

Capstone Industry Council Meeting

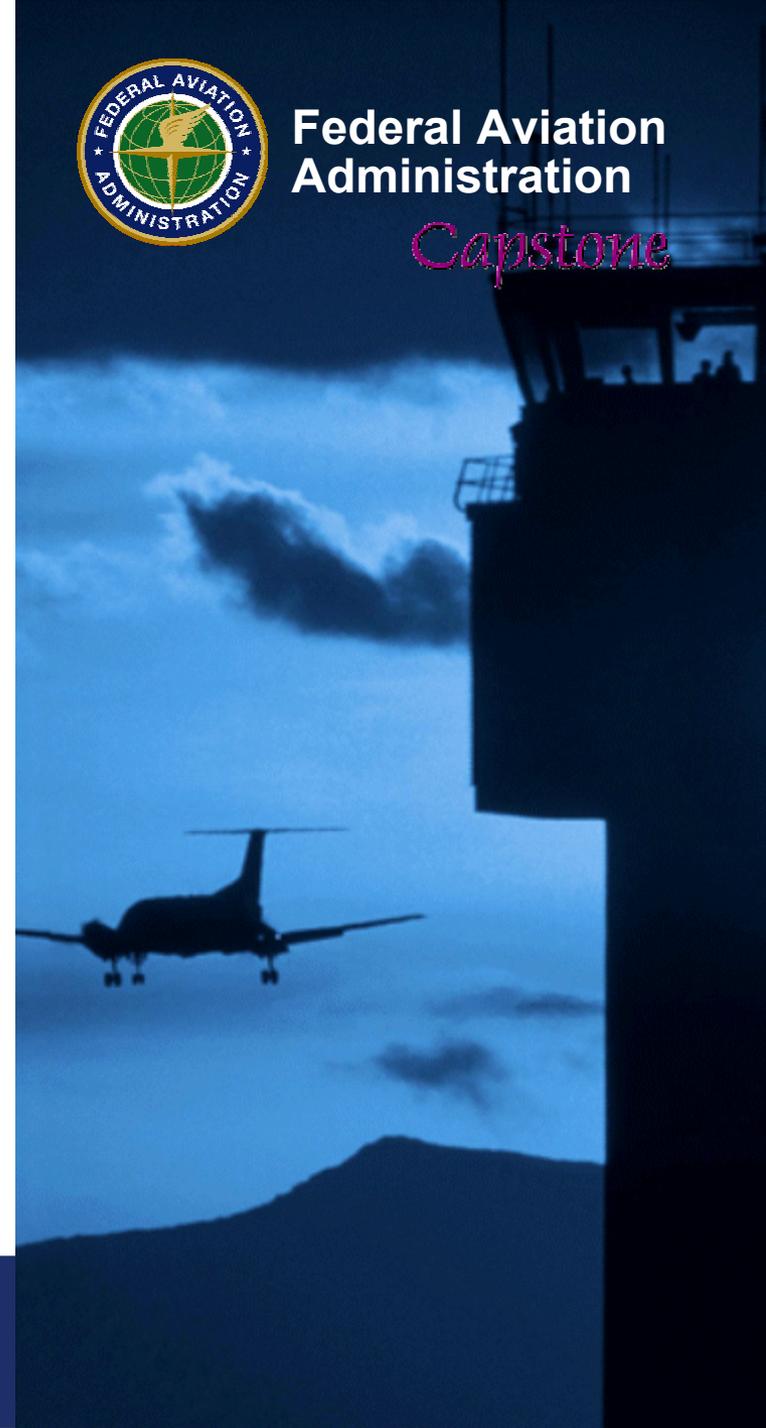
August 9, 2006

Capstone Phase III
Industry Council Meeting



Federal Aviation
Administration

Capstone



Agenda

➤ 0800-0945 Information Sharing

- Opening Sue Gardner
- Operations Status Update Ray Collins
- Expansion of the ADS-B Surveillance Service Area Lari Belisle
- Technical Status Update Mark Olson
- Conoco Phillips Capstone Update Dennis Parrish
- Capstone Coalition Status Update Felix Maguire
- Surveillance Broadcast Services (SBS) Overview Vinny Capezzuto
- Using ADS-B Data for Search & Rescue Kimo Villar
- WAAS Update JoAnn Ford

➤ 0945-1000 Industry Feedback (Roundtable)

Opening

- Avionics Request for Information
 - Announced July 17th on FAA Contract Opportunities Web Site
 - <http://www.asu.faa.gov/faaco/index.cfm?ref=4951>
 - 22 companies have requested a copy of the RFI to-date
 - Company responses are due to the FAA by August 17th

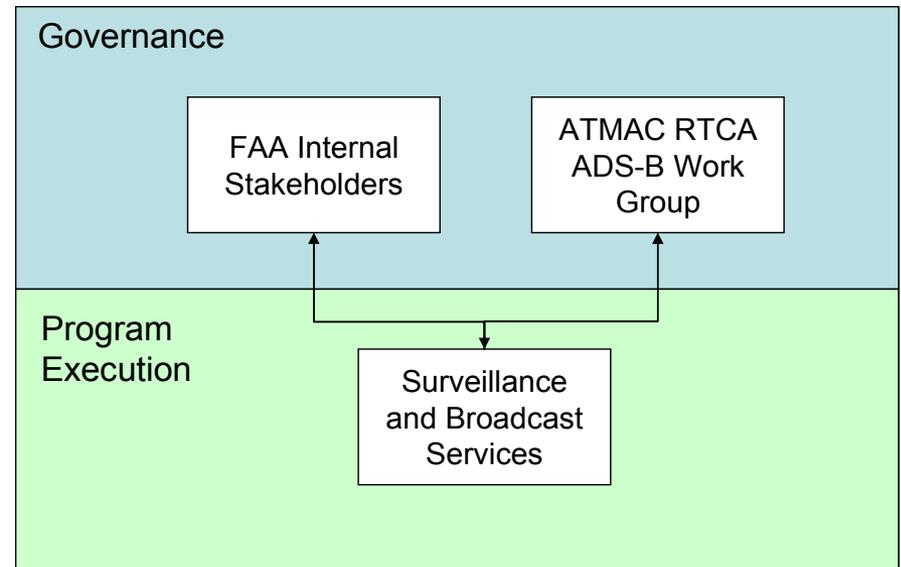
- Contract for Avionics Technician Training
 - Jointly funded by Capstone Program Office and the National Center for Aircraft Technician Training (NCATT)
 - First class to start in November 2006

- Highlights from Russ Chew visit

Opening (continued)

- Pat Poe retired July '06
- Service Level Agreement
 - Establishes the working relationship between the National Surveillance and Broadcast Services (SBS) Program Office and the Capstone Program Office
- Capstone JRC pre-brief to Industry – August 16th 1PM

Program Charter / Governance



FAA JRC Planning Status Update

Final Investment Decision JRC Date: **September 13, 2006**

Executive Council

- Briefing EC on July 14, 2006 on Statewide Implementation Strategy
 - Results: Sue Gardner to brief
- Briefing EC on August 29, 2006 in preparation of meeting the JRC in September.

Planning Status

- Cost Analysis is in coordination with ATO-F
- Working to put together risk adjusted cost & schedule information for the JRC documentation.

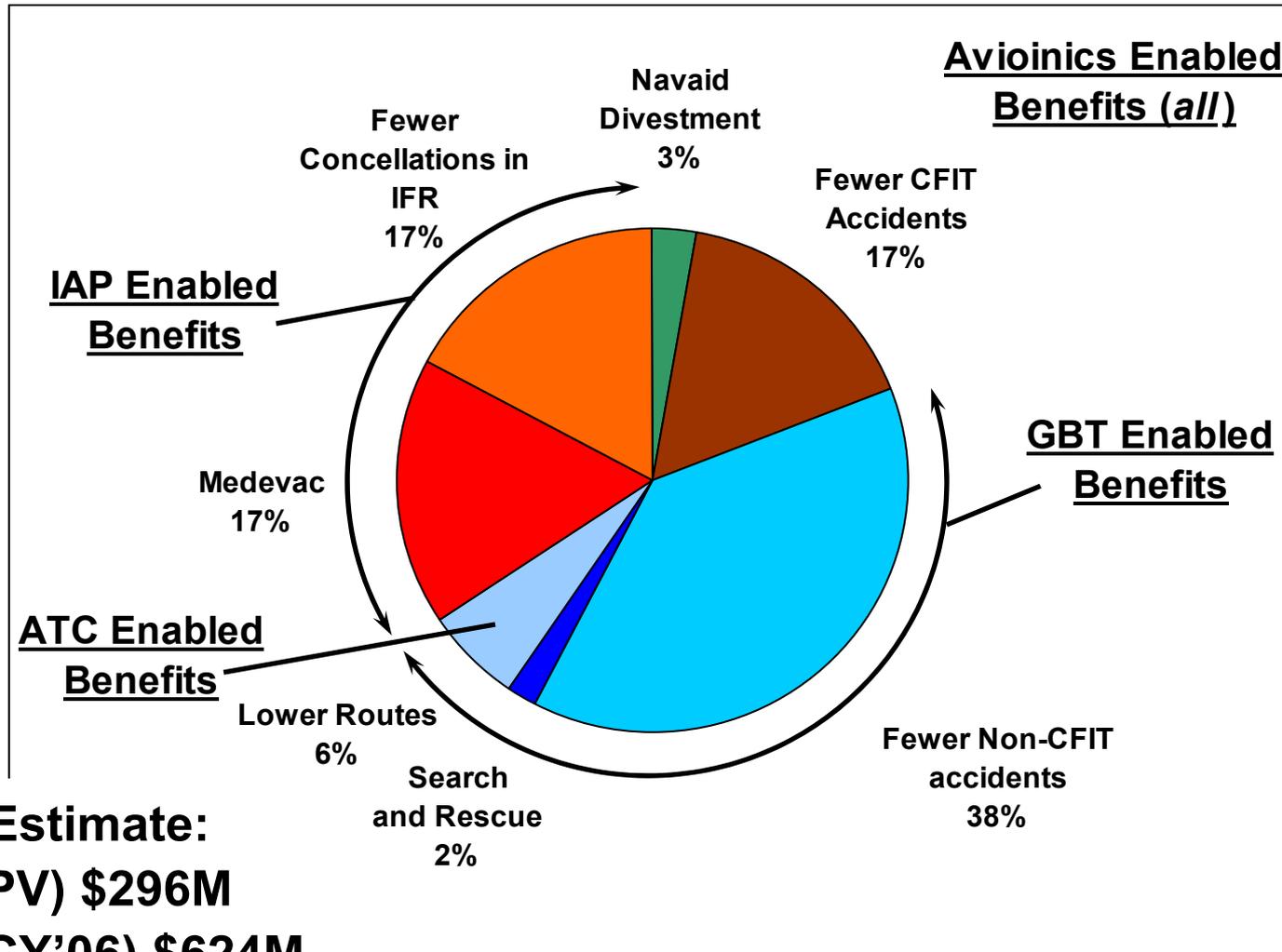
Operations Status Update

Ray Collins





Capstone Statewide Monitarized Benefits (Current Point-Estimate Present-Values – Preliminary)



