FY 22 HMA – Grant Application Review Summary

Subapplication Number	EMA-2022-BR-001-0014		
Project Title	Robeson County – Resilient Power Project		
Applicant Name	North Carolina Department of Public Safety		
Subapplicant Name	Robeson County		
Project Type	Backup Power - Generator		
Recommendation	Yes with Conditions		
Federal Cost (FEMA GO)	$2,152,500	**Phased Project**	No
BCR (subapplication)	14.34	**Duplicate Project**	No
BCR (reanalysis)	2.47	**Benefits (reanalysis)**	$7,787,437

Summary

This is a technical feasibility and cost-effectiveness review in support of the National Technical Review process. Additional Environmental Planning and Historic Preservation (EHP), eligibility and completeness, and funding limitation considerations may affect the selection of this subapplication for further consideration and funding. No contact was made with the applicant or subapplicant; this review is solely based on information provided in the subapplication.

Scope of Work

The scope of work is well-defined and clearly explains the activities necessary to complete the work. The subapplicant has submitted a subapplication for the purchase and installation of 17 generators to provide backup power to two water treatment plants and 14 wells in Robeson County, North Carolina. The subapplication does indicate that the generator will be installed at two water treatment plants and 14 water wells and that these are critical facilities.

Technical Feasibility

Project Schedule

The schedule duration is 31 months. The schedule includes all items in the scope of work and is reasonable. The proposed project schedule does not include time for final inspections or project closeout but otherwise appears reasonable.

Cost Estimate

The cost estimate does not include sufficient line items consistent with the scope of work. It is implied but not explicitly stated that the presented cost for each generator is inclusive of all requisite equipment, including transfer switches, electrical conductor, and electrical conduit. It is not clear whether the cost estimate includes items such as the generator enclosure.

Technical Design Information

The following information and documentation were provided to support the project:

Item	Documentation	Evaluation
Technical Information	Consultant engineer documentation	Sufficient documentation was not provided to describe the technical information necessary to formulate the proposed solution.

Item	Documentation	Evaluation
		No documentation was provided about the fuel tank locations and automatic transfer switch sizes.
Backup Power Capacity	Letter from professional engineer	Documentation was provided to support the proposed capacity of the backup power systems.
Design Drawings, Maps, Photographs	Project maps/photos	Documentation was provided to support the project.
Flood Hazard Elevation Requirements	FIRM	The sites are not in the Special Flood Hazard Area except for Maxton Water Treatment Plant and Well Pump #5A, which are in Zone AE. The documentation does not indicate whether the electrical equipment will be constructed in compliance with local floodplain ordinance requirements and be elevated appropriately.
Wind Hazard Protection Considerations	No documentation was provided to support this item.	No documentation was provided to indicate how the proposed project will be protected against wind hazards per local building codes.

Based on the documentation provided, the project is technically feasible and effective at reducing risk to individuals and property from natural hazards. The following conditions were identified:

- Amend the proposed schedule to include essential scope of work elements, such as project closeout and final inspections.
- The cost estimate should not be submitted as a lump sum. Amend the cost estimate to contain sufficiently detailed information. Refer to HMA Guidance, Part IV, Section H.1. for guidance on creating a cost estimate.
- Provide documentation to support information about related equipment purchases including automatic transfer switch sizes and fuel tank locations.
- Provide documentation indicating the generators to be located at Maxton Water Treatment Plant (WTP) and Well Pump #5A will be elevated in accordance with ASCE 24.
- Provide documentation to demonstrate that the generator will be protected against natural hazards and wind-borne debris via a weather-protected enclosure or concrete wall, and that the generator will be appropriately anchored to resist design wind speed and/or design seismic event.

Cost-Effectiveness

The Benefit-Cost Analysis (BCA) was completed based on professional expected damages. The BCA evaluated the project as a critical facility building.

The following was found during review of the submitted BCA:

Cost Estimation

Input	Value	Evaluation
Project Useful Life (PUL)	19 years	This value is consistent with the FEMA standard value.
BCA Toolkit Initial Project Cost	$2,870,000	This amount is consistent with the subapplication project cost estimate.
Annual Maintenance Cost	$17,000	This amount is not reasonable. The subapplicant indicated that they estimated an annual maintenance of $1,000 per generator per year but did not indicate how they estimated this value.
BCA Toolkit Total Project Cost	$3,113,504	This amount is calculated based on the initial project cost, the annual maintenance costs, and the PUL.

Professional Expected Damages

Input	Evaluation
Facility Type	The facility type of utilities, providing potable water service, was used in the BCA. This input is consistent with the proposed project in the subapplication.
Before-Mitigation Damages	The before-mitigation Loss of Function damages were based on the default assumptions in the BCA Toolkit, which are estimated to start at a 5-year recurrence interval with a 1-day outage duration, 48-year with a 4-day outage, and 181-year with a 7-day outage. The default assumption in the BCA Toolkit are based on a 99-, 33-, and 10-percent chance of a 1-, 4-, and 7-day outage, respectively, over the estimated 19-year useful life of the proposed project.
After-Mitigation Damages	The after-mitigation Loss of Function damages were based on the default assumptions in the BCA Toolkit, which are estimated at a 181-year recurrence interval with 1-day outage duration based on the assumption that there is a 10-percent chance that during a power outage the backup might not operate.

BCA Assistance

This subapplication qualified for additional BCA assistance.

A reanalysis BCA was performed, and the following edits were made:

Input	Value	Explanation	Documentation
Annual Maintenance (Maxton Generators Mitigation Action)	$14,900	Annual maintenance was changed from an estimated $1000/generator submitted by the subapplicant and recalculated based on $10/kW to reflect a more conservative maintenance estimate.	N/A

Input	Value	Explanation	Documentation
Annual Maintenance (Lumber Bridge Generators Mitigation Action)	$12,900	Annual maintenance was changed from an estimated $1000/generator submitted by the subapplicant and recalculated based on $10/kW to reflect a more conservative maintenance estimate.	N/A
Before-Mitigation Damages	Deleted the 5-year recurrence interval with a 1-day outage duration for each mitigation action.	The 5-year recurrence interval with a 1-day outage duration was removed to account for possible redundancy in the water system and potential water storage capabilities that would prevent the loss of potable water caused by short utility outages.	N/A

The total benefits associated with this project, $7,787,437, are greater than the total project cost of $3,157,329, producing a BCR of 2.47.

Based on the documentation provided, the project is cost-effective.

Conclusion

Based on the information provided, the project is technically feasible and cost-effective; therefore, it is recommended for further consideration with the following conditions:

- Amend the proposed schedule to include essential scope of work elements, such as project closeout and final inspections.
- The cost estimate should not be submitted as a lump sum. Amend the cost estimate to contain sufficiently detailed information. Refer to HMA Guidance, Part IV, Section H.1. for guidance on creating a cost estimate.
- Provide documentation to support information about related equipment purchases including automatic transfer switch sizes and fuel tank locations.
- Provide documentation indicating the generators to be located at Maxton Water Treatment Plant (WTP) and Well Pump #5A will be elevated in accordance with ASCE 24.
- Provide documentation to demonstrate that the generator will be protected against natural hazards and wind-borne debris via a weather-protected enclosure or concrete wall, and that the generator will be appropriately anchored to resist design wind speed and/or design seismic event.

This review is an evaluation of the project's technical feasibility and cost-effectiveness. Additional EHP, eligibility and completeness, and funding limitation considerations may affect the selection of this subapplication for further consideration and funding.