

# 2018 NSF SMART AND CONNECTED COMMUNITIES PI MEETING

## ZEROH: Zero Energy Ready Homes, NSF# 1737538

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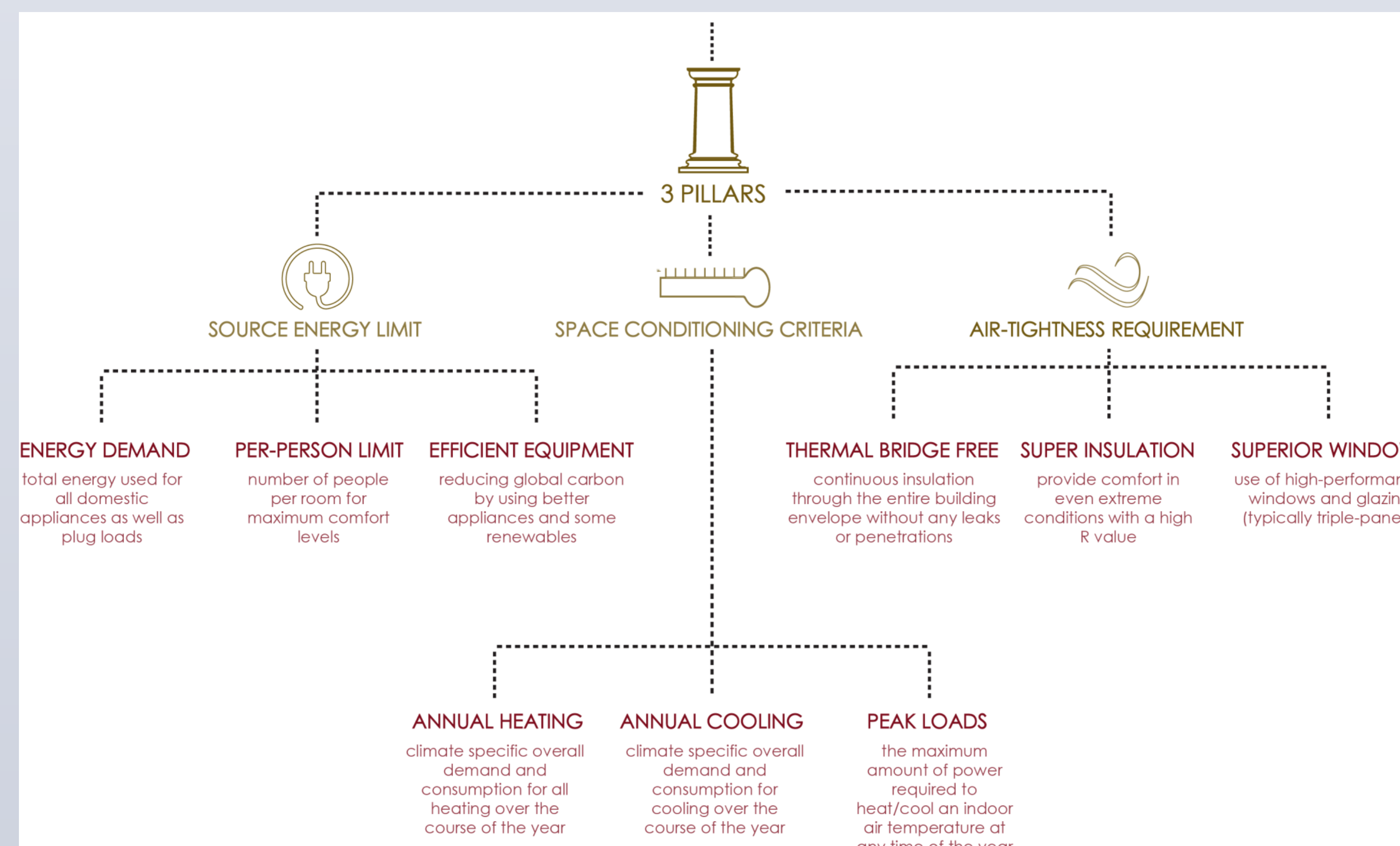
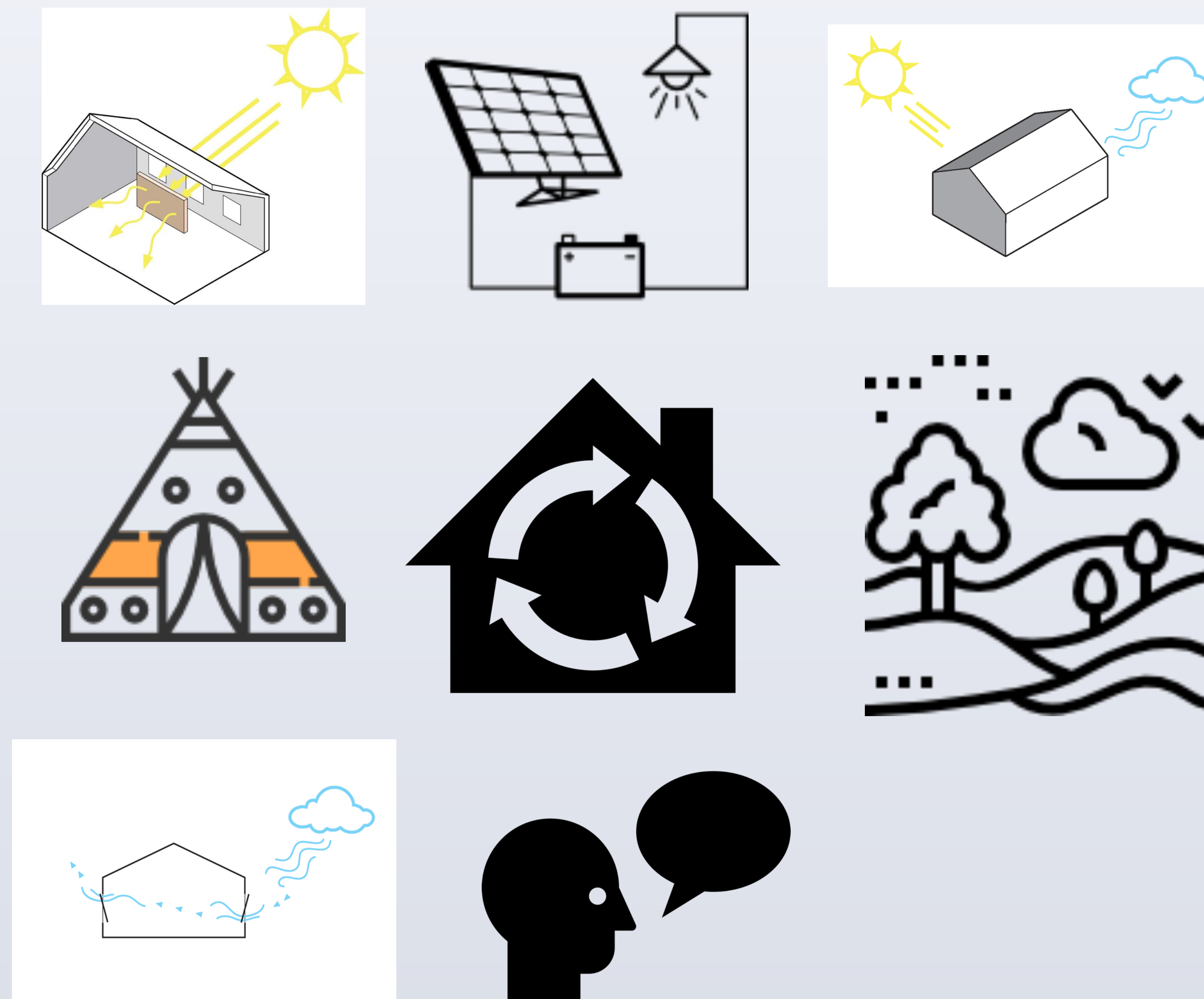
### Project Aims

