ALASKA ENERGY AUTHORITY

AEA ENERGY DASHBOARD AND STATEWIDE SURVEY

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ALASKA ENERGY AUTHORITY

About AEA

AEA's mission is to reduce the cost of energy in Alaska. To achieve this mission, AEA strives to diversify Alaska's energy portfolio — increasing resiliency, reliability, and redundancy.

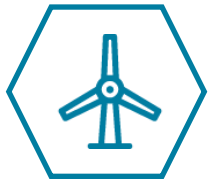
Railbelt Energy – AEA owns the Bradley Lake Hydroelectric Project, the Alaska Intertie, and the Sterling to Quartz Creek Transmission Line — all of which benefit Railbelt consumers by reducing the cost of power.

Power Cost Equalization (PCE) – PCE reduces the cost of electricity in rural Alaska for residential customers and community facilities, which helps ensure the sustainability of centralized power.

Rural Energy – AEA constructs bulk fuel tank farms, diesel powerhouses, and electrical distribution grids in rural villages. AEA supports the operation of these facilities through circuit rider and emergency response programs.

Renewable Energy and Energy Efficiency – AEA provides funding, technical assistance, and analysis on alternative energy technologies to benefit Alaskans. These include biomass, hydro, solar, wind, and others.

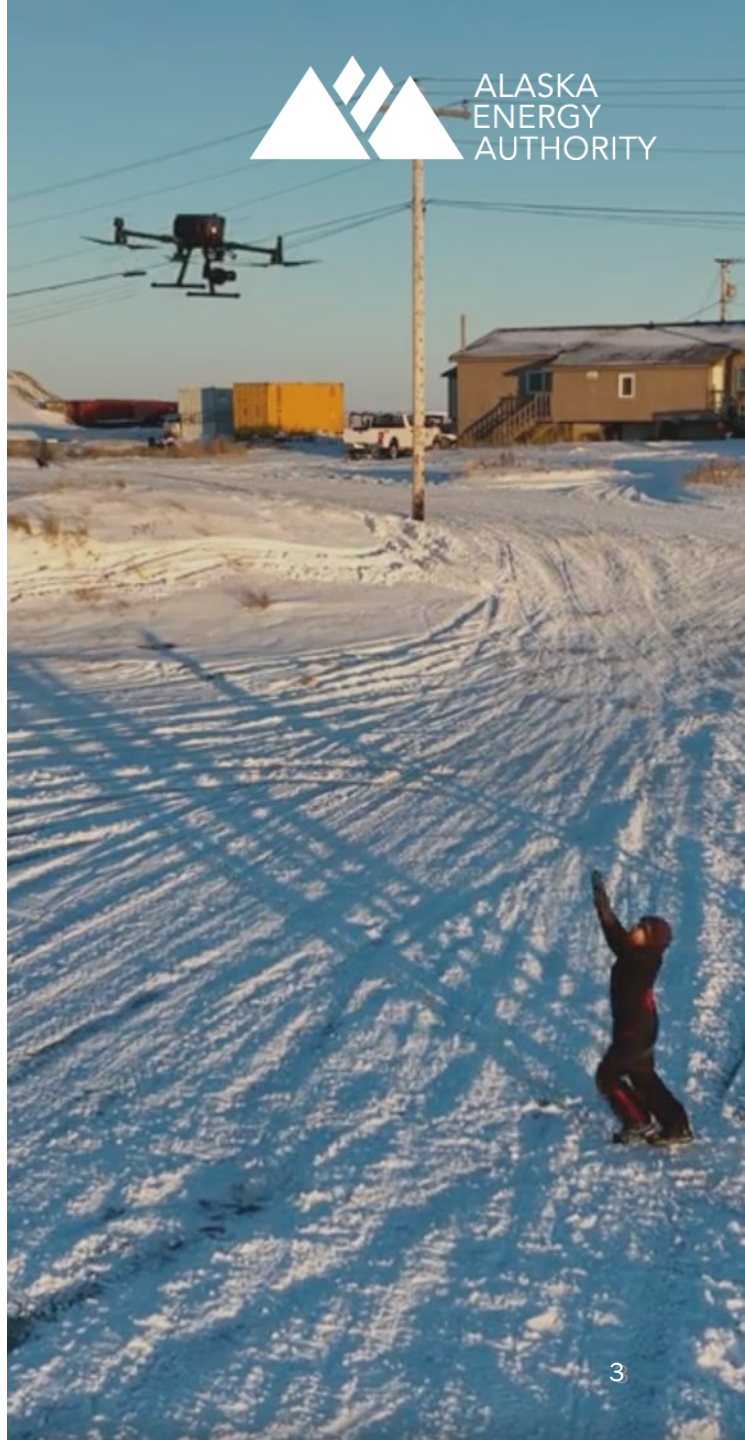
Grants and Loans – AEA provides loans to local utilities, local governments, and independent power producers for the construction or upgrade of power generation and other energy facilities.

