NY/NJ/PHL Metropolitan Area Airspace Redesign

Draft Environmental Impact Statement DEIS

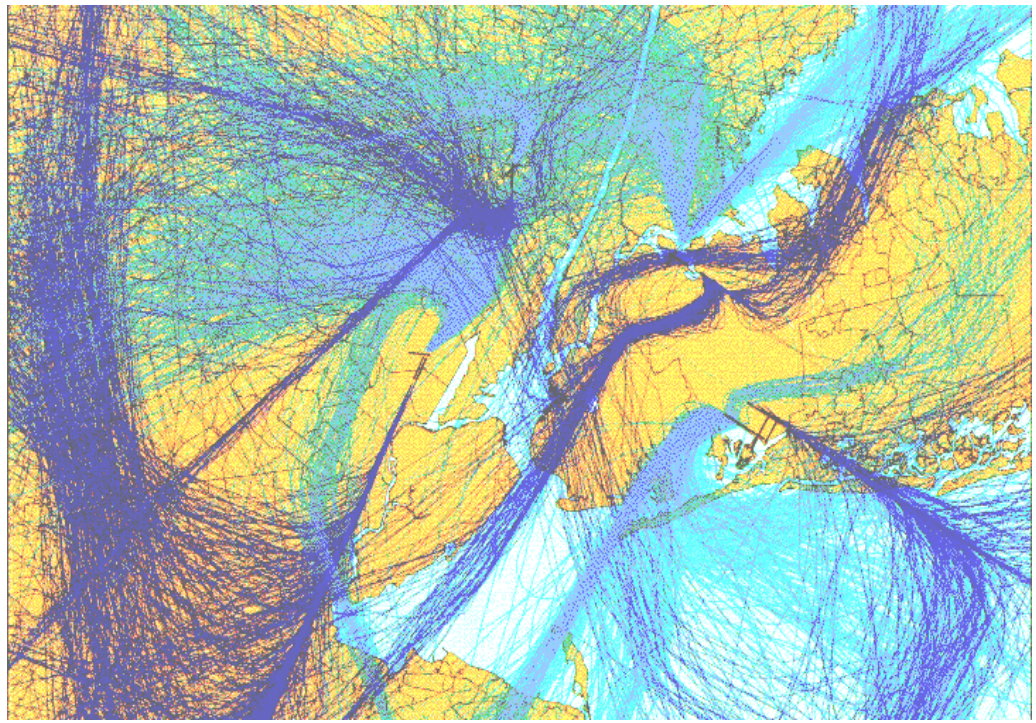
Briefing to Congressional Staffers

December 20, 2005

Federal Aviation Administration

Why We Need to Redesign Airspace

- Routinely, the New York and Philadelphia metropolitan areas airports are among the top 10 delayed
- Lack of alternate routes closes off airspace in cases of severe weather
- Multiple facilities fragment arrival and departure corridors



- Complexity and congestion continue to be issues even with post-September 11 downturn

Objectives of NY/NJ/PHL Metropolitan Area Airspace Redesign

- Purpose
  - Increase efficiency and reliability of the air traffic system through the adjustment of traffic flows in the New York/New Jersey and Philadelphia areas to accommodate new technologies and reduce delays
- Need
  - Maintain Safety
  - Respond to Increasing Aviation Growth
  - Mitigate Mounting Delays

- Eight "Purpose and Need" elements:
  - Reduce Delay
  - Improve User Access
  - Maintain Airport Throughput
  - Expedite Arrivals and Departures
  - Flexibility in Routing
  - Reduce Complexity
  - Balance Controller Workload
  - Reduce Voice Communications

Overview of Alternatives

- Four alternatives
  - Future No Action
    - Required by NEPA
  - Modifications to Existing Flows
    - Minor routing changes
    - No airspace realignment
  - Ocean Routing
    - Proposed by NJCAAN
    - Does not meet Purpose & Need
  - Integrated Airspace
    - Includes design variations with and without an Integrated Control Complex (needed to illustrate independent utility)

