be used for data distribution. GIS layers can be easily viewed in Google Earth by exporting to kml format, including viewing in 3D.

2.0 Examples of Software Applications for transmission line siting

The following are examples of software applications for transmission line siting built on ESRI's ArcGIS platform.

- Public Service of New Mexico (PNM) has vast data sources that it draws on for its transmission siting projects. These include USGS topographic (TOPO) maps, Digital

Orthophoto Quarterly Quads (DOQQ), high-resolution photography, satellite data, digital elevation models, hillshades and georeferenced scans. Combining these image layers enable PNM to assess land contours and model various corridor scenarios. PNM is creating GIS models for engineers to create a "first guess" route for transmission line siting which considers a host of criteria. Criteria for guiding the line recommendation include data layers for federal land, open areas, water, current utility corridors, new utility lines near existing lines and terrain. The model minimizes the footprint the transmission corridor makes on the land and values cultural consideration such as federally protected lands and Native American pueblos. Uses ArcGIS Spatial Analyst

- Bonneville Power Administration (BPA) uses web-accessible GIS applications to manage a database that contains data on more than 800,000 transmission towers. BPA developers designed an internet tool for viewing its geographic transmission data (TView2, built using ESRI's internet mapping software ArcIMS). The same data used for monitoring the transmission system can also be applied to best site analysis for building the system. BPA created the Transmission Business Line tool (TBL) which interacts with GIS for a variety of uses including siting transmission lines and facilities.
- The widely used EPRI-GTC Siting Methodology designed by EPRI is being used by GTC, a not-for-profit cooperative. It is an extension to ArcGIS designed by Photo Science called Corridor Analyst 9. This software supports each step of the siting methodology's rigorous procedures for documenting and consistently applying planning assumptions, evaluation criteria and decisions. GIS successfully integrates with the method for analyzing the factors of suitability surfaces for natural, engineering and man-made conditions. It is used to map all geographic features within an area of interest and offers visualization of corridor options. The selection process uses ArcGIS to identify macro-corridors, define the project area boundaries, identify the alternative corridors within the macro-corridors, and select a preferred route. The software maps all geographic features in a study area and assigns numerical suitability values to all features. Features such as open land, agriculture and wetlands are ranked 1 (most suitable) to 9 (least suitable). Using the cell values, a computer algorithm calculates optimal paths for three types of suitability surfaces: locating with existing transmission lines, locating with existing rights of way, and crossing less developed areas. The optimal paths identified are called macro corridors. The model creates reports that include maps, applied criteria descriptions and cost implications. Ranks and weights are calculated for each alternative, and the siting team ranks each alternative route.
- Source: Barbara Shields, ESRI, as found on:
  http://www.elp.com/index/display/article-display/325005/articles/utility-automation-engineering-td/volume-13/issue-4/features/using-gis-for-efficient-transmission-line-siting.html

- Tetra Tech created a multi-media web based interface for 2-D, 3-D, and animated GIS maps and data. Two dimensional GIS based maps, data and aerial photography can be viewed through a user friendly, intuitive interface to allow illustration of various resources e.g., T&E species, vegetation, population, land use, viewsheds, etc.). To improve visualization of the transmission line alternatives, 3-D animated "fly throughs" of the landscape elements were prepared. http://rd.tetratech.com/software/projects/tuscon_electric_power_mmgis.asp

3.0 Environmental Resource and Land Use Data

Sources of U.S. Government and other GIS data are rapidly developing and improving. Internet sites such as Geodata.gov provide comprehensive indexes of, and links to, data distribution sites. Clearinghouses such as Geocommunicator.gov, Seamless.usgs.gov, Datagateway.nrcs.usda.gov and NationalAtlas.gov provide access to many popular layers form different agencies, while other Web sites concentrate on one agency or theme. Most states, and many counties and municipalities, provide GIS data clearinghouses for their jurisdictions and typically provide larger scale data than federal data sources.

- **Geodata.gov, Geospatial One Stop**
- http://geodata.gov
- Geodata.gov is intended to be the first place to go for locating U.S. GIS data and related products. It provides search capabilities and links to all major U.S. government GIS data sources, many of which are included below.

- **ESRI Data and Maps**
- http://www.esri.com/data/data-maps/index.html
- Distributed on a set of DVDs with commercial ESRI products. This source includes a diverse and high quality set of ready to use GIS layers.

- **Bureau of Land Management, National Integrated Lands System**
- http://www.geocommunicator.gov
- Provides GIS map services which stream GIS data via the Internet to ESRI GIS software applications. Includes many GIS layers, such as Federal Surface Management Agency, Public Land Survey System, base map layers, mining and minerals, and many energy-related layers. This source also provides interactive maps for users lacking ESRI GIS software.

- **USDA, Geospatial Data Gateway**
- http://datagateway.nrcs.usda.gov
- Provides automated, location-specific GIS data distribution system for many natural resource layers, including hydrologic units, watershed boundaries, topographic map imagery, quadrangle map indices, elevation data, land use/land cover data, soils and climate data.

- **U.S. Geological Survey, National Map Seamless Server**
- http://seamless.usgs.gov
- Clearinghouse focused primarily on topographic information, which includes orthoimagery (aerial photographs and satellite imagery), scanned topographic maps, elevation, geographic names, hydrography, boundaries, transportation, structures and land cover.

- **U.S. National Atlas, GIS Map Layers**
- http://www.nationalatlas.gov/atlasftp-na.html
- Provides hundreds of national map layers in GIS format; useful but may not be the most detailed or current data available for a particular theme.

- **National States' Geographic Information Council, GIS Inventory**
- http://gisinventory.net
- Data clearinghouse providing primarily standardized parcel data from county and other local sources.

- **U.S. Geological Survey, National Elevation Dataset**
- http://gisdata.usgs.gov
- Provides best available elevation data across the U.S., including high resolution. Light Detection and Ranging (LIDAR) data are available in some locations.

- **U.S. Geological Survey, Center for Biological Informatics**
- http://biology.usgs.gov/cbi
- Data clearinghouse providing links to biological resources data.

- **U.S. Geological Survey, Geologic Hazards**
- http://geohazards.cr.usgs.gov
- USGS geologic hazards information site with GIS data for some hazard types.

- **National Park Service, Data and Information Clearinghouse**
- http://www.nps.gov/gis/data_info
- Provides wide variety of NPS GIS data.

- **National Park Service, National Archaeological Database**
- http://www.cast.uark.edu/other/nps/nadb
- Searchable bibliographic inventory of over 350,000 reports on archaeological investigations and planning, mostly of limited circulation, representing a large portion of the primary information available on archaeological sites in the U.S.

- **U.S. Fish and Wildlife Service, National Wetlands Inventory**
- http://www.fws.gov/wetlands/data
- Provides wetland GIS data including classification nomenclature, which describes the habitat.

