“Promoting and advancing the development of healthy, durable, and sustainable shelter for Alaskans and other Circumpolar People”
CCHRC Research and Testing Facility

LEED Platinum

SIEMENS
Runner-up
Smartest Building in America
Research Programs

Building Envelopes & Materials

Energy & Mechanical Systems

Policy & Program Development
Net Zero-Passive House

Alaska is part of the Global Arctic Community
Indigenous Wisdom for our dilemma in time

FIRST NEEDS

• Water
• Food
• Shelter
Indigenous Wisdom for our dilemma in time

RESPONSIBILITY

- Sustainability
- Respect
- Community
Indigenous Wisdom for our dilemma in time
15,000 years of success should guide the process
Indigenous Wisdom for our dilemma in time

LEARN FROM NATURE

RETAINING heat, not PRODUCING heat, is the most important part of an animal’s survival.
The Need

32.5% of the housing stock is considered in need of major repair or falling apart.

74.4% of households are considered drafty.

21.8% of households are unable to maintain 68°F on cold days in the winter.

37.4% of households reported having mold or mildew in the home.

Fuel oil prices reach as high as $10.00 per gallon.

55.9% of households have income less than $20,000.

Arctic is changing, 184 Alaskan communities threatened by erosion.

Natural disasters are becoming more frequent.
Sustainable Northern Communities

Building Alaska’s Future Together
Indigenous wisdom
21st century technology
Design

SNS Prototype Floor Plan

LIFEWATER STP

HIGH UAQ COLD STORAGE

NIQIQAGUK COVERED STORAGE

QANI'ICHAQ AIR DUCT, ENTRY, BENCH

INNIGI'IK WOOD STOVE

KAIIIIVIK EMERGENCY ROOM

KIRKUVIK KITCHEN

ANAGVIK SAT TRASH

MIICVIK 3 BEDROOM 3

MIICVIK 2 BEDROOM 2

MIICVIK 1 BEDROOM 1

WARM

COOL

COLD
Energy and Cost Efficient

- Earth berming
- Sod
- Waste water treatment
- Heating and ventilation
- Alternative energy
- Lighting
Sustainable Northern Communities

“We need housing. Our young people have no place to live.”
George Paneak (1950-2009) Former Mayor of Anaktuvuk Pass

Design Challenges
- 16,000 HDD
- Electricity $.60/kWh
- Heating Oil $8/gallon
- 1400 gallons/yr.
- New house is $650,000
- Last house built ten years ago
- Context appropriate housing
- Transportation costs

Construction Outcomes
- Cost significantly less than new home quotes
- 160 gallons fuel annually
- Completed in four weeks
- Local work force
- Approaches net 0
Quinhagak

Design Charette (share it)
Building Envelope  Thermal Raft Foundation
Quinhagak

4-inch metal studs

Plastic spacer

R-40 walls, floor, roof
Constructability

Prefab sections for speed of assembly
Quinhagak House Construction
Quinhagak House - Performance

- 132 gallons fuel oil first winter
- Superior indoor air
- Built in 6 weeks
- Local labor force
- Light materials
- High owner comfort
- Significantly less cost
- Durable
Prototype to Production
Quinhagak House becomes the people’s
Quinhagak House becomes the people’s

120 gallons oil annually
Warm, healthy, affordable
Newtok
Newtok/ Merktarvik
Newtok/ Merktarvik
So many challenges we face together
Sustainable Northern Communities
A HOLISTIC APPROACH
Only through a holistic approach can we create healthy, thriving, sustainable communities.
Sustainable Northern Communities
A HOLISTIC APPROACH

SECURITY, RESILIENCY, SUSTAINABILITY

Community Engagement – Multi-agency Approach – Economic Development – Phased Prioritized Projects

Shishmaref, Alaska
Photo Credit: Arctic Photo

Kivalina, Alaska
Photo Credit: Flicker

Newtok, Alaska
Photo Credit: NYTimes
Our Past

Their Future
Qagaasakung, Quyanaq, Quyana, Mahsi’, Gunalcheesh, Haw’aa, Merci!

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