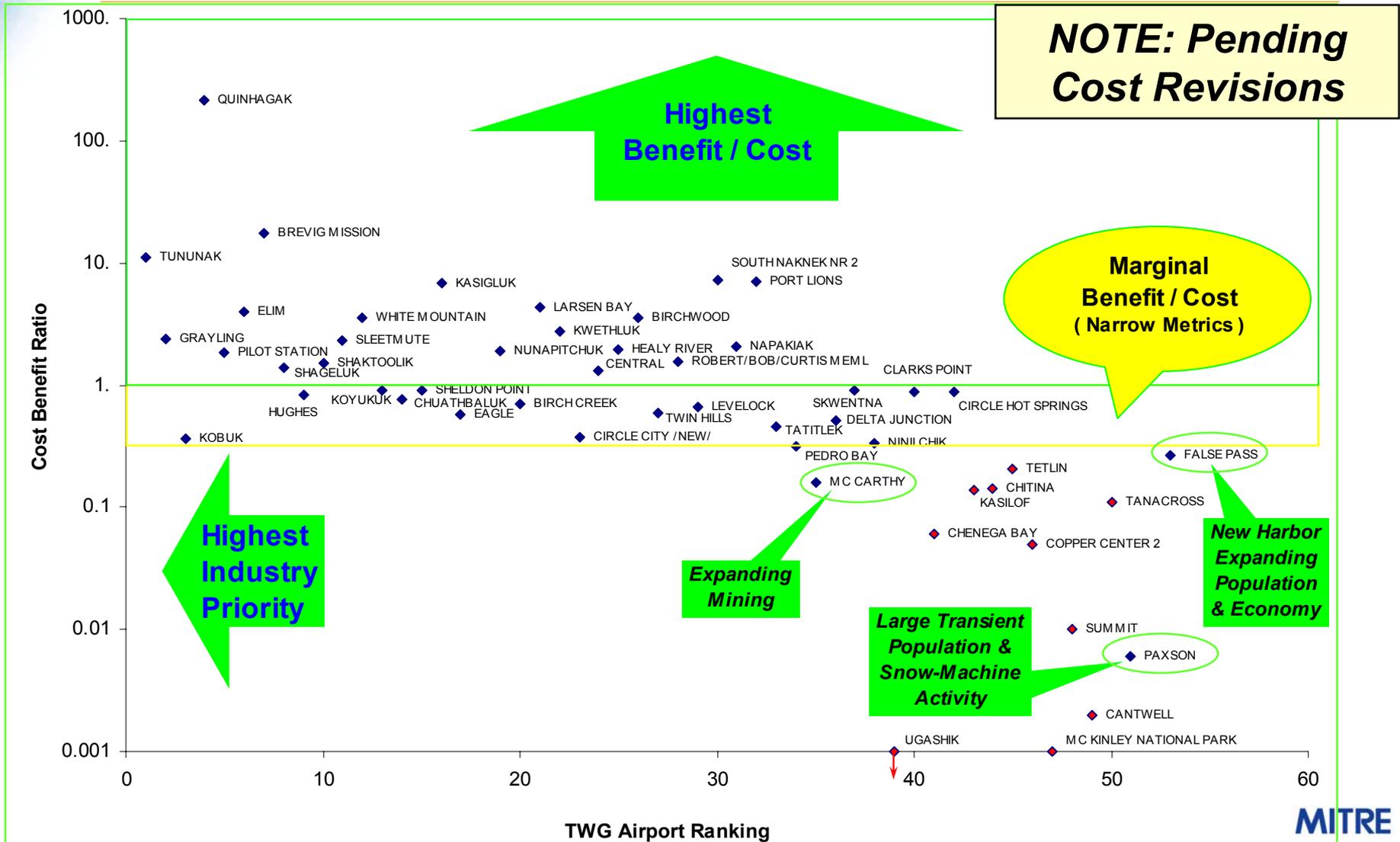
8/8/06 Estimate:

Total (PV) \$296M

Total (CY'06) \$624M



Instrument Approach Airports Evaluation: High or Marginal Monitarized Benefit/Cost, or Special Factors





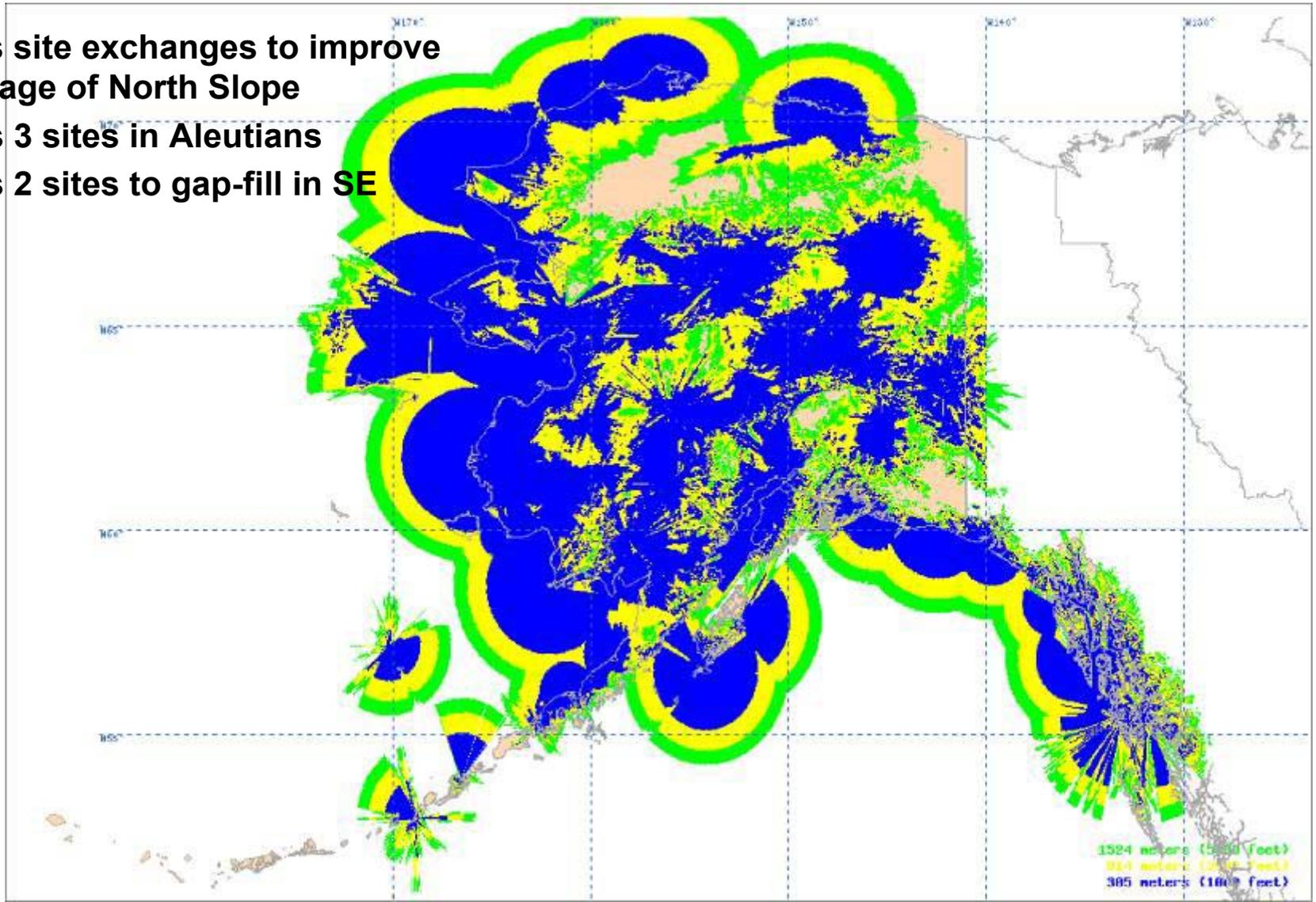
GBT Assumptions

- **GBT Coverage is more Beneficial where:**
 - **Airspace has more Aircraft Operations**
 - **Locations have more GBT-Preventable Accidents**
 - **Where it can be Contiguous on Busiest Airways**

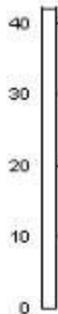


Coverage at 1,3,5 Kft (AGL)

- Omits site exchanges to improve coverage of North Slope
- Omits 3 sites in Aleutians
- Omits 2 sites to gap-fill in SE



Cost (\$ Millions)

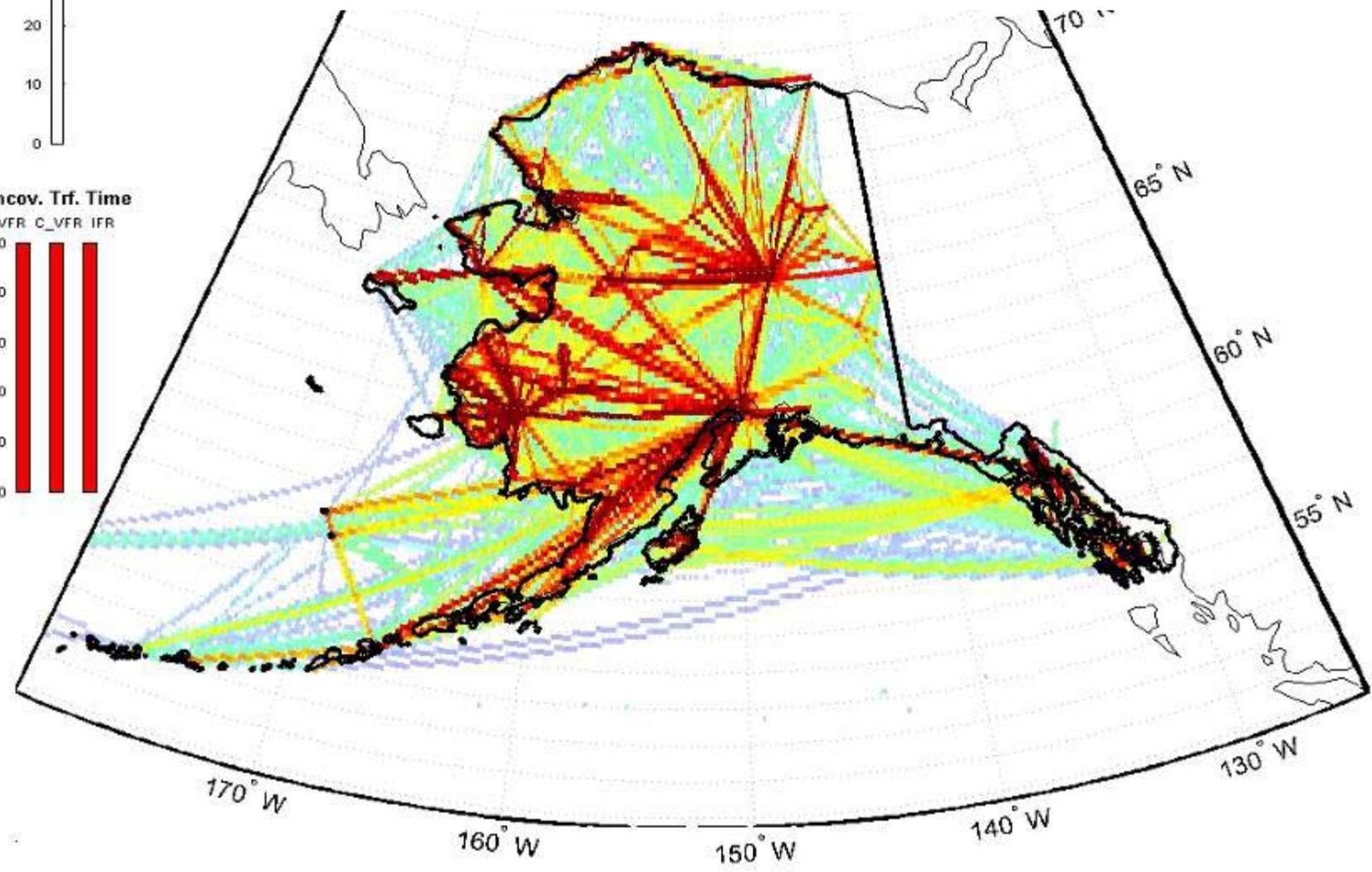
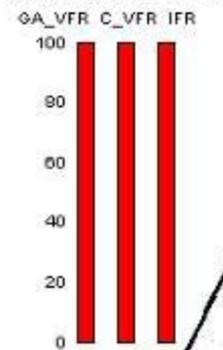