- **U.S. Census Bureau, TIGER Line Shapefiles**
- http://www.census.gov/geo/www/tiger
- Provides jurisdictional and census-related boundaries with geographic entity codes that can be linked to U.S. Census Bureau demographic data.

- **U.S. Census Bureau, Demographic Data**
- http://factfinder.census.gov
- Provides U.S. Census Bureau population, housing, economic data that can be linked to jurisdictional and census-related boundaries.

- **U.S. Department of Agriculture, Natural Resource Conservation Service**
- http://soildatamart.nrcs.usda.gov
- Provides tabular and spatial data on soils.

- **GeoCommunity, GIS Data Depot**
- http://data.geocomm.com
- Commercial Web site providing free and low-cost access to many U.S. Government GIS data layers, including scanned topographic maps, digital elevation models, orthophotography, Federal Emergency Management Agency floodplain maps, Defense Mapping Agency vector product format layers, U.S. FWS National Wetland Inventory data, and others. Some layers have value added in that they can be obtained in commonly used GIS formats, while others are more accessible from resource agencies.

- **Federal Emergency Management Agency Map Service Center**
- http://www.msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1
- Provides access to digital flood insurance rate map databases.

4.0 Other Transmission Planning and Siting Related Resources

Transmission System Planning:

Bonneville Power Administration Transmission System Planning

http://www.transmission.bpa.gov/system_planning Information about transmission system planning studies.

Transmission Siting

Electric Power Research Institute (EPRI) - Georgia Transmission Corporation (GTC) *Overhead Electric Transmission Line Siting Methodology*. EPRI, Palo Alto, CA; Georgia Transmission Corporation, Tucker, GA, 2006. 1013080

EPRI - *Kentucky Transmission Line Siting Methodology.* EPRI, Palo Alto, CA, California; Kentucky Power Cooperative, Winchester, KY; and E.ON U.S., Louisville, KY, 2007. 1016198

Both reports can be downloaded at no charge from EPRI website (www.epri.com) by conducting a search for EPRI publications, by research area and key word ("siting" or "transmission line siting methodology"). Additional information also available at: www.epri-gtc-siting.com.

*http://my.epri.com/portal/server.pt?space [search on "EPRI publications" in box in upper right hand corner of screen and then search on phrase, "electric transmission line siting methodology"].

Tribal Energy Siting Guidance Manual
http://teeic.anl.gov/documents/docs/Tribal_Energy_Siting_Guidance_Manual.pdf

Edison Electric Institute

State Generation and Transmission Siting Directory: Agencies, Contacts, and Regulations (2004). This resource contains regulatory contacts and summary information for siting

of generation and transmission facilities in 50 states. While it contains no siting guidance, it identifies which states have specific transmission siting requirements, the basis for the requirement (e.g., voltage level, line length or other), and contact information. It may be a useful resource to reference in the Macro-Corridor exhibit. (http://www.eei.org/ourissues/ElectricityTransmission/Documents/State_Generation_Transmission_Siting_Directory.pdf).

Transmission Projects: Supporting Renewable Resources (February 2009). This special report illustrates the recent and ongoing efforts of EEI members to develop transmission to support renewable resource interaction. The report is intended to give a broad perspective on the variety of transmission projects being built to support renewable resource integration.
http://www.eei.org/ourissues/ElectricityTransmission/Pages/TransmissionProjectsSupportingRenewableResources.aspx

Transmission Projects at a Glance (updated February 2010). This report highlights major EEI member company transmission projects either recently completed, currently under construction, or in various stages of the proposal/planning/siting process. Three broad categories of transmission investment are covered by projects in the 2010 report: transmission line and non-transmission line transmission system investments, transmission supporting the integration of renewable resources, and transmission related smart grid. This report appears to include some overlap with the one above relating to transmission supporting the integration with renewable resources.

http://www.eei.org/ourissues/ElectricityTransmission/Pages/TransmissionProjectsAt.aspx

Federal Energy Regulatory Commission (FERC)

Transmission Siting

http://www.ferc.gov/industries/electric/indus-act/siting.asp.

FERC Guidance for applicants relating to siting, construction and operation of natural gas pipelines (available at: http://www.ferc.gov/industries/gas/enviro/guidelines.asp), identified the following potential resources:

Office of Energy Projects *Guidelines for Reporting on Cultural Resource Investigations for Pipeline Projects* (December 2002)

Department of Energy, Office of Electricity Delivery and Energy Reliability (OE).

OE website has link to National Council on Electricity Policy: *Coordinating Interstate Electric Transmission Siting: An Introduction to the Debate*. (July 2008), available at: http://www.oe.energy.gov/DocumentsandMedia/Transmission_Siting_FINAL_41.pdf

West Wide Energy Corridor Programmatic EIS (DOE/EIS-0386, November 2008) evaluates potential impacts associated with the proposed action to designate corridors on federal land in 11 Western States (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming) for oil, gas and hydrogen pipelines and electricity transmission and distribution facilities. http://corridoreis.anl.gov/documents/fpeis/index.cfm

Appendix 3 GTC Methodology

The industry has developed computer-based models (e.g., using GIS) that systematically identify transmission routes that have the least impact on surrounding landscapes and result in more logical and defensible decisions. The method developed by EPRI-GTC is the best known of these systems.

The GTC methodology begins by identifying a large area of landscape containing corridors or land parcels that are most suitable based on set criteria for the construction of a proposed transmission line. Increasingly detailed information is added about each corridor as the method moves through successive phases and as more refined routes are identified. The process ends with the identification of specific routes. EPRI published the methodology in February 2006 as a national model for siting transmission lines. In May 2006, the methodology earned GTC the National Rural Electric Cooperative Association's 2006 Cooperative Innovators Award. It has been real-world tested on more than 200 miles of transmission line projects.

Benefits of the model include its ability to produce siting decisions that are consistent, objective and defensible, backed by a consistent rationale; to improve productivity and analytical capabilities; and to lower data acquisition costs. Other advantages that set it apart from other GIS-based routing processes are that it uses a collaborative process for the utility team and external stakeholders to assess and rank criteria for siting. Also unique to the EPRI-GTC approach is its use of algorithms to create alternative corridors on suitability maps for manmade, environmental and engineering features; a fourth corridor is made from a composite average of the other three.

The documented methodology (***EPRI GTC Overhead Electric Transmission Line Siting Methodology***, February 2006**)** describes a standardized process utilities could use to improve the way transmission line routes are evaluated and selected; it discusses right-of-way environmental issues in siting development and management. The process incorporates GIS technology, statistical evaluation methods, and stakeholder collaboration to produce a new siting methodology. The project team performed landscape analysis at different scales, from large regional areas called macro-corridors, to alternative corridors, to constructible alternative routes, to a preferred route. Analysis was performed at each phase, using off-the-shelf geographical databases and other datasets. A new GIS siting model was developed and used to manage data, produce macro and alternative corridors, generate statistics on alternative routes, and create graphic depictions. It also claims to lower data acquisition costs.