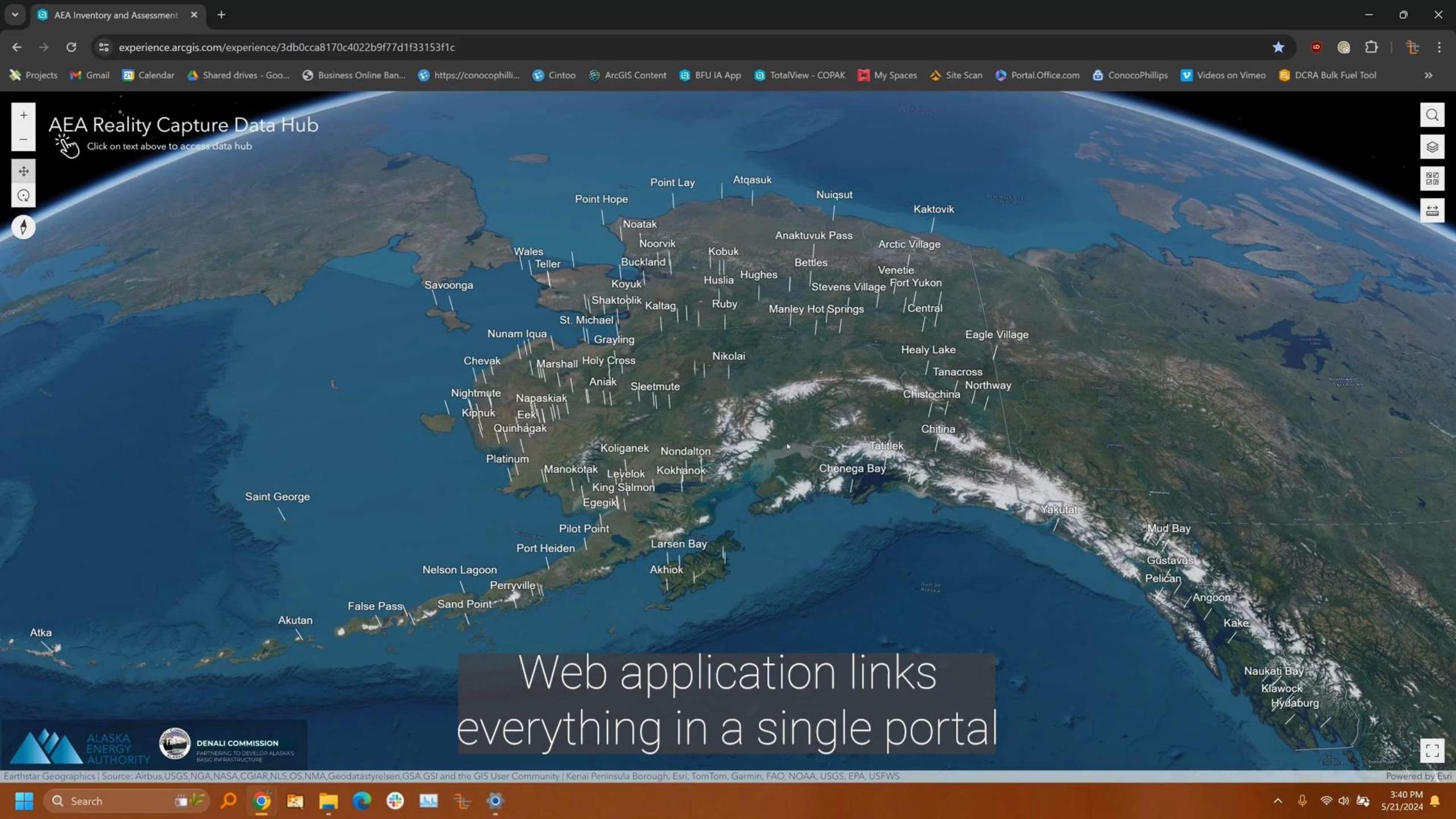


Energy Planning – In collaboration with local and regional partners, AEA provides economic and engineering analysis to plan the development of cost- effective energy infrastructure.

Project Overview

- Develop a comprehensive digital assessment survey that can be used to collect information and automatically assign scores based on condition.
- Utilize laser scanners and drones to provide subject matter experts high resolution 3D reality capture to enhance assessment and ranking the community bulk fuel, power generation, and power distribution system.
- Develop a comprehensive and repeatable methodology for capturing assessment data that can be used or adapted by a utility, agency, or community stakeholder.
- Securely store and host reality capture data for agency and community use.




AEA Inventory and Assessment
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Projects
Gmail
Calendar
Shared drives - Goo...
Business Online Ban...
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Cintoo
ArcGIS Content
BFU IA App
TotalView - COPAK
My Spaces
Site Scan
Portal.Office.com
ConocoPhillips
Videos on Vimeo
DCRA Bulk Fuel Tool
AEA Reality Capture Data Hub
Click on text above to access data hub
Point Lay
Atqasuk
Point Hope
Nuiqsut
Kaktovik
Noatak
Anaktuvuk Pass
Arctic Village
Noorvik
Kobuk
Wales
Teller
Buckland
Bettles
Venetie
Huslia
Hughes
Savoonga
Koyuk
Stevens Village
Fort Yukon
Shaktoolik
Kaltag
Ruby
Manley Hot Springs
Central
St. Michael
Nunam Iqua
Grayling
Eagle Village
Healy Lake
Chevak
Marshall
Holy Cross
Nikolai
Tanacross
Aniak
Sleetmute
Northway
Nightmute
Napaskiak
Chistochina
Kipnuk
Eek
Quinhagak
Chitina
Koliganek
Nondalton
Tatitlek
Platinum
Manokotak
Levelok
Kokhanok
Chenega Bay
King Salmon
Saint George
Egegik
Yakutat
Pilot Point
Mud Bay
Port Heiden
Larsen Bay
Gustavus
Nelson Lagoon
Akhiok
Pelican
Perryville
Angoon
False Pass
Sand Point
Kake
Akutan
Atka
Naukati Bay
Klawock
Hydaburg
Web application links
everything in a single portal
ALASKA ENERGY AUTHORITY
DENALI COMMISSION
PARTNERING TO DEVELOP ALASKA'S BASIC INFRASTRUCTURE
Earthstar Geographics | Source: Airbus,USGS,NGA,NASA,CGIAR,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community | Kenai Peninsula Borough, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
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Inventory and Assessment Progress

