ALASKA STATE LEGISLATURE AEROSPACE DAY

MARCH 17, 2021

ALASKA AEROSPACE CORPORATION

PACIFIC SPACEPORT COMPLEX – ALASKA –

ALASKA AEROSPACE CORPORATION

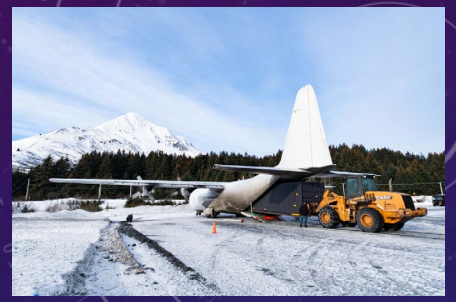
- **Charter to diversity economy with aerospace industry**
  - Established 1991 as State of Alaska public corporation
  - Primary focus of creating economic hub with spaceport
  - Launching government & commercial missions since 1998
- **Established and trusted launch capabilities**
  - FAA-licensed commercial spaceport
  - Government & commercial users
  - Solid-fueled and liquid-fueled experience
  - Orbital and sub-orbital capability
- **Business-oriented, low-cost, efficient & effective**
  - No sustainment funding from State or Federal agencies
  - Wholly-owned subsidiary, Aurora Launch Services, provides flexible and cost-efficient staffing solutions for daily operations and surge support

