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**OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY**

# ENVIRONMENTAL QUESTIONNAIRE

(To be completed **on-line only** at: [https://www.eere-pmc.energy.gov/NEPA.aspx)](https://www.eere-pmc.energy.gov/NEPA.aspx)

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| SECTION I. PROJECT SUMMARY | | |
| NEPA Control Number: | | NREL-18-020 |
| Project Title: | | NWTC Near Vertical Sound Propagation |
| Recipient: | | Dave Jager |
| Other Participants (Sub-recipients, Contractors, etc.): | |  |
| FOA Number: | |  |
| FOA Title: | |  |
| Award Number: | |  |
| DOE Technology Office Point of Contact: | |  |
| DOE Grant Management Specialist: | |  |
| SECTION II. BACKGROUND AND INSTRUCTIONS | | |
| Pursuant to the U.S. Department of Energy’s National Environmental Policy Act (NEPA) implementing regulations (10 CFR Part 1021), the Office of Energy Efficiency and Renewable Energy (EERE) is required to evaluate the potential environmental impact of projects that it is considering for funding. EERE must determine at the earliest possible time whether any proposed project qualifies for a categorical exclusion under 10 CFR § 1021.410 or will require further environmental review (i.e., an environmental assessment or an environmental impact statement). | | |
| **You are required to answer the questions below for the project as a whole, including all work to be performed by the Recipient and its sub-recipients, and contractors. You may not limit your responses to work performed by the Recipient only unless instructed by EERE.** In completing this questionnaire, you must provide specific information regarding the nature of your proposed project, including information on its size, operations, and the types and quantities of air emissions, wastewater discharges, solid wastes, land disturbances, etc. You should identify the location(s) of the proposed project and describe the activities that would occur at each location. | | |
| The form should be completed and signed by the Principal Investigator for the project, but may be completed and signed by another member of your organization who has sufficient knowledge of the project to answer the questions truthfully and accurately. | | |
| Failure to fully and adequately complete this form will delay EERE’s environmental review of your proposed project. Please note that false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001. | | |
| BURDEN DISCLOSURE STATEMENT | | |
| Public reporting burden for this collection of information is estimated to average 60 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-1800), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget (0MB), Paperwork Reduction Project (1910-1800), Washington, DC 20503. | | |
| SECTION III. PROJECT EVALUATION | | |
| **1a.** | **In the box below, please provide a brief summary of the proposed project activities. (Describe physical activities, not goals and objectives). Please specify if this project is part of a larger project or connected to another project.** | |
| Example: The proposed project activities include the design, development, fabrication and field testing of advanced biomass harvesting equipment. Design, development, and fabrication activities would occur at our research and development facility adjacent to our manufacturing plant in Dearborn, Michigan. Equipment testing would occur in various agricultural fields in the surrounding area over a two year period. | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| The proposed project at the National Renewable Energy Laboratory (NREL) National Wind Technology Center (NWTC) site would temporarily install and operate a loudspeaker, power amplifier, and series of microphones at an onsite meteorological (met) tower. The purpose of the project would be to measure the statistical characteristics of acoustic signals at the met tower using a near vertical and a slanted sound propagation.  The experiment would be conducted at the Site 4.0 met tower and would use a Community Professional PC394F or PC364 speaker, power amplifier, and set of microphones.  Two geometries of sound propagation would be used: 1) near vertical sound propagation with a speaker placed close to the tower base (within 3-5 m), and 2) slanted propagation with a speaker placed 100 m northeast of the tower. Microphones would be placed at various heights along the tower.  Speaker operation and data collection would occur intermittently for up to 5 hours per day for 5 days at a maximum power of 121 dB.  For 75% of the activity, researchers would transmit a set of harmonics between 0.6 and 3.5 kHz with about the same amplitude (within the audible range for humans and most animals).  The duration of each transmission would be between 30 min and 2 hours, transmitting 12 harmonics simultaneously.  For 25% of the activity, researchers would transmit a chirp with a duration of about 6 milliseconds and with the frequency range from about 0.8 kHz to 3.2 kHz (see attached Experiment Plan for details).  Two to 4 researchers would be onsite conducting the work. Most of the experiments would start at about 1 pm and some of the experiments would start at about 4 am.  The experiment would occur the week of September 23rd, with equipment setup in the met tower by NREL researchers the week prior.  Potential impacts due to installation could include hearing loss or nuisance sound levels. Workers would wear appropriate PPE to prevent hearing loss when in the experiment area when speaker is operating. There are no anticipated indirect impacts. |

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| **1b.** | **Is there other Federal government involvement outside of EERE in any aspect of this project (e.g., funding, technical assistance, project would occur on Federally-administered lands, project requires a Federal permit or review)?** | |
| **Yes** | | **No** |
| *If you checked “Yes,” please list the agency, describe the nature of its involvement and provide a point of contact at the agency, if known.* | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| Not applicable |