AEA 3D Imagery and Assessments Overview

- Power Generation Facilities: **165 assessed**
- Bulk Fuel Facilities: **280 tank farms in 141 communities assessed**
- Power Distribution Systems: **21 assessed**

Survey data, 3D maps, 3D walkthroughs, and support for using the data will soon be available through AEA's Critical Energy Infrastructure application Process.

Power Distribution Next Steps

- Expand Imaging: Assess and scan 29 more communities to continue the program

- Integrate New Tech: Integrate new technologies into the program, such as:
  - Live sensor and grid data,
  - CAD/As-Built deliverables from scan data, and
  - Integration of virtual operator and utility training elements into 3D scan data

- Collaborate: Coordinate with AVEC and ANTHC subject matter experts on the adoption of digital inventory tools and methodologies into their agencies' tech stacks.

Bulk Fuel Next Steps

- Data collected will be used to help AEA decide whether a tank farm needs maintenance or needs to be replaced
- The data collected will also help prioritize bulk fuel projects
- The data can also be used to plan for future projects
- Data collection for bulk fuel is near complete
- Project scheduled to be completed by December of 2025

Power Plant Next Steps

- The initial Power Plant Inventory and Assessment survey has been completed.
- AEA Circuit Riders update the Assessment when they are in the community for commissioning a new project or for training operators in order to keep RPSU priority list up to date.
- AEA received an award from the Denali Commission to digitize the operation's manual for powerhouses. The digital twin of powerhouses are tagged with maintenance, safety, and training information and videos needed to operate a powerhouse.

How AEA Stores the Data - Hosting

Why does AEA host the data online?
3D data from laser scanners and drone cameras is difficult to host as a small community or entity for several reasons:

- Specialized Software: Viewing and interacting with 3D data typically requires specific software tools, which can be difficult to use and expensive.
- Hardware Requirements: High-performance hardware, such as graphics cards and large displays, is often needed to properly render and manipulate 3D data.
- Technical Skills: Users need a certain level of technical expertise to understand and set up 3D environments, which can be a barrier for those without such skills.

How AEA Stores the Data

Where does AEA host the data online for viewing?

- Bulk Fuel Facility 3D walkthroughs are hosted on Matterport
- Power Generation Facility 3D walkthroughs are hosted on Matterport
- Power Distribution System 3D point cloud drone data is hosted on ArcGIS Online Scene Viewer
- Power Distribution System 3D mesh drone data is hosted on ArcGIS Online Scene Viewer
- Bulk Fuel, Power Generation, and Power Distribution Survey Data is hosted on ArcGIS Survey123
- Community point, line, and polygon feature layers are hosted on ArcGIS Online
- Power Distribution drone inspection video data is hosted on Adobe Frame.io
- AEA plans to move away from Matterport and Adobe and host the data internally in the future

What AEA Can Do With the Data

What can be done with the data collected?

3D data is generated from LiDAR (laser scanning) and photogrammetry and can be used beyond inventory and assessment purposes. It can be downloaded and transferred into other free and paid for programs for the community's use, including:

- used to create virtual trainings, and operations/maintenance tools;
- virtual asset management systems;
- and import into CAD, and other design software.
- Data types include 3D walkthroughs, point clouds, 3D meshes, video, spreadsheets, and geojsons

Data may be available to external entities subject to AEA's Critical Energy Infrastructure application process, scheduled to be active soon.

AEA's Data Sharing and How You Can Access It

- Inventory and Assessment data is classified as Critical Energy/Electric Information (CEII)
- AEA requires interested persons/parties to sign an NDA, fill out an application, and receive community consent
- AEA has a community consent form available to use
- Contractors who are hired by AEA and want access to this data will only be required to sign an NDA
- Bulk Fuel Facility 3D walkthroughs hosted on Matterport shared via password protected link for specified amount of time. *Note: Matterport currently charges to access data*
- Power Generation Facility 3D walkthroughs hosted on Matterport shared via password protected link for specified amount of time. *Note: Matterport currently charges to access data*
- Bulk Fuel, Power Generation, and Power Distribution Survey Data downloaded as .csv, .xlsx formats

Project Team and Roles

TotalView Role:

Data collection, reality capture, system administration, GIS and application development

CRW Engineering Role:

Quality assurance and quality control, assessment development, engineering consultation

Electric Power Systems Engineers Role:

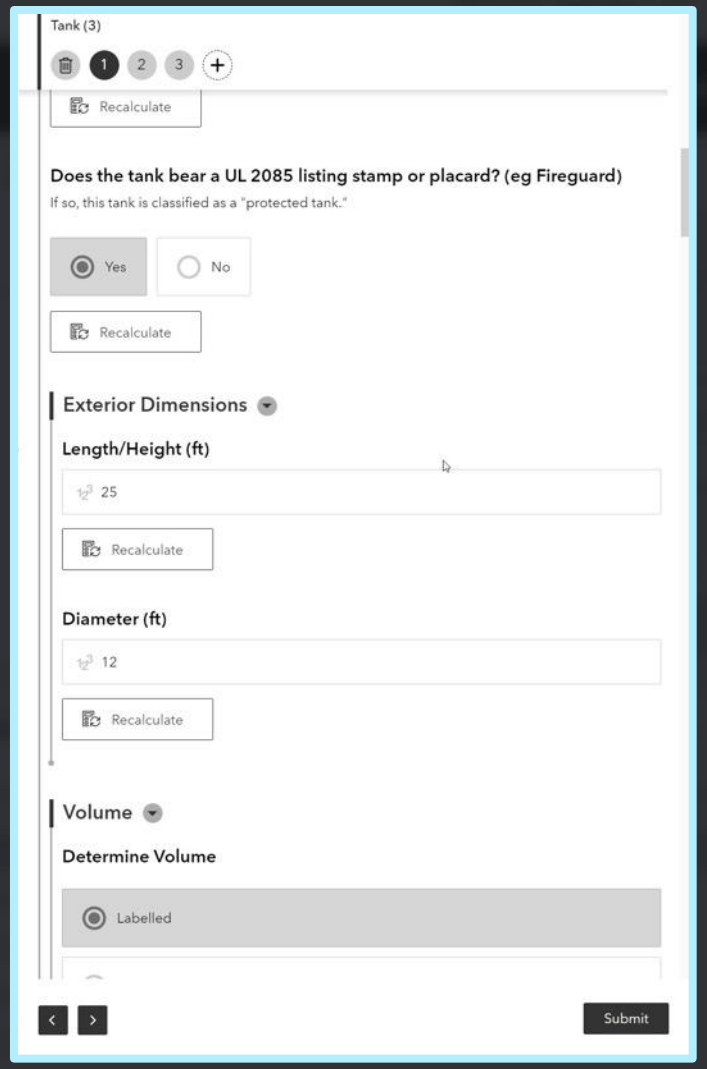
Quality assurance and quality control, assessment development, engineering consultation

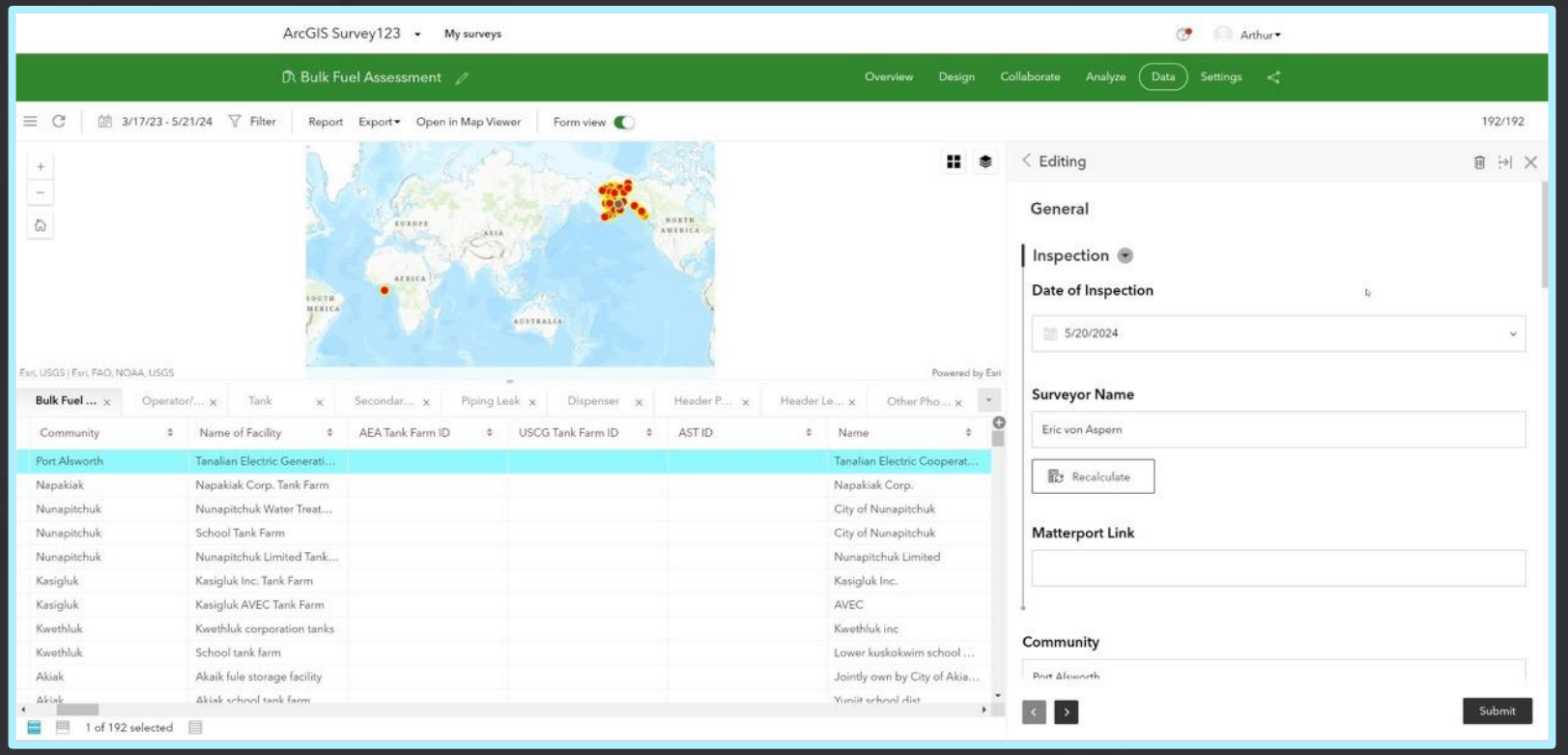
Alaska Village Electric Cooperative Role:

Assessment review and feedback, utilizing data from surveys to develop internal systems and best practices

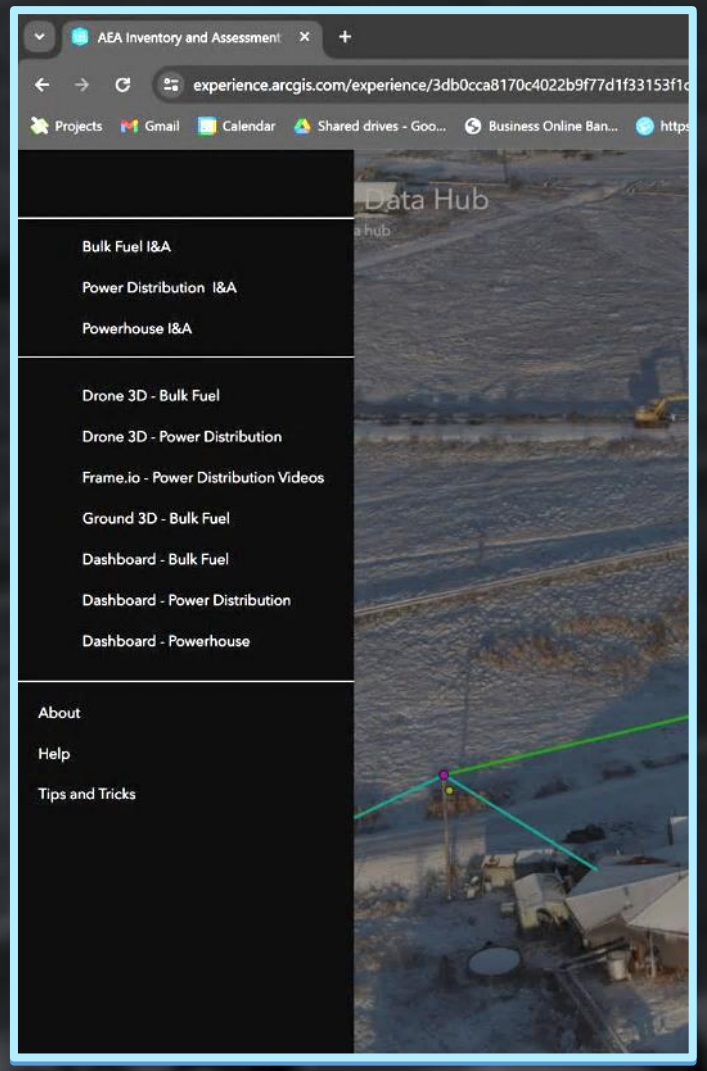
Alaska Native Tribal Health Consortium Role:

