NAV CANADA Overview

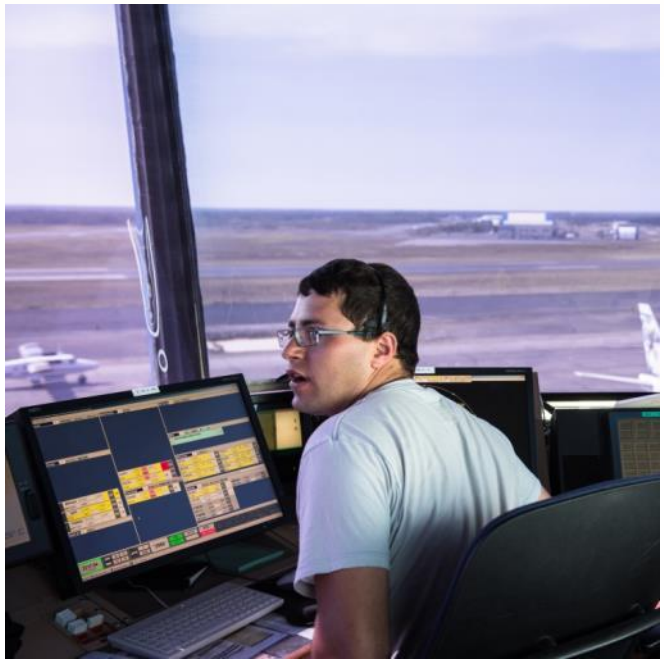
Rudy Kellar
Executive Vice President, Service Delivery
April 2016

Outline

1. **Corporate Update**
   - Corporate Focus and Priorities
   - Rates and Charges

2. **Operations**
   - Northern Service Highlights and Planned Upgrades
   - AIM Update
   - NAV AID Modernisation

Our People





4,600 employees across the country

- Air Traffic Controllers
- Flight Service Specialists
- Electronics Technologists
- Engineering and IM
- Corporate Functions

Service Delivery

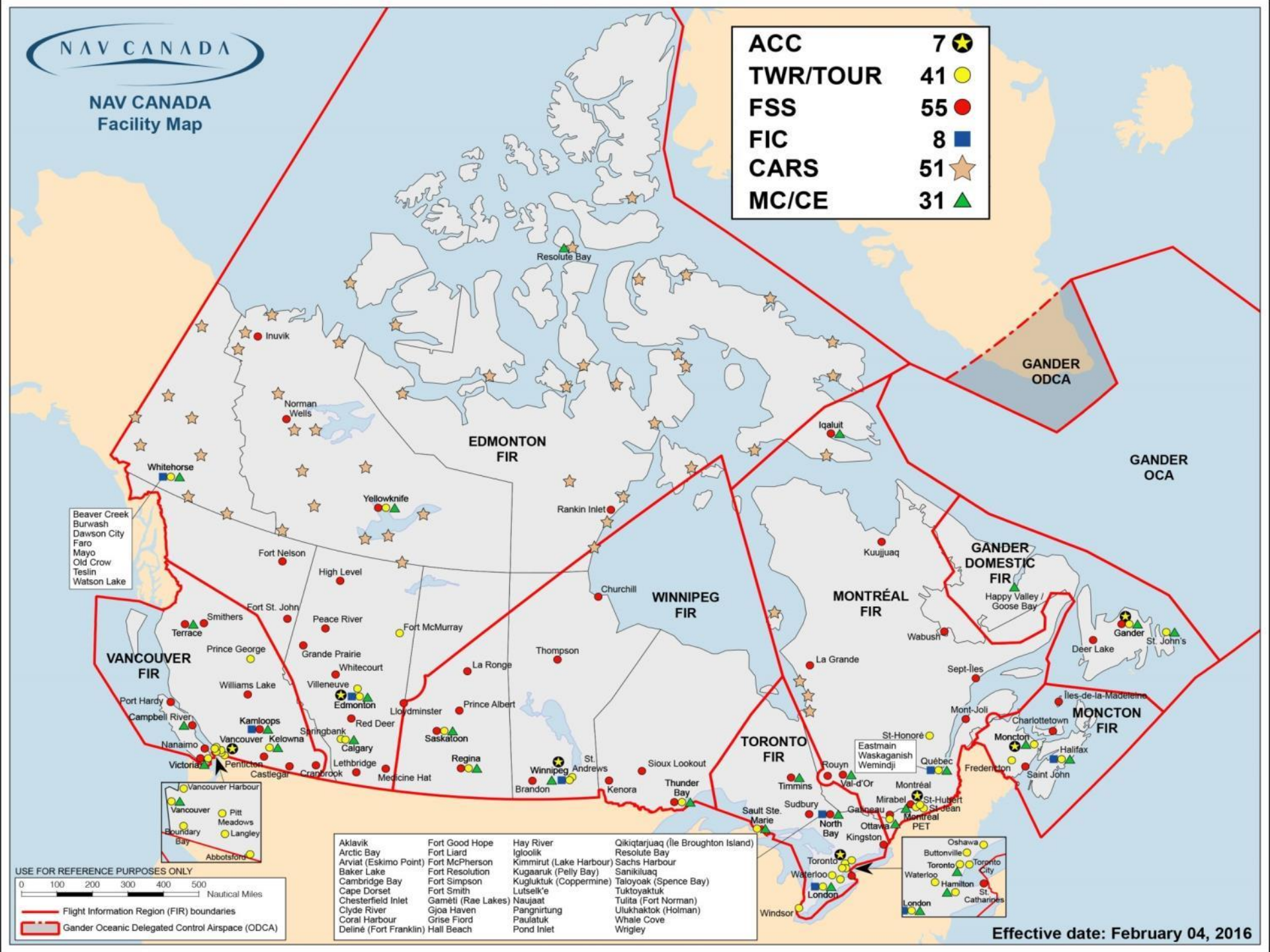
- Air Traffic Control
- Flight Information
- Weather Services
  Aeronautical Information
- Airport Advisory Services
- Communication, Navigation,
  Surveillance Maintenance
- Air Traffic Management
  Technology Development