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| **1c.** | **Is the proposed project limited exclusively to intellectual, academic, or analytical activities?** | |
| Intellectual, academic, and analytical activities include but are not limited to: | | |
| * Literature searches and information gathering | | * Feasibility studies |
| * Data analysis | | * Document preparation |
| * Computer modeling | | * Data dissemination |
| * Analytical reviews | | * Paper studies |
| * Conceptual design | |  |
| *Answer “No” to this question if the proposed project involves any laboratory research and development, physical experiments, prototypes, pilot-scale projects, demonstration projects, field tests, land-disturbing activities, construction or similar activities.* | | |
| **Yes** | | **No** |
| *If you checked “Yes,” describe the proposed activities:* | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| Not applicable |

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| ***If you checked “Yes,” proceed directly to Section IV (Certification by Proposer) and complete the information and signatures as requested. If you checked “No,” you must complete the entire questionnaire.*** | | |
| **2a.** | **Is the project definition complete at this point (i.e., all sites and activities are known)?** | |
| **Yes** | | **No** |
| *If you checked “Yes”, complete the remainder of the questionnaire. If you checked “No”, please describe those sites and/or activities/tasks that are yet to be defined and complete the remainder of the questionnaire to the best of your knowledge.* | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| Not applicable |

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| **2b.** | **In the chart below, please identify and describe the following five types of identifying information concerning project activities to be performed:** |
| 1. **each location where work will be performed, including address or coordinates, names of facilities, and whether this is the Recipient, Subrecipient or Contractor location;** |
| 1. **the nature of the location (e.g., urban, industrial, suburban, agricultural, university campus) and the current condition and/or use of the site;** |
| 1. **the types of activities to be conducted at that location;** |
| 1. **land administration (e.g., BLM, USFWS, DOD, state, private); and** |
| 1. **the scale of each activity, by reference to the following categories:** |
| * **Small scale:** activities appropriately categorized as “lab” or “bench” scale, typically conducted in indoor facilities. |
| * **Pilot plant:** downsized model of a fully integrated demonstration or commercial operation or facility that provides data to inform a final design of a larger facility. |
| * **Manufacturing facility:** a facility where component development would occur but work is in the scope of the facility’s normal/daily operations. |
| * **Other:** activities that, by reason of their nature, scope, or duration, do not fall into one of the above three categories. |

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| **Question 2b.** | | | | |
| **(1)**  **List all Project Locations (Address or coordinates, Facility Name, Indicate Recipient, Sub-recipient, or Contractor)** | **(2)**  **Nature of Location and Current Condition/Use** | **(3)**  **Activities to be Performed at each Location** | **(4)**  **Land Administration** | **(5)**  **Scale of Each Activity** |

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| National Renewable Energy Laboratory, National Wind Technology Center  18600 Highway 128  Boulder, CO | Federal Research Facility | Activities would include temporary installation and operation of a speaker, power amplifier, and series of microphones at an onsite met tower. | DOE | Other |

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| **2c.** | **In the box below, please identify and describe: (1) any known or potential health and safety hazards to the public or project workers that may result from or are associated with your proposed project; and (2) any efforts that will be taken to mitigate these hazards. Please describe them individually for each site discussed in Question 2b.** |
| Hazards Example: The project will involve the use and handling of various hazardous materials, including metals and industrial solvents. All such handling will occur in-lab, and our organization is dedicated to proper hazardous material handling and disposal practices, so the project activities that involve these materials would pose no risk to the public. All hazardous materials would be managed in accordance with federal, state, and local environmental regulations. |
| Mitigation Example: Existing corporate health and safety policies and procedures would be followed including employee training, proper protective equipment, engineering controls, monitoring, and internal assessments. Additional policies and procedures would be implemented as necessary as new health and safety risks are identified. This would help ensure compliance with applicable health and safety regulations, and minimize health and safety risks to employees and the public. |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | |

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| Workers could potentially be exposed to physical hazards during the course of the project. Activities with potential physical hazards could include operating speakers with the potential to cause hearing damage, fall hazards when placing equipment in the met tower, heavy lifting, use of hand tools, and operating vehicles. Existing subcontractor corporate health and safety policies and procedures would be followed including employee training, proper protective equipment, engineering controls, and monitoring. DOE's Golden Field Office has accepted NREL's programs, procedures, and processes as conforming to DOE's Integrated Safety Management requirements, and compliant with the requirements of 10 CFR 851 to have an approved Worker Safety and Health Program and flowdown requirements to subcontractors. All work is to be conducted in accordance with established written procedures or authorized in a Safe Work Permit. Within 65m, workers would be required to wear hearing protection (see section 13 for additional information on hearing conservation). |