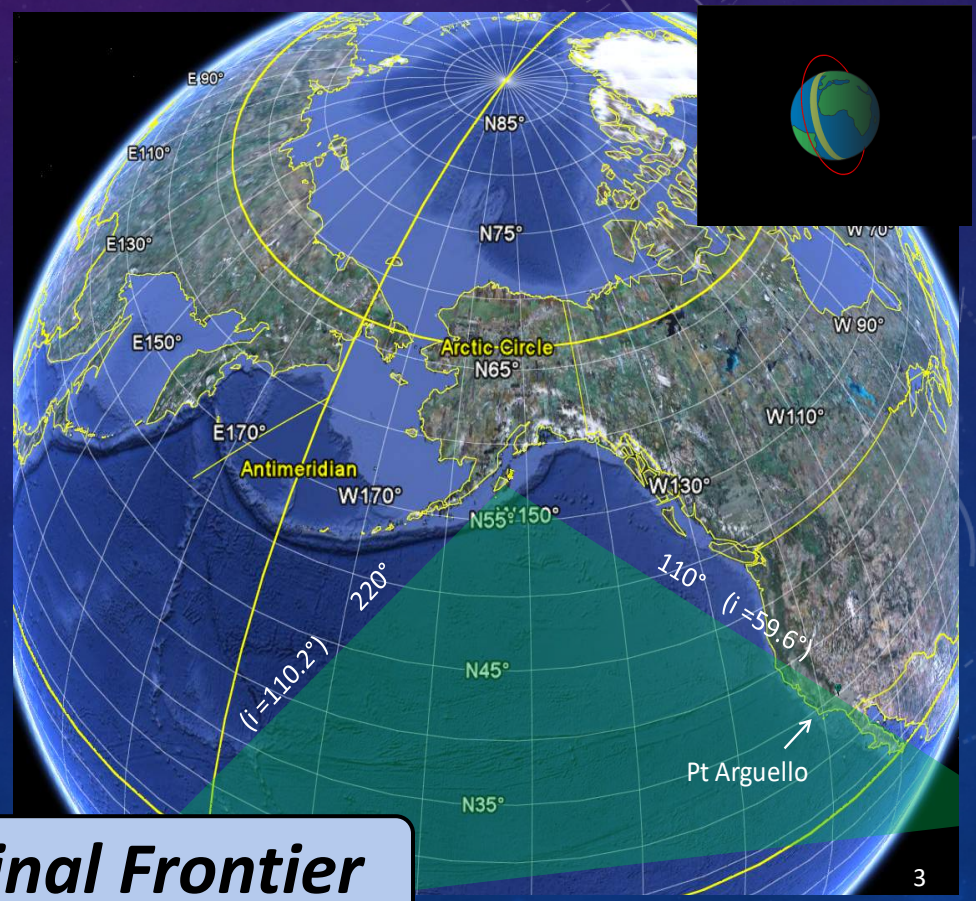
AURORA Launch Services

Photo Credit: Astra / John Kraus

PSCA PROVIDES AMERICA WITH ASSURED ACCESS TO SPACE

- **Kodiak Island, Alaska**
  - Located on 3,700 acres of public land at Narrow Cape
  - Established Logistics supports vibrant seafood trade and USCG
    - Deep water ice-free port with regular cargo shipments
    - State airport co-located at USCG Airbase with daily 737 jet service
  - Dual-path fiber optic connectivity for global ops
  - Year-round launch operations; Gulf of Alaska waters moderate temps
- **Designed for both national security and commercial launch**
  - Efficient for Polar, sun synchronous, and high inclination orbits
  - Unique location for extensive testing of new aerospace systems
  - Focus on small and light-lift launch vehicles (e.g., Minotaur, Athena, Venture class)
  - FAA-licensed under FAR Part 420
  - Secure facilities for DoD missions
- **~$120M of capital investment**
  - Federal, State, and private-sector funding
  - On-going Spaceport Enhancement Program equips spaceport to continue to meet future launch needs





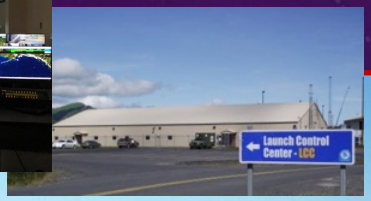
From the Last Frontier, to the Final Frontier

PSCA VIRTUAL TOUR

Area 3 Commercial Launch Pads

Integration & Processing Facility
Spacecraft & Assemblies Transfer

Launch Pad 2



Launch / Mission Control Centers

Launch Service Structure
(Launch Pad 1)

Rocket Motor
Storage Facility

Maintenance Support
Facility

Instrumentation Field

Payload Processing
Facility

SIX LAUNCH PADS PROVIDE RESILIENCY, RESPONSIVENESS, AND FLEXIBILITY

Photo Credit: Astra / John Kraus

PSCA: 23-YEARS OF LAUNCH

Photo Credit: MDA

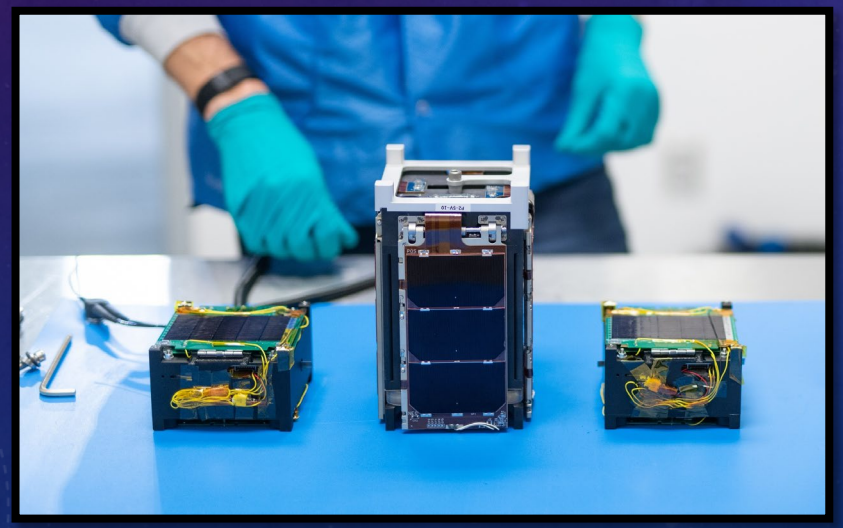
Photo Credit: Astra / John Kraus

YEAR	MONTH	SPONSOR
1998	NOV	USAF
1999	SEPT	USAF
2001	MAR SEPT NOV	USAF NASA/USAF SMDC
2002	APR	USAF
2004	DEC	MDA
2005	FEB	MDA
2006	FEB SEPT	MDA MDA
2007	MAY	MDA
	SEPT	MDA
2008	JULY DEC	MDA MDA
2010	NOV	USAF
2011	SEPT	ORS/USAF
2014	AUG	SMDC
2017	JUNE JULY	MDA MDA
2018	JULY NOV	Astra Astra
2019	JULY	MDA
2020	FEB SEPT DEC	DARPA* Astra Astra