- Develop zero energy ready homes for homes in remote rural communities
- Integrate cultural, environmental, and ethical dimensions into residential energy planning projects

### Integrative Research

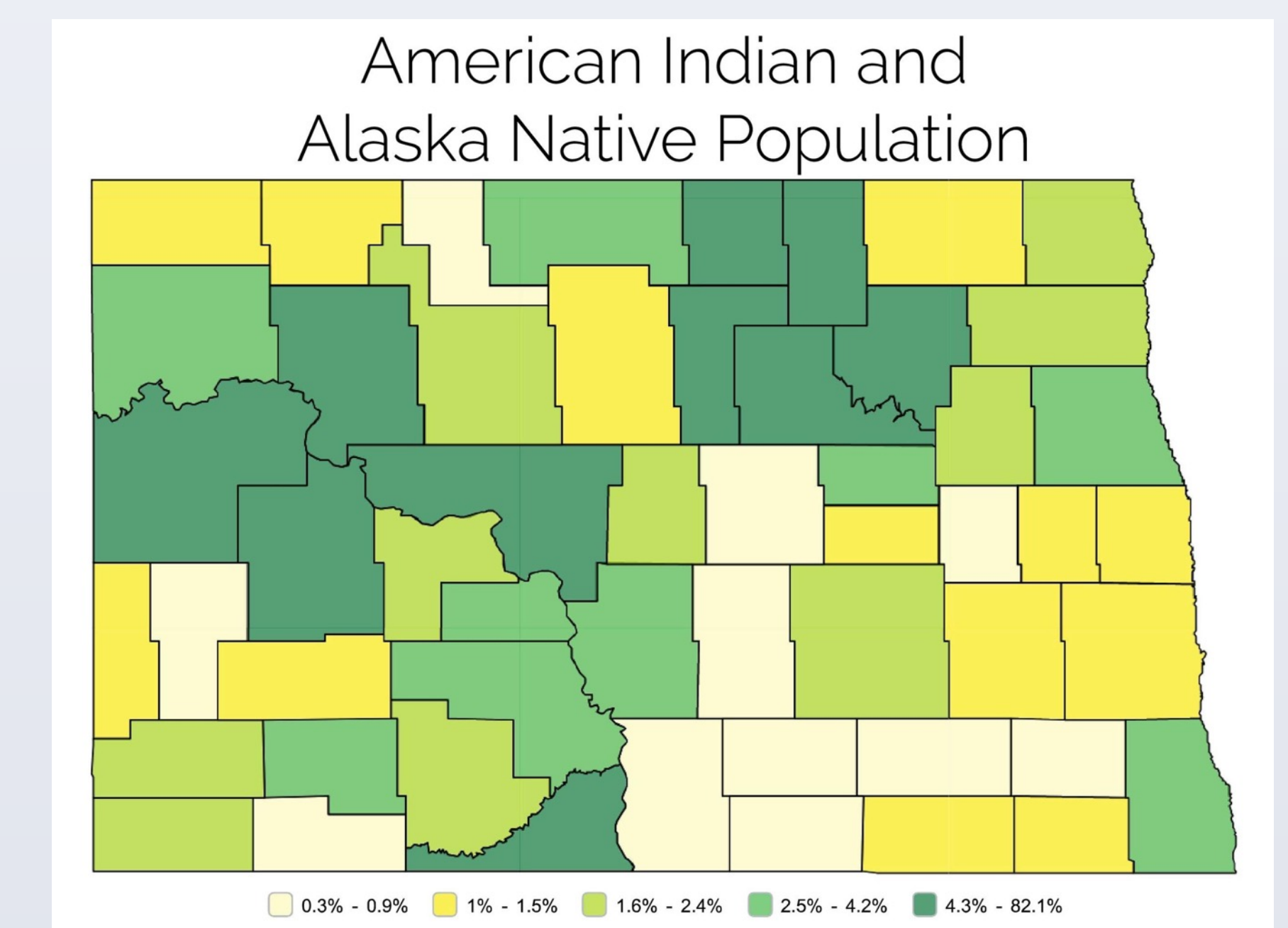
- Exploit passive home design technologies to develop primarily DC energy delivery systems for residences;
- Integrate photovoltaic and energy storage systems using next-generation earth-abundant materials;
- Community inputs will be factored into residential energy design module;

### Research Overview



### Community Engagement

- The community is constituted by residents of the Native American reservations in North Dakota



### What's next?

- Survey of current homes/residents in Native Indian Communities - Turtle Mountain, Standing Rock and New Town
- Evaluate effects of cultural factors in home design (site/door orientation, materials choice, covered entries, shade structures)
- Incorporating "*Passiv Haus*" Budgets in Home Architecture Models
- Hygrothermal modeling and analysis of preliminary models
- Analysis of Hybrid energy delivery architectures (AC-DC) service entrances

#### Acknowledgements

The PIs gratefully acknowledge support from the NSF via grants 1737538