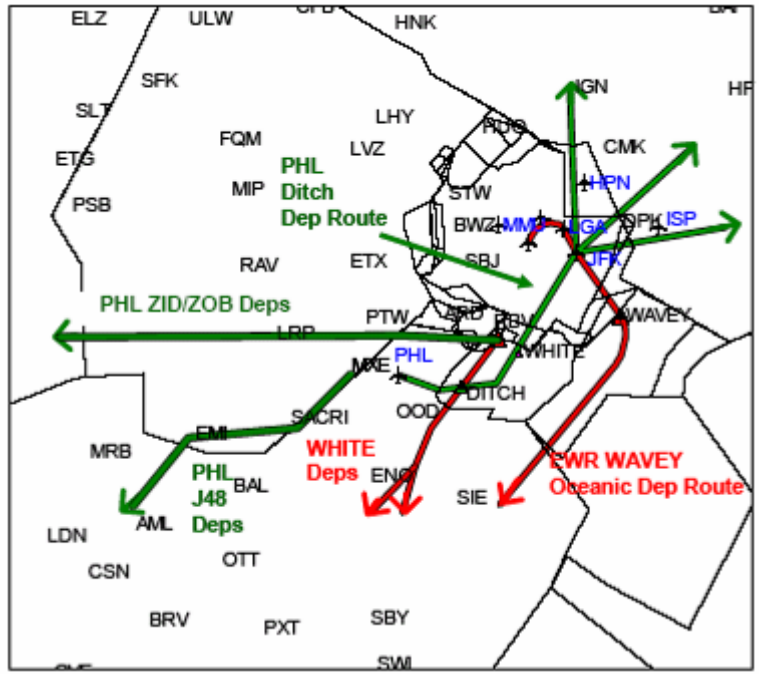
Alternative: Future No Action

- Procedures identical to 2004
  - Including STOEN departures from PHL (Dual Modena Departures)
- Forecast traffic levels:

		90th Percentile Operations		Above 2003 Average	
	2003 Mean	2006	2011	2006	2011
EWR	1125	1575	1634	40%	45%
JFK	798	1240	1355	55%	70%
LGA	1039	1314	1314	26%	26%
PHL	1222	1764	1922	44%	57%
TEB	592	794	900	34%	52%

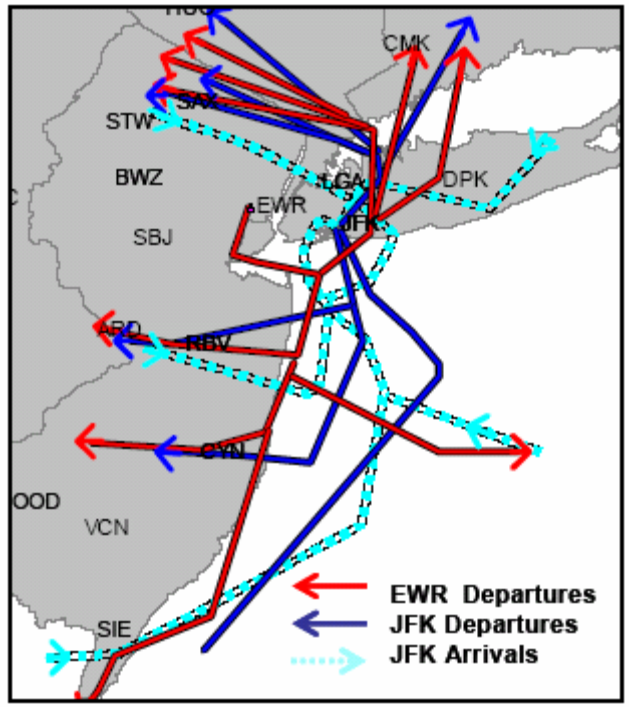
Alternative:
Modifications of Existing Airspace

- Multiple departure headings
- Establish 2nd airway for current J80/J110 traffic
- WHITE moved west, DITCH moved east
  - PHL climbs no longer restricted by NY departures
- EWR 04 departures to MIA via WAVEY.J174
  - Avoids congestion on WHITE.J209