* Launch Campaign did not result in liftoff

EMERGING SPACE LAUNCH MARKET: COMMERCIAL LIGHT-LIFT

- **Light-lift launch vehicles**
  - Focused on dedicated missions of small-satellite, CubeSats, nano-satellites
  - Launch approximately 50-250 kg (110-550 lbs) to low earth orbit
  - Typically, <1,000 gallons of Kerosene (RP-1) and LOX
  - Approximately 40-60 feet in height
- **PSCA serves multiple roles**
  - Testing of new rocket systems and streamlining launch operations
  - Low-cost launch of R&D satellites
  - Responsive access to for high-inclination/polar constellations



INCREASING PORTFOLIO OF COMMERCIAL CUSTOMERS

- **Astra Space**
  - Rocket 3.2 reached space from Kodiak in Dec 20
  - 40-foot kerosene/LOX rocket
- **Taiwan Innovative Space**
  - Taiwanese company with US subsidiary – Formosan Space
  - 72-foot hybrid rocket
  - 390kg to 700km LEO orbit
- **AgniKul Cosmos**
  - India-based company
  - 60-foot kerosene/LOX rocket
  - 100kg to 700km LEO orbit
  - Late-2022 flights
- **Phoenix Launch Systems**
  - US company developing 36-foot aerospike-powered rocket
  - 22kg to 400km LEO orbit
  - Development schedule shows first flight in mid-2023
- **Other commercial companies in negotiations**

