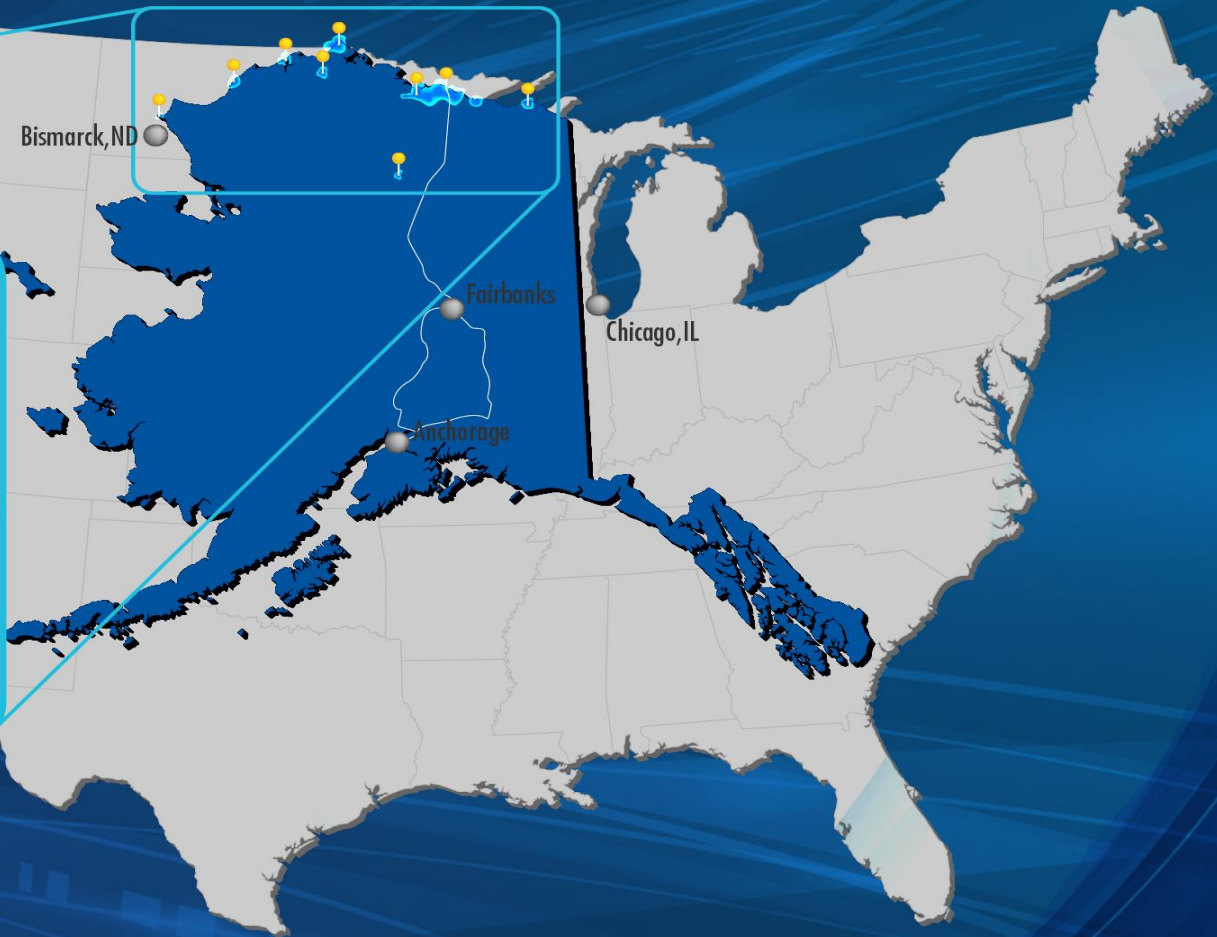


North Slope Broadband

October 10, 2019





ASTAC's Service Area

ASTAC's service area - Point Hope to Kaktovik
90,000+ square miles, which is larger than
40 of the 50 states.