The methodology uses GIS software called Corridor Analyst©. This software maps all geographic features, assigns numerical suitability values to features, assigns engineering constraints, generates corridor alternatives, automatically generates alternative corridor reports and creates reports of criteria used and values assigned.

GIS software views each data set as a separate map, or data layer. There is a map showing the beginning and ending locations of the proposed transmission line, a map detailing land use based on satellite imagery, a digital elevation map, a road map, a map showing existing transmission lines, and a map displaying all avoidance areas. These data layers can be thought of as a series of maps stacked one on top of the other, but because each is geographically referenced to a real place on to a real place on the earth's surface, GIS software can analyze spatial relationships between them. For example, the software has the ability to determine that the end point of the proposed transmission line is located in an agricultural field (land-use data layer) that has a 5 percent slope (Digital Elevation Model data layer), and that while there are no existing transmission lines in the vicinity, there is a secondary road nearby and that an archaeological site eligible for the National Register for Historic Places is located less than 60 meters away.

The EPRI-GTC method is a well-defined four step process that includes:

- Macro-Corridor generation, based on locations of suitability or opportunity areas;
- Alternative Corridor generation, based on collection of more detailed data;
- Development of suitability maps that avoid built, environmental, and engineering constraints
- Alternative route generation, based on collection of more detailed data, route analysis and evaluation

- Selection of preferred route, based on consideration of additional metrics including cost, assigning weights to special concerns using expert judgment, and ranking of alternatives.

Other entities are starting to adopt the EPRI-GTC standardized methodology, including the state of Kentucky, although with some modification to reflect state siting and permitting requirements. For example, it has been applied to projects in Kentucky by East Kentucky Power Cooperative. A key benefit of this methodology is the ability to quantitatively consider stakeholder input in the route selection process. Several companies sponsored a project to calibrate the siting methodology to local Kentucky concerns. This involved assembling a group of Kentucky stakeholders representing a wide range of interests at a February 2006 workshop held in Lexington, Kentucky. Stakeholders provided input to the relative suitability and importance of the criteria used to develop alternative corridors for new transmission lines.

Kentucky Transmission Line Siting Methodology. (EPRI, December 2007) describes the workshop results and subsequent (successful) testing of the methodology; the report was prepared by Photo Science, Inc. (Lexington, KY).

Finally, a transmission siting methodology developed for Tribal Planners was also reviewed and summarized (*Energy Transport Corridor Siting for Tribal Planners, Guidance Manual*, January 2010). The objective of the manual is to provide tribes with the guidance and information needed for siting energy transport facilities on tribal lands. The process recommended is applicable for siting energy corridors as well as for the approval of individual rights-of-way. The manual was developed by Argonne National Laboratory on behalf of the US Department of Interior's Office of Indian Energy and Economic Development (IEED) and Bureau of Indian Affairs (BIA) to provide assistance to tribes in energy system transmission planning. In addition to outlining a siting methodology, it also contains useful information relating to technological applications that facilitate and enhance the siting process (e.g., GIS); general impacts from siting transmission lines and pipelines (and mitigation), and available resources relevant to siting transmission corridors and rights-of-way. Much of the resource information provided in Attachment 1 to this exhibit was pulled from Appendix B of the Tribal manual. Note that the manual does not require that a specific GIS model be used in transmission siting. However, it does provide examples using ESRI's Arc/Info 9.3.1 with the Spatial Analyst Extension (ESRI 2009).

The tribal guidance also includes four steps that are mostly consistent with the EPRI-GTC model, although there are some variations in terminology and what activities are conducted at the various phases. The steps include: (1) locate unrestricted energy transport corridor (with no consideration to any issues or constraints; (2) revise location of corridor to avoid constraints (opportunities are also considered at this phase); (3) refine the preliminary corridor using location specific input and results of any environmental impact analysis; and (4) finalize the corridor (outside agencies and other external stakeholders are invited to review the results at this time and the location may be further refined in response to comments).

The Agency has been briefed in detail on the EPRI-GTC model and support, but do not require, its potential use/adaptation by applicants to RD Macro-Corridor Studies. However, the Agency also has identified two issues: (1) stakeholder input to weighting is conducted on a regional basis; and (2) too much emphasis appears to be placed on the collection of cultural resource data [or is it on weight given to cultural resource constraints?]. Regarding the GIS model used in the ERPI-GTC methodology, its use is also not a requirement. While applicants are encouraged to use GIS in the transmission siting process, selection of a particular siting model is at the discretion of the applicant, based on what is best suited to its particular needs. Additional examples of GIS applications are provided in Appendix 2.

Cumulative Impacts in NEPA Documents

"Evidence is increasing that the most devastating environmental effects may result not from the direct effects of a particular action, but from the combination of individually minor effects of multiple actions over time."
-- President's Council on Environmental Quality, *Considering Cumulative Environmental Effects under the National Environmental Policy Act* (January 1997)

Although the National Environmental Policy Act (NEPA) itself does not refer to cumulative impacts, the Council on Environmental Quality (CEQ) regulations implementing NEPA stress the importance of identifying, analyzing, and considering cumulative impacts in documents prepared pursuant to the statute. In addition, courts have enforced these requirements and have invalidated agency NEPA documents and subsequent decisions that did not adequately address the cumulative impacts of the proposed action. Because of the importance of this issue in the NEPA process, and in protecting the environment, there are several guidance documents now available relating to cumulative impact analysis, also called cumulative effects analysis.

In particular, to improve how cumulative impacts are assessed in environmental impact analyses, CEQ developed a handbook entitled "Considering Cumulative Effects under the National Environmental Policy Act" (1997). Although somewhat dated, CEQ's handbook still offers the most comprehensive and useful information on practical methods for addressing cumulative effects in NEPA documents. Consequently, the concepts presented in the handbook serve as the foundation for this guidance. Reviewers are urged to use this guidance and the CEQ handbook simultaneously, and to refer to the 2005 guidance for additional details on how to identify and consider past actions.

Considering Cumulative Effects under the National Environmental Policy Act, Council on Environmental Quality (January 1997) (URL: *https://ceq.doe.gov/publications/cumulative_effects.html*)

Guidance on the Consideration of Past Actions in Cumulative Effects Analysis. Council on Environmental Quality (June 2005) (URL: https://ceq.doe.gov/nepa/regs/Guidance_on_CE.pdf)

A. Regulatory Requirements

NEPA requires that federal agencies examine the environmental impacts of their proposal in "detailed statements" that have come to be known as environmental impact statements (EIS). *See* NEPA, Section 102(2) (C), 42 USC 4332(2) (C). The CEQ regulations implementing the procedural provisions of NEPA state that the scope of an EIS "consists of the range of actions, alternatives, and impacts to be considered" in the document (40 CFR 1508.25).