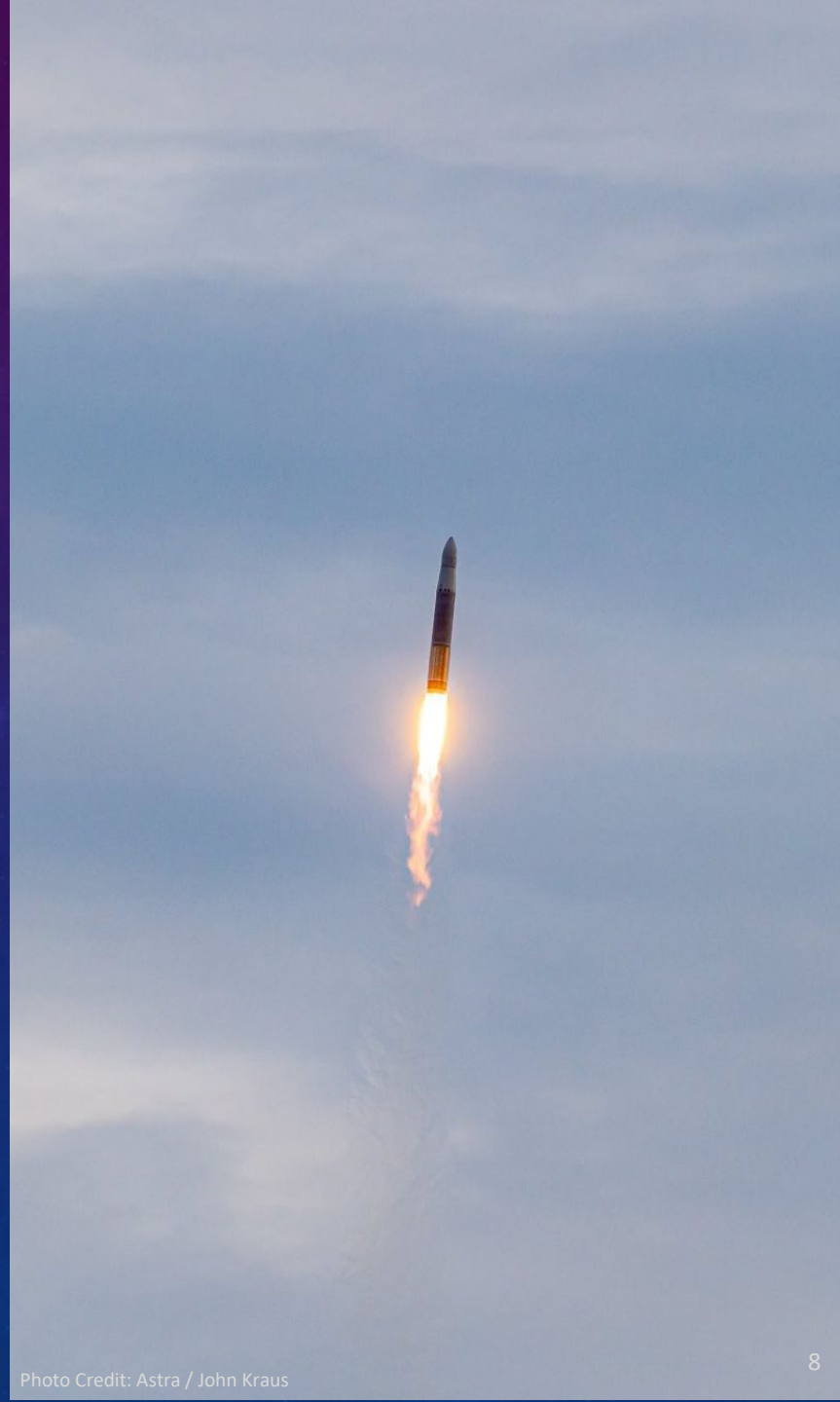


Photo Credit: Astra / John Kraus

SPACE TOURISM

- **PSCA selected for edge-of-space tourism**
  - High altitude balloon holding 8 people
  - Experience the aurora from 100,000’
  - Requires FAA-licensed spaceport
  - Recover in Gulf of Alaska or Bering Sea
  - Working with FAA & NOAA on recovery ops