Density of Intra-Alaska Operations (Annual Flight Minutes per 100 Sq NMI)

Uncov. Trf. T. Dens



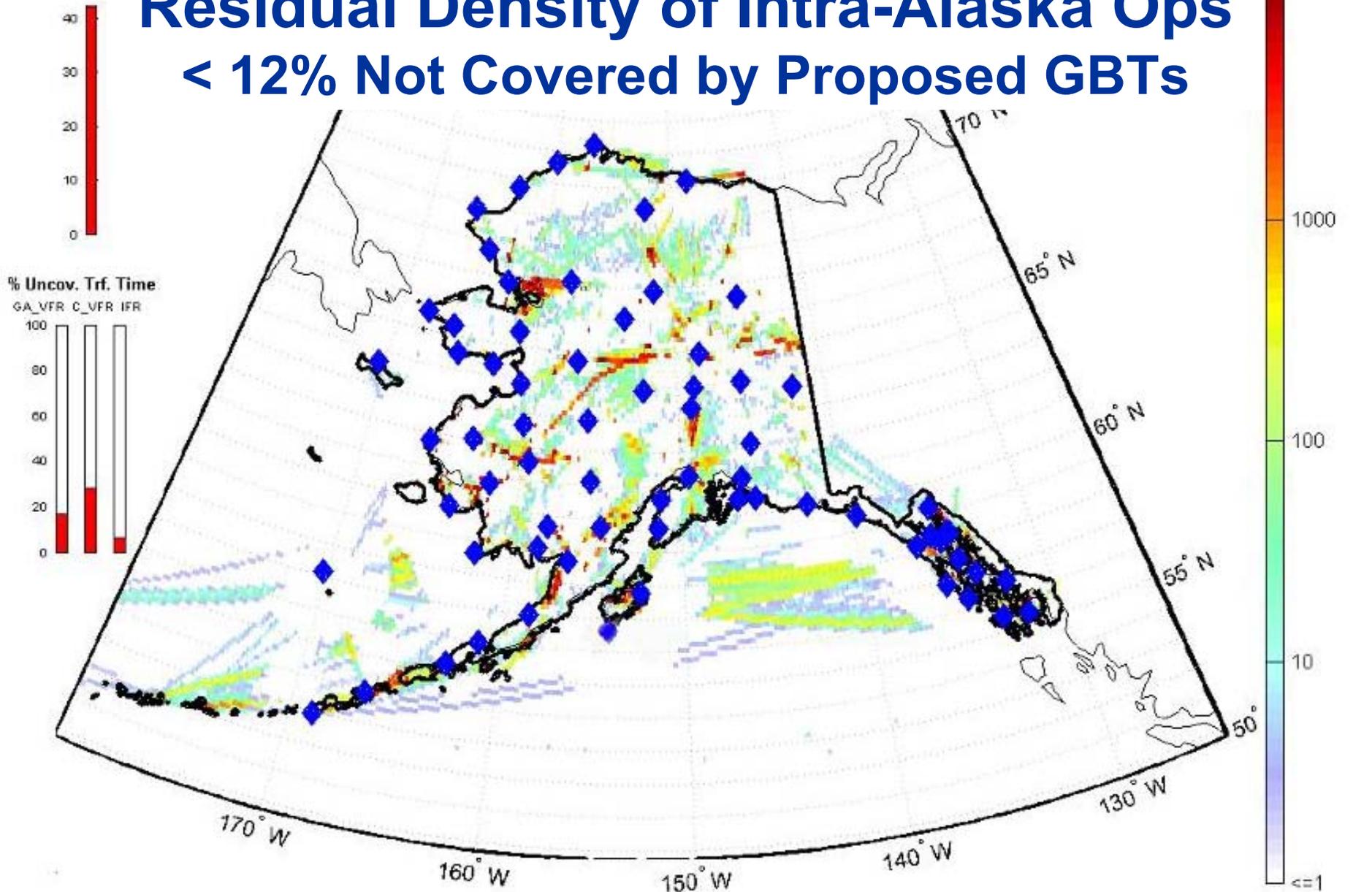
% Uncov. Trf. Time



Cost (\$ Millions)

Uncov. Trf. T. Dens
>=16000

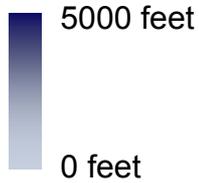
Residual Density of Intra-Alaska Ops < 12% Not Covered by Proposed GBTs





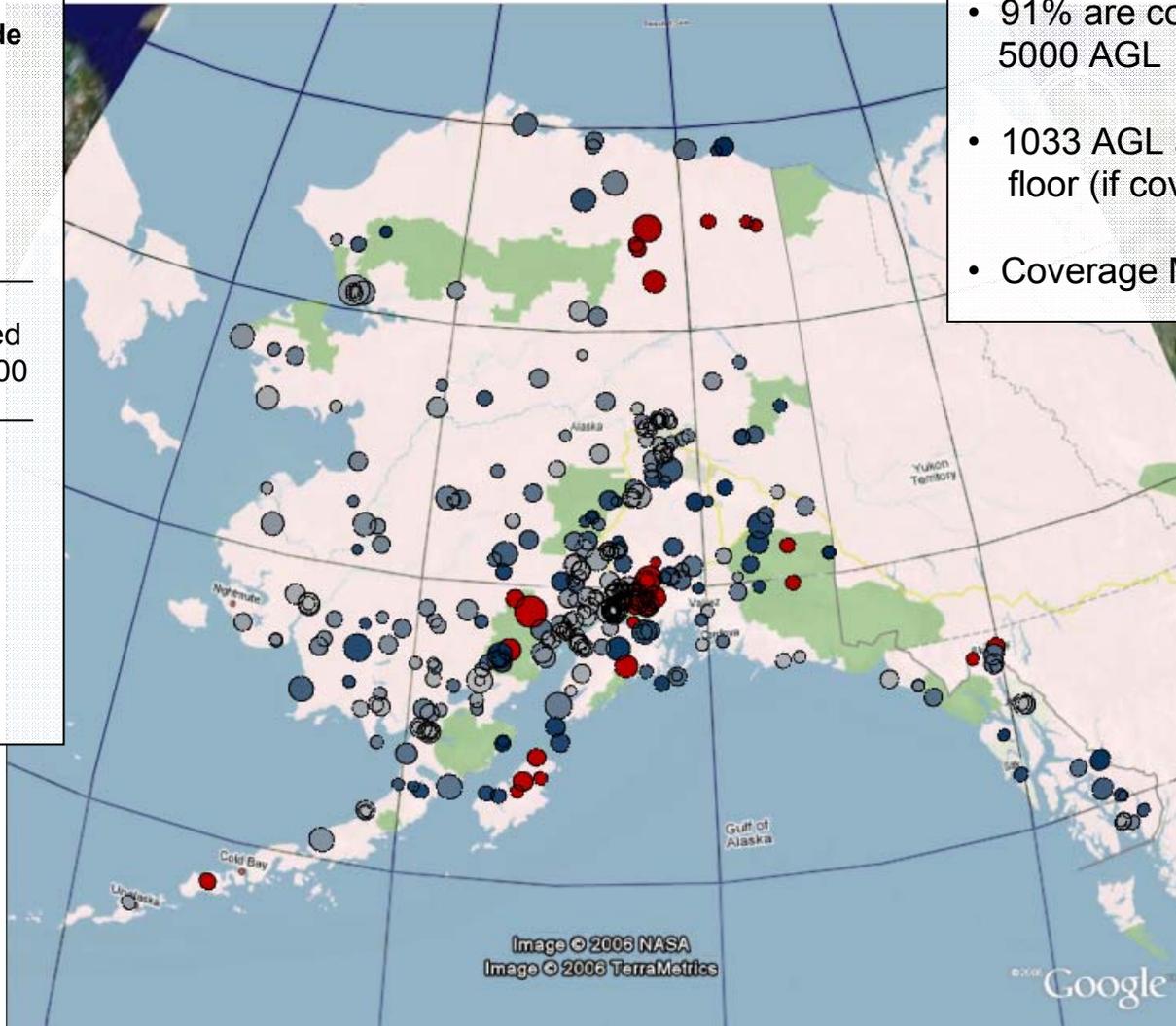
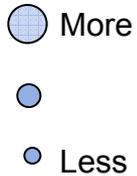
GBT-Preventable Accident Locations Coverage by Capstone I+II plus 45 New

Minimum GBT Coverage Altitude



Uncovered
Below 5000

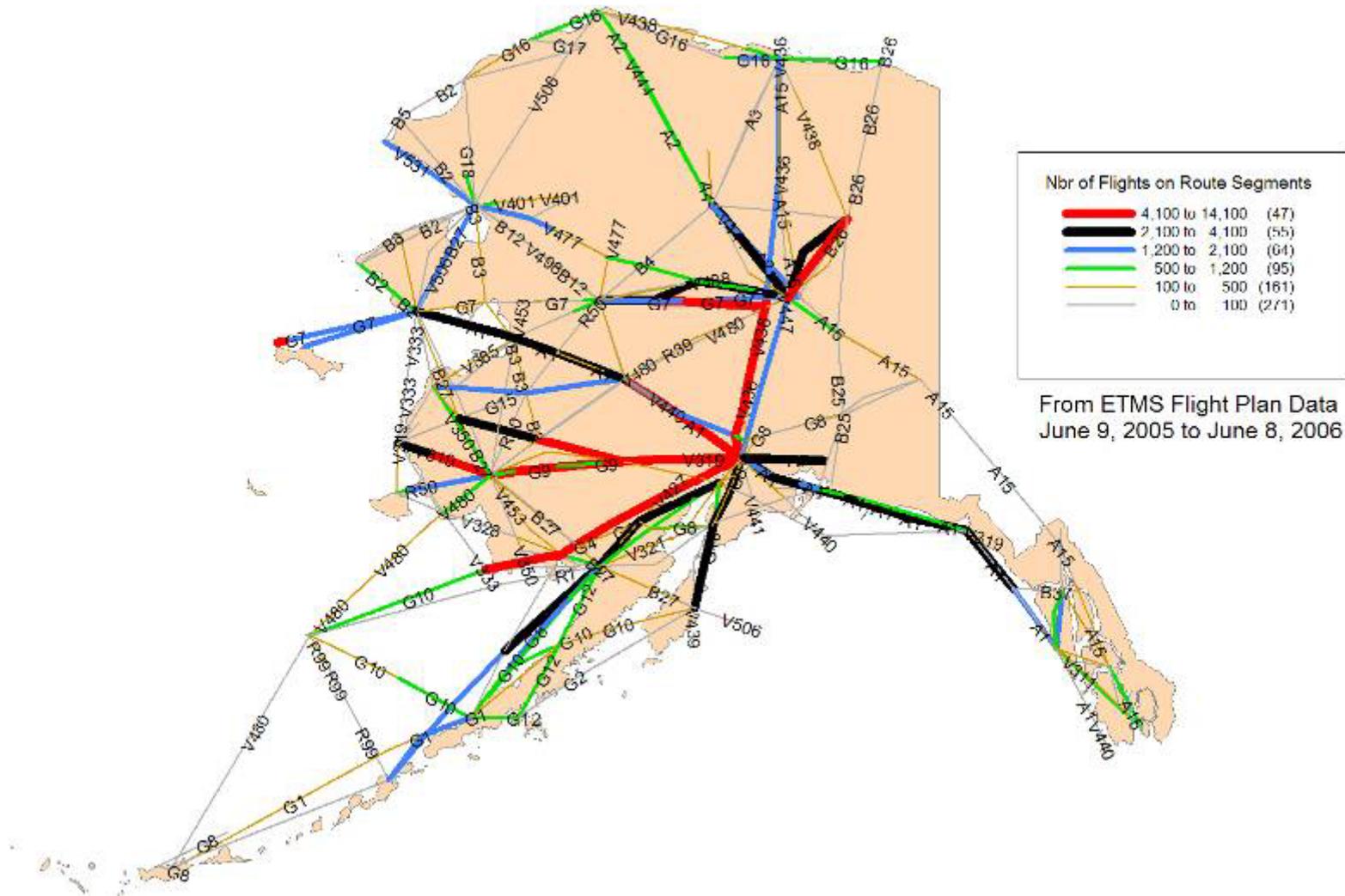
Relevance Score



- 91% are covered at or below 5000 AGL
- 1033 AGL average coverage floor (if covered)
- Coverage Metric: 72%