Actions that must be considered in the same EIS are those that are connected, cumulative, or similar:

- *Connected actions* are those that automatically trigger other actions, cannot or will not proceed unless other actions are taken, or are interdependent parts of a larger action.
- *Cumulative actions* are actions, which when viewed with other proposed actions, have cumulatively significant impacts.
- *Similar actions* are those, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together.

Impacts (or effects) that must be considered in an EIS are those that are direct, indirect, and cumulative:

- *Direct impacts* are caused by the proposed action or alternatives and occur at the same time and place (40 CFR 1508.8).
- *Indirect impacts* are caused by the proposed action or alternatives and are later in time or farther removed in distance, but are still reasonably foreseeable (40 CFR 1508.8).
- *Cumulative impacts* result from the incremental impact of the proposed action or alternatives when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7).

It is important to note that the *cumulative actions* that must be considered together in the same EIS are "proposals," as that term is defined in the CEQ regulations (see 40 CFR 1508.23), pending before the same agency at the same time. However, the *cumulative impacts* that must be addressed in an EIS are those that result from the proposed action or alternatives and those from past, present, and reasonably foreseeable future actions. Such actions are not necessarily "proposals," need not be pending before the agency considering the proposed action, and need not even be federal actions.

Further, the determination of whether a proposal may "significantly" affect the environment requires a consideration of "[w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts" (40 CFR 1508.27(b) (7)). Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts. *Id*. Thus, an environmental assessment, prepared to determine whether the impacts of a proposed action could be significant, must include an analysis of cumulative impacts.

Level of Detail

Cumulative impacts should be addressed in both EAs and EISs, although at differing levels of detail. In general, an EIS will have a more in-depth cumulative impact analysis than an EA because a project for which an EIS is prepared has a greater potential to cause significant impacts. However, EAs must also include a cumulative impact analysis in order for the Agency to determine whether the potential impacts may be significant (thus requiring the preparation of an EIS). Courts have held that an agency cannot reasonably determine whether the potential impacts of an action will be significant in the absence of a cumulative impact analysis.

Categorical exclusions are, by definition, minor projects without significant environmental impacts and as such will not require a cumulative impacts analysis. However, in the event of unusual or extraordinary circumstances, a proposed action that is normally categorically excluded may require the preparation of an EA (or an EIS) for which a cumulative impacts analysis should be prepared.

Part 1970 describes the types of Agency actions that require the preparation of an EIS (see 7 CFR § 1970.151(b)). Thus, a cumulative impacts analysis must be prepared for these types of actions:

- Siting, construction (or expansion), and decommissioning of major treatment, storage, and disposal facilities for hazardous wastes as designated in 40 CFR part 261;
- Proposals that would change or convert the land use of an area greater than 640 contiguous acres;
- New electric generating facilities, other than gas-fired prime movers (gas-fired turbines and gas engines), of more than 50 average MW output, and all new associated electric transmission facilities; and
- New mining operations when the applicant has effective control (i.e., applicant’s dedicated mine or purchase of a substantial portion of the mining equipment).

This list is not exclusive, however. Even if an EIS is not required, an EA must be prepared for any Agency action that is not categorically excluded (7 CFR §§ 1970.53, 1970.54, and 1970.55).

The following types of cumulative impacts may need to be analyzed, depending on what other activities are also occurring (or will occur) in the area, such as land clearing operations, or construction of facilities with air and/or water emissions:

- Acid rain and climate change from power plant emissions;
- Degradation of regional air quality;
- Increased stream sedimentation and soil erosion from increased land clearing;
- Change in sociocultural resulting from ongoing local development, including new housing, office, or commercial construction;
- Cumulative residential and commercial development and highway construction associated sprawl of nearby urban areas;
- Habitat fragmentation from infrastructure construction or changes in land use;
- Habitat degradation from grazing, timber harvesting or changes in land use;
- Fragmentation of historic districts from new residential or commercial developments;
- Reduction of public water supply (including aquifer drawdown) from agricultural irrigation, domestic consumption and industrial usage;
- Loading large water bodies with discharges of sediment, thermal and toxic pollutants;
- Changes in hydrological regimes of major rivers and estuaries;
- Loss of natural habitats or historic character through residential, commercial, and industrial development;
- Disruption of migrating fish and wildlife populations;
- Loss of biological diversity; and
- Social, economic, or cultural effects on low-income or minority communities resulting from ongoing development.

There is no single formula for determining the appropriate scope and level of analysis for a cumulative impacts analysis. Ultimately, in all phases of the assessment, the practitioner must determine the method and extent of analysis based on the size and type of the project proposed, its location, its potential to impact environmental resources, and the current condition of any potentially affected resource. That is, the level of analysis should be commensurate with the magnitude of the environmental impacts of the project and the resources affected.

As a result, EISs - which generally have longer-lasting and more widespread effects and in potentially environmentally sensitive areas - include more in-depth analyses than EAs, especially those of limited scope.

With respect to EAs, which are prepared for proposals where the significance of environmental impacts is unknown, the degree to which resources may be affected will determine the extent of the cumulative impact analysis needed. For example, small-scale projects that have minimal impacts of short-duration would not likely contribute significantly to cumulative impacts. However, where direct and indirect impacts are found to be present, a full cumulative impacts study will be needed. If the project is large, long-lasting, complex and in (or affects) an environmentally sensitive area, the cumulative impact analysis should be closer to that which is done for an EIS.

For both EAs and EISs, however, if the proposed action and alternatives would have no direct or indirect effects on a resource, the cumulative effects on that resource do not have to be analyzed.

Case Law

Courts have invalidated EAs and EISs on the basis of inadequate cumulative impact analyses. The following are important points raised by the courts with respect to cumulative impact analysis in NEPA documents:

- Proposals which are functionally or economically related must be evaluated in the same environmental analysis so that the environmental consequences of the projects can be evaluated together.
- Only actual "proposals" as defined in CEQ regulations may be considered sufficiently related to require the preparation of one NEPA document. That is, only when a particular idea is sufficiently concrete to meet the CEQ definition of a "proposal" might the need for an EA or EIS be triggered. Those activities which might only be contemplated or made more likely will not be considered related actions, necessitating coverage in a comprehensive EIS.
- Cumulative impacts are *not* limited to those from actual proposals, but should include impacts from activities which are not yet proposals, are merely being contemplated, or are reasonably foreseeable future actions.
- A cumulative impact analysis must address the following:

- The area in which the effects of the proposed project will be felt;
- the impacts that are expected in that area from the proposed project;
- other past, present, and reasonably foreseeable actions that have or are expected to have impacts in the area;
- the impacts or expected impacts from these other actions; and
- the overall impact that can be expected if the individual impacts are allowed to accumulate.