Image Credit: Space Perspective

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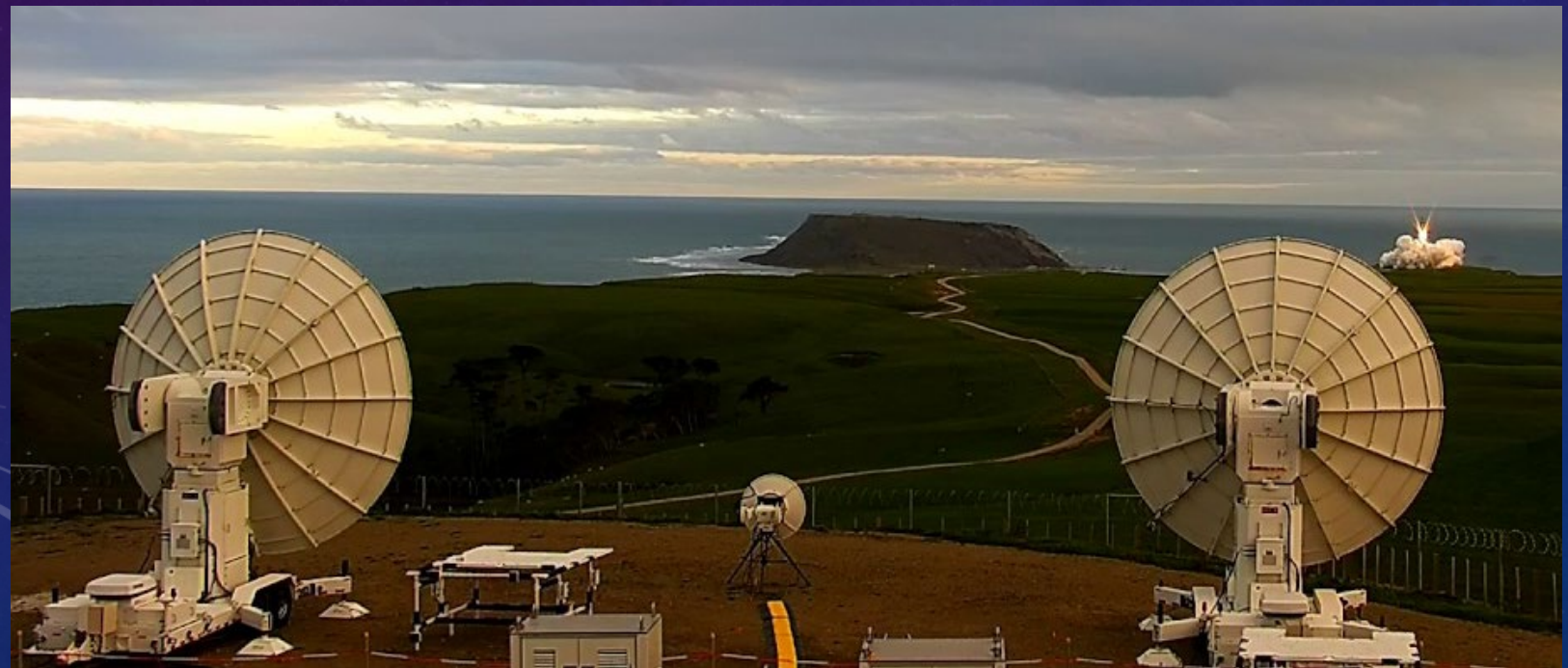
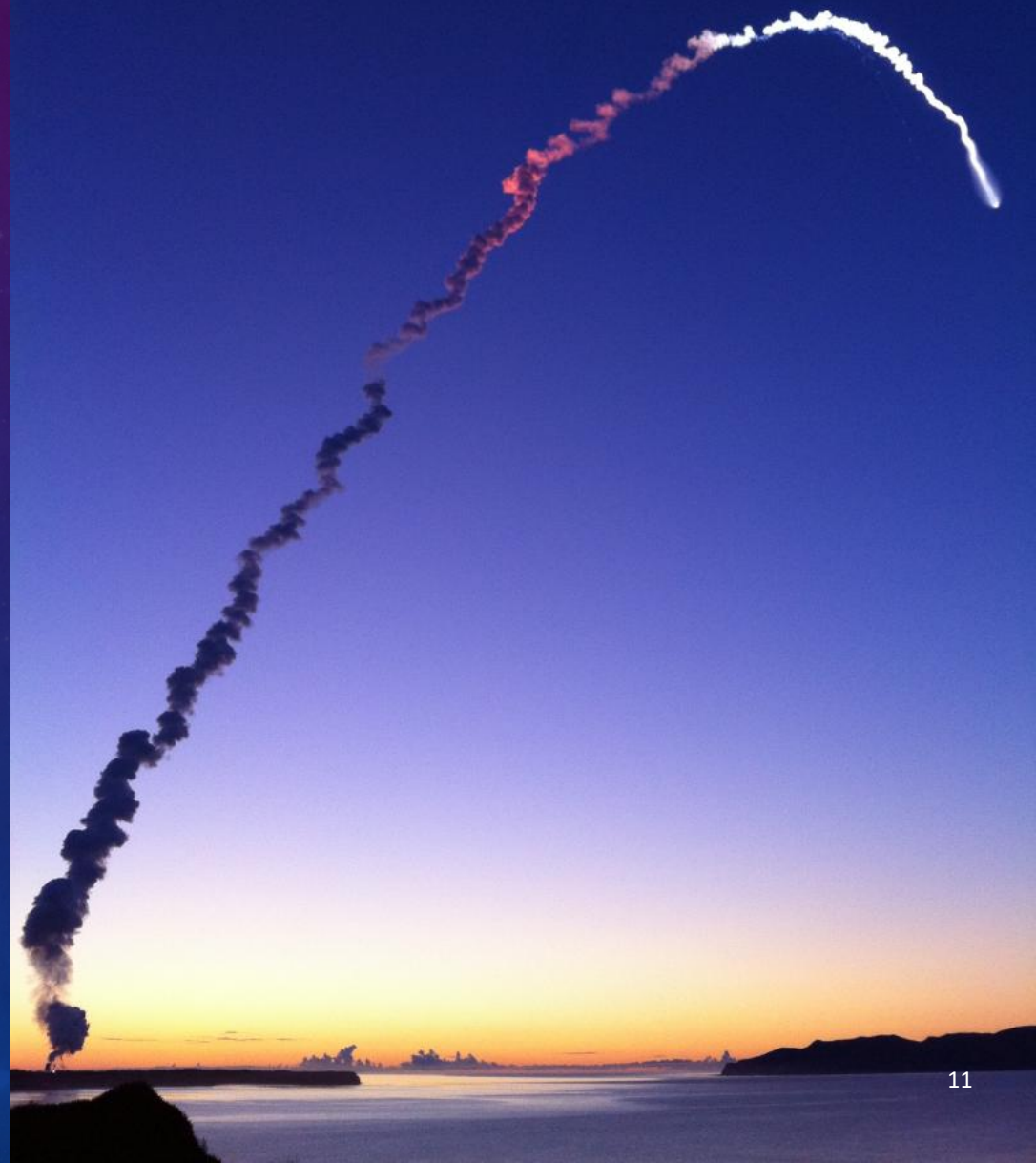
LAUNCH SUPPORT TO OTHER SPACEPORTS