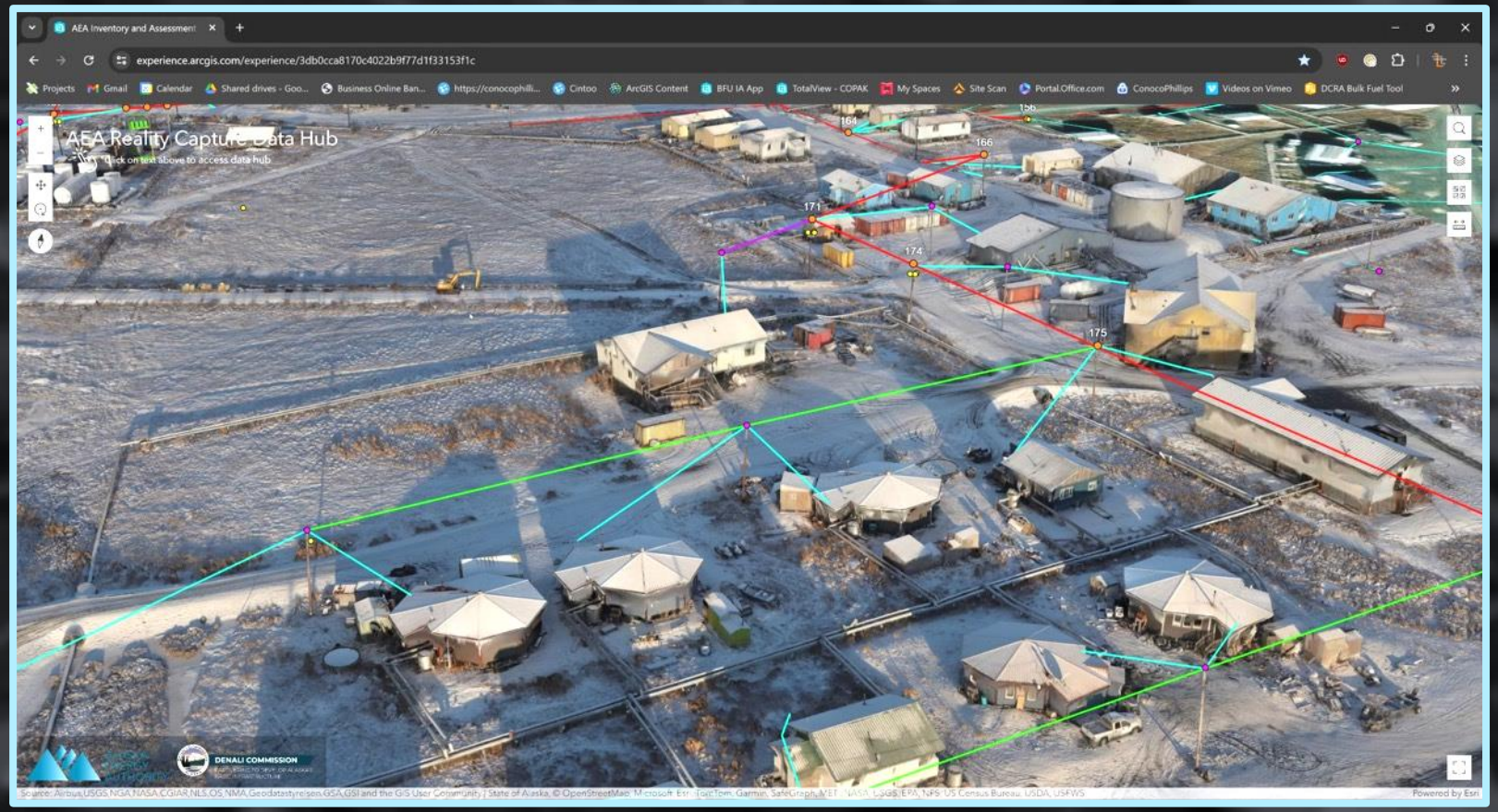
Rural power distribution subject matter expertise, survey feedback