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| **2d.** | **In the box below, please identify and describe any of the following that would be associated with the proposed project. Please describe individually for each site discussed in Question 2b.** | |
| 1. **any physical modification of existing facilities or construction of new facilities** | |
| 1. **ground disturbing activities that would occur** | |
| 1. **any change in the use, mission, or operation of existing facilities** | |
| 1. **installation of equipment outdoors** | |
| If the proposed project will involve the installation or deployment of equipment outdoors, please describe the area of disturbance, what currently exists at the site, the dimensions of the installation, any associated infrastructure, etc. | | |
| Example 1: | | Physical modification of existing facilities and ground disturbing activities: To accommodate testing facilities necessary for the project, the current testing facility will have to be expanded by approximately 4,500 square feet. |
| Example 2: | | Change in use of existing facility: A room within our facility that has served as a dedicated wind tunnel will be modified to serve as an environmental test chamber. This will require the adaptation of the chamber’s construction to partition off part of the room and seal it to allow generated environmental fluctuations within. |
| Example 3: | | Installation of equipment outdoors: The proposed turbine location is on school property located in a previously disturbed area south of the existing school building and near the high school athletic facilities and fields. East of the school are two golf courses; south and north are single family residential neighborhoods; and to the west are two public park properties. There are wooded areas located on the school property to the south and west. The foundation of the wind turbine would be approximately 25 square feet with an additional 5 square feet of disturbance during construction. The foundation would be approximately 10-15 feet in depth. There would be minor, temporary land disturbance adjacent to the proposed site for crane work and tower staging area. Existing roads would be used to access the project location. |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

1. A speaker and microphone system would be installed at the NWTC per the description in section 1a.
2. No ground disturbing activities would occur.
3. There would be no change in the use, mission, or operation of existing facilities.
4. All equipment would be installed outdoors.

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| **2e.** | **In the box below, please identify and describe any existing, modifications to, or new permits, licenses or authorizations that would be required to perform project activities (such as environmental permits, operating permits, or drilling permits). Please describe them individually for each site discussed in Question 2b.** | |
| Example 1: | | The project will generate small amounts of effluent waste which will be discharged into the Potomac River, requiring our organization to secure the requisite discharge permit pursuant to state and federal regulations. |
| Example 2: | | The project activities will be conducted for the next three years. We will be required to replace our current solid waste disposal permit with an updated permit that may alter the nature of what and how we are permitted to dispose of solid waste. |
| Example 3: | | The project activities will take place in marine navigable waters and will require permits from the U.S. Coast Guard and the U.S. Army Corps of Engineers. |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| Not applicable |

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| **2f.** | **Please list the estimated quantities of materials used (e.g., feedstock, chemicals, water) and produced by the project (e.g., biofuel). Please describe them individually for each site discussed in Question 2b.** |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | |

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| The project would include the installation of a speaker, amplifier, and microphone system. No materials would be produced by the project. |

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| **3.** | **Would the proposed project use, result in, or require the management, storage, transport or disposal of radioactive, toxic, or hazardous chemicals, waste, or other materials that require special handling?** | |
| **Yes** | | **No** |
| *If you checked “Yes,” please provide a detailed description of: (1) the materials; (2) approximate quantity; (3) their role in the project; and (4) storage, transport, and disposal procedures for each* *material*. Hazardous chemicals and materials include those which, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may increase the risk of mortality or pose a substantial threat to human health or the environment when improperly stored, transported, disposed of, or otherwise managed. | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| Not applicable |

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| **4.** | **Please describe: (1) all non-hazardous wastes that will be generated by the proposed project; and (2) the method of their disposal. Please describe them individually for each site discussed in Question 2b.** |
| It is presumed that every project will generate solid wastes, so applicants answering “none” must explain why no waste will be generated. Non-hazardous waste is any garbage, refuse or trash, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. See 40 CFR § 261.2. |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | |

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| No wastes are anticipated due to the project. If any non-hazardous wastes were generated, they would be segregated for recycling, reuse, or landfill disposal according to NREL requirements. |

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| **5.** | **Would the proposed project involve the use or development of recombinant DNA or genetically engineered microorganisms, plants, animals, or similar technologies?** | |
| **Yes** | | **No** |
| *If you checked “Yes,” please provide a detailed description of: (1) the genetic modifications; (2) the safety procedures in place for their handling and use over the course of the project; and (3) how they will be disposed of at the project’s conclusion*. | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| Not applicable |

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| **6.** | **Does the project involve the use of any nanoscale materials or nanotechnology?** | |
| **Yes** | | **No** |
| *If you answered “Yes,” please describe: (1) the nanoscale materials used; (2) potential risks those materials may pose; and (3) how they will be disposed of.* Nanotechnology is defined as research and technology development at the atomic, molecular, or macromolecular levels using a length scale of approximately one to one hundred nanometers in any dimension; the creation and use of structures, devices and systems that have novel properties and functions because of their small size; or the ability to control or manipulate matter on an atomic scale. | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| Not applicable |  |