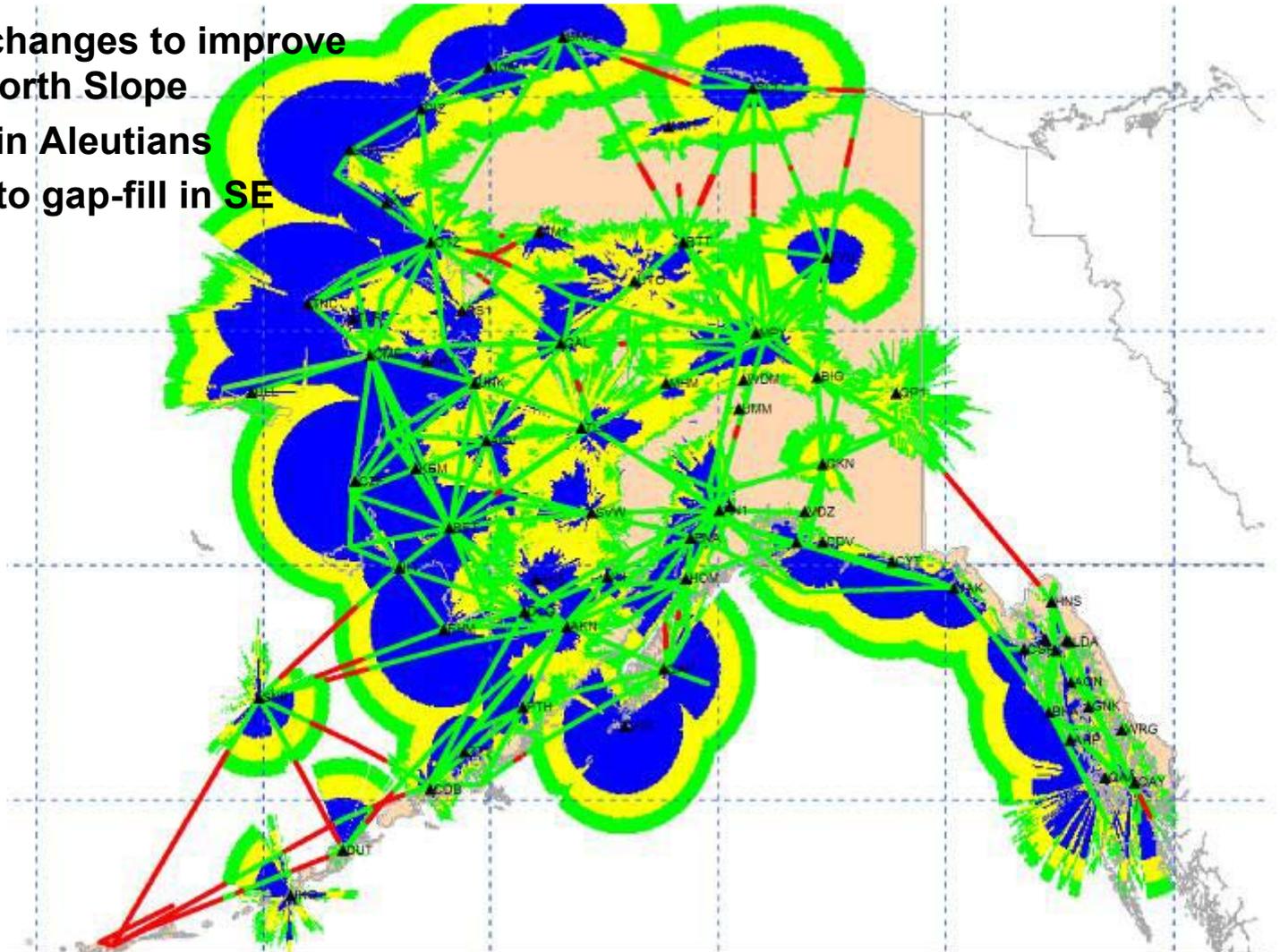
Low Altitude Airway Segments Frequency of Inclusion in Flight Plans





Airway Coverage at MEA

- Omits site exchanges to improve coverage of North Slope
- Omits 3 sites in Aleutians
- Omits 2 sites to gap-fill in SE



Chelton 6.0B Software Upgrade

Status: 8/1/06

- August 28:
 - 6.0B System Requirements Document complete
 - 6.0B Software Planning Documents complete.
- September 15
 - 6.0B Software Requirements Document complete.
 - Generate SPRs for changes.
 - System Requirements Document, Software Requirements Document, prototype source code and accepted SPRs send to ENEA to generate Software Design Document
- September 15 - October 30
 - Finish Software Design Process
 - SOI#2
- November 1 - March 30
 - Software Verification and Validation Process
 - SOI#3
- April 15
 - SOI#4 and Software Release

Capstone SE Installations

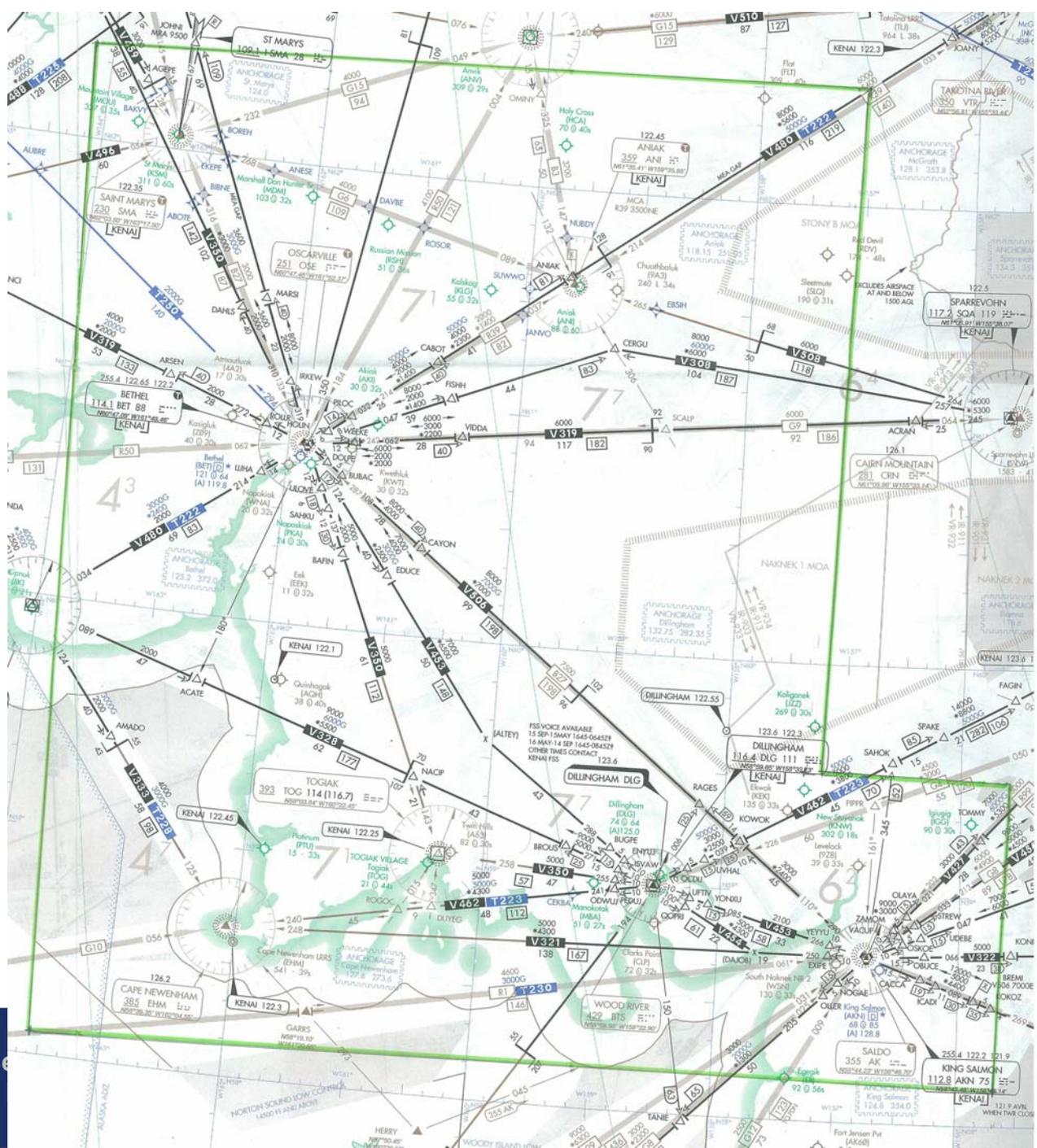
Status as of August 3, 2006

Chelton:	1 In progress	0 Remaining
Garmin F/W:	0 In progress	0 Remaining
Garmin Hel:	0 In progress	0 Remaining
GDL90 Ret:	0 In progress	0 Remaining
GDL-IDU :	0 In progress	0 Remaining

Helos: 9 carry-over – 10 on contract
(4 Coastal, 5 Temsco)

ITEMS of INTEREST

- SE AK Flight Explorer – Issues w/Service
- Juneau ATCT Displays
- **Expansion of the ADS-B Surveillance Service Area -- Lari Belisle**



