North Atlantic Traffic Forecast
(1 October 2016)

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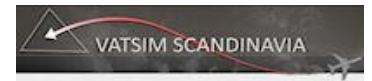
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Description of New Forecast Methodology

- **The new twenty year forecast is composed of two parts**
  - **Near-term projection for the first five years**
  - **Long-term portion that forecasts 5 to 20 years into the future**
- **The near-term portion (first five years) of the forecast is**
  - **Based on carrier fleet order books**
  - **Reflects decisions about network and fleet changes by 48 air carriers**
  - **Reflects input from operators and key stakeholders**
  - **Built at detail level of carrier, equipment type, city pair, and FIR crossings**
  - **Includes airport capacity constraints (i.e., this is not an unconstrained forecast)**
- **The long-term portion of the forecast**
  - **Reflects traffic growth for the following 15 years**
  - **References economic based growth-rates published by IATA, ICAO, Boeing, and Airbus**
  - **Consists of a central, low, and high growth rate**
- **The composite forecast appends the long-term forecast to the last year of the near-term forecast**
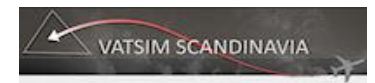
Near-Term Five-Year Forecast Methodology: Data

- **FIR Set:**
  - **All NAT FIRs (except Bodø oceanic)**
- **Carrier Set:**
  - **Forty-eight carriers (combination of the top 80% of traffic in each FIR)**
  - **This includes four major Middle Eastern carriers and low cost carriers with significant growth potential (study commissioned by FAA)**
  - **About 10% of all NAT traffic are operated by LCCs**
- **Fleet Information**
  - **Sources for equipment inventory, orders, and retirement plans**

Carrier websites	Publicly available financial documents
Public news announcements	Ch-Aviation.com
Planespotters.com	Boeing and Airbus order books

- **Fleet Utilization**
  - **Flight data obtained from ANSPs used to determine utilization per carrier/equipment/FIR**
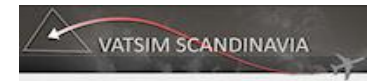 - **Focused on ANSP provided data for July 15-21, 2015**

Mathematical formulation for the Simplified Fratar Algorithm:

$$\text{Min} \sum_{ij} (X_{ijkl} - Y_{ijk})^2 \text{ for each } kl \text{ combination}$$

Subject to the carrier-level growth projection constraint:

$$D_{kl} = \sum_{ij} X_{ijkl}, \text{ for each } kl \text{ combination}$$

where,

i identifies the ith departure airport j identifies the jth arrival airport,

k identifies the kth carrier l identifies the year

X_{ijkl} is the number of projected NAT flights from airport i to airport j by carrier k in year l