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| **7.** | **Is the proposed project near or around, or does it involve, any of the following environmentally sensitive resources?** Please indicate below any and all environmentally sensitive resources that could be adversely affected by any project activities. (See Attachment 1 to the Environmental Questionnaire for select environmental sensitive resource definitions). | | | | |
|  |  | Historical, archeological or cultural resources (includes listed and eligible resources over 50 years old or of cultural significance) |  | h. | Coastal zones |
|  |  | Threatened or endangered species (whether proposed or listed by state or federal governments) including their habitat |  |  | Populations of low income or minorities (Environmental Justice) |
|  |  | Marine animals or essential fish habitat |  | j. | Migratory birds, Golden or Bald Eagles |
|  |  | Floodplains orwetlands |  | k. | Depletion of a non-renewable resource |
|  |  | Tribal lands or resources of Tribal interest/ sensitivity |  | l. | Areas having a special designation, (e.g., Federal and state designated wilderness areas, national parks, national natural landmarks, wild and scenic rivers, state and Federal wildlife refuges, and marine sanctuaries |
|  |  | Ocean resources (e.g., coral reefs) |  | m. | Prime farmland, unique farmland, or other farmland of statewide or local |
|  |  | Land resources (e.g., tundra, rainforests) |  | n. | Special sources of water (e.g., sole source aquifers) |
| *If you checked any boxes above, please provide a detailed description below of: (1) the resources that could be affected; and (2) how project activities may affect those resource*s. | | | | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | | | | |

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| The project area is not located in a wetland or floodplain, threatened or endangered species habitat, or where there are known historic or cultural resources. Threatened and endangered species surveys have been performed on the property in appropriate habitats and no T&E species have been captured or observed. There is designated threatened species habitat (Preble’s meadow jumping mouse) in the southeastern portion of the site. The proposed project location is in the northern portion of the site and would not affect the designated Preble’s mouse habitat. |  |

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| **8.** | **Does the proposed project involve any of the following activities or areas of concern?** Please indicate below any and all activities or areas of concern that exist in the vicinity of your project, are required for your project, or could affect your project. (See Attachment 1 for definitions of each activity or area of concern). | | | | |
|  | a. | Clearing or excavation |  | f. | Polychlorinated biphenyls (PCBs) |
|  | b. | Dredge and/or fill |  | g. | Navigable air space |
|  | c. | Pre-existing contamination |  | h. | Underground storage tanks |
|  | d. | Pesticide use |  | i. | Underground extraction/injection |
|  | e. | Asbestos or lead-based paint |  |  |  |
| *Please provide a detailed description of: (1) each activity or area of concern; and (2) the effects of each activity or area of concern on your project and/or the surrounding area*. | | | | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | | | | |

Not applicable

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| **9.** | **Is there any public opposition, concern, uncertainty or scientific controversy concerning the environmental effects of any project activities?** | |
| **Yes** | | **No** |
| *If you checked “Yes,” please describe the nature of the uncertainty or controversy. Please note that uncertainty means that the potential environmental effects are not well known, and controversy means that effects are known but in dispute*. | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| Not applicable |  |

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| **10.** | **Please quantify, to the extent possible, all emissions into the ambient air resulting from project activities. Please describe them individually for each site discussed in Question 2b.** |
| Potential emissions include, but are not limited to, greenhouse gas emissions, particulate matter and airborne pollutants.Sources of emissionscan include stationary sources, such as boilers, process heaters, generators, solvent usage, or mobile sources, such as vehicles. It is presumed that every project will result in some emissions being released into the ambient air, so applicants answering “none” must explain why no emissions will be released. Please indicate if the project site is within an attainment or non-attainment area. Non-attainment areas are designated parts of the country where air pollution levels persistently exceed the national ambient air quality standards. See 42 U.S.C. 7501(2). |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | |

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| Not applicable  The proposed site is within the Denver-Boulder-Greeley-Ft. Collins-Loveland, CO 8-hour ozone non-attainment area (inclusive of STM and NWTC). The proposed site is located in an attainment area for 1-hour ozone, SOX, PM-2.5, PM-10, CO, NO2, and lead. |

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| **11.** | **Would the project involve activities or deployments into marine/freshwater aquatic environments?** | |
| **Yes** | | **No** |
| *If you checked “Yes,” please provide a detailed description of: (1) the proposed activities or deployment; (2) where and when these activities would occur; and (3) what permit/authorizations have been or would be acquired for this activity.* | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| Not applicable |  |

