
Site Suitability Study for Small Modular Reactors and Microreactors in Puerto Rico

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Pathway: Advanced Reactor
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Abstract

This proposal evaluates the general site suitability for Small Modular Reactors (SMRs) and Microreactors in Puerto Rico. The project follows a DOE sponsored first phase study for the feasibility of advanced nuclear on the Island. The study will be consistent with this FOA's objective to support innovation and competitiveness of multiple U.S. advanced nuclear reactor technologies such as SMRs and Microreactors. The outcome of this site suitability study will support this mission, in part, by (1) addressing the potential integration of SMRs and Microreactors into micro-grid, non-electric, and/or hybrid applications such as the Puerto Rico manufacturing industry, specifically pharmaceuticals and (2) addressing NRC plant siting regulatory issues for SMRs and Microreactors at remote locations in the US including small islands; these include emerging regulatory siting requirements for topics such Exclusion Area and Low Population Zone, population density, emergency planning and security.

The work will be led by The Nuclear Alternative Project (NAP), a non-profit organization formed by Puerto Rican engineers working in the U.S. nuclear industry dedicated to informing and advocating for advanced reactors in Puerto Rico. Principal collaborators include engineering consultants, ARUP and Applied Analysis Corp. Cooperation has also been established with major US reactor vendors and the pharmaceutical industry in Puerto Rico.

The study will evaluate two (2) regions/sites for deployment of SMRs and Microreactors in Puerto Rico. The regions were chosen based on available plant siting data, population density, and potential electricity needs of a broad range of energy stakeholders in Puerto Rico, among others. Region 1 is a North Central coastal region between the towns of Arecibo and Vega Baja and Region/Site 2 is the former site of the Roosevelt Roads Naval Station in Ceiba. These sites will be screened using exclusionary/avoidance, discretionary and preference criteria to identify optimum areas for plant siting.

The work will be performed in accordance, in part, with USNRC Regulatory Guide (RG) 4.7. Alternate regulatory criteria may also be used, consistent with the size and inherent safety of SMRs and Microreactors as currently being developed such as in the proposed 10 CFR 53, Part D, and supporting documents.



As suggested in RG 4.7, the information needed to evaluate potential sites at this initial stage of site selection is assumed to be limited to information that is obtainable from published reports, public records, public and private agencies, and individuals knowledgeable about the locality of a potential site. Although in some cases the applicant may conduct on-the-spot investigations, it is assumed that these investigations would be limited to reconnaissance-type surveys at this stage in the site selection process. The project budget includes potential site visits.

Project deliverables will include preliminary reports for site evaluation tasks as follows:

- Preliminary sites/region evaluation and screening
- Geology and Seismology
- Atmospheric Extremes and Dispersion
- Exclusion Area and Low Population Zone
- Population Considerations
- Emergency Planning
- Security
- Hydrology
- Industrial, Military, and Transportation Services
- Ecological Systems and Biota
- Land Use and Aesthetics
- Socioeconomics
- Environmental Justice
- Noise
- SMR Sites Rankings
- MicroReactor Sites Rankings
- PPE Evaluations and Updated Rankings

Plus a final project report.