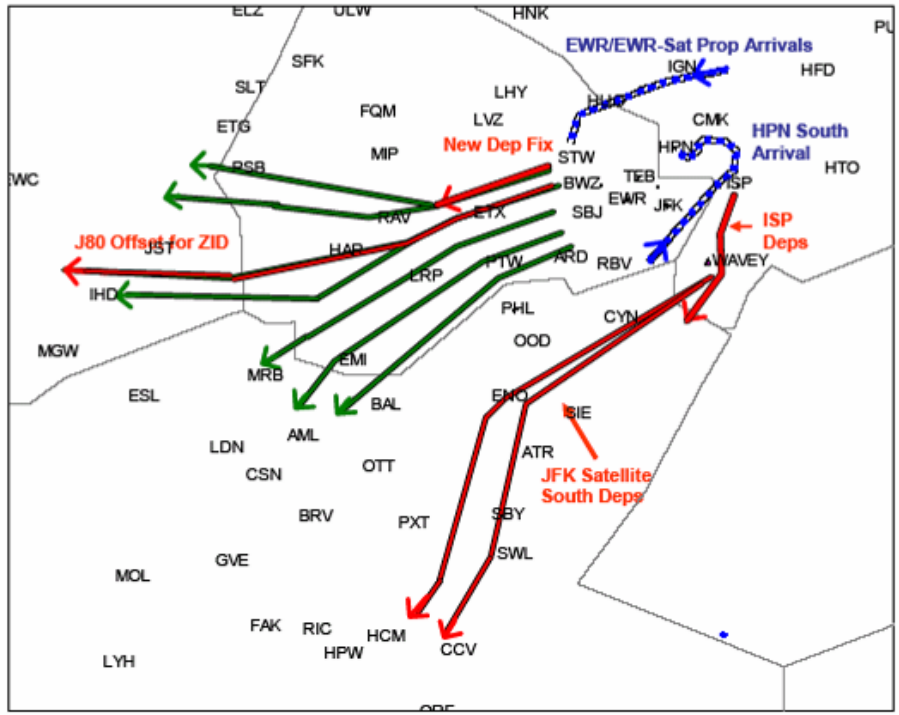
Alternative: Ocean Routing

- Based on proposal from New Jersey Citizens Against Aircraft Noise (NJCAAN) utilizing existing airspace boundaries
- Moves EWR and JFK southbound departures over water
  - JFK arrivals moved to accommodate departure changes
- No change to jet airways



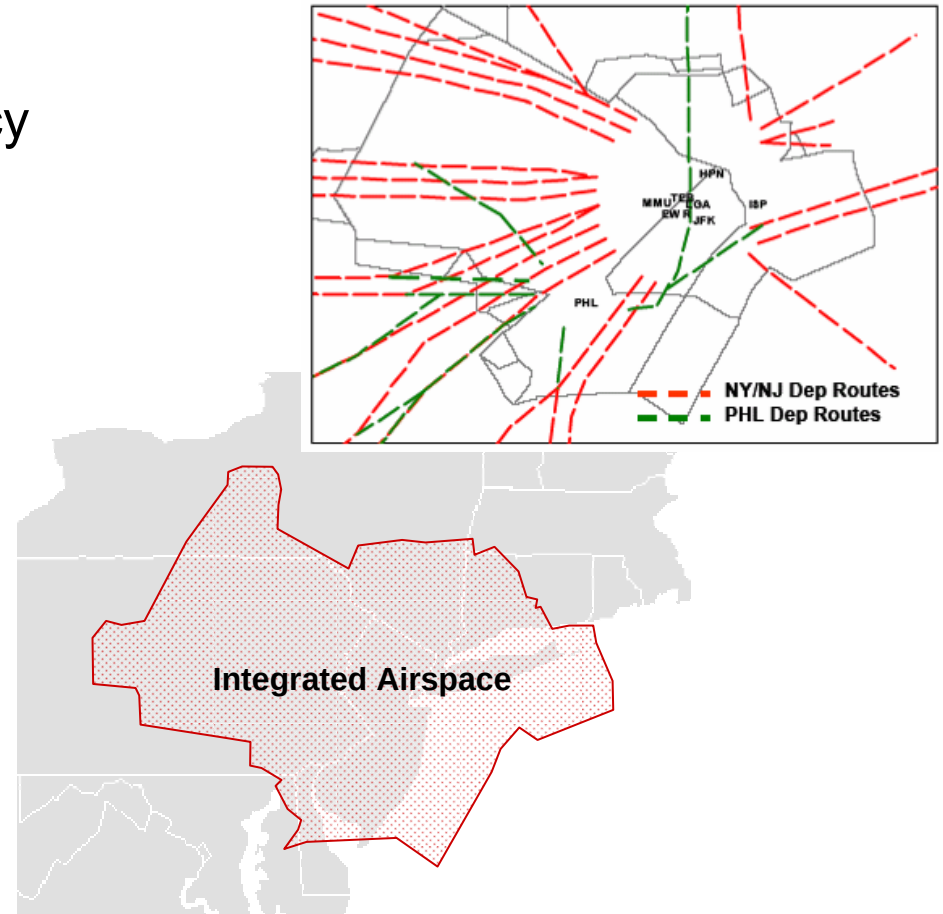
Alternative: Integrated Airspace (variation w/o ICC)