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| **12.** | **Would the proposed project result in a discharge of any type of wastewater, pollutant, or contaminant to a sewer system, stormwater system, soils, retention ponds, or any water resources (e.g., surface water, including lakes, rivers, creeks, and wetlands, and ground water)?** | |
| **Yes** | | **No** |
| *If you checked “Yes”, please quantify and characterize the wastewater or pollutants, including thermal discharges.* Please provide a detailed description of the: (1) wastewater, pollutants or contaminants to be released; and (2) the water resources that may be affected. Under federal law, the term “pollutant” means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. See 33 U.S.C. § 1362(6). The term “contaminant” means any physical, chemical, biological, or radiological substance or matter in water. See 42 U.S.C. § 300f(6)*.* | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| Not applicable |  |

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| **13.** | **Would the proposed project have the potential to generate noise impacts to sensitive receptors (such as hospitals, schools, daycare facilities, and elderly housing), adjacent communities, employees working at the project site, and/or wildlife?** | |
| **Yes** | | **No** |
| *If you checked “Yes,” please provide a description of: (1) the receptors that may be impacted and its estimated distance from the project activities; (2) the level of noise generated (in A-weighted decibels (dbA)) to each receptor; and (3) anticipated duration.* | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

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| A speaker would be operated intermittently for up to 5 hours per day for 5 days at a maximum power of 121 dB.  Shown below are the estimated maximum sound pressure levels for the activity based on the Inverse Square Law for sound moving away from the source (sound attenuates at about 6 dB every doubling of the distance):   * 1m = 121 dB (e.g., pneumatic chipper at ear) * 25m = 93 dB (e.g., subway train at 200’) * 50m = 87 dB (e.g., sustained exposure at 85 dB may result in hearing loss) * 100m = 81 dB (e.g., telephone dial tone) * 200m = 75 dB (e.g., vacuum cleaner) * 400m = 69 dB (e.g., normal conversation)   References per <https://ehs.yale.edu/sites/default/files/files/decibel-level-chart.pdf>  Operating the speaker at less than maximum is the usual practice, reducing power by 6 dB to achieve a steady signal and reduce background and electronic noise at the topmost microphones on the met tower. Once sufficient signal noise reduction is achieved, there's no need to operate with higher power. For these reasons, the 121 dB will not be exceeded and the experiment will usually operate at lower power. All of the estimated values above should be considered maximums as well.  For the vertical propagation study, the affected area during the operating time with sound pressure levels over 85 dB, using the above levels, is a half-sphere centered on the speaker, with a radius of 65 m. For the portion of data collection with a vertical orientation of the speaker (speaker located at the base of the tower), the speaker would be approximately 128 meters from the closest point of Building 251 (southern wall), resulting in sound pressure levels at the building of less than 81 dB.  For the slant propagation study, sound pressure levels at and above ground level behind the speaker would be lower than in the vertical propagation study due to the angle of the speaker. With a slanted orientation of the speaker (speaker located 100 meters northeast of the tower and directed at the tower), the speaker would be approximately 152 meters from the closest point of Building 251 (southern wall) resulting in sound pressure levels at the building of less than 81 dB.  Per the researcher, lowering the sound pressure levels is not possible, as this would not allow the experiment to meet its stated goals, and that shielding the speaker to limit propagation horizontally could affect the experiment due to vibrations in the equipment.  *Potential for impacts to workers*  The NIOSH Recommended Exposure Limit (REL) for occupational noise exposure is 85 decibels, as an 8-hour time-weighted average (85 dB as an 8-hr TWA). Exposures at or above this level are considered hazardous. Sound pressure of this level would be expected within an approximately 65 m radius of the speaker during data collection. The researchers and any other workers within this radius would require hearing protection.  *Potential for impacts to wildlife*  According to the Nature Sounds Society (Cornman 2003), there are four major ways in which animals are adversely affected by noise pollution:   1. Hearing loss, resulting from noise levels of 85 dB or greater, 2. Masking, which is the inability to hear important environmental cues and animal signals, 3. Non-auditory physiological effects, such as increased heart rate and respiration and general stress reaction, and 4. Behavioral effects, which vary greatly between species and noise characteristics, resulting in, for example, abandonment of territory and lost reproduction.   Generally, noise effects can be above or below (i.e., inaudible), or within the hearing range of the animal or wildlife group and still have effects. The results from studies and summaries reviewed reveal that varying sources and levels of noise can affect both the sending and receiving of important acoustic signaling and sounds. The few projects that actually measure sound and attempt to attribute noise effects to wildlife as reviewed here include highway noise, wind farms, generators, or other constant or chronic noise levels.  The noise levels emitted from the tomography experiment would be at levels attributed to hearing loss (i.e., noise levels of 85 dB or greater) within an approximately 65 m radius of the speaker. Extended exposure at this level would not be anticipated given that birds would be expected to leave the immediate area due to the researchers’ presence. At a distance greater than approximately 65 meters from the speaker, sound levels would be below 85dB. Due to the temporary nature of the activity, with data collection and speaker operation occurring for up to 5 hours per day for 5 days, there would be no expected increased risk to wildlife. |  |

