

# ARCTIC GRID ENERGY SOLUTION (AGES)

## Energy resilience in the Arctic

### THE PROBLEM

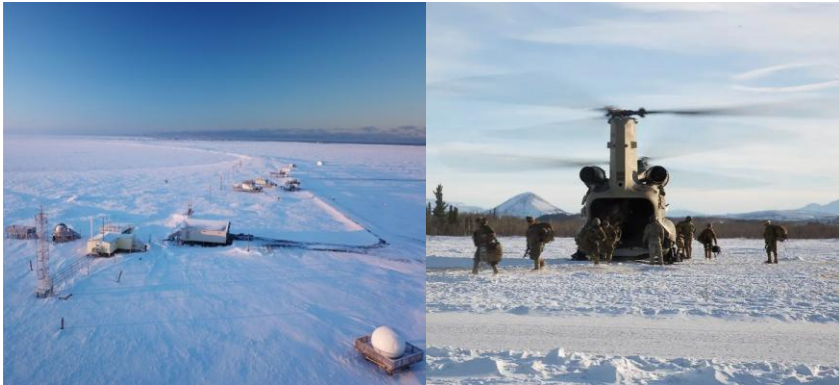
The Joint Force requires continuous, reliable power for sustained Arctic operations down to -60°F (-51°C). To address this need, and to remain competitive in the Arctic, high performance microgrids with energy storage capabilities for extreme cold weather are required. There is a critical need for military-ready energy systems to support Arctic operations for our national security.

Current operations are highly dependent on fuel resupply for generators making them highly susceptible to degradation and failure due to the extreme Arctic weather conditions. Specifically, AGES is focused on ensuring that existing military tactical generators can operate in extreme cold weather environments.

### THE COMMERCIAL SOLUTION

The primary solution is an energy storage/generator microgrid capability for extreme cold weather environments down to -60°F (-51°C). Additional impacts include:

- Reductions in generator fuel resupply
- Improved insulation
- Internal passive heating
- Capture of waste heat given off by internal or external components
- Higher power quality for mission critical equipment



### IMPACT

- Operational prototype will support Arctic Edge in FY24
- The microgrid may be adopted as part of the cold weather program of record for the U.S. Army Expeditionary Energy and Sustainment Systems.

### NEXT STEPS

- Finalize vendor selection/contracts September 2022
- Prototype development begins October 2022
- Prototype release expected at Arctic Edge 2024

### KEY FACTS

- The project will use a combination of cold-weather resilient batteries, improved insulation, internal passive heating, capture of waste heat given off by internal or external components, and active heating via hydronic coils.
- Current cold weather approaches for generator, batteries, and microgrid components are at Technology Readiness Level (TRL) 5-6 and the AGES project will advance cold weather technologies to TRL 7-8 through this multifaceted approach.

### DoD/USG PARTNERS

- NORTHCOM J4
- OUSD(A&S)/ OECIF
- OUSD(R&E)/RRTO
- USN/ ONR
- USA/ PM E2S2
- USACE/ ERDC-CRREL

### COMMERCIAL PARTNER

- TBD

### HIGHLIGHTS

- Effectively addresses the energy resilience requirements by reducing generator fuel resupply risks, providing scalable, flexible, and high-power quality for high energy demands, and deploying a resilient battery storage capability by 2024.
- Maintains our competitive and dominant posture in the Arctic against the GPC.
- Has the ability to transfer lessons learned to other important energy resilient infrastructure projects across the forces, and to fill the critical infrastructure gap.

### DIU FOCUS AREA

- Energy Portfolio

### CONTACT DIU

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