

## DEPARTMENT OF COMMERCE, COMMUNITY, AND ECONOMIC DEVELOPMENT Division of Community and Regional Affairs

# Increasing Resilience in Alaska's Environmentally Threatened Communities

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## Alaska by the Numbers



Alaska is **1/5** the size of the contiguous Lower 48

The average rural community population in

Alaska



95 % of the 144 environmentally threatened communities facing infrastructure impacts from erosion, flooding and permafrost thaw are small and low-income

Over **1/3** of all Federally Recognized Tribes are in Alaska

229 Alaska Tribes

345 Other Tribes



**200** of Alaska's **336** communities are off the road system

Each year the average rural Alaskan harvests

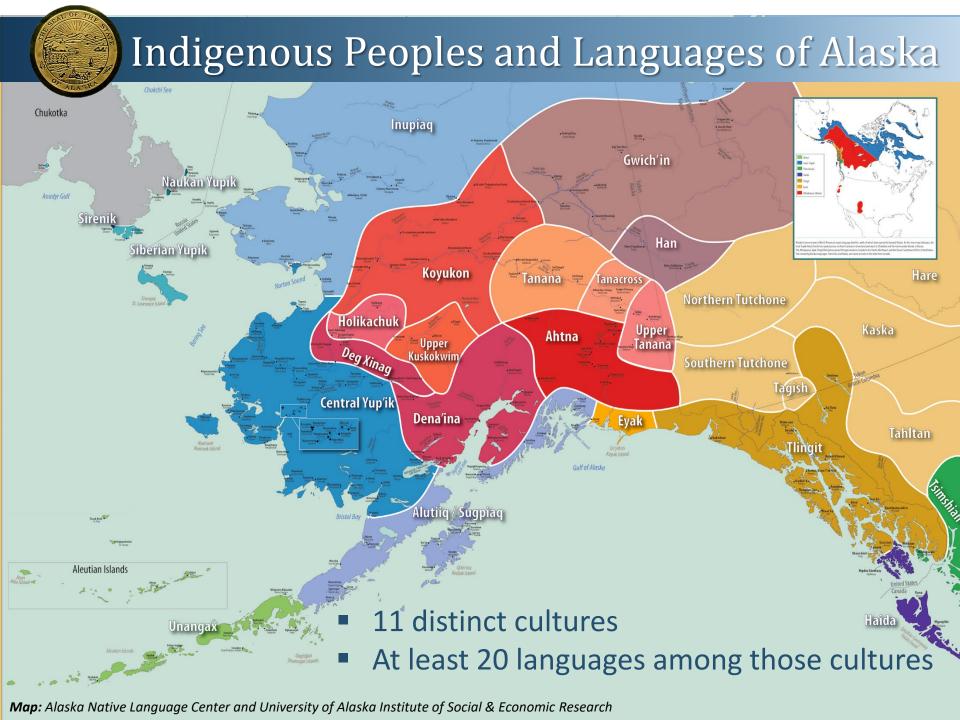
295 pounds of food from

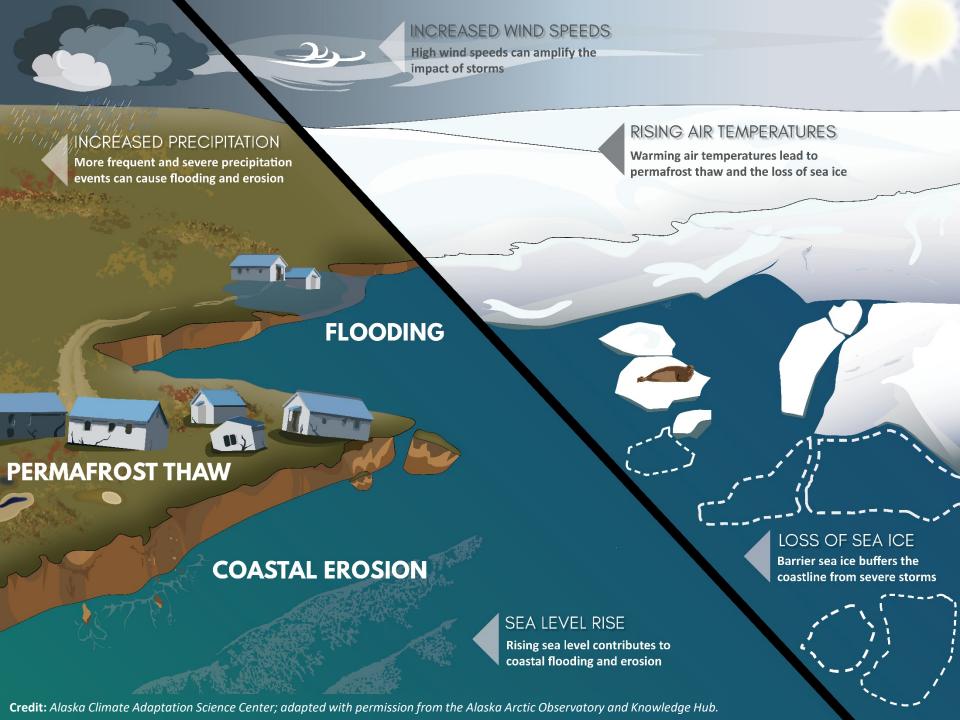
the land and waters

In February 2020, the cost of gas in Noatak, AK was

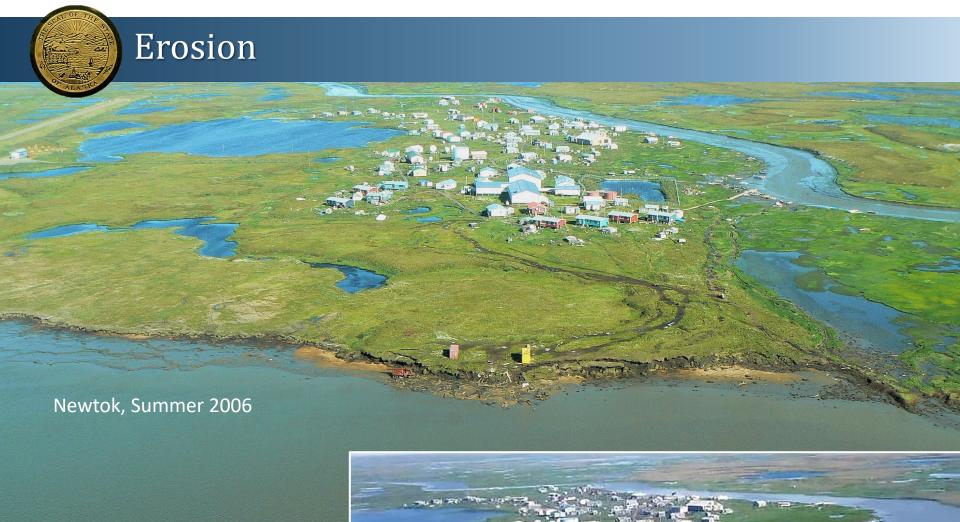
\$10/gallon







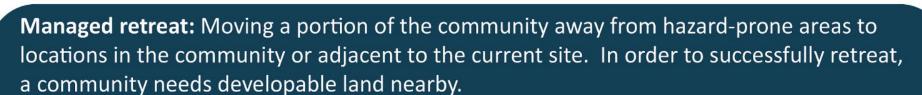








**Protection-in-place:** The use of shoreline protection measures and other controls to prevent or minimize impacts. These measures allow the community to remain in its current location.





**Relocation:** Moving the entire community to a new location that is not connected to the current site. Relocation is the option of last resort.





## Protection-in-Place











## Phases of Community Resilience

#### **Assess Risk**

- Collect site-specific baseline data such as LIDAR, bathymetry, tidal determinations, river currents, sediment transport, flood history, and geotechnical investigations
- Determine the suitability of available climate projections and downscale models if appropriate
- Conduct hazard-specific forecasts such as shoreline mapping, inundation and storm surge modeling, hydrodynamic modeling, permafrost degradation modeling, etc.



#### **Planning**

- Develop strategies to respond to the risks identified in the previous step, accounting for the requirements of individual types of infrastructure, such as power plants, water and sewer distribution lines, barge landing sites, schools, washeterias, community centers and other vital offices or facilities.
- Identify both near-term and long-term solutions.
- Decide whether project(s) should be managed locally or with outside assistance.