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| **14.** | **Would the proposed project have the potential to result in any community-based impacts, including:** | |
| * **visual impacts** | |
| * **socioeconomic/environmental justice impacts** | |
| * **changes in local employment** | |
| * **changes in local traffic patterns or density** | |
| * **new transportation access** | |
| * **new utility lines or right-of-ways** | |
| * **other impacts to community services** | |
| **Yes** | | **No** |
| *If you checked “Yes,” please provide a description of: (1) the communities affected; and (2) what effects the project will have.* | | |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | | |

|  |  |
| --- | --- |
| Not applicable |  |

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| **15.** | **Please provide a detailed description of how the project will be decommissioned, including the disposition of equipment and materials.** |
| *Explanation: (****Note:*** *For proper formatting, use the Tab key, not the Enter key, to separate paragraphs).* | |

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| The speaker and microphone system would be removed following the experiment. |

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| SECTION IV. CERTIFICATION BY PROPOSER | |
| I hereby certify that I am authorized to submit, and I do so hereby submit, the information in this questionnaire on behalf of the Recipient named below. I certify that the information provided herein is accurate and complete as of the date shown below. I understand that false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001. If I receive any information that would indicate that any of the above-referenced answers are no longer correct or complete, I agree to notify EERE immediately. If it is necessary for EERE to modify the information I provide, EERE will request that I recertify the revised form. | |
| Name |  |
| Title |  |
| Recipient |  |
| Signature |  |
| Date |  |