Overarching Objectives

- Safety record: top decile
- ANS customer service charges: bottom quartile, and decline over long term
- Modern, cost-efficient technology: top quartile
- Provide value to customers: improving operational efficiency through technology and service
- Create a work environment that places us amongst the best Canadian employers
- Environment: Contribute where feasible to reduced aviation footprint

Goals for 2020

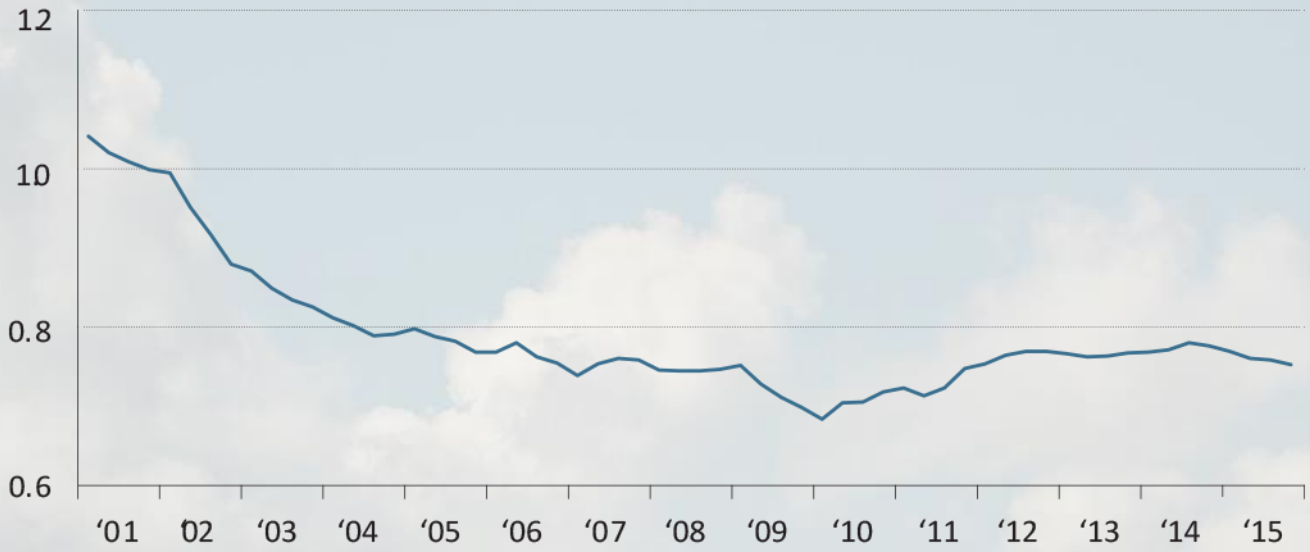
- World leadership – safety, service, technology
- Value to customers – productivity and efficiency
- Be a leading employer
- Build on strengths
  - People
  - Technology
  - Finances
  - Reputation


NAV CANADA
NAV CANADA
Facility Map
ACC 7
TWR/TOUR 41
FSS 55
FIC 8
CARS 51
MC/CE 31
EDMONTON FIR
WINNIPEG FIR
TORONTO FIR
MONTRÉAL FIR
VANCOUVER FIR
GANDER ODCA
GANDER OCA
GANDER DOMESTIC FIR
MONCTON FIR
Resolute Bay
Inuvik
Norman Wells
Whitehorse
Yellowknife
Rankin Inlet
Iqaluit
Kuujjuaq
Churchill
Fort Nelson
High Level
Fort St. John
Peace River
Fort McMurray
Smithers
Terrace
Prince George
Grande Prairie
Whitecourt
Villeneuve
Edmonton
Williams Lake
Port Hardy
Campbell River
Kamloops
Vancouver
Kelowna
Nanaimo
Victoria
Penticton
Castlegar
Cranbrook
Springbank
Calgary
Lethbridge
Medicine Hat
Lloydminster
Red Deer
Saskatoon
Prince Albert
La Ronge
Thompson
Regina
Winnipeg
Brandon
St. Andrews
Sioux Lookout
Kenora
Thunder Bay
Timmins
Sudbury
Sault Ste. Marie
North Bay
Ottawa
Kingston
Toronto
Waterloo
London
Windsor
Rouyn
Val-d'Or
Montréal
Mirabel
St-Hubert
St-Jean
Gatineau
Québec
St-Honoré
Eastmain
Waskaganish
Wemindji
La Grande
Wabush
Sept-Îles
Happy Valley / Goose Bay
Deer Lake
Gander
St. John's
Mont-Joli
Îles-de-la-Madeleine
Charlottetown
Moncton
Halifax
Fredericton
Saint John
Beaver Creek
Burwash
Dawson City
Faro
Mayo
Old Crow
Teslin
Watson Lake
Vancouver Harbour
Vancouver
Pitt Meadows
Boundary Bay
Langley
Abbotsford
Oshawa
Buttonville
Toronto
Toronto City
Waterloo
Hamilton
St. Catharines
London
Aklavik
Arctic Bay
Arviat (Eskimo Point)
Baker Lake
Cambridge Bay
Cape Dorset
Chesterfield Inlet
Clyde River
Coral Harbour
Deline (Fort Franklin)
Fort Good Hope
Fort Liard
Fort McPherson
Fort Resolution
Fort Simpson
Fort Smith
Gamèti (Rae Lakes)
Gjoa Haven
Grise Fiord
Hall Beach
Hay River
Igloolik
Kimmirut (Lake Harbour)
Kugaaruk (Pelly Bay)
Kugluktuk (Coppermine)
Lutselk'e
Naujaat
Pangnirtung
Paulatuk
Pond Inlet
Qikiqtarjuaq (Île Broughton Island)
Resolute Bay
Sachs Harbour
Sanikiluaq
Taloyoak (Spence Bay)
Tuktoyaktuk
Tulita (Fort Norman)
Ulukhaktok (Holman)
Whale Cove
Wrigley
USE FOR REFERENCE PURPOSES ONLY
0 100 200 300 400 500
Nautical Miles
Flight Information Region (FIR) boundaries
Gander Oceanic Delegated Control Airspace (ODCA)
Effective date: February 04, 2016

Safety

RATE OF IFR-TO-IFR LOSSES OF SEPARATION

per 100,000 aircraft movements (five-year moving average)



Note: The data in the above chart reflects losses of separation between two aircraft operating under instrument flight rules.