#### **Implementation**

- Carry out preferred solutions or pathways through locally-managed construction or outside project management contractors.
- Includes permitting, contracting, administrative reporting, and reimbursement processes.



**Local Understanding of Risk** 

**Local Actions to Reduce Risk** 

**Increased Local Resilience** 



### Challenges & Vulnerabilities of Rural Alaska

#### **Development Costs**

- High transportation costs due to the vast distances between villages
- Lack of roads about 60 % of Alaska's communities are not connected by roads
- Lack of local resources (gravel) for projects
- Harsh temperatures
- Shortage of remote construction workers

Level of technical expertise required for most projects

Lack of redundancy in physical infrastructure systems

Limited communication infrastructure



## **Housing Development Costs**

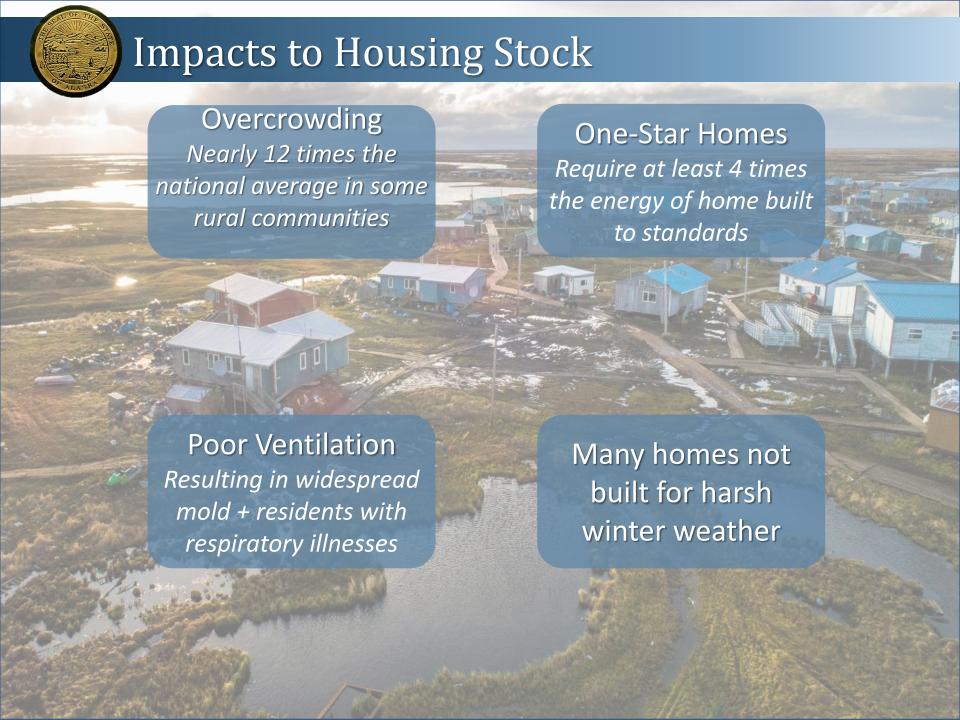
#### Construction

Total development costs (including land, platting, roads, water and sewer in addition to home construction) typically range from \$450,000 - \$750,000 a unit\*

#### Infrastructure

- Infrastructure construction typically costs millions of dollars.
- Piped water and sewer services may never be feasible In many rural communities
- The housing developer (tribe, housing authority, or community organization) is responsible for connecting houses to roads, water, and sewer

**Alaska Housing Finance Corporation** 





### Exacerbation of Existing Stressors

Overcrowding + Lack of
Housing
Approximately 12 times the national
average in some areas

Access to Clean Water
Impacts human health waterborne diseases; decreased
availability and quality of
drinking water

Increased Accidents + Injuries

Attributed to extreme weather events, such as droughts, floods, storms, and ice loss

Food Insecurity
Diminished food quality and
quantity of subsistence
resources; decreased access