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| EERE ENVIRONMENTAL QUESTIONNAIRE |
| ATTACHMENT 1 |
| **Definitions for Question 7 – Environmentally Sensitive Resources** |
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| Historical, Archeological or Cultural Resources. The National Historic Preservation Act, the Historic Sites, Buildings and Antiquities Act; the American Indian Religious Freedom Act, and the Archeological Recovery Act provide for the preservation of sites, buildings, structures, or objects of historic, archeological, or architectural significance designated by Indian, Federal, state, or local governments or listed or eligible for listing on the National Register of Historic Places. The Archeological Resources Protection Act, Antiquities Act, and Native American Graves Protection and Repatriation Act also apply if the proposed project is on Federal and tribal land. This item should be checked "yes" if a proposed project is in an area that meets any of the above, or if an archeological survey has not been performed. Provide documentation of any consultation or State Historic Preservation Officer determination letters if available. If this information is not available or a survey has not been conducted recently, DOE may require such a survey to be conducted prior to any proposed project implementation. |
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| **Threatened/Endangered (T/E) Species and/or Critical Habitat.** The Endangered Species Act provides for protection of animals, birds, fish, plans, and other living organisms that are in danger of extinction. A list of T/E species is provided in 50 CFR Part 17. Consultations with the U.S. Department of Interior Fish and Wildlife Service (FWS) and the corresponding state agency should be documented. This item should be checked "yes" if any state- or Federally-listed or proposed threatened or endangered species or critical habitat is located in the potential area of affect, or could be indirectly affected by the proposed project. If the status of T/E species at the proposed project location is unknown, please contact the local or state office of the FWS to obtain a listing of potential species and habitats found in the area. |
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| **Floodplains**. Flood plains are lowlands adjoining inland and coastal waters with a 1 percent or greater chance of inundation in any given year. Indicate "yes" if the proposed project location is in or adjacent to a floodplain area. If documentation is available noting the floodplain boundaries, please provide a copy. Appropriate documentation of the 100 year floodplain [or 500 year floodplain for certain "flood critical" actions] boundaries include: Flood Insurance Rate Maps or Flood Hazard Boundary Maps prepared by the Federal Emergency Management Agency (FEMA) of the U.S. Department of Homeland Security. Executive Order 11988 Floodplain Management requires Federal agencies to avoid incompatible development in floodplains, and consider the conformance of the proposed project to floodplain standards, potential effects of the proposed projects on floodplains, and potential effects of floodplain modifications on other local properties and improvements. |
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| **Wetlands**. Wetlands are areas inundated by surface or groundwater with a frequency sufficient to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. [10 CFR 1022.4]. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflow, mudflats, and natural ponds. Man-made ponds can qualify as wetlands if invasion of appropriate flora or fauna has occurred. Appropriate documentation of presence or absence of wetlands within the area of project effect includes: FWS National Wetlands Inventory; U.S. Department of Agriculture Soil Conservation Service Local Identification Maps; U.S. Geological Service (USGS) Local Identification Maps; USGS Topographic Maps; state wetland inventories; and Regional or local government sponsored wetland and land use inventories. Executive Order 11990 Protection of Wetlands requires federal agencies to consider the effects of proposed projects on wetlands, and to avoid, to the extent possible, destruction and modification of wetlands. If the status of land in or around the proposed project location is unknown, please contact the state or local U.S. Army Corps of Engineer's office. |
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| **Coastal Zones**. Coastal zones are the coastal waters and adjacent shore lands of the Great Lakes, and the Atlantic, Pacific, and Arctic Oceans, Gulf of Mexico, and Long Island Sound. The term "coastal state" includes the states bordering on those bodies, plus Puerto Rico, the Virgin Islands, Guam, the Commonwealth of Northern Mariana Islands, and the Trust Territories of the Pacific Islands and American Samoa. Coastal states have authority regarding actions, which directly affect coastal zones, in accordance with the Department of Commerce regulations promulgated under the Coastal Zone Management Act. Federal activities and Federal development projects must be consistent with state coastal zone management (CZM) programs to the maximum extent possible. Federal activities are those performed by or on behalf of a Federal agency in the exercise of its statutory responsibilities, but do not include the issuance of a Federal license or permit or the granting of Federal assistance. Indicate "yes" if the proposed project is located in a coastal zone State or is in the vicinity of a coastal zone State. If a consistency determination has been obtained, or a written "negative determination" (indicating that a consistency determination is not required) please provide a copy. See 15 CFR 930. |
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| **Migratory Birds, Golden or Bald Eagles.** Other Federal and state laws that protect wildlife species include the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Examples of protected migratory birds include Canadian geese and great blue herons. This item should be checked "yes" if the proposed project may directly or indirectly impact any of these species or their habitats. If the status of other protected species is unknown in the proposed project location, please contact the local or state office of the FWS to obtain a listing of potential species and habitats found in the area. |
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| **Depletion of a Non-Renewable Resource.** Non-renewable resources are naturally occurring substances (e.g., metals, minerals, fossil fuels) that are in limited supply and cannot be replaced or regenerated. The exhaustion or threatened exhaustion of such resources could have significant ramifications. Indicate "yes" if the proposed project would involve a resource that is in limited supply. |
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| **Areas Having a Special Designation.** Various Federal laws restrict the ability of Federal agencies to aid developments affecting national wilderness areas, national memorial parks, national parks, national monuments, national primitive areas, national preserves, national recreational areas, national wild and scenic rivers, national grasslands, national wildlife refuges, national forests, national lakeshore or seashore, and national trails. Indicate "yes" if any of these areas of special environmental or natural significance is located in close proximity to the proposed project location and describe the specific special designation. |
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| **Prime Farmland, Unique Farmland, or Other Farmland of Statewide or Local Importance.**  The Farmland Protection Policy Act requires Federal agencies to consider ways to lessen the effects of proposed projects that convert or adversely affect prime farmland which is not currently classified or designated for future urban development or water storage. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Prime farmland also includes land that possesses the above characteristics but is being used currently to produce livestock and timber. Prime farmland does not include lands designated for future urban development, such as land that has been identified for commercial, industrial, or residential development by zoning code, ordinance, or a comprehensive land use plan [7 U.S.C. 4201(c)(1)]. The U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) field office serving the area can provide assistance in determining whether a proposed location or site meets the definition of prime farmland. Form AD 1006, the Farmland Conversion Impact Rating Form, available at NRCS offices, should be used for this purpose. |