- Agencies are not required to list or analyze the effects of individual past actions unless such information is necessary to describe the cumulative effect of all past actions combined.

- Agencies retain substantial discretion as to the extent of such inquiry (examining individual past actions) and the appropriate level of explanation. Generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.

B. Council on Environmental Quality Handbook

The preceding six elements are amplified and embellished in CEQ's handbook entitled *Considering Cumulative Effects Under the National Environmental Policy Act* (January 1997) (*https://ceq.doe.gov/publications/cumulative_effects.html*)) (note that the Preface to the Handbook states that it does not establish new requirements and is not formal CEQ guidance on the issue; the recommendations in the handbook are not intended to be legally binding). This handbook outlines principles of cumulative effects analysis, steps in performing such analyses, and methods and tools of cumulative effects analysis. Below is a synopsis of the handbook, presented in a manner to assist NEPA practitioners tasked with conducting a cumulative impact analysis in accordance with the CEQ regulations and applicable case law.

Principles of Cumulative Impact Analysis

The CEQ handbook views cumulative impact analysis as a vital tool in achieving the broad goals of NEPA as set out in Section 101 of the statute. These goals, in today's parlance, include promoting sustainable development, addressing global climate change, and improving biological diversity. To meet these goals, CEQ establishes principles of cumulative impact analysis. These can be summarized as follows:

1. Cumulative impacts are the total effect on a particular resource of all past, present, and reasonably foreseeable future actions, no matter who has taken the action.

- "Total effect" means direct and indirect impacts of the past, present, and reasonably foreseeable future actions
- "Resource" includes traditional environmental media such as air and water quality; ecosystems such as an airshed, viewshed, watershed, or habitat; and human communities defined as socio-cultural settings that affect the quality of life.

The actions to be considered include those taken or to be taken by any entity: federal, non-federal, or private.

2. Cumulative impacts can result from the accumulation of similar effects or the interaction of different effects.

- The accumulation of effects is generally linear, i.e., the impacts are in direct relation to the amount of activity.
- Interactive impacts can be "countervailing" where the net adverse effect is less than the sum of the individual effects or "synergistic" where the net adverse effect is greater than the sum of the individual effects.

3. A cumulative impacts analysis should focus on those resources that can be evaluated meaningfully and on cumulative impacts that are significant.

- In determining the significance of cumulative impacts on a resource, the analyst should focus on the capacity of the resource to accommodate additional effects or stresses.

Conducting a Cumulative Impact Analysis

The handbook divides the steps in conducting a cumulative impact analysis into three segments: scoping, describing the affected environment, and determining the environmental consequences.

<u>Scoping</u>

The analyst should use the scoping process to help identify (1) the resources that could be adversely affected by the proposed action, and (2) future actions that could also adversely affect those resources.

- Affected resources are rarely aligned with administrative or political boundaries. The identification of affected resources should use natural ecological boundaries or actual socio-cultural boundaries in order to adequately identify potential impacts.
- Although the CEQ handbook suggests identifying all past and present actions that affect a particular resource, in general, a complete description of the existing (affected) environment will incorporate the effects of past and present actions.
- Identifying "reasonably foreseeable future actions" requires forecasting, but should not involve speculation. Identification of such actions should be based on concrete evidence such as existing land use master plans, permit applications, and historical trends. However, reasonably foreseeable future actions are not limited to those which are funded or for which other NEPA analyses are being prepared.
- Affirmatively seeking information from the public; non-governmental organizations; other federal agencies; and state, local, and tribal governments will help the analyst identify future actions that could, along with the proposed action or alternatives, result in cumulatively significant adverse effects.
- In determining the scope of the analysis for the NEPA document, the analyst needs to address the appropriate geographic scope and time frame of the analysis. The geographic area and time frame will probably differ among resources. The indirect impacts of the proposed action or alternatives can last beyond the life of the activity itself [see spatial and temporal bounding text boxes below]; the indirect impacts that occur after an activity has ceased could result in cumulatively significant impacts when considered together with other future actions. At some point, however, the analysis will become speculative and not useful to the public or to decisionmakers.

Example of time period extending beyond life of project

An impact assessment of ground water withdrawals to cool power plant turbines should go beyond determining whether the capacity of the aquifer is adequate to provide water for the life of the power plant. The analysis should also consider the long-term effects of lowering the aquifer level. Should municipal drinking water and agricultural irrigation withdrawals increase in the future, the cumulative effect of the power plant withdrawals may lower aquifer levels to the point where, at predictable intervals in the future, droughts will eliminate all supply. The NEPA document may, therefore, have to consider time periods beyond the life of the power plant.

Example of cumulative effects analysis showing historical context

The project is in a rural area that is now developing into suburban land uses. Since 1990, approximately 1000 acres previously planted in corn and sorghum have been converted to residential and commercial uses. The project will contribute an additional seven acres of farmland lost with indirect impacts of 40 acres (business park planned).

Given the significantly expanded scope of a cumulative impacts analysis (with respect to geographic boundary, timeframe and other actions to be considered), it is critical that the focus of the analysis be narrowed down to important issues of national, regional, and local significance. This narrowing can occur only after thorough scoping. The purpose of scoping for cumulative effects is to determine (1) whether the resources, ecosystems and human communities of concern have already been affected by past or present activities; and (2) whether other agencies or the public have plans that may affect the resources in the future. This is best accomplished as an iterative process that goes beyond formal scoping meetings and consultations to include creative interactions with all the stakeholders.

Getting scoping right the first time is critical to ensuring that time and resources are not wasted on analyzing impacts that are irrelevant or inconsequential to decisions about the proposed action and alternatives (e.g., analyzing future actions that are too speculative, trying to exhaustively list and analyze all individual past actions, or analyzing cumulative effects on resources that would not be directly or indirectly impacted by the proposed action alone, etc.). Cumulative effects analysis should “count what counts”.

For example, simply because information about past actions may be available or obtained with reasonable effort does not mean that it is relevant and necessary to inform decision-making. CEQ does not require the consideration of the individual effects of all past actions to determine present effects of past actions. Based on scoping, agencies have discretion to determine whether, and to what extent, information about the specific nature, design, or present effects of a past action is useful for the agency's analysis of the effects of a proposal for agency action and its reasonable alternatives. Generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.

Early consideration of cumulative effects also may facilitate design of alternatives to avoid or minimize impacts. In addition, because cumulative actions can result from the activities of other agencies or persons, they may have already been analyzed by others and the impacts determined, which can be incorporated into the analysis.