Decreased Mental Health

Acute events and slower-moving

impacts close to home are

causing anxiety, depression, and

post-traumatic stress disorder

## Newtok 2006-Present











## Newtok 2006-Present



Community decision to relocate



Review of alternate sites/Site selection process



Land exchange with USFWS for site control

Request to State for Assistance

2006



#### Newtok Planning Group 2006-Present

#### Newtok

- Newtok Village Council
- Newtok Native Corporation

#### State of Alaska

- Commerce, Community, and Economic Development/Community and Regional Affairs— group coordinator
- Environmental Conservation/Village Safe Water Program
- Transportation and Public Facilities
- Military and Veterans Affairs/Homeland Security and Emergency Management
- Education and Early Development
- Health and Social Services
- Alaska Energy Authority
- Alaska Governor's Office
- Alaska Legislative Representatives

#### **Regional + Non-Profit Organizations**

- Association of Village Council Presidents, Regional Housing Authority
- Alaska Native Tribal Health Consortium
- Coastal Villages Region Fund
- Lower Kuskokwim School District
- Rural Alaska Community Action Program
- Yukon-Kuskokwim Health Corporation

#### **Federal**

- U.S. Army Corps of Engineers, Alaska District
- Economic Development Administration
- National Oceanic and Atmospheric Administration
- DoD Innovative Readiness Training Program
- USDA, Rural Development
- USDA, Natural Resources Conservation Services
- Housing and Urban Development
- Bureau of Indian Affairs
- Federal Aviation Administration
- Environmental Protection Agency
- Denali Commission
- Alaska Congressional Delegation Representatives



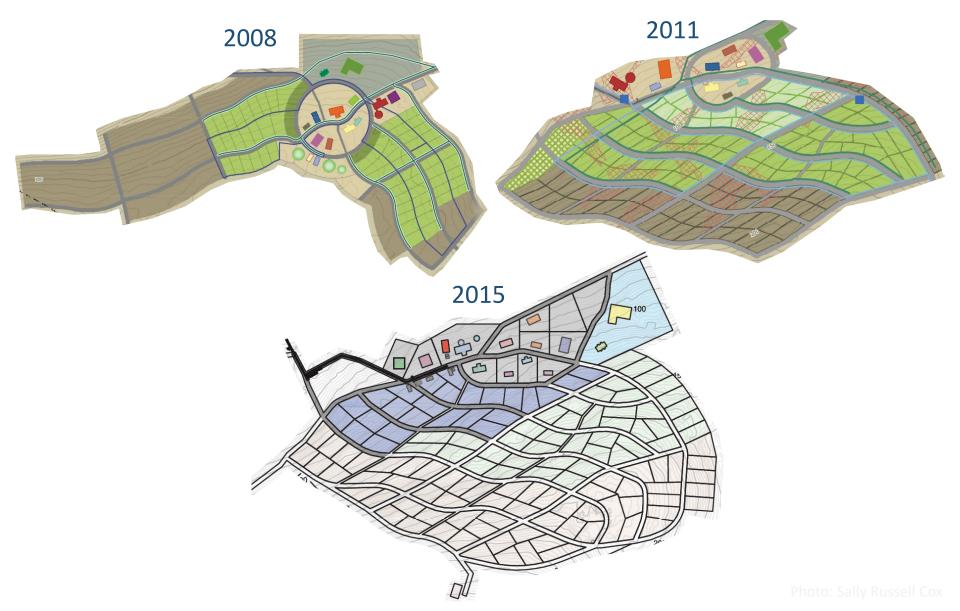


## Pioneer Infrastructure Development





#### **Conceptual Community Layout Planning**





## 2012 Mertarvik Strategic Management Plan





## Guiding Principles for Newtok Relocation

The relocation of Newtok will be defined by our Yup'ik way of life.