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| **Special Sources of Water.** Through the Safe Drinking Water Act, EPA and states designates Critical Aquifer Protection Areas and Sole or Principal Source Aquifers, and State-designated Wellhead Protection Areas in accordance with 42 U.S.C. 300h-6(b), 42 U.S.C. 300h-3(e), and 42 U.S.C. 300h-7(e), respectively. Such areas are accorded special protection to assure the quality and availability of public water supplies. Indicate "yes" if the proposed project is located in an area designated for protection (e.g., is included in an area wide groundwater quality protection plan), or would constitute a potential source of contamination within an existing or expected wellhead protection area serving a public water supply. If aquifer designations are not known for the proposed project area, contact the environmental protection office for the State. |
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| **Definitions for Question 8 – Activities or Areas of Concern** |
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| **Clearing or Excavation.** Clearing or excavation refers to the removal of vegetation, soil, sediments, or disturbance of land surfaces and subsurface including cutting, burning, digging, grading, filling, or blasting. Provide the estimated area to be affected, the quantity of material to be added or removed, and the planned disposition of spoils. Describe the potential for runoff or erosion, any control techniques to be employed, and the distance to nearby surface water bodies, including wetlands. |
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| **Dredge and/or Fill.** Dredge and/or fill are the excavation of material from waters of the United States. Filling is the discharge of material into waters of the United States to change the bottom elevation. Waters of the United States are all interstate waters, and intrastate lakes, rivers, streams, mudflats, wetlands, sloughs, plays, or natural ponds. These activities include "ocean dumping" as regulated under Sections 102 and 103 of the Clean Water Act, construction of dams, dikes, piers, or others that could alter the course of waters of the United States. Also included is any shore activity with the potential for runoff to waters of the United States. If available, include documentation of appropriate consultation(s), e.g., with the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act or Sections 9 and 10 of the Rivers and Harbors Act; and with EPA [40 CFR Parts 220-233]. |
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| **Pre-Existing Contamination.** Indicate if the proposed project will disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment. Quantify and characterize such pre-existing substances, including whether they are present above background or regulatory levels. Also quantify the volume of contaminated materials (e.g. soil, sediment, groundwater, debris, etc.) which would require transport to a properly permitted treatment, storage, or disposal facility as the result of the proposed project. |
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| **Pesticide Use.** A pesticide is a substance intended for preventing, destroying, repelling, or mitigating any type of pest including insects, rodent, nematode, fungus, or weed, and any substance intended for use as a plant regulator, defoliant, or desiccant. While the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) imposes no requirements on private applicators, commercial pesticide applicators must be certified by the state or U.S. EPA. Additionally, FIFRA requires that certain pesticides known as “restricted use pesticides” (listed in 40 CFR 152.175) to only be applied by certified applicators. If either commercial or private pesticide application or the utilization of restricted use pesticides is anticipated, indicate "yes". If a private application is anticipated, document measures to be undertaken to assure safe storage, use, and disposal. |
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| **Asbestos.** If the proposed proejct includes demolition or renovation of an existing building, you must determine if asbestos is present. Common asbestos containing building materials may include but are not limited to floor tile, mastics, wall board, joint compound, acoustic ceiling tiles, thermal insulation, spray-on fire proofing, glazing, caulking, roof flashing, felts, and mastics. Demolition and renovation activities that may impact asbestos containing building materials are regulated by the U.S. Occupational Health and Safety Administration (OSHA) through the Asbestos in Construction Standard and asbestos air emissions from asbestos abatements are regulated by the EPA as a hazardous air pollutant under the Clean Air Act (CAA). Include a description of measures to be undertaken to comply with asbestos removal requirements of 29 CFR 1926.1100 and 40 CFR 61 (Subpart M). |
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| **Polychlorinated Biphenyls (PCBs).** PCBs are a family of man-made organic chemicals that were domestically manufactured from 1929 until banned in 1979 due to their toxicity and persistence in the environment. Given their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were largely used as dielectric and coolant fluids in transformers, capacitors, electric motors, etc. Manufacture, processing, transport, use, marking, storage, and disposal of PCBs are regulated by EPA [40 CFR Part 761] in accordance with the Toxic Substances Control Act. Some states also regulate PCBs as hazardous waste. If the proposed project involves replacement or removal of capacitors, transformers, voltage regulators, circuit breakers, switches, cables, electromagnets, or other electrical equipment, presence or absence of PCBs should be ascertained. A "yes" indication should be supported with information on the anticipated concentration and quantity of PCB oil, and the intended method/location of disposal. |
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| **Navigable Air Space.** The U.S. Department of Transportation Federal Aviation Administration (FAA) regulates objects which invade navigable air space or otherwise constitute an obstruction to air navigation, and determines whether such activities constitute a navigation hazard. Indicate "yes" if the proposed project involves construction or alteration more than 200 feet above ground level, any construction or alteration in instrument approach areas, and other construction or alteration identified in 14 CFR 77.13. Document notification of the appropriate Manager, Air Traffic Division, of the FAA Regional Office for the area within which the construction or alteration will be located. Copies of FAA Form 7460-1 Notice of Proposed Construction or Alteration may be obtained from the regional FAA office or electronically through FAA’s website. |
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| **Underground Storage Tanks**. Indicate "yes" if 10 percent of more of tank volume (including the volume of underground pipes) will be beneath surface of the ground. Indicate if installation, use, or removal of underground storage tanks is anticipated, and whether tank use is/was for storage/collection of hazardous waste, heating oil, other petroleum or petroleum-based substances, stormwater, or wastewater. Describe any leak detection/monitoring methods to be used for storage of hazardous waste or regulated petroleum products like gasoline or diesel. |
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| **Underground Extraction/Injection.** Underground extraction/injection is the subsurface emplacement of fluids through a bored, drilled, or driven well, or through a dug well where the depth of the well is greater than the largest surface dimension. If the proposed project involves construction or use of an injection well, indicate "yes," and describe the class of the well as defined in 40 CFR 146.5, the type and quantity of contaminants (e.g., waste disposal, hydrocarbon or mineral extraction) and whether the injection involves an exempt aquifer as defined in 40 CFR 146.4. |