Service Charges

- Introduced in 1997-99
  - Air Transportation Tax (ATT) abolished
  - Terminal, enroute, oceanic
- Can only be set at the level required to meet our financial requirements of providing ANS services
- Must adhere to other charging principles covering safety, non-discriminatory pricing, Northern Services, and others
- Charges can be appealed

Rate Setting Approach

1. NAV CANADA does not attempt to earn an economic profit. Rather, as a cost recovery operation, we set our customer service charge rates to break even over the planning period.

2. Rate Stabilization Account – manage the RSA between its target level and a floor of zero.

    - Consider raising rates if the notional RSA balance reaches $40 million and is forecast to decline further
    - Consider lowering rates if the RSA balance is above target and growing

Build-up in the Rate Stabilization Account

- The notional balance of the RSA is $41 million above its target at February 2016 and is expected to be $50 million above target by the end of the fiscal year.

- This is an indication that, given current air traffic levels, our rates are generating revenues in excess of our current financial requirements.

- Based on our traffic forecasts and 2017 Preliminary Operating Budget, we anticipate a further build-up in the RSA next year, unless rates are adjusted.

Our Approach:

1. Establish new base rates for each fee type, effective September 1, 2016.

   Chargeout rates are essentially:

Costs allocated to each fee type,
Divided by
Anticipated air traffic

- Cost allocation exercises have been performed on an annual basis. The most recent calculations are based on the forecast of 2016 costs.
- Air traffic is expected to grow by 2.5% in fiscal 2016, by 2.1% in fiscal 2017 and by 2.4% in 2018 and 2019.
- For fiscal 2017 we are forecasting the same growth rate (1.7%) for all fee types other than the Daily charge (7.8%), which averages to 2.1% overall.

New Base Rates

		Fiscal 2017 Breakeven		
		Current Base Rates	% Change vs Existing Base Rates	Proposed Base Rates
Flight-Based Charges				
Terminal		$23.90	+1.0%	$24.14
Enroute incl. overflight		$0.03445	-7.3%	$0.03194
NAT		$93.24	-6.5%	$87.18
Int'l Com	- DataLink	$22.04	-13.7%	$19.02
	- Voice	$58.56	-13.7%	$50.54
Aircraft-Based Charges				
Daily Charges		various	-0.5%	various
General Aviation		various	-0.5%	various
			-3.9%	

The principal reason for the differences in fee adjustments is that Enroute and Overflight traffic have been growing more strongly than Domestic traffic, which attracts more Terminal fees.

Our Approach *(cont'd)*:

2. Return $50 M excess in the rate stabilization account (anticipated as at August 2016) to customers.
   - Do so by way of a temporary one-year prospective rate reduction
   - This method has been used in the past.
   - We have determined that a temporary reduction of 3.9% from new base rates should return $50 million to customers over one year.
   - This is equivalent to an average reduction of 3.7% from existing base rates.

Rates in Fiscal 2017

		Fiscal 2017 Breakeven			Fiscal 2017	Fiscal 2017
		Current Base Rates	% Change vs Existing Base Rates	Proposed Base Rates	Temporary Adjustment	Base Rate & Adjustment
Flight-Based Charges						
Terminal		$23.90	+1.0%	$24.14	-3.9%	-2.9%
Enroute incl. overflight		$0.03445	-7.3%	$0.03194	-3.9%	-10.9%
NAT		$93.24	-6.5%	$87.18	-3.9%	-10.1%
Int'l Com	- DataLink	$22.04	-13.7%	$19.02	-3.9%	-17.0%
	- Voice	$58.56	-13.7%	$50.54	-3.9%	-17.0%
Aircraft-Based Charges						
Daily Charges		various	-0.5%	various	-3.9%	-4.4%
General Aviation		various	-0.5%	various	-3.9%	-4.4%
			-3.9%		-3.9%	-7.6%