**Our Guiding Principles are:** 

MERTARVIK

Ikayuqurluteng, aknirtenritellkainek,
assirluteng calillerkaitnek

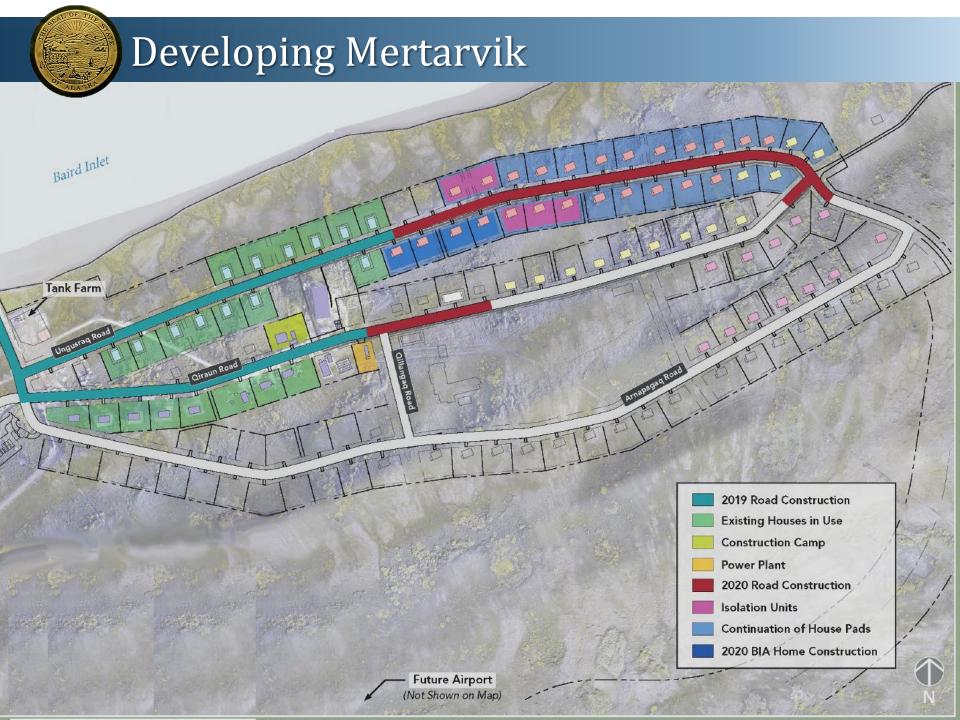
a community that builds together for the safe and healthy future of Newtok

- To remain a distinct, unique communityour own community
- To stay focused on our vision by taking small steps forward each day
- To make decisions openly and as a community and look to elders for guidance
- To build a healthy future for our youth
- Our voice comes first we have first and final say in making decisions and defining priorities



## Guiding Principles for Newtok Relocation

- To share with and learn from our partners
- No matter how long it takes, we will work together to provide support to our people in both Mertarvik and Newtok
- Development should:
  - Reflect our cultural traditions
  - Nurture our spiritual and physical well-being
  - Respect and enhance the environment
  - Be designed with local input from start to finish
  - Be affordable for our people
  - Hire community members first
  - Use what we have first and use available funds wisely
- To look for projects that build on our talents and strengthen our economy





## Developing Mertarvik



## Mertarvik Housing













### Mertarvik Housing

HUD Native American
Housing Assistance and
Self Determination Act of
1996 (NAHASDA)

Bureau of Indian Affairs
Housing Improvement
Program

FEMA Hazard
Mitigation Grant
Program (housing
buyouts)

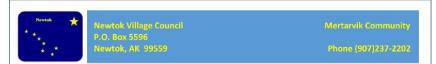
Congressional Allocation to Denali Commission (Cold Climate Housing Research Center homes) FEMA Pre-Disaster
Mitigation
Program (housing
pads)

Cares Act (isolation units which will later revert to community housing)



#### Mertarvik Housing Policies

- Identifies how families will become eligible for housing based on level of threat and income
- Developed by the Newtok Village Council and reviewed by state/federal agencies with housing expertise
- Compliments other policies for the relocation effort, including procurement and purchasing policies and construction standards



#### **Mertarvik Housing Policies**

Adopted May 23, 2019, Revised Jan. 14, 2020

#### 1. Purpose and Scope:

- 1.1. These Policies guide the relocation of the entire village of Newtok to Mertarvik—the first time in recent years that a village has completely relocated outside of a federal disaster declaration.
- 1.2. The Policies are intended to be consistent with all applicable federal and state laws and policies that relate to dwelling unit funding, including but not limited to 2 C.F.R. Part 200 and the policies of the Association of Village Council Presidents Regional Housing Authority (AVCP). The Policies were reviewed by a committee of housing agencies who offered technical assistance. Under the policies of some funding programs, only residents with sufficiently low-income are eligible to receive dwelling units. Other residents will receive dwelling units through other funding that is less restrictive. In the event of conflict between the Mertarvik Housing Policies and those of an entity providing funding for a given home, the latter shall prevail.
- 1.3. These policies are intended to complement other Newtok/Mertarvik policies, including but not limited to the Newtok Procurement and Purchasing Policies and the Mertarvik Construction Standards.