Technical Status Update

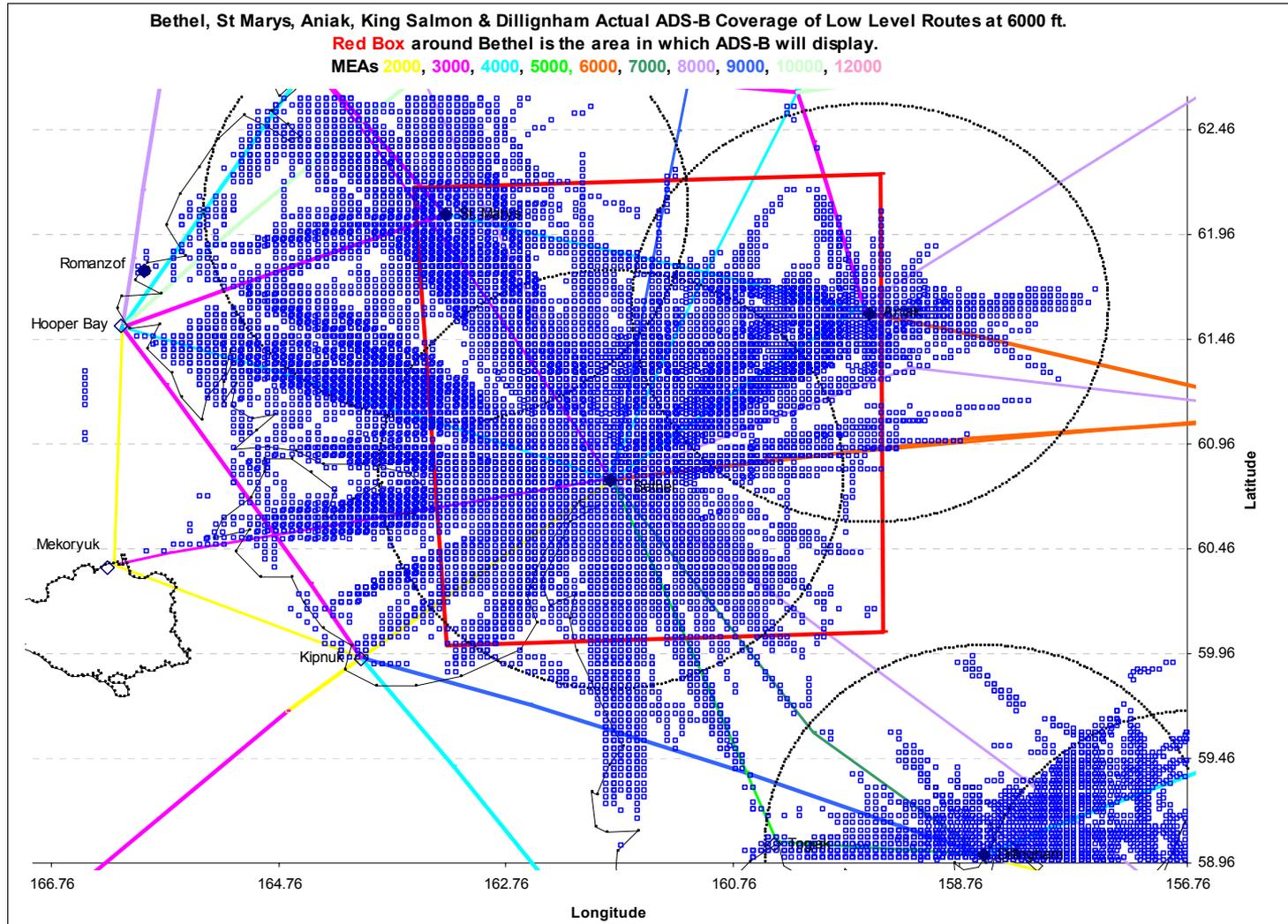
Mark Olson



Recent Events

- Seven sites in SE Alaska are operational for essential services:
 - Biorka Island
 - Gustavus
 - Haines
 - Juneau
 - Lena Point
 - Sister’s Island
 - Yakutat

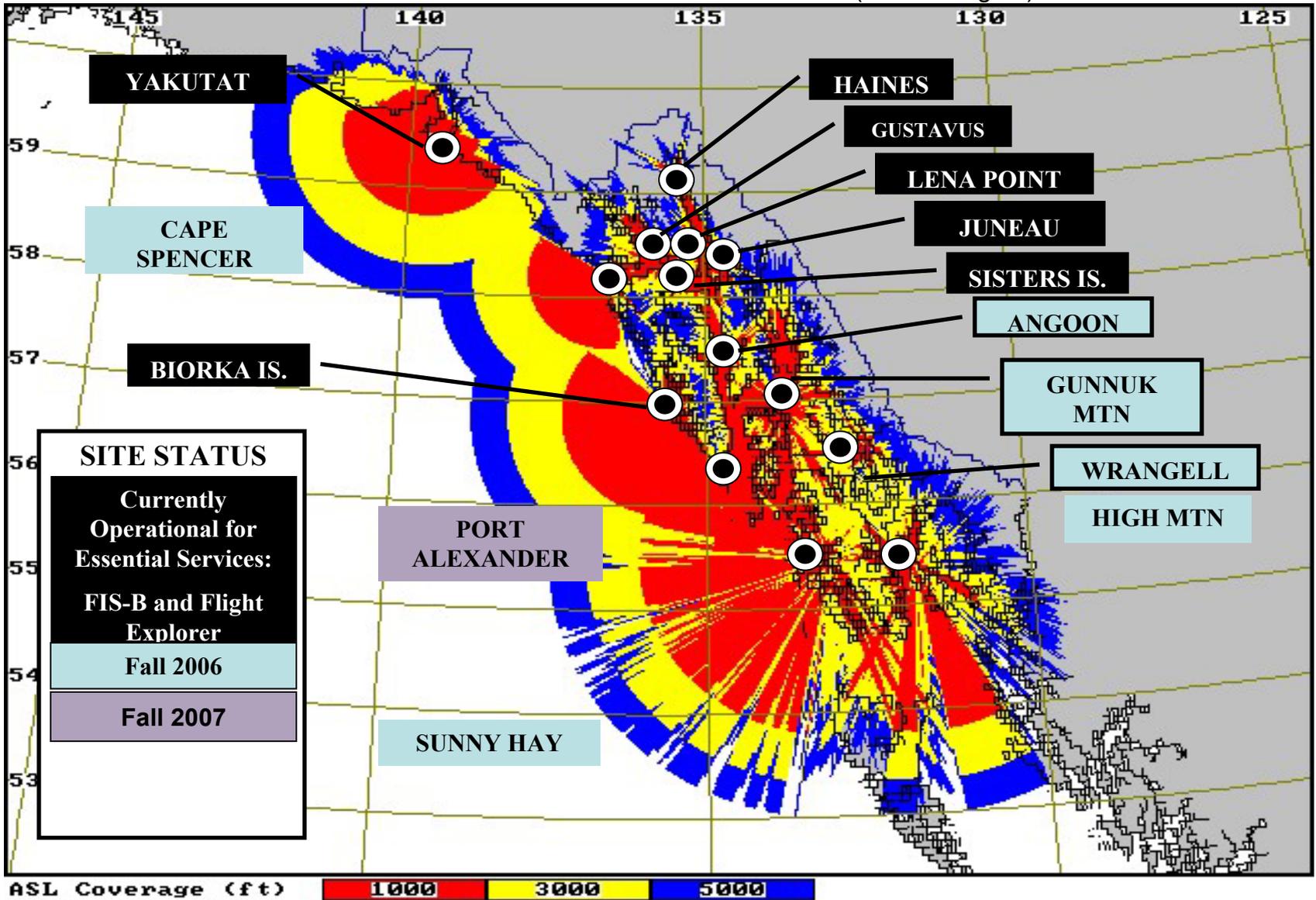
Phase I Coverage Box



STATUS OF SERVICES as of 4 Aug 06–Y-K

	ADS-B Surveillance	FIS-B	TIS-B	CRABS	VOLPE / Flight Explorer
Phase I: Y-K Delta					
Bethel	X	X	N/A	X (Developmental)	X
Aniak	X	X	N/A	N/A	X
St. Mary's	X	X	N/A	N/A	X
Dillingham	% O/S til 8/15	X	N/A	N/A	X
King Salmon	% O/S til 8/15	X	N/A	N/A	X
Unalakleet	# TBD	X	N/A	N/A	X
Sparrevohn	# TBD	X	N/A	N/A	X
Tatalina	# TBD	X	N/A	N/A	X
Cape Romanzof	# TBD	X	N/A	N/A	X
Cape Newenham	# TBD	\$ O/S	N/A	\$ O/S	\$ O/S
Site Summit	# TBD	X	X	X	N/A
X = Available N/A = Not Available # TBD = Current date is unknown - awaiting ATO-E decision					
% O/S = Out of Service					
\$ O/S = Out of Service. Cape Newenham - Wind damage to satellite communications facility.					

PHASE II GBT SITES (As of 4 Aug 06)



STATUS OF SERVICES as of 4 Aug 06-SE

	ADS-B Surveillance	FIS-B	TIS-B	CRABS	VOLPE / Flight Explorer
Phase II: Southeast					
Juneau	# TBD	X	N/A	N/A	X
Yakutat	# TBD	X	N/A	N/A	X
Sisters Island	# TBD	X	N/A	N/A	X
Gustavus	# TBD	X	N/A	N/A	X
Lena Point	# TBD	X	N/A	N/A	X
Biorka	# TBD	X	N/A	N/A	X
Gunnuk	# TBD	X	N/A	X	Fall '06
Wrangel	# TBD	X	N/A	X	Fall '06
Angoon	# TBD	X	N/A	X	Fall '06
Haines	# TBD	X	N/A	N/A	X
Sunny Hay	# TBD	Fall '06	N/A	N/A	Fall '06
Cape Spencer	# TBD	Fall '06	N/A	N/A	Fall '06
High Mountain	# TBD	Fall '06	N/A	N/A	Fall '06
Port Alexander	# TBD	Fall '07	N/A	N/A	Fall '07

X = Available **N/A = Not Available** **# TBD = Current date is unknown - awaiting ATO-E decision**