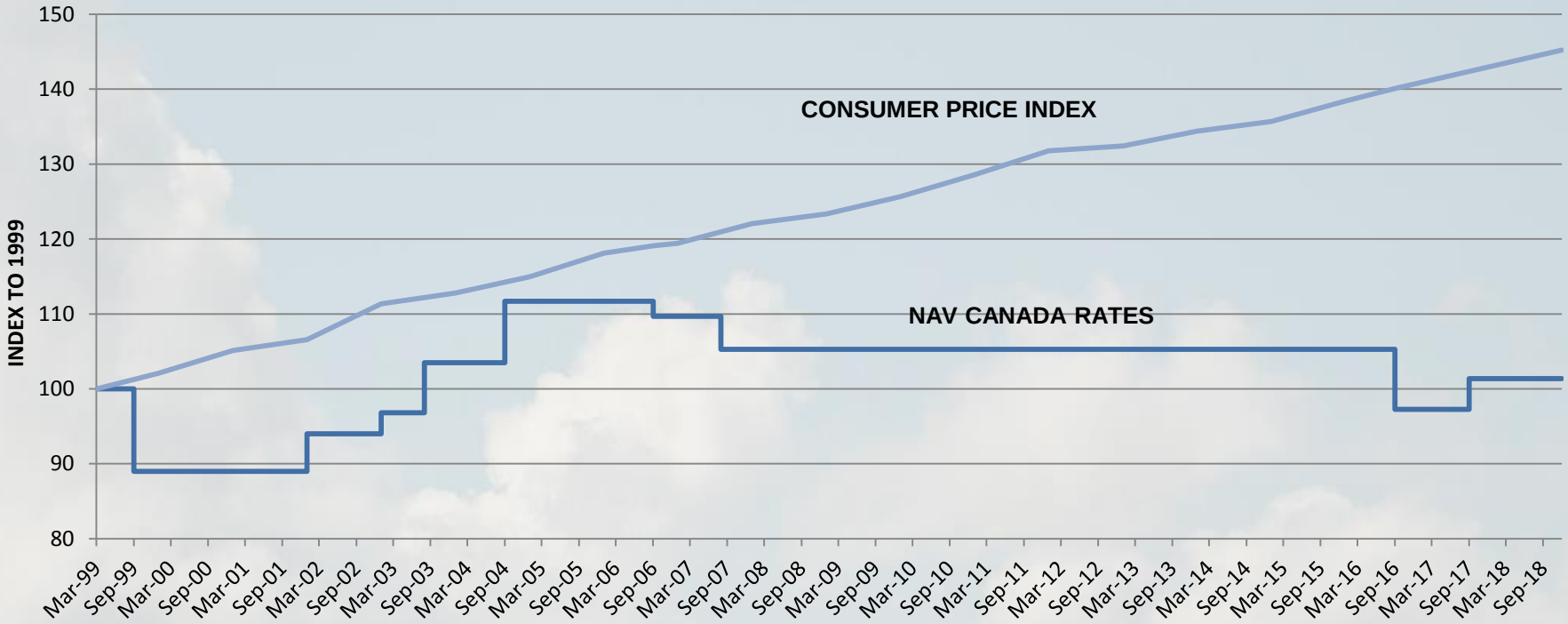
Consultation

Interested parties should make comments on NAV CANADA's Notice of Revised Service Charges by July 6, 2016.

NAV CANADA Rates

HISTORY OF NAV CANADA RATE CHANGES (1)

versus Consumer Price Index (2)



(1) Average changes since charges were fully implemented on March 1, 1999

(2) Consumer Price Index – Growth assumed to be 1.6 per cent for 2016

System Progress

Investment

$2 billion in new technology and facilities since 1996

Aviation Weather Systems Project

- Upgrade and expansion involving 463 systems at 338 sites – many in remote areas
- Eight year $66 million program
- Significant expansion to 23 airports that previously did not have weather observations

Aireon℠ Benefits

- First ever complete pole-to-pole coverage
- Significant annual fuel savings in North Atlantic
- Enhanced safety
- Increased air operations capacity and efficiency
- Reduced emissions/environmental impact
- Good potential for expanded surveillance in the North and other remote and mountainous regions
- Alternative revenue to NAV CANADA

NAV CANADA
Operations Update

Rob Thurgur
Vice President, Operations
April 2016

2015/16 Highlights

- Phase 2 of Weather Camera Project
- 68 additional RNAV (GNSS) Instruction Procedures planned for 2016 at Northern / Remote aerodromes
- Technology deployment
- Transition of Pilot Briefing Services from North Bay to Edmonton, Winnipeg and Quebec City to better align customer needs / traffic flows
- Adoption of SNOWIZ by 24 GNWT Aerodromes

Automated Weather Observation System (AWOS)

- Replacement of 68 legacy AWOS and installation of 23 additional systems
- Features include:
  - remote access to update, restart or monitor:
  - Consistent configurations
  - Heated anemometer to report wind speed and direction
  - No moving parts – more stable readings and reduced maintenance
  - 24/7 broadcast on the minute
  - More reliable and accurate METAR/SPECI bulletins

Human Weather Observation Systems (HWOS)& Limited Weather Information Systems (LWIS)

- 176 new HWOS replace legacy systems at staffed sites
- Sensors provide data on:
  - Wind speed & direction
  - Temperature and humidity
  - Atmospheric pressure
- LWIS capability incorporated into HWOS outside operational hours
- Improves safety
- Facilitates MEDEVAC service
- Facilitates 24 hour IFR Service

HWOS-LWIS Installation (since last NATA)

- Commissioned – Northern Quebec (Nunavik Region)
- Akulivik, Aupaluk, Ivujivik, Kangiqsualujjuaq, Kaniqsujaq, Kangirsuk, Quaqtaq, Salluit, Tasiujaq, Umiujaq
- All installed under commercial arrangement with MTQ

Digital Aviation Weather Cameras

- Supplements other weather information products
- Improved, higher resolution images on AWWS every 10 minutes
- Near real time information supports AWOS sites susceptible to shifting weather patterns
- Currently deployment at 177 sites with more than 220 to be completed by end of 2017

Weather Cameras – Phase 2

- Expands all 91 AWOS sites to 3 to 4 cameras
  - Will augment visibility calculation when <3 SM
- Additional new stand-alone sites (49)
- 3 year project concluding in 2018

Weather Cameras – Phase 2

Completed since last NATA Event:

- Norway House*
- Flin Flon
- Gods Lake Narrows
- Cape Dorset
- Pond Inlet*
- Berens River
- Hall Beach
- Yorkton*
- Stony Rapids*
- Arctic Bay
- Thunder Bay
- Oxford House
- Arviat
- Big Trout Lake
- Lynn Lake
- Tadoule Lake*
- Burwash
- Prince Rupert*
- St. Anthony*
- Churchill Falls*
- Inukjuak

*Additional cameras at AWOS sites.

Weather Cameras – Phase 2

Planned installations – 2016

- **May:** Dease Lake, Cat Lake
- **June:** Faro, Baie-Comeau*, Ft. McMurray*
- **July:** Ft. Liard, Lac Brochet,
- **August:** Oxford House, Ft. Chipewyan*, Slave Lake*, Shamattawa, High Level*
- **TBD:** Nahanni Butte, Braeburn, Kelowna*, Trout Lake, Lutselk'e, Paulatuk, Tulita, Wrigley, Qikiqtarjuaq*, Gjoa Haven

TBD = dependent upon signing of real estate leases

*Additional cameras at AWOS sites.