Y_{ijk} is the number of NAT flights from airport i to airport j by carrier k in the base year data set provided by the ANSPs
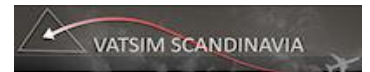
The carrier-level growth projection constraint requires that each carrier match its yearly growth projections that were determined in the fleet analysis.
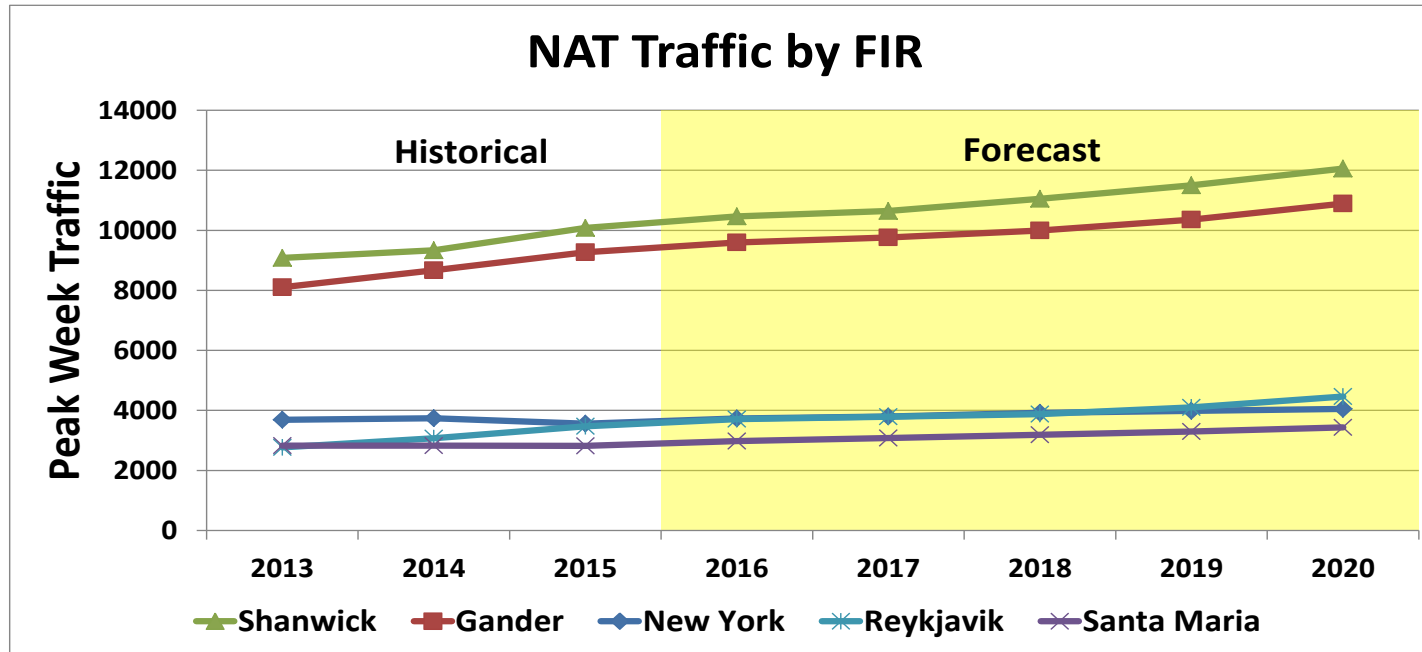
Peak Week Historical and Near-Term Forecasted FIR Operations

**An annual growth of 3.6% is projected for total Trans-Atlantic operations between 2016 and 2020**

NAT Traffic by FIR

Average Yearly Growth Rates by FIR		
FIR	**2013 – 2015 (actual growth rate)**	**5-Yr Projected**
Shanwick	5.4%	3.6%
Gander	6.9%	3.3%
New York	-1.8%	2.6%
Reykjavik	12.0%	5.1%
Santa Maria	-0.2%	4.0%

Note that summing across FIRs does not provide total NAT operations for the carrier since a single flight can cross multiple FIRs.