Affected Environment

The description of the affected environment should characterize the current condition of all of the potentially affected resources as identified in the scoping process. As noted above, the affected area is not necessarily limited by administrative or political boundaries. In addition, the affected area will vary among resources. The analyst should characterize the current condition of each resource area in terms of regulatory thresholds and, if possible, in terms of their current ability to withstand additional impacts or stresses. In most circumstances, the baseline condition against which the impacts of the proposed action and alternatives are compared is the existing environment. Efforts by an agency to return an environmental resource to a pre-existing condition would generally be considered part of the proposed action itself.

Environmental Consequences

After identifying and characterizing the current condition of the resources that are potentially affected by the proposed action and alternatives, and identifying the future actions that could affect those same resources, the analyst must next analyze and describe the potential impacts of the proposed action and alternatives on the affected resources. Similarly, the analyst must analyze and describe the potential impacts of the identified future actions on those same resources. The analysis of the impact of future actions on the affected resources is conducted in the same manner as that used to conduct an analysis of the impacts of the proposed action and reasonable alternatives (e.g., determining pathways for effluents, assessing effects to listed species or their habitats).

Taking the impacts of the proposed action and alternatives together with the impacts of the future actions, and taking into account the condition of the existing environment, the analyst must then determine whether the cumulative impacts would accumulate linearly (additive) or would be interactive (synergistic). With this information, the analyst can then determine the significance of the cumulative impacts, using the definition of "significance" in the CEQ regulations (40 CFR 1508.27).

Note that, while the cumulative impacts of the proposed action and alternatives must be analyzed and described, in general, there is no requirement to analyze the cumulative impacts of the "no action" alternative.

First, the CEQ regulations can be read as requiring an analysis of the cumulative impacts of the proposed action and other *action* alternatives. *See* 40 CFR §§ 1502.14(d), 1508.7, 1508.25(c), and 1508.28(b) (1). In addition, it is not possible to consider the cumulative impacts of the no action alternative because, by definition, the no action alternative means the agency is not acting. Therefore, there is no "action" to which the impacts from other past, present, and reasonably foreseeable future actions can be added to derive cumulative impacts.

Analytical Approach

NEPA documents generally consider only a limited number of resources that may be potentially affected by cumulative impacts. To more fully encompass the principles of cumulative impact assessment, this approach should be expanded to include consideration of a broader array of resources, ecosystem components, and the human community that may be affected. In addition to considering the biological resources that are a staple of the NEPA analysis (species, habitats), examples of other resources that should be considered include elements of the physical environment, historic and archaeological sites, traffic patterns, socioeconomic services and issues, and community structure and character.

`Once these resources have been identified, consideration should be given to the ecological requirements needed to sustain the resources. It is important that the NEPA document consider these broader ecological requirements when assessing how the project and other actions may cumulatively affect the resources of concern. Often these ecological requirements may extend beyond the boundaries of the project area (e.g., include larger ecosystems), but reasonable limits should be placed on the scope of the analysis. Focus on the ecosystem level is also consistent with the ecosystem management approach to maintaining or restoring composition, structure, and function of natural and modified ecosystems for the goal of achieving sustainability.

Example of ecosystem level approach
Federal assessment and mitigation for the loss of wetlands often focus primarily on the acreage affected rather than the function of the wetland within the broader ecosystem. In such a case, the impact to the wetland might not be deemed significant if the wetland had no immediate wildlife values or other notable characteristics. However, by expanding the assessment to consider the full array of wetland functions and their importance with a broader context, cumulative impacts could be more fully assessed. For example, important functions to focus on could include the wetlands' role as a nursery for recreationally and/or commercially valuable aquatic species; its ability to minimize downstream flooding; and its ability to improve water quality.

Human-centered issues, such as socioeconomics and community structure, are often overlooked in cumulative effects analysis, and also need to be addressed, as the potential cumulative impacts may be significant. Some examples are provided below:

Socioeconomics:

- Over-burdened utility infrastructure (e.g., water supply, water treatment) and social services (hospitals, schools, fire/police) due to sudden, unplanned population changes (in-migration) as a secondary effect of multiple projects and activities.
- Unstable labor markets resulting in changes in pool of eligible workers (e.g., construction workforce) during “boom” and “bust” phases of development (especially if several large construction projects are underway in same area at same time and are competing for workers).

Human community:

- Disruption of community mobility and access as result of infrastructure development (e.g., increased traffic, commuting times, etc.).
- Changes in community dynamics by incremental displacement of critical community members as part of unplanned commercial development projects.
- Loss of, or adverse impacts to, neighborhoods or community character, particularly those valued/inhabited by low-income or minority populations, through incremental development.

Mitigation and Monitoring

An important goal of the NEPA process is to reduce adverse environmental effects and this includes cumulative effects. If it is determined that significant cumulative effects would occur as a result of a proposed action, the project proponent needs to make every effort to avoid, minimize, or mitigate adverse effects. At a minimum, the mitigation should address the proposed project's contribution to the cumulative impacts, and could include modifying or adding alternatives (to incorporate proposed mitigation measures). Oftentimes the most effective mitigation measures need to target action(s)other than the proposed action, although the separation of responsibilities for actions contributing to cumulative effects makes designing appropriate mitigation especially difficult.

The complexity of cumulative impacts problems ensures that even rigorous analyses will contain substantial uncertainties about predicted environmental consequences. Monitoring is the last and critical step in assessing the accuracy of predictions of cumulative effects that ultimately result from the action and ensuring the success of mitigation. Monitoring provides the means to identify the need for modifying (increasing, decreasing or reconfiguring) mitigation, and adaptive management provides the flexible program for achieving these changes. Important components of a monitoring program for assessing cumulative effects include the following: measurable indicators of the magnitude and direction of ecological and social change, appropriate timeframe, appropriate spatial scale, means of assessing causality, means of measuring mitigation efficacy, and provisions for adaptive management.

Methods of Cumulative Impact Analysis

The CEQ handbook identifies various methods that analysts can use to identify future actions with potential cumulative effects and to analyze the cumulative effects. As noted above the methods used to analyze the impacts of the proposed action and alternatives are the same ones that should be used to analyze the impacts of future actions and the impacts of the proposed action (and alternatives) and future actions together.

Methods for identifying future actions include questionnaires, interviews, and panels of knowledgeable individuals. Methods for characterizing the existing environment include use of the Geographical Information Systems (GIS). Methods for analyzing impacts include modeling and trends analysis.

Tools for Explaining Cumulative Impacts

CEQ also describes tools that can be used to explain cumulative impacts either in public meetings, in briefings to decisionmakers, or in the NEPA document itself. These include matrices that show in a table format the present environmental conditions, the impacts from the proposed action, the impacts from future actions, and the potential cumulative impacts; network diagrams that show various actions that accumulate upon resources; and overlay mapping to identify areas were impacts will overlap.