Ceilometers

- Helium-filled weather balloons being eliminated due to:
  - Increasing costs (unavailability) of helium
  - Shipping costs
  - OSH issues
  - Old technology (not as accurate as ceilometer)
- Ceilometer will function as observer's aid
- Same equipment as in AWOS
- 3-year project (2016/18);
  - 95 staffed weather observing sites

Ceilometers

Completed since last NATA:

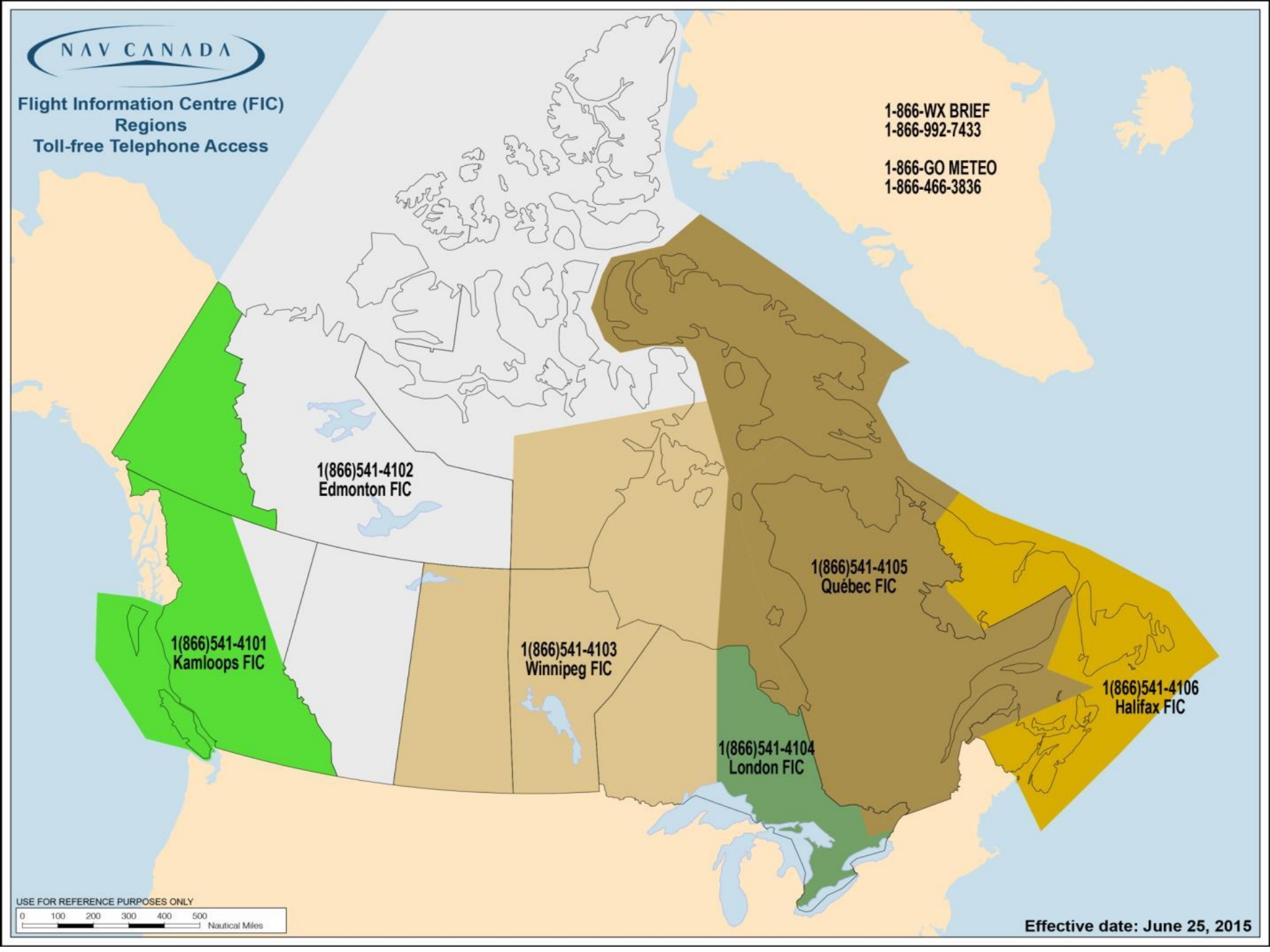
- Ft. McPherson, Aklavik, Teslin, Watson Lake, Ft. Resolution

Planned 2016 (25)

- Paulatuk,
- Wrigley,
- Rankin Inlet,
- Norman Wells,
- Déljne,
- Ft. Good Hope,
- Ft. Liard,
- Tuktoyaktuk,
- Ft. Nelson,
- Ulukhaktok,
- Ft. Simpson,
- Hay River,
- Sachs Harbour,
- Gamèti,
- Tulita,
- Lutselk'e,
- Old Crow,
- Baker Lake,
- Ft. Smith,
- La Ronge,
- La Grande Rivière,
- Berens River,
- Pickle Lake,
- Flin Flon,
- Rouyn-Noranda