Near-Term Five-Year North Atlantic LCC Analysis

Current and Prospective Pre-Clearance European Airports Would Allow Access to U.S. Secondary Airports without Federal Inspection Services (FIS) Facilities
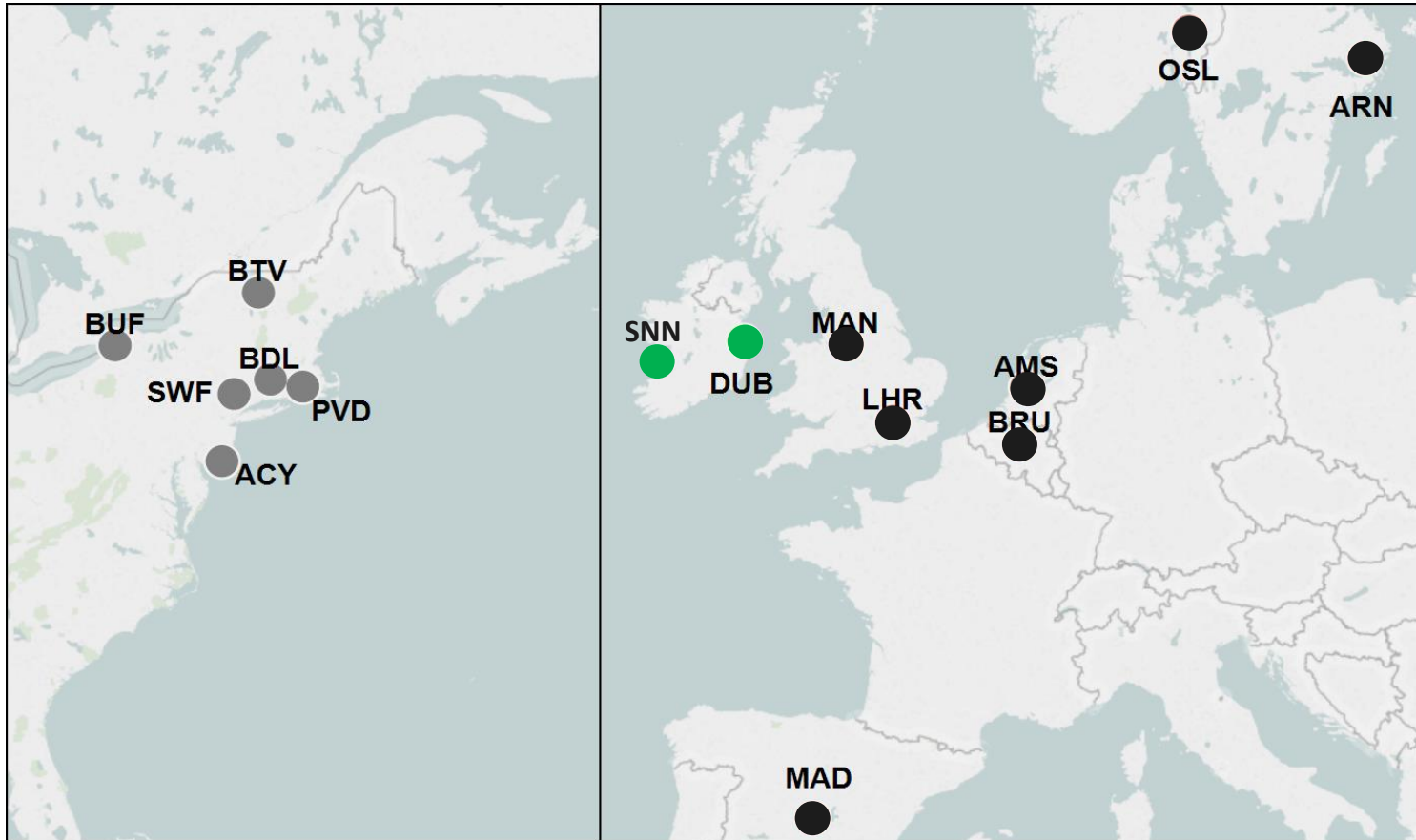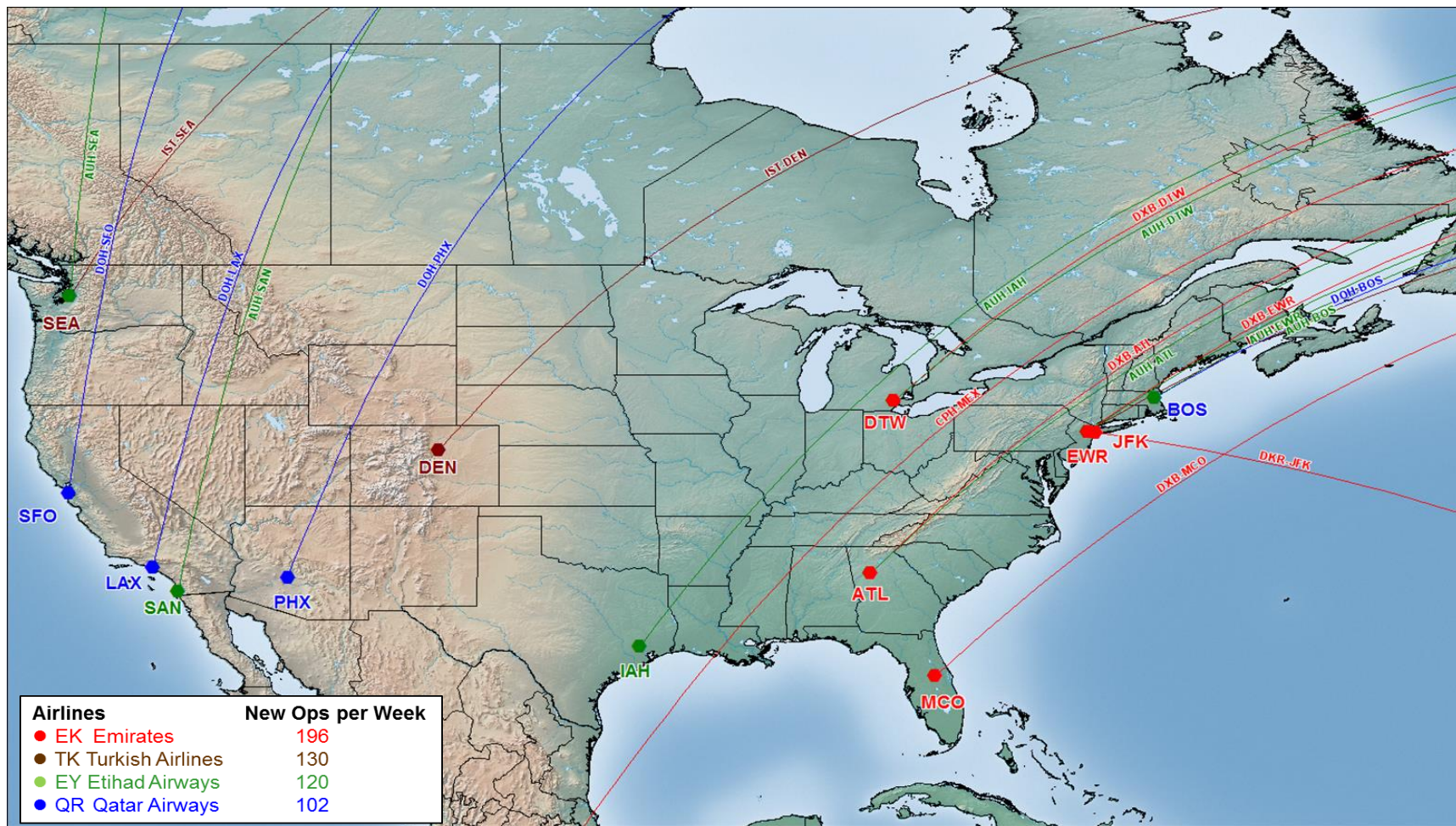