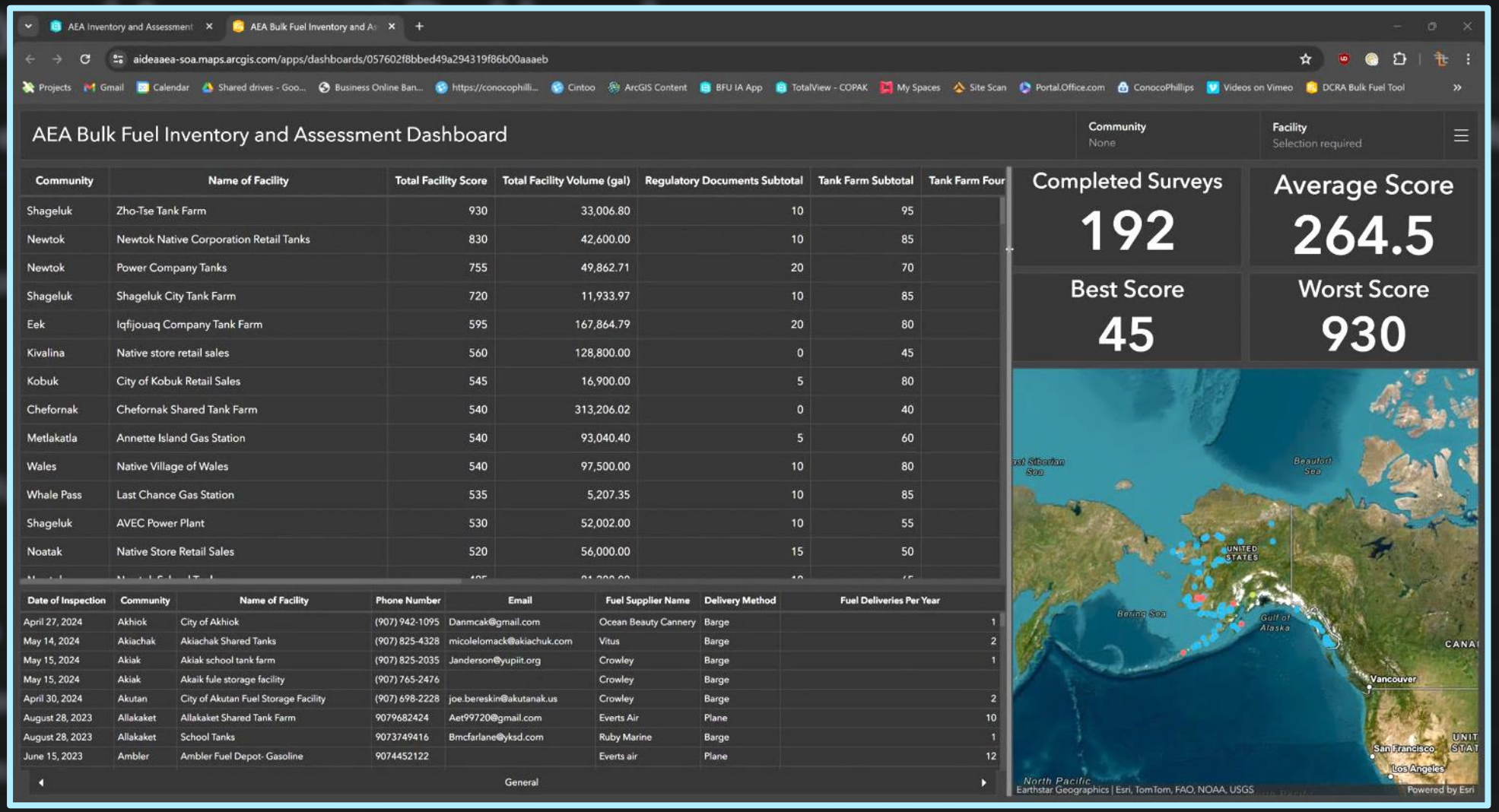


Deliverables (Inventory/Assessment Survey)

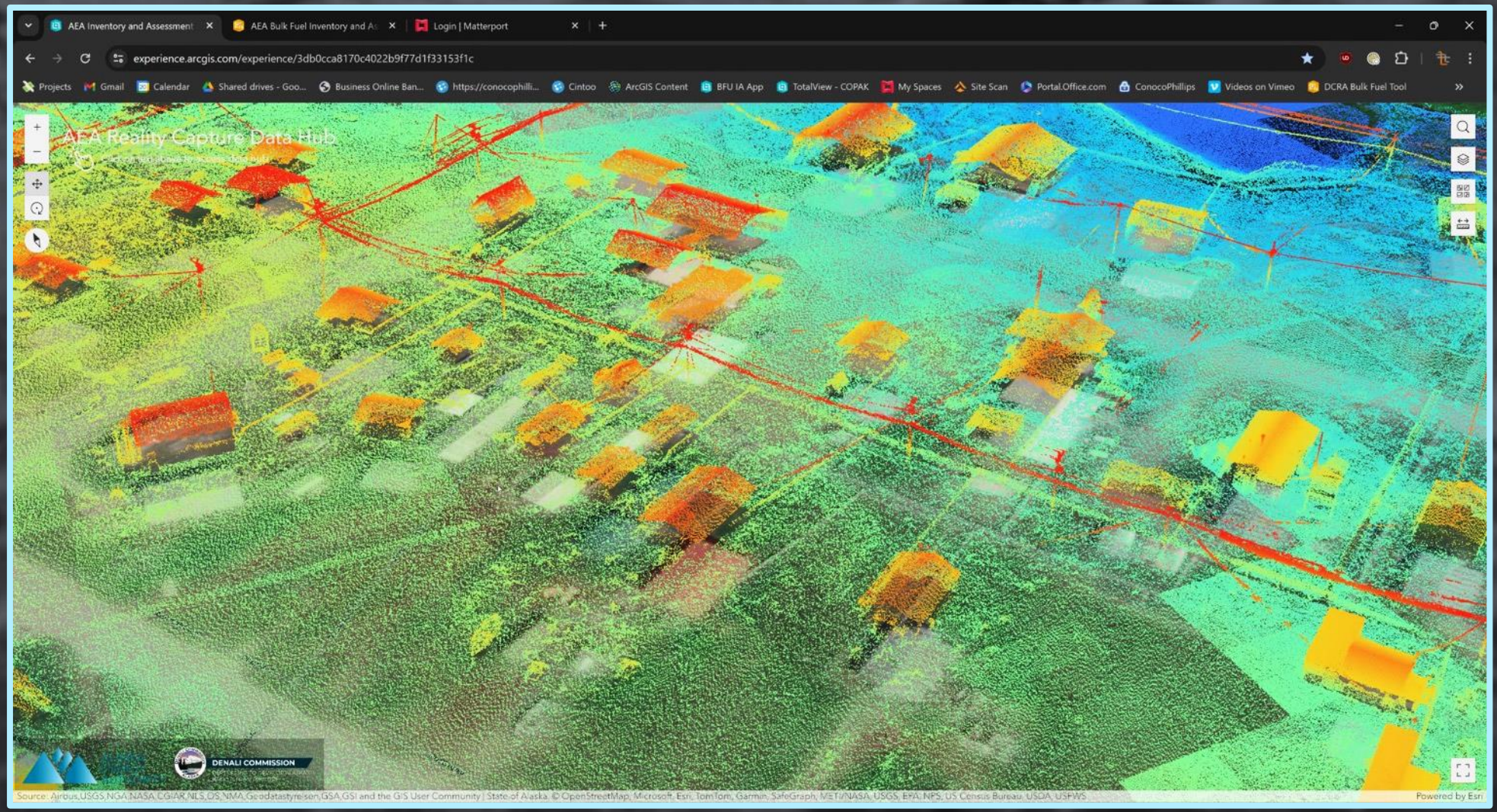




Deliverables (Web App)



Deliverables (Dashboards)