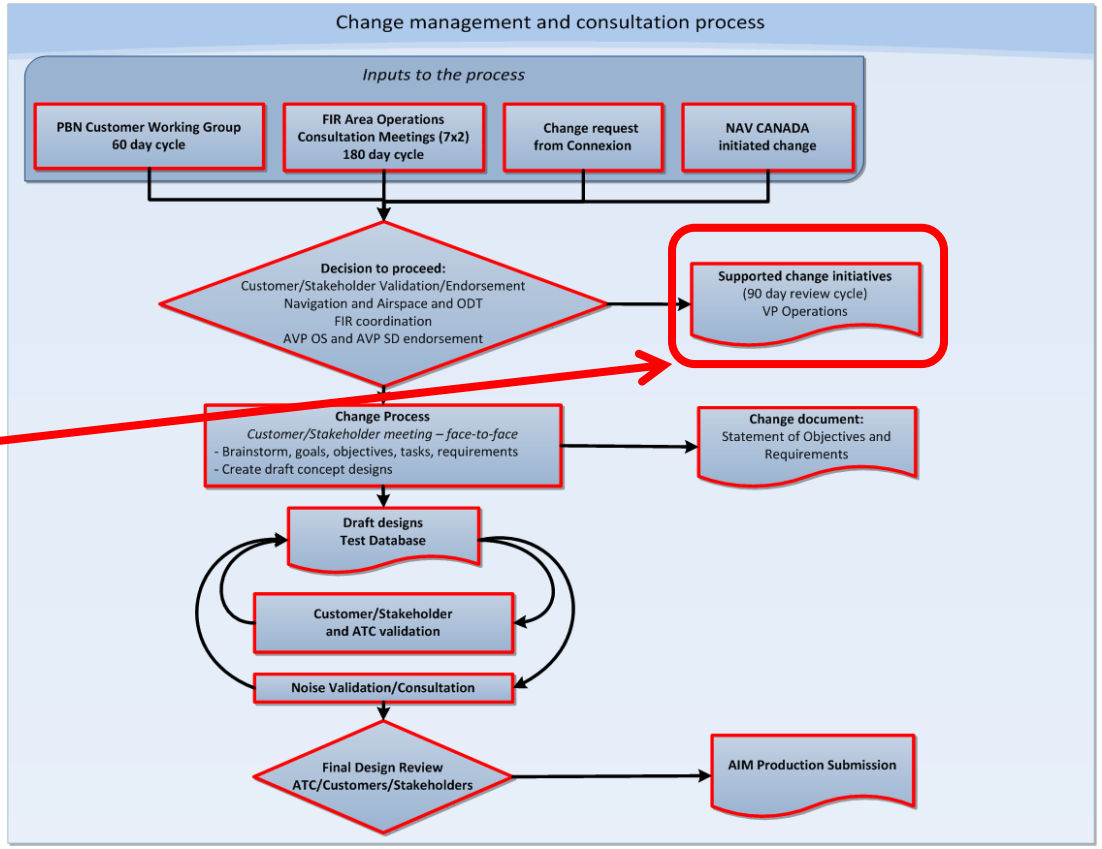
Northern FIC Services

- Implemented June 25, 2015
- Pilot Briefing and Flight Planning Services transferred from North Bay FIC to Edmonton, Winnipeg and Quebec FICs
- No change in level of service
- All flight information services previously available to pilots operating in the area continue to be provided
  - Better aligns customer service delivery with traffic flows
- Arctic Radio continues to provide communication services via RCOs