Completed Fiber Projects 2017 - 2019



One of the first customers on ASTAC fiber (Wainwright)

Point Hope

- Structures reached: 100%
- 38,000 feet of fiber

Wainwright

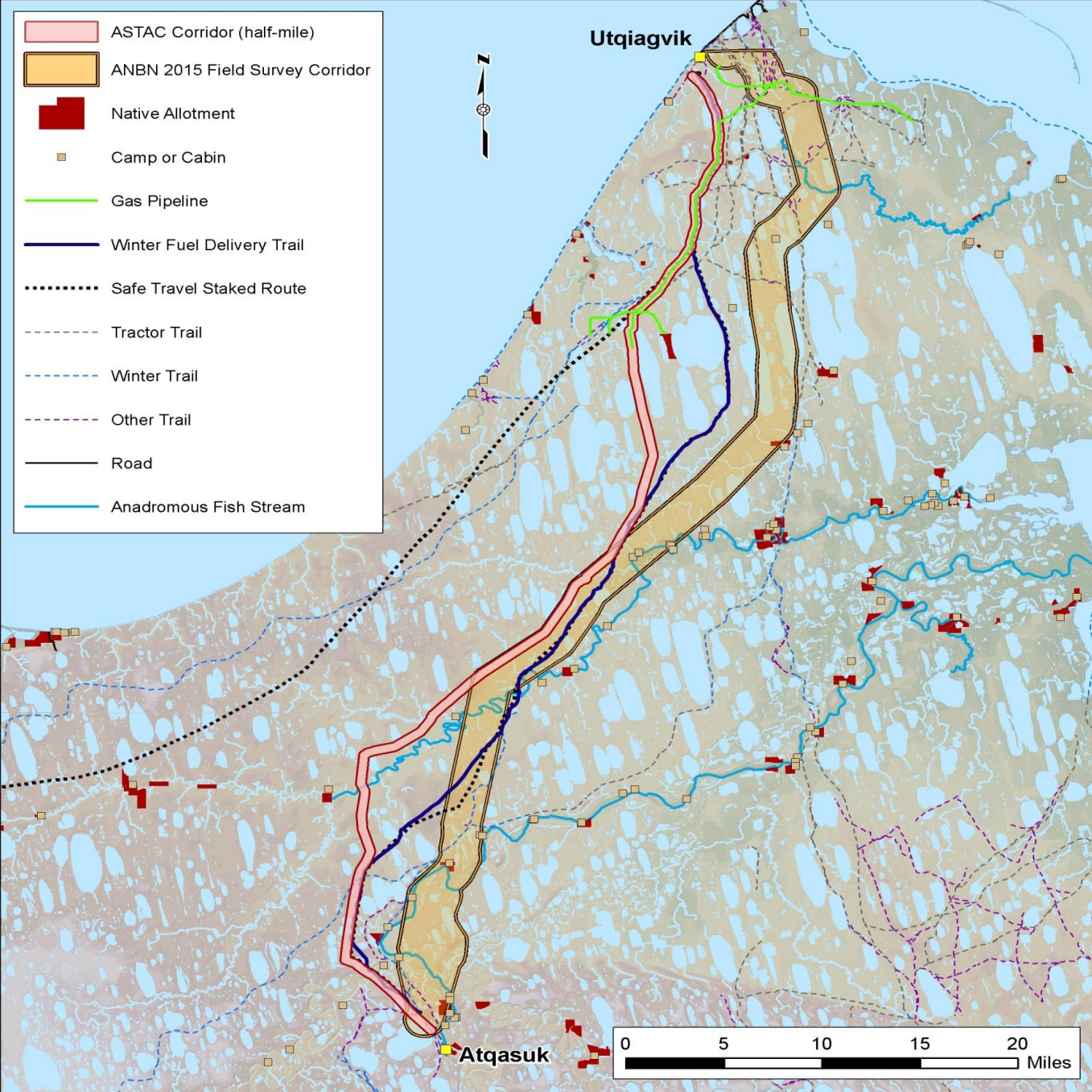
- Structures reached: 100%
- 40,000 feet of fiber

Nuiqsut

- Structures reached: 100%
- 35,000 feet of fiber

Utqiagvik

- Structures reached: 100%
- 218,600 feet of fiber



Fiber to Atqasuk 2018 - 2021

Permitting and ROW Status

North Slope Borough

- Title 19 Conditional Use **ISSUED**
- Field Work Survey Development **ISSUED**
- IHLC/TLUI Permits **ISSUED**