Conoco Phillips Capstone Update

Dennis Parrish

Capstone Coalition Status Update

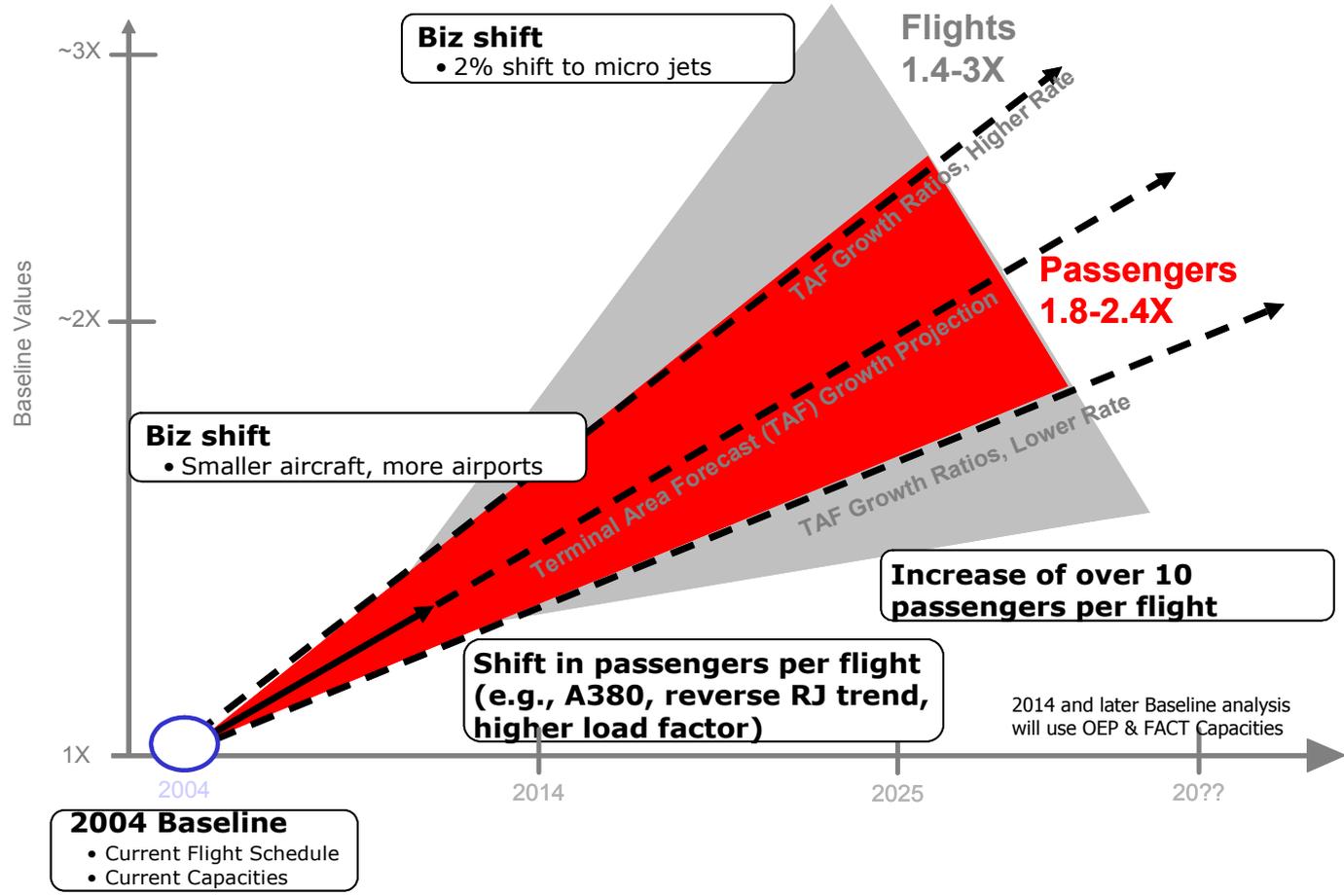
Felix Maguire



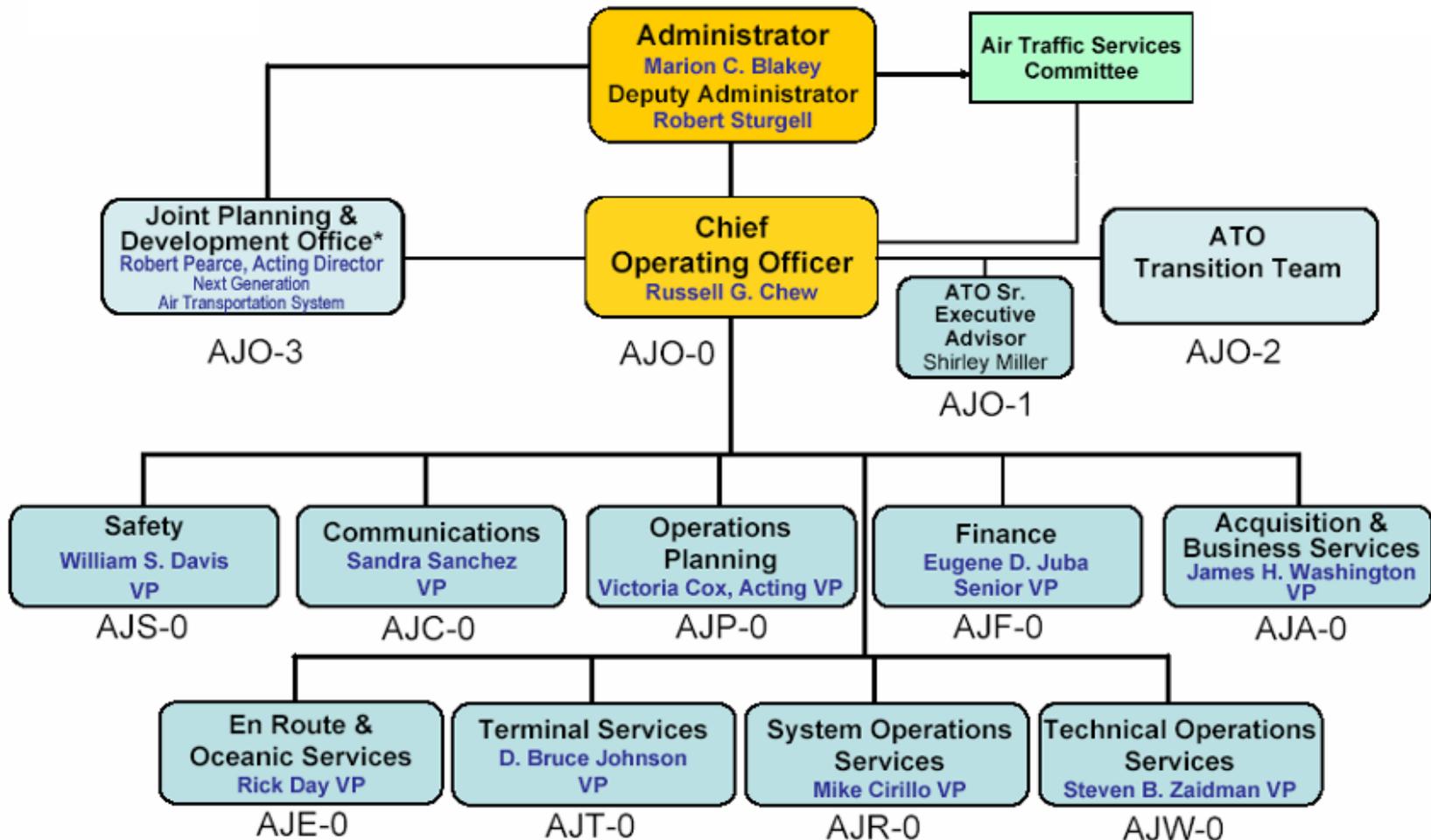
Surveillance Broadcast Services (SBS) Overview