C. Conclusion

Cumulative impacts analysis is an important element in understanding all of the potential environmental impacts of a proposed action, and in preserving, protecting, and enhancing the environment. At the same time, analysts are limited by time and funding, and the type of analysis envisioned by the CEQ handbook may not be possible. Because the CEQ cumulative impacts handbook does not establish any new requirements for analysis, the analyst should be guided primarily by regulatory requirements and case law pronouncements. The CEQ handbook does offer some principles and hints for conducting a cumulative impact analysis that analysts could find useful.

Additional Guidance

Depending on the type of project being proposed and the resources that could be affected, other agencies have also developed cumulative impacts guidance, often tailored to their types of projects and building on the steps outlined in CEQ’s 1997 Handbook. These additional guidance documents include:

Environmental Protection Agency

Consideration of Cumulative Impacts in EPA Review of NEPA Documents. Environmental Protection Agency, (May 1999) EPA 315-R-99-002.

This guidance, while not expressly intended for federal agencies use in carrying out cumulative impact analysis, includes information pertaining to the EPA's review of cumulative impact analyses in EISs. The guidance is intended to assist EPA reviewers of NEPA documents to provide accurate, realistic, and consistent comments on the assessment of cumulative impacts focused on specific issues that are critical in EPA's review of NEPA documents under Section 309 of the Clean Air Act. It may be particularly helpful to RD staff in their review of applicant or contractor submittals relating to cumulative impacts. This document is available for downloading at the EPA NEPA website: www2.epa.gov/sites/production/files/2014-08/documents/cumulative
Other relevant EPA reports include:

- EPA, 2000. *Projecting Land-Use Change: A Summary of Models for Assessing the Effects of Community Growth and Change on Land-Use Patterns*. EPA/600/R-00/098. U.S. Environmental Protection Agency, Office of Research and Development, Cincinnati, OH.
www.epa.gov/reva/docs/ProjectingLandUseChange

- EPA, 2013. *Our Built and Natural Environments: A Technical Review of the Interactions among Land Use, Transportation, and Environmental Quality* (Second Edition). EPA 231K13001. U.S. Environmental Protection Agency, Office of Sustainable Communities, Washington, DC 20460
www2.epa.gov/sites/production/files/2014-03/documents/our-built-and-natural-environments

Federal Energy Regulatory Commission, Office of Energy Projects (relating to hydropower projects, from the Division of Hydropower Licensing)

Preparing Environmental Documents Guidelines for Applicants, Contractors, and Staff (Section 3.2, Scope of Cumulative Effects Analysis), September 2008 (URL: www.ferc.gov/industries/hydropower/gen-info/guidelines/eaguide.pdf)

Federal Highway Administration

Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process
(URL: www.environment.fhwa.dot.gov/projdev/qaimpact)

In addition, various state departments of transportation (DOT) have developed state procedures for assessing indirect and cumulative impacts of transportation projects. Some examples are provided below; applicants are encouraged to check their own state DOT office website to see whether such guidance is available.

- California DOT: *Guidance for Preparers of Cumulative Impact Analysis*. Last Updated June 2, 2014. Links to Guidance Paper on Approach and Guidance; and Issue papers on Defining Resource Study Areas; Data Gathering and CEQA Guidelines for Cumulative and Indirect Impacts. Available at: www.dot.ca.gov/ser/cumulative_guidance/purpose

- Florida DOT: *Cumulative Effects Evaluation Handbook*. Environmental Management Office. December 2012 (77 pages). Available at: http://www.dot.state.fl.us/emo/pubs/CEE/CEE-Handbook-2012-1218.pdf

- Texas DOT:

  - *Cumulative Impact Analysis Guidelines*. Environmental Affairs Division. Release Date 3/2014 (15 pages).
  - Available at: ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/720-03-gui

  - Environmental Handbook Indirect and Cumulative Impacts. Release Date March 2014. 720.01.GUI. Version 1 (9 pages). Available at: ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/720-01-gui

  - Guidance on Preparing Indirect and Cumulative Impact Analyses. September 2010 (132 pages). Available at: ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/720-04-gui

- Washington State DOT: *Guidance on Preparing Cumulative Impact Analyses, Washington State Department of Transportation*. February 2008. Available at: www.wsdot.wa.gov/NR/rdonlyres/1F0473BD-BE38-4EF2-BEEF-6EB1AB6E53C2/0/CumulativeEffectGuidance

- Wisconsin DOT: *Guidance for Conducting a Cumulative Effects Analysis*. November 2007. Environmental Policy and Community Impacts Analysis Section. (22 pages). Available at: wisconsindot.gov/Documents/projects/data-plan/plan-res/landuse/cumulative

- American Association of State Highway and Transportation Officials (AASHTO): *Practitioner's Handbook 12, Assessing Indirect Effects and Cumulative Impacts under NEPA*. April 2011. Center for Environmental Excellence by AASHTO. Available at: environment.transportation

Nuclear Regulatory Commission

Interim Staff Guidance on Environmental Issues Associated with New Reactors, (August 2013), Attachment 4, Staff Guidance for Cumulative Impacts Alternative Review (2012). NRC COL-ESP-ISG-026, ADAMS Accession No. ML12328A065. Available at: www.nrc.gov/reading-rm/doc-collections/isg, http://www.nrc.gov/reading-rm/doc-collections/isg/col-app-design-cert.html

This guidance relates to new nuclear reactors (combined license, design certification and early site permit applications), however, portions may be relevant to new power plants potentially funded by RUS electric programs.

[Template] Consistency Determination

[Date]

[Name and address of the State agency responsible for the Coastal Management Program (CMP)]

Attn: [name of State CMP's contact person]

Dear [name of State CMP's contact person]:

This document presents the State of [State's name] with the USDA [Rural Housing Service/Rural Utilities Service, Rural Business and Cooperative Service]'s, hereafter referred to as the Agency, Consistency Determination under Coastal Zone Management Act (CZMA) Section 307 and Title 15 CFR Part 930, Subpart C, for implementation of our applicant's proposal to [provide a brief description of the project] located at [provide the location of the project]. Our applicant, [name of applicant], has requested [direct loan/guaranteed loan/grant] funds for the proposed project and has prepared and provided environmental documentation to allow the Agency to evaluate the potential environmental impacts from the proposed project in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S. Code 4321-4347).

Under the proposed action, the applicant would [provide a detailed description of the project, including estimated construction start dates and duration]. [Provide a statement regarding the need/purpose of the project.]

Effects to Resources
The Agency has determined that proposed action would affect the land, water uses, and natural resources of [name of your state] in the following manner:

Topography
[Describe any impacts on the topography of the project's area of impact.]

Soils
[Describe any impacts on soils in the project's area of impact.]

Land Use
[Describe any impacts the project might have on land use in its area of impact.]

