

NNA Track 2: Responding to the Housing Crisis in the Arctic: A Transdisciplinary Approach across Physical, Natural and Social Systems

Key Project Contact(s): Cristina Poleacovschi, Iowa State University, poleacov@iastate.edu, PI
William Gallus, Iowa State University, wgallus@iastate.edu, Co-PI
Michael Perez, Auburn University, Mike.perez@auburn.edu, Co- PI
Kristen Cetin, Michigan State University, cetinkri@msu.edu, Co- PI
Bora Cetin, Michigan State University, cetinbor@msu.edu, Co- PI

Project Objectives and Methods:

- Form a multi-disciplinary research team to assess housing vulnerabilities (biophysical changes and household exposure to substandard living conditions)
- Form community partnerships based on meetings with and approval of tribal councils
- Determine needs regarding household living conditions (i.e. indoor air quality) and vulnerabilities using interviews and surveys with external stakeholders (i.e. government agencies, non-profits, engineering firms, etc).
- Organize workshops with community partners and the research team to facilitate feedback on vulnerability assessments and create summary reports of issues and preliminary resolutions.
- Use climate model output to estimate future impacts of warming on permafrost and the resulting damage to infrastructure.
- Develop case study curriculum for civil engineers with education professors regarding the housing issues in the Arctic to support critical engagement by future engineers

Keywords: Housing Vulnerability, Climate Change, Community Based Participatory Research, Rural Alaska

Progress To Date/Future Plans:

- The research team has bi-weekly/monthly meetings to coordinate and to build cultural competency and capacity for community based participatory research. Meetings are being arranged to determine the communities that we plan to reach out to over the next year.
- The case study curriculum has being developed with a team of education scholars. The case study will be piloted in the Fall in one civil engineering course. The goal is to increase awareness of housing issues in the Arctic and to improve critical consciousness among civil engineers.
- Stakeholders who work with rural Alaska communities have being interviewed (N=25) to identify the climate change adaptation barriers and drivers to address issues of infrastructure/housing. Data has been coded and will be submitted to a conference in May Preliminary results of interviews indicate that external stakeholders believe community leadership, funding, inclusion of local knowledge, and baseline data of environmental risks are essential to addressing biophysical risks to infrastructure in rural Alaska.
- A questionnaire is being developed for community stakeholders to identify the

Highlights or Expected Outcomes: This research will support the development of multi-disciplinary, culturally appropriate research to address housing vulnerability in rural Alaska. By providing an integrative understanding of housing vulnerability, targeted responses can be developed to address key vulnerabilities. Further, this project will design a case study curriculum for civil engineers regarding the housing issues in the Arctic using critical pedagogy perspectives to support critical engagement by future engineers.

NNA Community Collaboration and Research Coordination: The NNA community provides a unique community to better understand the contextual needs of research in rural Alaska and existing projects for potential collaboration. We are interested in learning more about ways researchers are better supporting the priorities of rural communities through research. The reports developed through this planning grant will provide insight for other researchers into research priorities as identified by community representatives.

Advice for Overcoming NNA Project Challenges: Due to the remote nature of many Alaska communities and cultural diversity, our research team has spent additional time building cultural competency and forming intentional management plans to ensure appropriate engagement with tribal councils. Working with collaborators who have strong, existing relationships with rural communities has supported this process.