

Emergency Response in the Arctic (ERA): Investments for Global Capacities and Local Benefits

Key Project Contacts: Engineering Team: Thomas Sharkey, Rensselaer Polytechnic Institute (RPI), sharkt@rpi.edu; Martha Grabowski, RPI, grabom@rpi.edu; Al Wallace, RPI, wallaw@rpi.edu; **Social Science Team:** Tom Birkland, North Carolina State University, tabirkla@ncsu.edu; Marie Lowe, University of Alaska Anchorage, mlope@alaska.edu.

Project Objectives: Create operations research (OR) models that determine and co-produce knowledge on where, when, and how to build infrastructure that both (i) improves Emergency Response in the Arctic (ERA) and (ii) benefits local Arctic Alaska communities. In order to achieve this objective, we need to both understand how infrastructure improves ERA and how the local community would be impacted by the infrastructure (including the discourse around such investments). The team has formed community partnerships across Arctic Alaska in order to accomplish this research.

Keywords: Oil Spill Response, Search and Rescue, Mass Rescue, Governance, Infrastructure Planning, Community-Based Participatory Research

Progress to Date/Future Plans/Expected Outcomes:

Community-Based Research: We have formed an advisory committee of representatives from the North Slope Borough, the Northwest Arctic Borough, City of Nome, NANA Regional Corporation, the U.S. Coast Guard, and Alaska Clean Seas. The first meeting of this committee (March 2019) resulted in identifying several classes of “dual-use infrastructure” – infrastructure that both improves ERA and benefits communities – and community partners in Utqiagvik (visit in June 2019), Kotzebue (visit in July 2019), and Nome (visit in July 2019).

Dual-Use Infrastructure: In initial analysis and coding of community visits, *port infrastructure* and *telecommunications* emerged as both relevant and timely. Additional themes included the community’s ability to maintain new infrastructure into the future and talked with us about how it might impact subsistence activities, either positively or negatively. Current research in this area is examining the discourse around Arctic infrastructure in the communities.

OR Modeling: We have created OR models to understand response capabilities to mass rescue events from cruise ships and oil spill response in remote regions. Our future plans are to model the benefits that different types of dual-use infrastructure bring to the community. We are creating an OR model that can assess how infrastructure development across the region could be accomplished that both benefits communities and improves ERA. The model will be able to answer “what-if” questions like “What level of (outside) investment is necessary in order to ensure that each community receives certain benefits?” The output of the OR modeling efforts will be validated through our community partners and adaptations will be made based on their concerns.

NNA Community Collaboration and Research Coordination: Our team would like to coordinate data, both from engineering and the social sciences, on discussions around infrastructure in Arctic Alaska. We are currently working in Utqiagvik, Kotzebue, and Nome; however, we have postponed visits to these communities until a vaccine for the coronavirus has been created.

Advice for Overcoming NNA Project Challenges: The key issue right now is altering our timeline in response to not visiting the communities. We are currently exploring remote visits (e.g., through Skype/Zoom/etc.); however, this can only partially address our research process as we seek to validate our research findings.