Istanbul's Ataturk Airport (not on map) is also being considered for Pre-Clearance

Near-Term Five-Year Middle East Carrier Analysis

Current and Prospective US markets to be served by Middle East carriers

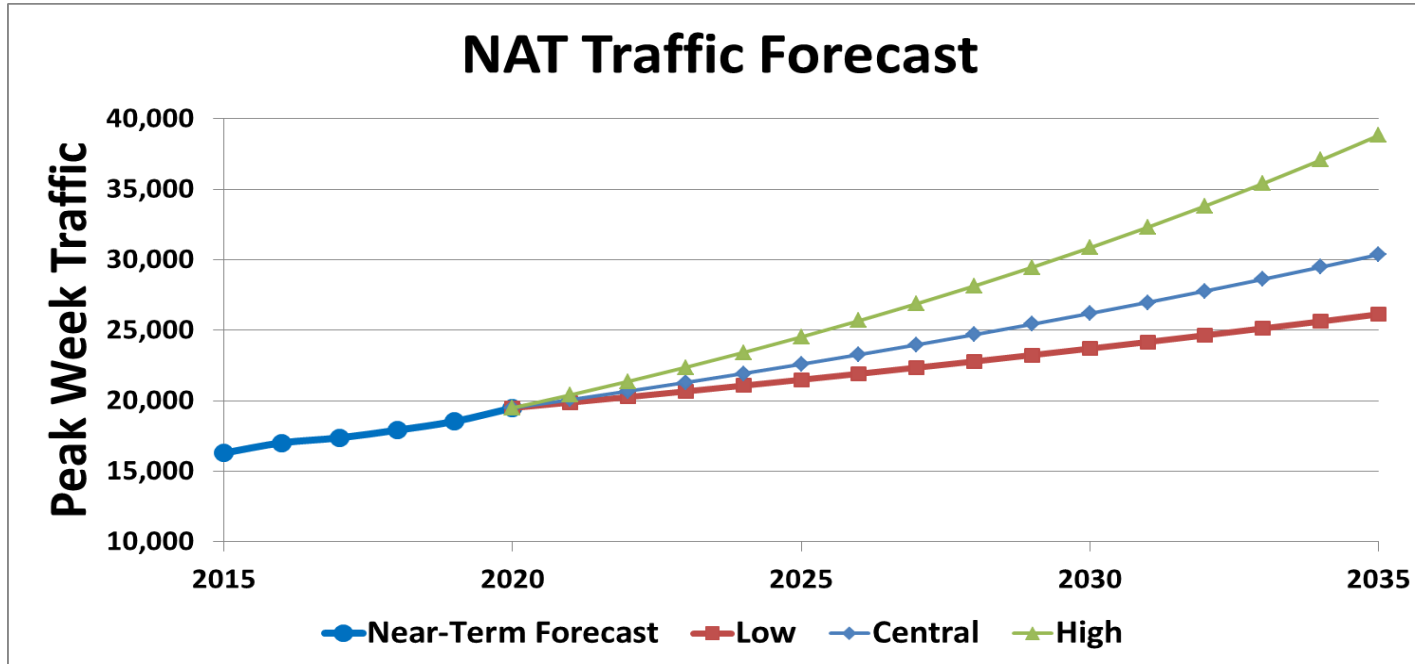| Airlines	New Ops per Week
● EK Emirates	196
● TK Turkish Airlines	130
● EY Etihad Airways	120
● QR Qatar Airways	102

15-Year Long-Term Forecast (beyond Near-Term Forecast)

The long-term forecast branches into high, central and low forecasts from the end of the near-term forecast (Average Annual Growth Rate (AAGR))

Sources	AAGR from 2014 to 2034	AAGR from 2020 to 2030	AAGR from 2010 to 2030	AAGR from 2020 to 2035
IATA	2.6%	2.0%	3.0%	2.0%
Boeing	3.0%			
Airbus	2.8%			
ICAO (FESG CAEP/9) High Scenario		4.7%	4.7%	
ICAO (FESG CAEP/9) Central forecast		3.8%	3.9%	
ICAO (FESG CAEP/9) Low Scenario		3.0%	3.1%	

Summary of Long-Range (2020-2035) North Atlantic Passenger Growth Forecast	
High	4.7%
Central	3.0%
Low	2.0%

20 Year NAT Traffic Forecast (2015 – 2035)

NAT Traffic Forecast

Peak Week Traffic vs Year (2015–2035), with four series: Near-Term Forecast, Low, Central, High.

Composite Growth Rates (2015 - 2035)	
High	4.4%
Central	3.2%
Low	2.4%

Conclusions

- **The 2015 – 2020 traffic forecast, based on airline fleet analysis and business plans, is projected to grow 3.6% annually**

- **Contributing factors to first five years in the forecast**
  - **Rapid growth in New York due to Norwegian Air, Air Europa, and jetBlue**
  - **Gander and Shanwick operations will grow at a rate of 3.5%.**
  - **Santa Maria will grow due to Air Europa which has a large order book**
  - **Reykjavik will grow due to Icelandair, Norwegian Air, and WestJet**

- **Large orders by middle east carriers will significantly grow NAT traffic**

- **LCCs will add significant growth in the North Atlantic**

- **Growth by legacy carriers will remain fairly flat**

- **The 20 year NAT traffic forecast (2015 – 2035) is projected to grow at a 3.2% average annual rate**