Vincent Capezzuto

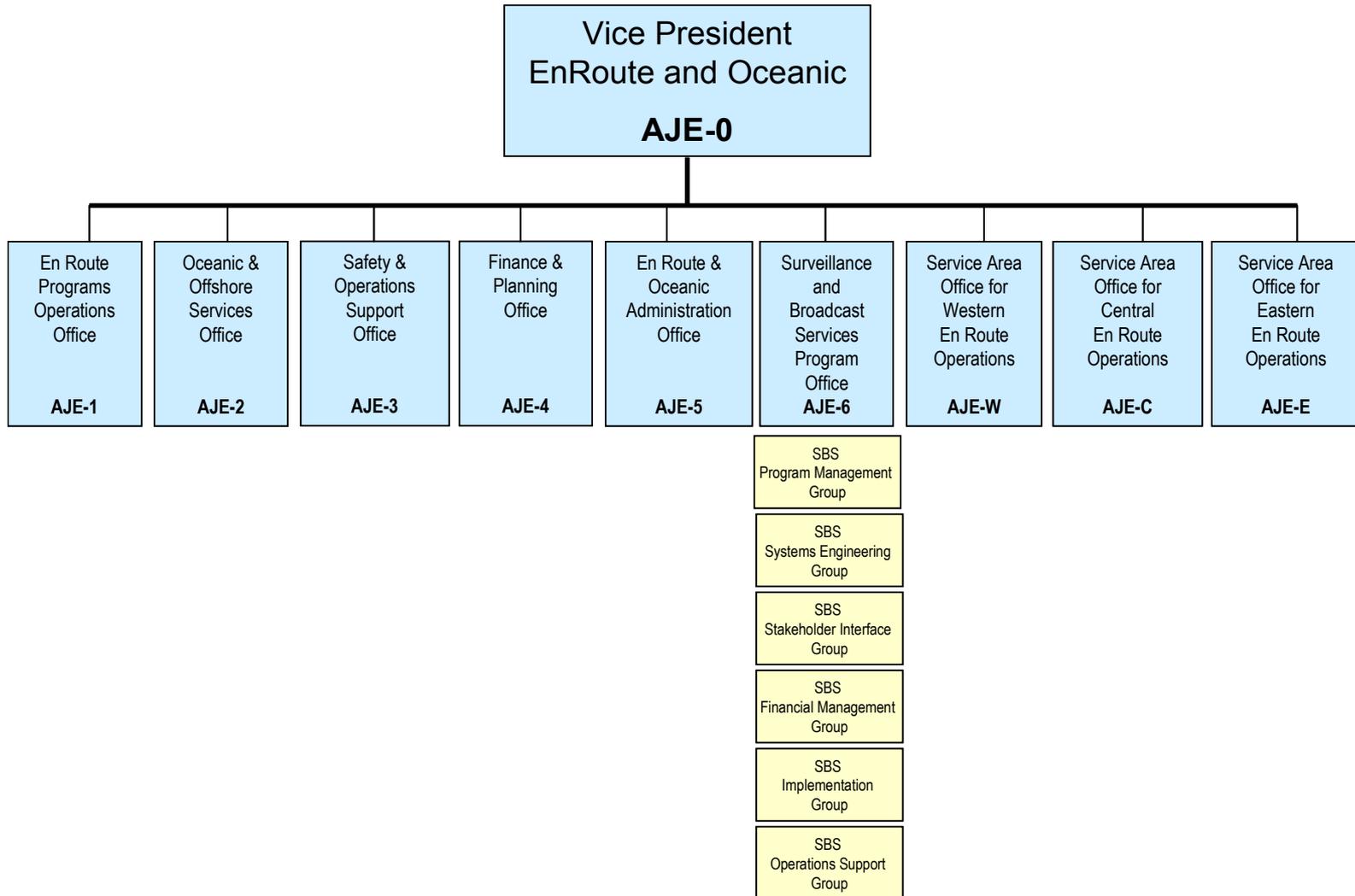
NGATS...Planning for a Range of Futures



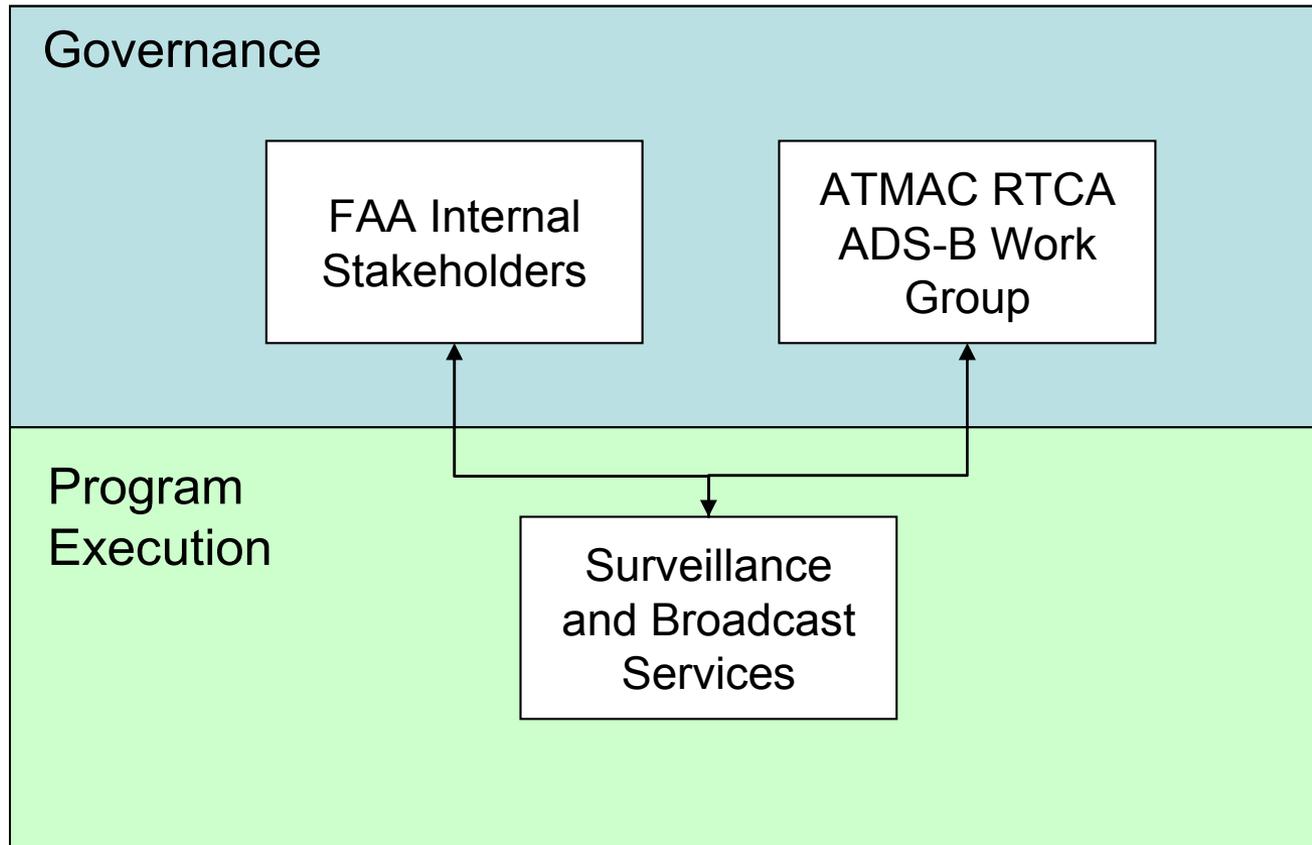
ATO Organization



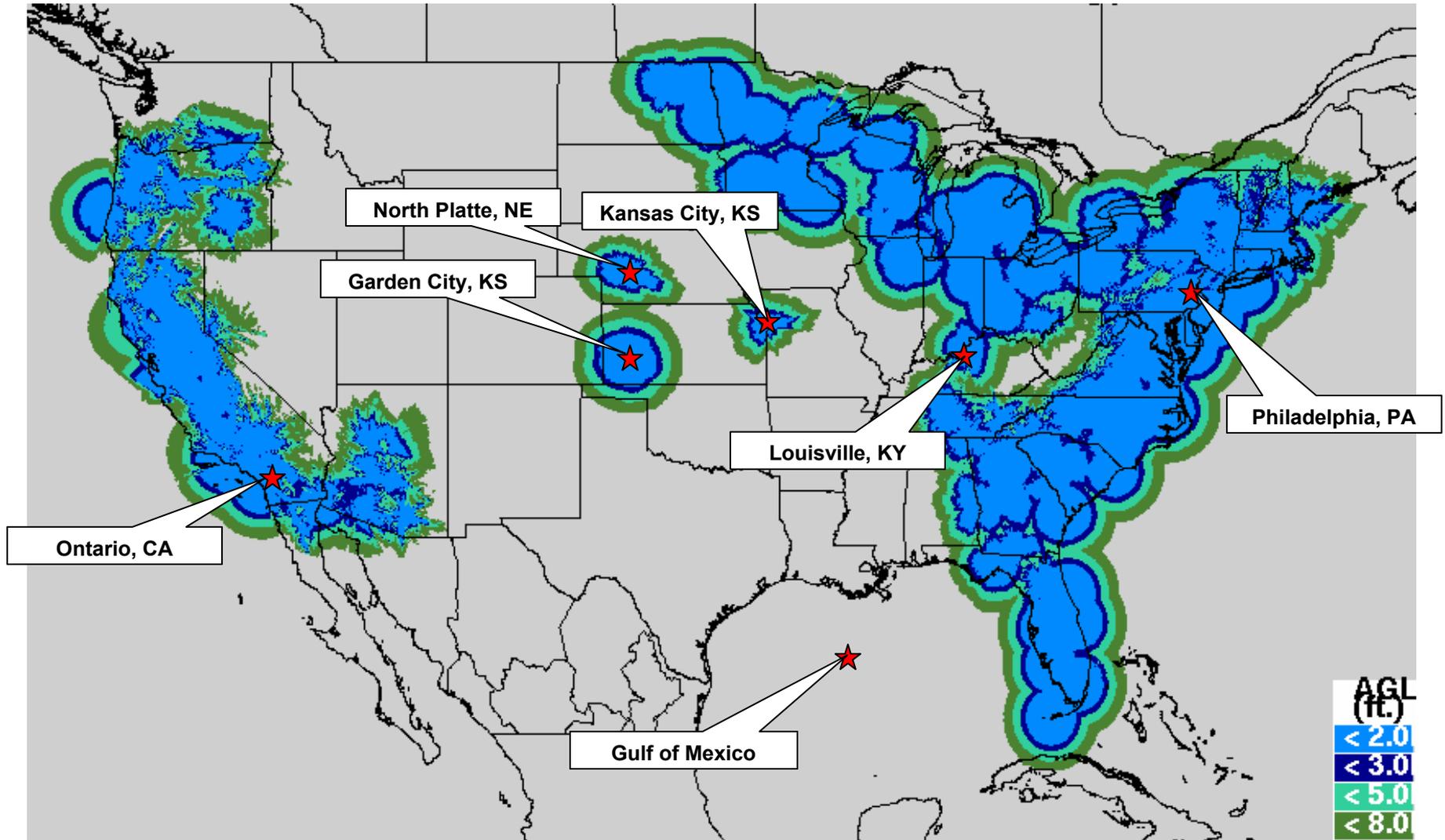
ATO-E Organization



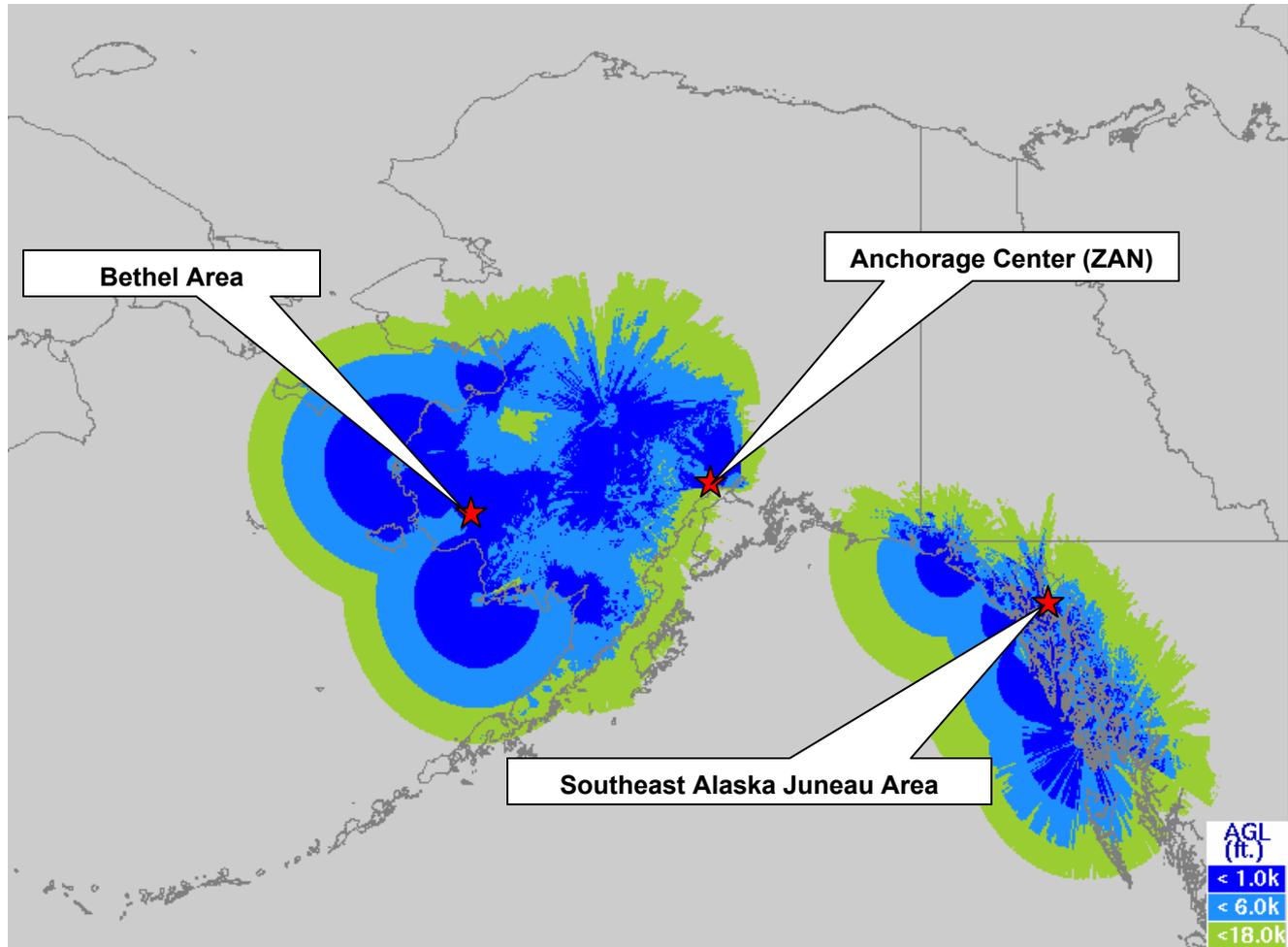
Program Charter / Governance



Segment 1 Locations: Expansion



Segment 1 Locations (Continued)



Business Case Review: Qualitative Benefits

➤ Segment 1

- Surface surveillance data to UPS AOC
- Company flight following for Gulf helicopter operators
- Risk reduction
 - Integration of ADS-B to automation platforms (HOST/ERAM, MEARTS, STARS, CARTS)
 - TIS-B on 1090 link
 - Government provided surveillance integrated with ADS-B service provider
 - Reduce general aviation opposition to airspace rule

➤ Segments 2-4

- Surface surveillance data to AOCs and Command Center
- Reduced separation standards
- DoD applications
- Future aircraft to aircraft applications

Dual Track Approach

- Ground Infrastructure
 - Industry Day #1 – June 2006
 - Industry Day #2 – August 2006
 - Performance Specification Request for Information (RFI) – September 2006
 - Industry Day #3 – October 2006
 - Screening Information Request (SIR) – November 2006
 - Request for Offer (RFO) – March 2007
 - Contract Award – July 2007
- Avionics Equipage
 - Rulemaking Project Team Established – May 2006
 - Rulemaking Project Record (RPR) Phase 1 and Phase 2 – August 2006
 - Economic Assessment of Notice of Proposed Rulemaking (NPRM) – September 2006 - November 2006
 - Internal FAA Coordination – December 2006 - January 2007
 - Submittal of NPRM to OST / OMB – February 2007
 - Issuance of NPRM – September 2007

Summary

- Program has transitioned from Research and Development (R & D) to Implementation
- Segment 1 baseline established
- Dual track service acquisition and rulemaking activities underway
- Risk Mitigation plans in effect
 - Governance Process
 - Backup Analysis underway
 - Separation Standards Workgroup established
 - Specification coordination with industry and international community

Success through a collaborative FAA / industry relationship

Using ADS-B Data for Search & Rescue

Kimo Villar

WAAS Update

JoAnn Ford

WAAS

wide area augmentation system

GPS Satellites



● Wide-area Reference Station (WRS)

● New WRS's

📡 Wide-area Master Station (WMS)