Surface Waters
[Describe any impacts on surface water in the project's area of impact.]

Wetlands
[Describe any impacts on wetlands in the project's area of impact.]

Floodplains
[Describe any impacts on floodplains in the project's area of impact.]

Biological Resources
[Describe any impacts on biological resources in the project's area of impact.]

Historical and Cultural Resources
[Describe any impacts on historical and cultural resources in the project's area of impact.]

Air Quality
[Describe any impacts on air quality in the project's area of impact.]

Noise
[Describe any impacts on noise in the project's area of impact.]

Hazardous Materials and Hazardous Waste Management
[Describe any hazardous materials that will be stored, produced, or transported by the project, how they will be disposed of, and why they won't cause any negative impacts.]

Environmental Justice
[Describe any impact the project will have on environmental justice/socioeconomics.]

Transportation
[Describe any impacts on transportation caused by the project.]

Aesthetics
[Describe any impacts the projects will have on the surrounding aesthetics.]

Cumulative Impacts
[Describe any cumulative impacts the project may have.]

Consistency Determination
The [name of your state] Coastal Zone Management Program contains the following applicable enforceable policies:

[List your state's enforceable policies, as well as who administers them and their purposes. These would most likely be found on your state's CMP website.]

Based upon the following information, data, and analysis, the Agency finds that the proposed project's activities are consistent to the maximum extent practicable with the enforceable policies of the [name of your state]'s Coastal Zone Management Program. The following is a summary of the Agency's analysis supporting this determination:

[Provide a list of the state CMP's enforceable policies and the evidence the Agency has supporting the consistency of the project with those individual policies.]

Pursuant to 15 CFR Section 930.41, the [name of your state] Coastal Zone Management Program has 60 days from the receipt of this letter in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR Section 930.41(b). [Name of your state]'s concurrence will be presumed if its response is not received by the Agency on the 60th day from receipt of this determination. The State's response should be sent to: [Name, address, and phone number of Agency contact]

If you need additional information, or if you have any questions, please do not hesitate to call me at [your phone number], or email me at [email address]. Thank you very much for your assistance.

Sincerely,

[Name]

[Title]

Attachments: [list your attachments]

[Template] Negative Determination

[Date]

[Name and address of the State agency responsible for the Coastal Management Program (CMP)]

Attn: [name of State CMP's contact person]

Dear [name of State CMP's contact person]:

In accordance with the Section 307 of the Coastal Zone Management Act of 1972, as amended, and 15 CFR 930.35, the USDA [Rural Housing Service/Rural Utilities Service/Rural Business and Cooperative Service], hereafter referred to as the Agency, has determined that our applicant's proposal to [brief description of the project] will have no reasonably foreseeable effects on any coastal use or resource, and does not require a consistency determination. Our applicant, [name of applicant] has requested [direct loan/guaranteed loan/grant] funds for the proposed project and has prepared and provided environmental documentation to allow the Agency to evaluate the potential environmental impacts from the proposed project in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S. Code 4321-4347).

Under the proposed action, the applicant would [provide a detailed description of the project, including estimated construction start dates and duration]. [Provide a statement regarding the need/purpose of the project.]

Effects to Resources

[INCLUDE THE FOLLOWING PARAGRAPH ONLY IF THE PROJECT IS OUTSIDE OF THE COASTAL ZONE]

The Agency recognizes that actions outside the coastal zone may affect land or water uses or natural resources along the coast and therefore are subject to the provisions of the Act. Consequently, an analysis of the impacts of the proposed action on the coastal zone was conducted.

[THE INFORMATION BELOW IS REQUIRED REGARDLESS OF THE LOCATION OF THE PROJECT INSIDE OR OUTSIDE OF THE COASTAL ZONE]

The Agency has reviewed the environmental information and documentation for the proposal with regard to impacts on coastal resources, and has determined that the proposed action, as described above, will not affect the following:

Topography
[Describe why the project won’t impact the topography in the project’s area of impact.]

Soils
[Describe why no impacts will occur to soils in the project’s area of impact.]

Land Use
[Describe why no impacts will occur to land use in the project’s area of impact.]

Surface Waters
[Describe why no impacts will occur to surface water in the project’s area of impact.]

Wetlands
[Describe why no impacts will occur to wetlands in the project’s area of impact.]

Floodplains
[Describe why no impacts will occur to floodplains in the project’s area of impact.]

Biological Resources
[Describe why no impacts will occur to biological resources in the project’s area of impact.]

Historical and Cultural Resources
[Describe why no impacts will occur to historical and cultural resources in the project’s area of impact.]

Air Quality
[Describe why no impacts will occur to air quality in the project’s area of impact.]

Noise
[Describe why no impacts will occur to the noise levels in project’s area of impact.]

Hazardous Materials and Hazardous Waste Management
[Describe any hazardous materials that will be stored, produced, or transported by the project, how they will be disposed of, and why they will not cause any negative impacts.]

Environmental Justice
[Describe why no negative impacts will occur to environmental justice/socioeconomics.]

Transportation
[Describe why no impacts will occur to transportation.]

Aesthetics
[Describe why no impacts will occur to the surrounding aesthetics.]

Cumulative Impacts
[Describe why no cumulative impacts will exist.]

[Name of your state]'s concurrence will be presumed if the State response or a request for an extension is not received by the Agency on the 60th day from receipt of this determination. The State's response should be sent to:

[Name, address, and phone number of Agency contact]

If you need additional information, or if you have any questions, please do not hesitate to call me at [your phone number], or email me at [email address]. Thank you very much for your assistance.

Sincerely,

[Name]
[Title]

Attachments: [list your attachments]

Request for Review

[Date]

[Name and address of the State agency responsible for the Coastal Management Program (CMP)]

Attn: [name of State CMP's contact person]

Dear [name of State CMP's contact person]:

We are in the process of preparing environmental documentation as part of our request for funding from USDA [Rural Housing Service/Rural Business Service/Rural Cooperative Service], hereafter referred to as the Agency, in order that the Agency may, pursuant to the National Environmental Policy Act, assess the environmental impacts of our proposal to utilize [direct loan/guaranteed loan/grant] funds to [description of the proposal] in [county], [State].

The proposed action consists of [provide a detailed description of the project]. The project is being proposed to [give a brief statement supporting project purpose and need].

Please advise if the proposal is within the [name of your state]'s Coastal Management Program, and, if so, please perform a federal consistency review. Any other information you may wish to provide regarding environmental impacts or suggestions for mitigating impacts will be appreciated and taken into consideration.

Please respond within 30 days of receipt of this letter. Please send your reply to

[Name, address, and phone number of Agency contact]

If you need any further information or wish to discuss our project, please contact [name] at [telephone number].

Thank you very much for your assistance.

Sincerely,

[Name]

[Title]
Attachments: [list your attachments]

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