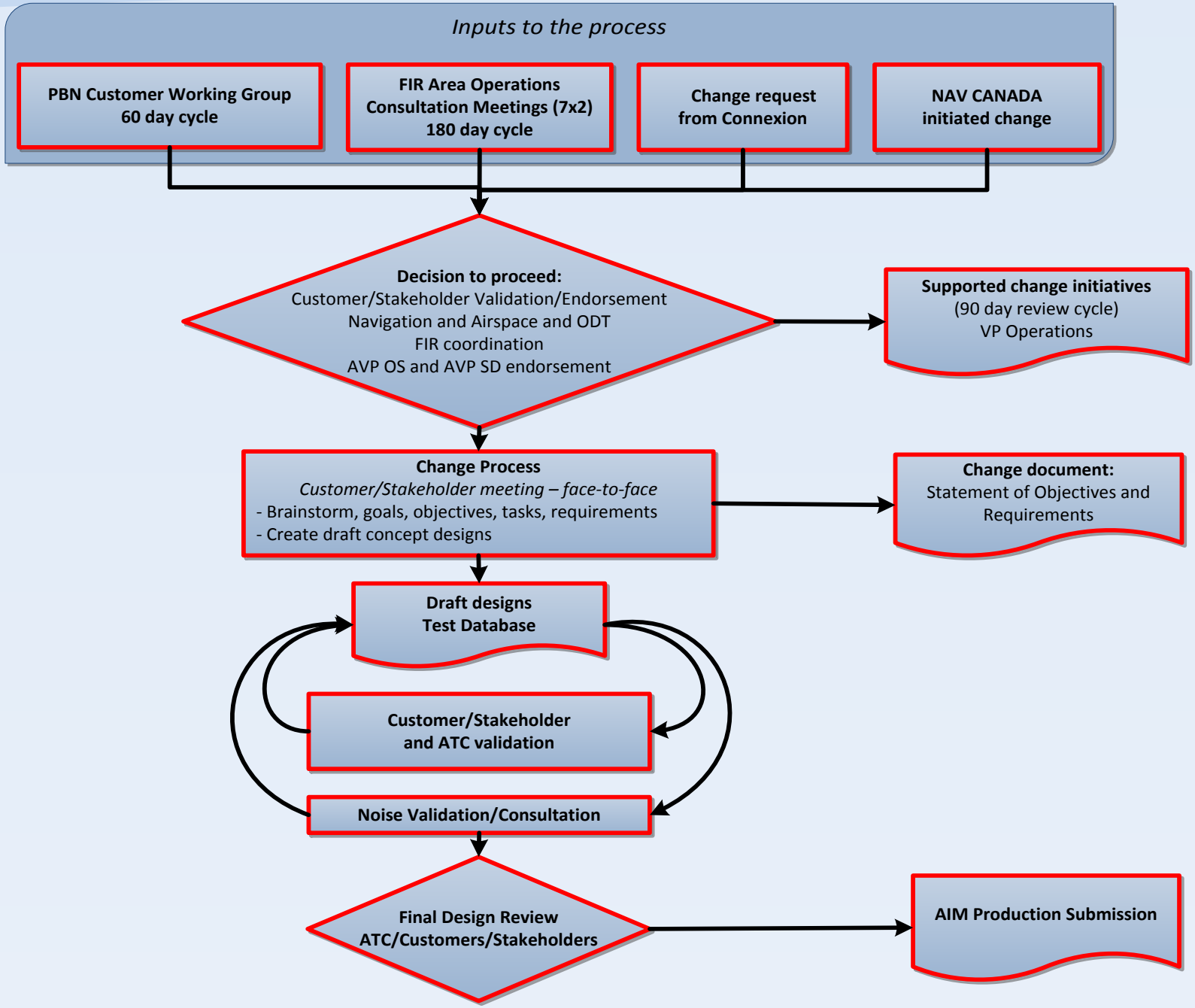

NAV CANADA
Flight Information Centre (FIC)
Regions
Toll-free Telephone Access
1-866-WX BRIEF
1-866-992-7433
1-866-GO METEO
1-866-466-3836
1(866)541-4102
Edmonton FIC
1(866)541-4101
Kamloops FIC
1(866)541-4103
Winnipeg FIC
1(866)541-4105
Québec FIC
1(866)541-4104
London FIC
1(866)541-4106
Halifax FIC
USE FOR REFERENCE PURPOSES ONLY
0 100 200 300 400 500
Nautical Miles
Effective date: June 25, 2015

PBN Change Management and Consultation Process

- Process arrived at through collaborative discussion with customers
- Commitment to transparency
- 90 day review cycle of supported change initiatives
- PBN Customer Working Group continues to provide a forum for detailed technical discussion



Change management and consultation process



AIM Program Improvements

- Assessing current Cyclic (Periodic) Review practices for Instrument Procedures. International best practices suggest changes may be possible that will reduce Level of Effort to meet regulatory requirements and free capacity for new work.

- Each ACC is reviewing current inventory of Instrument Procedures to identify where unused and unneeded procedures can be removed.

- Increased supplier capacity this year to increase design and verification (QA) capability of instrument procedures in production.

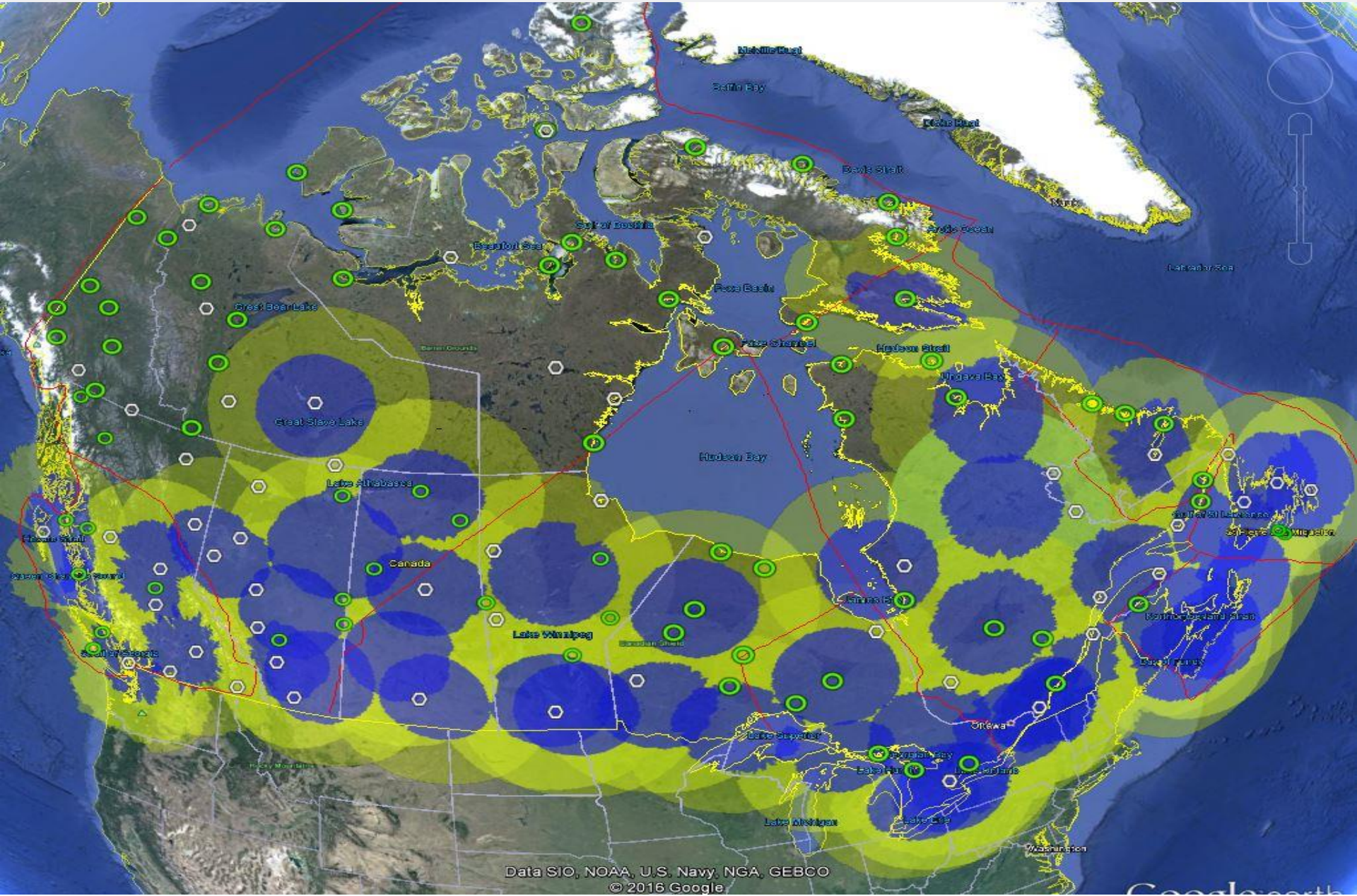
AIM Program Improvements

- Reviewed international best practices and implemented data tolerance specifications for aeronautical data changes. These tolerances allow some data changes to be deferred as not having operational impacts to flight operations.
- Introducing new processes for review and publication of procedures designed by External Design Organizations (EDOs).
  - Note: Commitment to cooperate with External Design Organizations to improve production timelines. New processes are focused on reducing data differences and providing quality feedback to reduce workload required by NAV CANADA staff to process EDO work.
- Implementing new workflow software (Pro MS) to allow better production planning, control of production processes and production reporting.
- Introducing Land Use Obstacle Evaluation System (OES) which will decrease workload associated with land use inquiries.
- Make publications every 28 days or less depending on ICAO standards.