📡 Ground Uplink Station

GEO Satellite

GEO Satellite

WAAS Schedule

- Improvements to obtain full LPV performance
 - Increase communications capacity – September 2005
 - New WRS
 - Alaska
 - Four new sites installed October 2004
 - Operational August 4, 2006
 - Canada
 - Two sites installed Summer 2005, two installed this summer
 - Operational 2007
 - Mexico
 - Three sites installed Summer 2005, two to be installed in September
 - Operational 2007
 - Replace GEO communication links
 - Launched in September and October
 - Operational 1st/2nd Quarter FY07
 - Software integrity monitor improvements to be introduced in 2007 and 2008
 - End state performance will result in greater availability of service

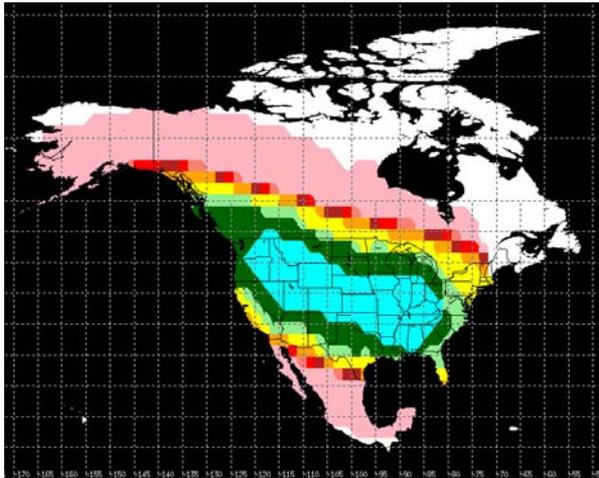
New Alaska Reference Stations

- Background – Four new Reference Stations (Barrow, Bethel, Fairbanks and Kotzebue)
 - Initial installation completed October 2004
 - All work completed/managed by FAA (ANI and TSSC III contractor)
 - Upgraded hardware design
 - All LRU's (Line Replaceable Units) upgraded
- Current Status
 - Equipment operational August 4th!

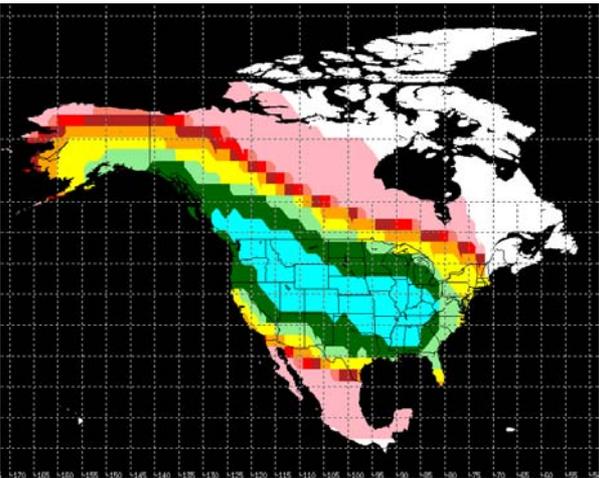


Predicted WAAS LPV Availability Gains

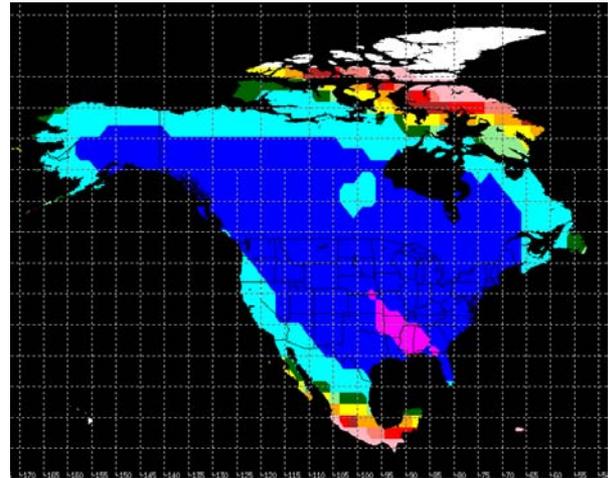
Commissioning - 2003



August - 2006



December 2008



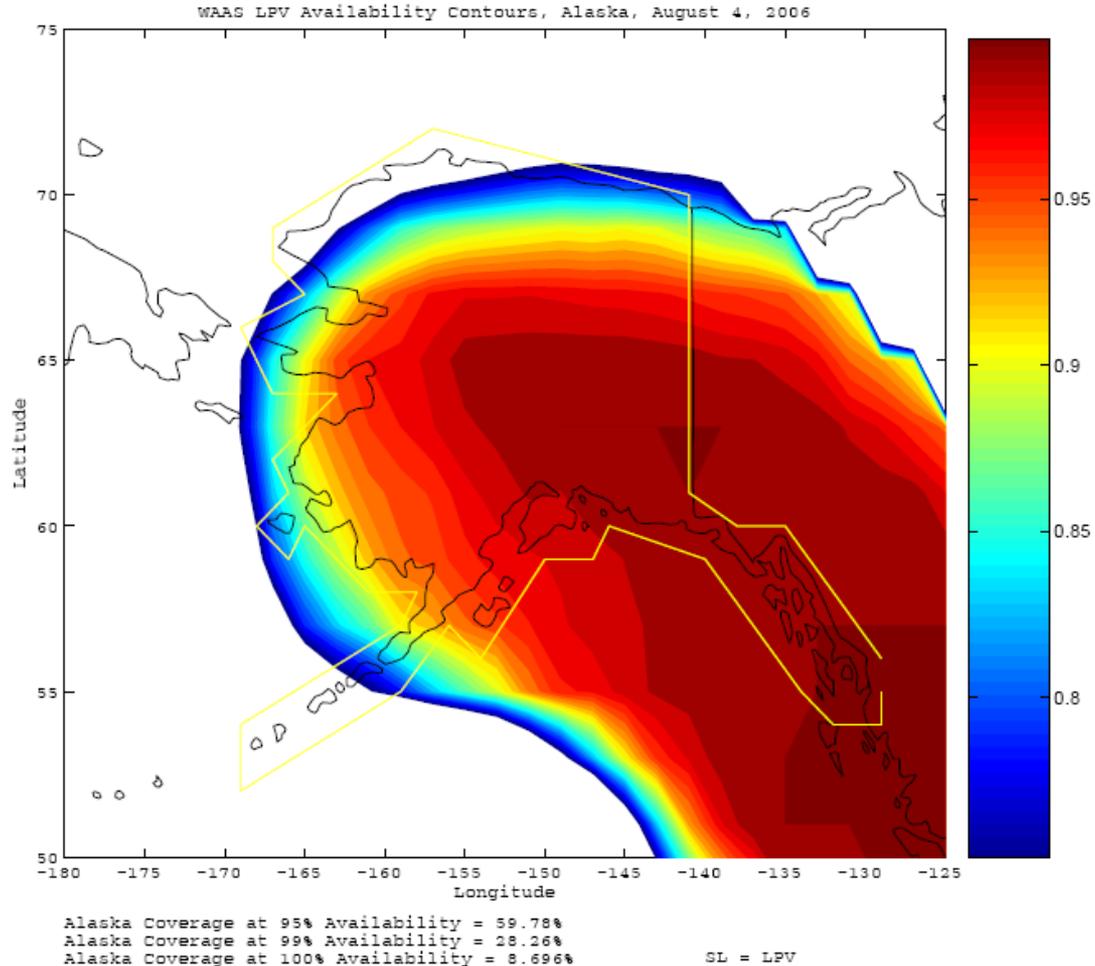
- Availability predictions performed by Mitre
 - Assumptions in this analysis are of a conservative nature, and can not completely predict actual or observed performance
- LPV availability in Alaska from commissioning to present was less than 75% with the exception of the lower southeastern portion of the state
- LPV availability is predicted to increase to 95% in the central portion of the state once the Alaskan sites are operational July 12, 2006
- Alaskan availability will increase incrementally as the Canadian sites are brought online and software enhancements are made, providing 99 - 99.5% coverage to the entire state by Dec 2008

Canstone Phase III Council Meeting

Federal Aviation Administration

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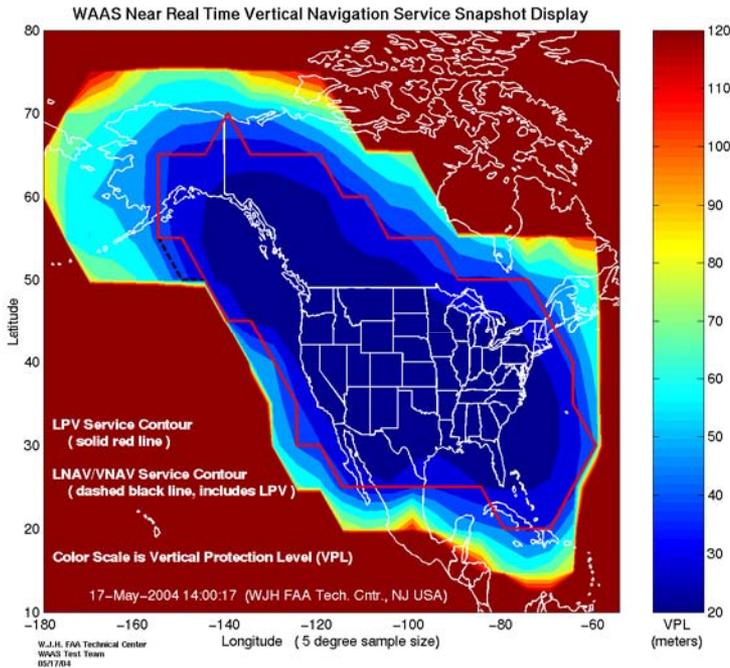
Actual WAAS LPV Availability – August 4, 2006



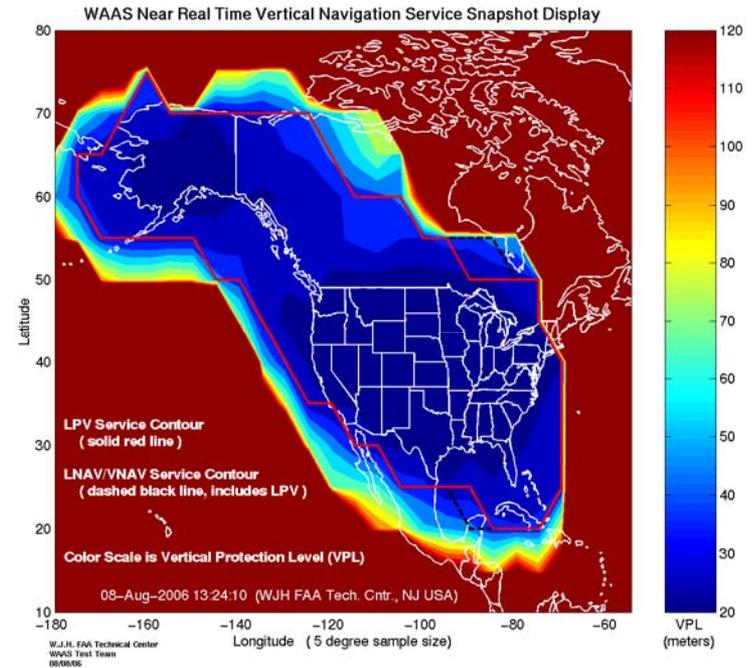
➤ Note – This is the best day since all four sites have gone operational

WAAS Performance Comparison

May 14, 2004



August 8, 2006



- FAA Technical Center continuously monitors WAAS performance
- Red line indicates current LPV coverage (40m HAL, 50m VAL)
- These pictures depict availability at a given instant and do not depict expected availability over time

Industry Roundtable