State of Alaska

- SHPO **ISSUED**
- TWUA & Title 16 Permit **ISSUED**

Bureau of Land Management

- ROW Grant **ISSUED**

Kaktovik Microwave 2018 - 2021



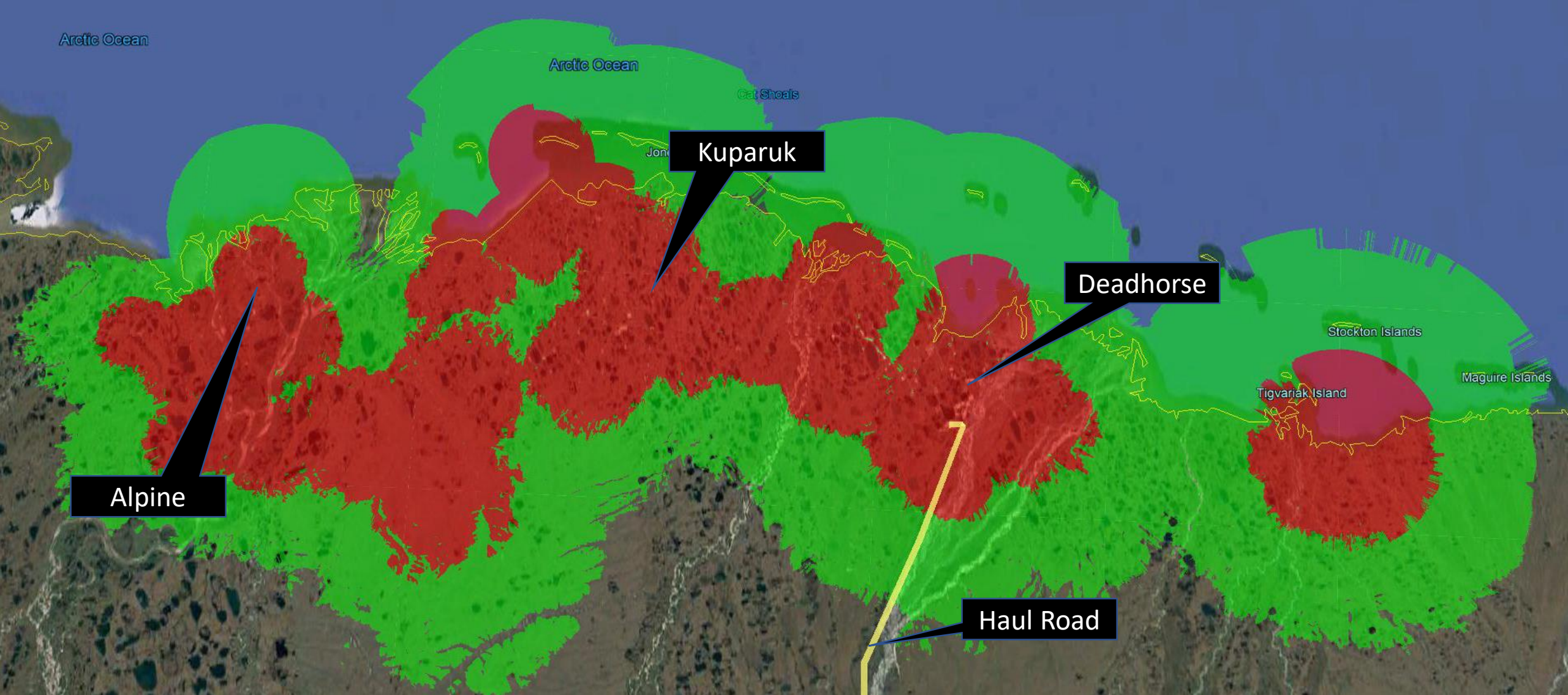
Wireless 4G & LTE Advancements

Eighteen 4G deployments between 2015 –2016

Sixteen LTE deployments 2017 – Present

- Kotzebue
- Point Hope
- Wainwright
- Utqiaġvik
- Nuiqsut
- 11 oil field sites
- 12 additional sites to be completed in 2020

North Slope 4G LTE Coverage





Technology

- Network reliability
- Automation and M2M business intelligence
- Remote control management, robotics, and supply chain tracking



Culture

- Connecting communities
- Adoption of cloud services



Investing

- We are on the cusp of integrating telecommunications into school curriculum
- Connecting the world to rural Alaska



Resilience

- How can we continue to provide affordable service with a quality experience
- Transformational bandwidth



Growth

- IOT moving the technology forward
- LAN/WAN, wireless networks, Wi-Fi in schools and community centers
- Video, data collection, system monitoring



Remote

- Seattle is the closest internet exchange (IX)
- Internet peering in Alaska currently goes to the lower 48



People

- The people are the greatest resource on the North Slope
- With high speed internet possibilities are endless
- Functionally we are there, but cost limits the adoption



Innovation

- ASTAC is working to stimulate advancement
- ASRC tech camps, makers space, coding camps, and drone camp hosted by the NSB School District



Connection

- North Slope can become an example of connected/smart communities
- Middle mile cost is financially challenging, how do we overcome the problem



Opportunity

- To grow, change and do things better than before
- Collaboration between companies