- **Range Safety & Telemetry System (RSTS) Support to Rocket Lab**
  - Mahia peninsula, New Zealand
  - AAC supported first ten RocketLab launches; May 2017 – Dec 2019
- **Negotiating agreements with other launch sites for similar support**
  - Agreement signed with Spaceport Camden, Georgia
  - Strengthens Alaska's aerospace market position
  - Team viewed as a world leader in range safety and support for commercial launch



REALIZING VISION OF AEROSPACE SECTOR ECONOMIC IMPACT

- **Corporation's activities are 100% funded by contracts**
  - All AAC salaries and expenses are funded by new dollars to Alaska
  - Spaceport has generated over $208M in launch revenue since first mission in 1998
  - FY21 revenues are down ~45%; COVID delays and cancellations
    - AAC team working to address downturn, but may be extended
- **Spaceport launches have generated ~$77.8M economic impact to Kodiak**
  - Commercial launch will transform into enduring operations (e.g., Kodiak-based staff, light manufacturing, logistics, refurbishment, etc.)
- **Alaska-purchased Goods, Services, and Labor: ~$16.3M annually**
  - Kodiak: $5.5M, Anchorage: $9.3M, Rest of State: $1.5M (average FY17-FY19)
- **Supporting Alaska's 'New Space' entrepreneurs**
  - Example: Anchorage-based The Launch Company
    - Spaceport engagement & innovation opportunities
    - USSF AFWERX Space Challenge winner (top 4% of applicants)



BUILDING AN ALASKAN SPACE WORKFORCE

- **Developing an Alaska-grown workforce**
  - Transitioned from ~75% Lower-48 workforce to 95% Alaska workforce (75% on Kodiak)
  - Spaceport Manager & Deputy Manager born and raised on Kodiak Island
- **Enhancing technical job skills through technical training and career development**
  - On-the-job skill learning opportunities
  - Increased STEM-focused responsibilities for staff
  - Experience at multiple spaceports and mission types
- **Denali Peak Performance Exceptional Team Award**

Video Clip: DARPA Launch Challenge

Photo Credit: DARPA

Photo Credit: Astra / John Kraus

PARTNERSHIPS & COLLABORATION

- **Creating Alaska's New Space economy**
  - Rapid & Agile Space Launch (RASL) Innovation Center
    - Joint UA/AAC effort to spark collaboration and creativity to advance small/light-lift launch capabilities with field testing at PSCA and Poker Flat
    - Discovery and Innovation facility concept in work for Kodiak: Innovation Lab, Interactive STEAM learning, K thru Entrepreneurial engagement
  - Strengthening collaboration with DMVA and Alaska National Guard
    - Alaska Space Defense Force personnel to provide security support
    - Exploring additional approaches to collaborate on DoD flight tests
  - Commercial spaceport license for Poker Flat Research Range
    - On-going coordination with Univ of Alaska / Geophysical Institute
  - Professional Certificate in Spaceport Operations & Management
    - University of Alaska on-line edX offering in work
- **Integrating space launch into Kodiak's way-of-life**
  - Pre-coordinating launch schedules and closures with the community to minimize impacts on shared use of air, sea, and land
  - Spaceport Master Plan: Documents current and future site lay-out
  - Spaceport Ambassador program with Kodiak Civil Air Patrol
  - Board Member on Kodiak Economic Development Corporation

Photo Credit: Astra / John Kraus