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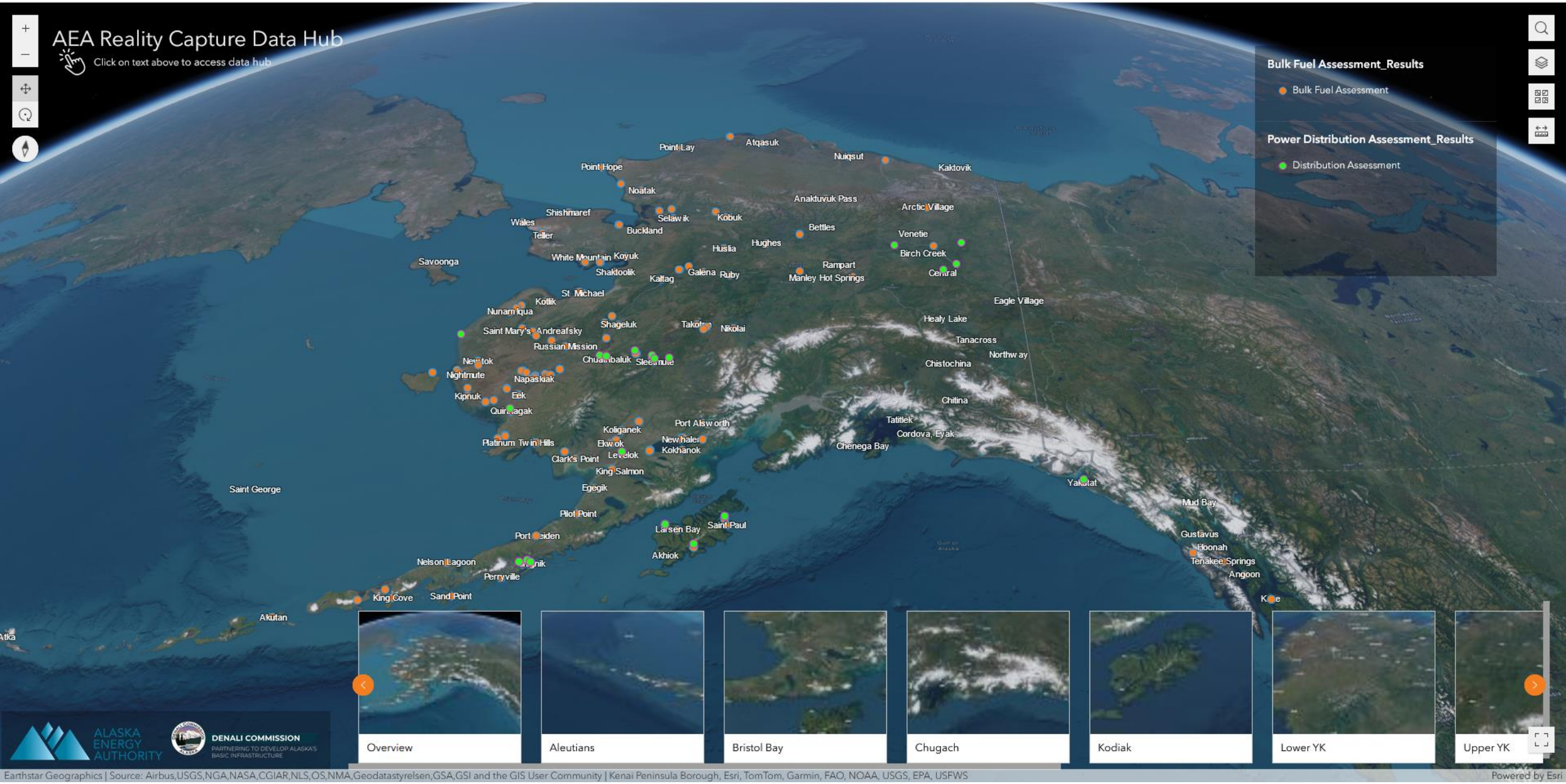
Deliverables (3D)


AEA Reality Capture Data Hub
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Bulk Fuel Assessment_Results
Bulk Fuel Assessment
Power Distribution Assessment_Results
Distribution Assessment
Point Lay
Atqasuk
Nuiqsut
Kaktovik
Point Hope
Noatak
Anaktuvuk Pass
Arctic Village
Shishmaref
Wales
Teller
Selawik
Kobuk
Buckland
Bettles
Venetie
Hughes
Huslia
Birch Creek
White Mountain
Koyuk
Savoonga
Shaktoolik
Galena
Ruby
Kaltag
Rampart
Manley Hot Springs
Central
St. Michael
Kotlik
Eagle Village
Nunam Iqua
Shageluk
Healy Lake
Saint Mary's
Andreafsky
Takotna
Nikolai
Tanacross
Russian Mission
Northway
Chuathbaluk
Sleetmute
Newtok
Chistochina
Nightmute
Napaskiak
Kipnuk
Eek
Chitina
Quinhagak
Tatitlek
Port Alsworth
Koliganek
Cordova, Eyak
Platinum
Twin Hills
Ekwok
New Stuyahok
Chenega Bay
Clark's Point
Levelock
Kokhanok
King Salmon
Yakutat
Saint George
Egegik
Mud Bay
Pilot Point
Larsen Bay
Saint Paul
Gustavus
Port Heiden
Hoonah
Akhiok
Tenakee Springs
Nelson Lagoon
Angoon
Perryville
King Cove
Sand Point
Akutan
Overview
Aleutians
Bristol Bay
Chugach
Kodiak
Lower YK
Upper YK
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DENALI COMMISSION
PARTNERING TO DEVELOP ALASKA'S BASIC INFRASTRUCTURE
Earthstar Geographics | Source: Airbus,USGS,NGA,NASA,CGIAR,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community | Kenai Peninsula Borough, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
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Thank You

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