RNAV (GNSS) Procedures

- Total number of sites = 136
- Total GNSS IP's Published as of Aug 2015 (282 IPs)
  - (LNAV=207; LNAV/VNAV=54; LPV=21)
- Planned for completion in 2016 (68 IPs)
  - To date: *LNAV=11 ; LNAV/VNAV=3; LPV=4*
  - To come: *LNAV = 10 ; LNAV/VNAV = 24 ; LPV = 16*
- Planned for completion in 2017 (115 IPs)
  - LNAV=15; LNAV/VNAV=56; LPV=44
- Planned for completion in 2018 (103 IPs)
  - LNAV=36; LNAV/VNAV=35; LPV=32
- Planned for completion in 2019 (82 IPs)
  - LNAV=31; LNAV/VNAV=30; LPV=21
- Details available from on-site representative
  - Charles Simard – Aeronautical Information Management Office

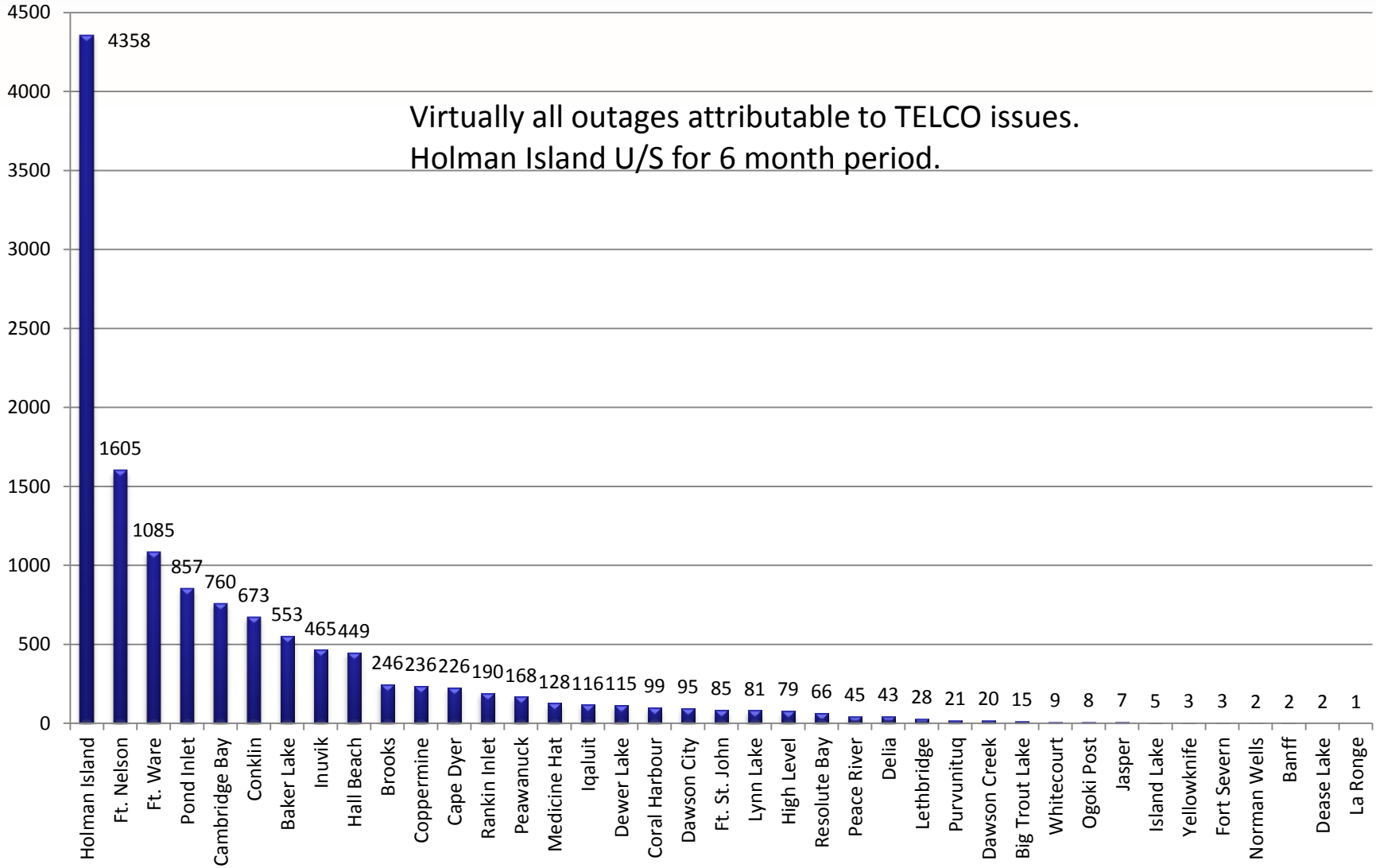
NAVAID Modernization



Telecommunications

- NAV CANADA relies heavily on 3rd party Telecommunications (TELCO) providers
- Many of NAV CANADA's system outages are attributable to 3rd party TELCO failures
- NAV CANADA Engineering has monthly meetings with TELCOs to review outages and outstanding trouble tickets
- NWTEL has been doing upgrades and will speak to details following our presentation

PAL/RCO downtime in hours Sep 2015 till April 2016



Summary

- Focus on improving safety, performance, service efficiency and cost-effectiveness in the North
- Improvements in service planned
  - RNAV (GNSS) procedures
  - Equipment Upgrades (ATC/FSS)
  - New Technology applications (HWOS/LWIS, AWOS)
- Constant evaluation of all services for safety and efficiency gains

Thank you / Questions?

20 YEARS

SERVING A WORLD IN MOTION