#### Lessons Learned

#### Community-Driven Approach

- Empowers and honors community decision-making, sovereignty, and self-determination
- Prioritizes local workforce development

## Data Collection + Risk Assessments

 Foundational to community understanding risk and making informed decisions about adaptation

## **Engaged Partnerships and Governmental Coordination**

 Addressing funding and technical assistance gaps requires collaboration, leveraging of resources, and coordination of expertise

#### Reprioritized Development

 The speed and severity of environmental threats may necessitate the development of pioneer housing before final infrastructure is in place.





#### Unmet Infrastructure Needs of Alaska Native Villages

#### **Congressional Request to Bureau of Indian Affairs:**

"...develop a report outlining the unmet infrastructure needs of tribal communities and Alaska Native Villages in the process of relocating to higher ground as a direct result of the impacts of climate change on their existing lands."

[1]

- [1] FY 2020 House appropriations report 116-100
- [2] Including 4 Alaska Native Non-Profits and 4 Alaska Native Regional Health Corporations
- [3] Communities in Threat Groups 1 and 2 for erosion, flooding and thawing permafrost



### **Estimating Unmet Needs**



Total Need

The \$\$ needed over next 50 years to protect infrastructure

Existing Support

The \$\$ currently available through federal programs. About \$13 million average per year



#### Estimating Infrastructure Costs

#### **Protect-in-Place**

Can physical measures be implemented to mitigate threats?

Yes

Select: Identify the type of structure mitigation from a list of options.

Quantify: Use map products to delineate quantities (length, area, quantity).

Estimate: Determine cost based on regional unit cost factors (quantity x unit cost).

#### **Managed Retreat**

Is there a safe place within the existing community to move threatened facilities?

Yes

No

Quantify: Use map tools to delineate the extend of the community impacted by the threats.

Estimate: Determine cost based on a percentage of modified baseline relocation cost adjusted by regional and population factors.

#### Relocation

Is relocation to the new site the only feasible mitigation option?

Yes

Estimate: Determine the cost from baseline relocation cost modified by regional and population factors.



#### Estimating Unmet Needs



\$77-97 million/year (-\$80 million average) over next 10 years

\$90-100 million/year over next 10 years\*

\$13 million average/year

\*Alaska Native villages face an estimated \$3.5 billion in threats to infrastructure over the next 50 years from erosion, flooding, and permafrost thaw.



#### Total Need: \$3.45 Billion

- \$3.5 Billion over 50 years
- \$90 \$110 million per year over the next 10 years
- Additional \$830 million for hub communities

#### Vulnerability Assessment

- 119 communities need 1 or more assessments
- \$32M required for assessments

Geographical Region	Regional Costs	
Aleutian and Pribiloff Islands	\$	68,805,000
Arctic Slope	\$	281,600,000
Bristol Bay	\$	72,290,000
Interior	\$	158,480,000
Northwest	\$	1,172,710,000
South East and South Central	\$	26,430,000
Yukon Kuskokwim	\$	1,673,535,000
TOTAL	\$	3,453,850,000

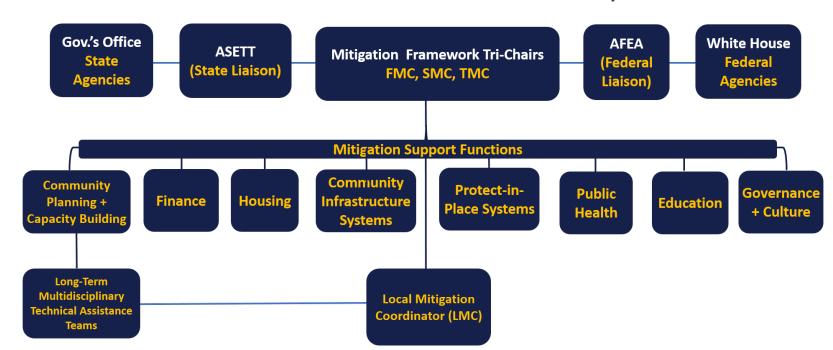
#### Key Assumptions

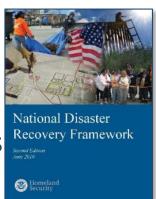
- Threats can be addressed as mitigation
- Professional judgements don't represent community decision-making
- Costs in 2020 dollars



# Environmentally Threatened Community Mitigation Framework

- Key Mitigation Framework Elements:
  - Guiding Principles
  - Dedicated Management/Leadership Positions
  - Coordinating Structure of Required Support Capabilities
  - Assigned Agency Roles and Responsibilities
  - Adoption by Both State and Federal Leadership
- Modeled after FEMA's National Disaster Recovery Framework







# A Phased Approach to Village Relocation



### 1: Relocation Decision Phase 1A

- Conduct environmental threat assessment/hazard impact analysis
- Prepare a relocation/ protect-in-place options analysis report
- Get state, federal, local government action agreement

#### Phase 1B

- Establish local relocation coalition
- Ensure administrative procedures, procurement and financial policies are in place.
- Obtain professional services as necessary
- Select local relocation coordinator
- Find support for community travel costs
- Develop emergency response / evacuation plan
- Implement temporary protection measures



## 2: Site Selection and Acquisition

#### Phase 2A

- Define community criteria for relocation site
- Identify potential relocation sites
- Analyze potential relocation sites
  - Perform aerial photography and site mapping
- Perform geotechnical hydrological investigation of alternative relocation sites
- Conduct the site election process

#### Phase 2B

· Acquire title to land



## 3: Getting Ready

#### Phase 3/

- Conduct baseline envtl studie
- Conduct geotechnical and hathymetric studies
- Complete planning stage topographical study
- Conduct airport relocation study
- analysis + design study
- Prepare quarry recon, report
- Prepare sanitation facilities prelim. engineering report

#### Phase 3B

- Complete Strategic Mgmt Pla
- Construct harge landing
- Prepare master plans for energy, water/sewer + housing
- Environmental Analysis
- Prepare community layou
- Prepare airport layout pla
- Design/construct homes access roads, landfill
- Design evacuation shelter, water + wastewater system

## 4: Pioneering

#### Phase 4A O population

- Complete building relocation assessment
   Design pioneer runway
- Prepare townsite
   development plan
- Design townsite road
- Complete platting, rightsof-way, site control
- Develop material source
- Install man-camp, eqpt. + temporary fuel storage
- Design staged power + water + sewer plants

## Phase 4B 25-100 population

- Build multi-purpose/
- · Build access roads
- Build townsite roads
- Install modular power and water/sewer plants
- Build/relocate more homes
- Design bulk fuel
- Design school + clinic

#### 5: Transition

#### Phase 5A 100+ population

- Install temporary community service space in evacuation shelter for school, clinic, post office
   Design telephone + cable
- systems
- Build more townsite roads
- Build pioneer runwayBuild sewage lagoon +
- Build/relocate more homes
- Install onsite sanitation systems in homes
- Finalize airport + acces
   road design

#### Phase 5B 200+ population

- Complete telephone + cable systems
- Build FAA lighted airport
- Build bulk diesel + gasoline tank farm; connect tank farm to power plant
- Install fuel header pipeline from barge landing to tank

## **6: The Final Move** 350 + population

- Build/relocate clinic
- Build/relocate remaining community buildings
- Build/relocate K-12 school
- Build remaining townsite roads (Townsite Roads Stage III)
- Build/relocate remaining homes (housing Stage III)
- Design/build piped water/sewer + water treatment systems
- Design/build power grid
- · Build cross-wind runway



# 7: Decommissioning the Old Village

350 + population

- Conduct inventory + assessment of remaining buildings, infrastructure and facilities at old village
- Develop a workplan for assessing the site
- Conduct field assessment to determine safe contaminant levels for subsistence use
- Prepare a Site
- Characterization Report
  Remediate the old village



## Contact:

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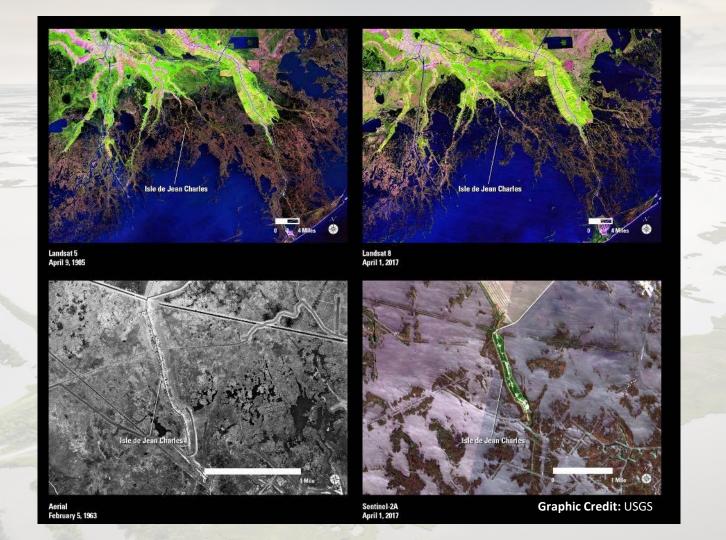
Web: <a href="https://www.commerce.alaska.gov/web/dcra/CommunityResilienceandClimateAdaptationPrograms.aspx">https://www.commerce.alaska.gov/web/dcra/CommunityResilienceandClimateAdaptationPrograms.aspx</a>





- Isle de Jean Charles: Past and Present
- Timeline: From Grant Award to Site Development
- Resettlement Site: Community
   Planning, Participation and Site
   Selection
- The New Isle: Site Design and Progress
- Lessons Learned





- Office of -

COMMUNITY



# January 2016

**HUD** awards \$48.3 million in CDBG-**NDR** funding to Louisiana for the Resettlement of Isle de **Jean Charles** 

# June - Nov. 2016

**Data gathering** and community engagement

**Preliminary land** use and infrastructure survey of IDJC

PHASE I

# Dec. 2016 - June 2017

**OCD** completes exhaustive site evaluation process throughout Terrebonne Parish

Residents visit potential sites for the new community

# January 2019

Louisiana **Land Trust** purchases 515acre tract for development of The New Isle

**Development** and construction begins

**March 2019** 



PHASE III



PHASE II









# Community Participation

~150

past and current IDJC community members

community meetings (2017 – 2020)

3

design workshops (2018) 6

steering committee meetings (2018)

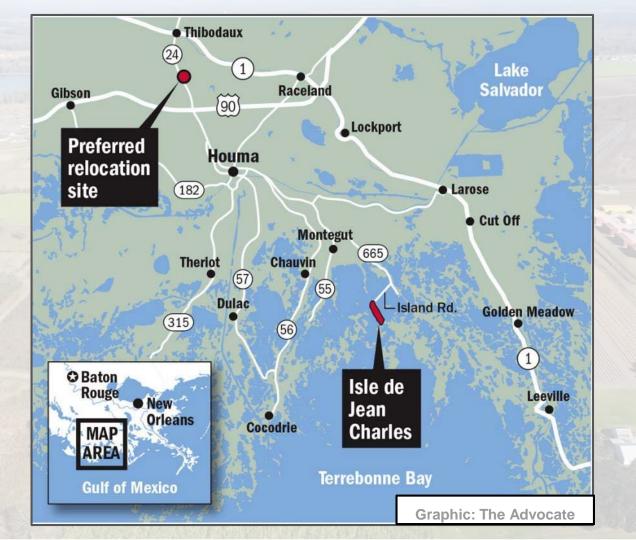


# Selecting a Site

















# Rendering of The New Isle

















## **MARCH 2020**

Infrastructure construction begins





## **MARCH 2021**

Residential construction begins





## **APRIL 2021**

Residential construction completed





EVELOPMEN

# **Lessons Learned**

Invest in community-based knowledge and local history

Create early local, state, business, nonprofit and community partnerships

Manage lines of communication

Build administrative capacity

Emphasize co-design process