- Multiple departure headings
- Establish 2nd airway for current J80/J110 traffic
  - Split ELIOT departures into two fixes to feed the two airways
- Simplified merge of ISP south departures with other NY Metro departures



Alternative: Integrated Airspace (variation with ICC)

- Increased departure efficiency
  - Multiple departure headings
  - Additional airways
  - Piggyback altitudes at departure fixes
- Dual arrivals to EWR on 04/22
- Terminal separation rules used at all legal altitudes
- ZBW and ZDC overlie ICC airspace

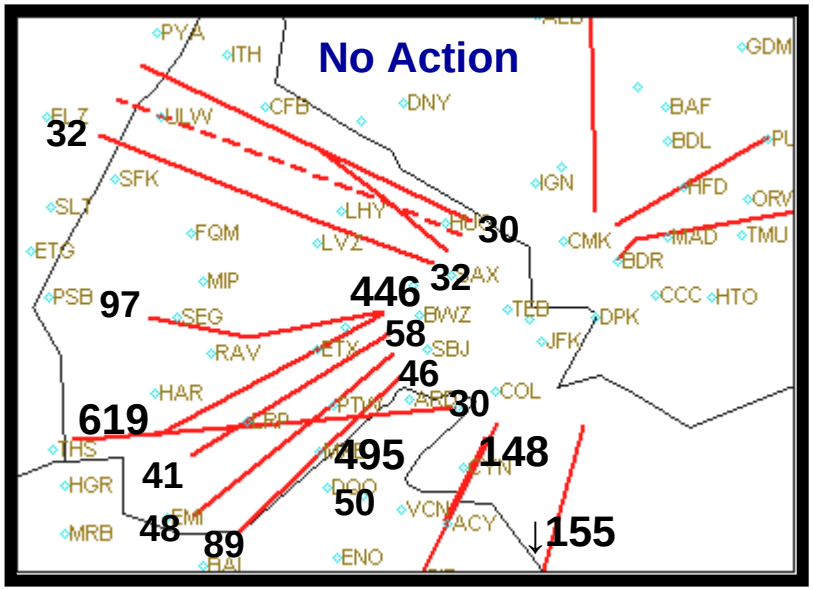


Summary of Operational Results

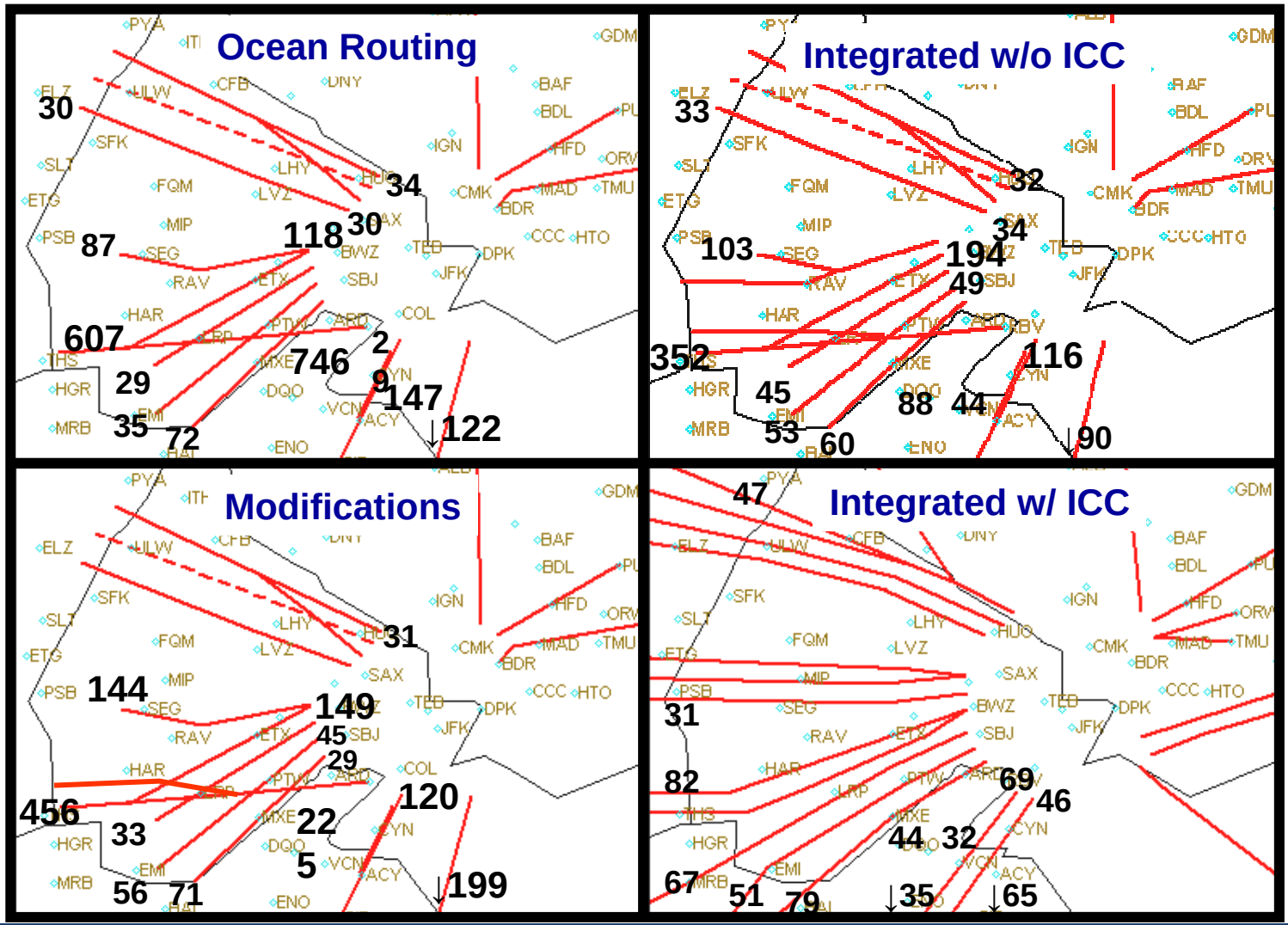
- Eight "Purpose and Need" elements translated into quantifiable metrics
- Key operational metrics are highlighted in the remainder of the briefing
  - Jet route delay (airspace delay)
  - Arrival and departure delays
    - Fanned headings for departures
    - Arrival efficiencies
  - Time below 18,000 ft.
  - Route length
  - Flexibility in severe weather
  - End of day's last arrival push

Jet Route Delays

- Each number represents points causing more than 30 minutes of delay per day
- South and west departures see most benefit from en route enhancement

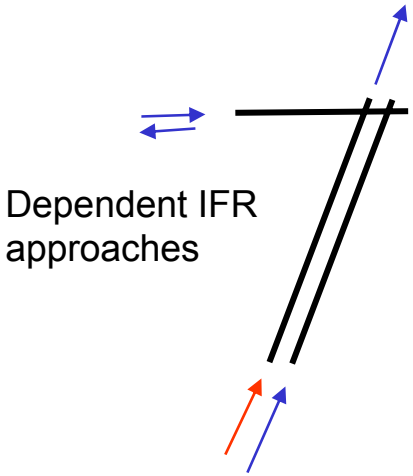


Jet Route Delays – Comparison

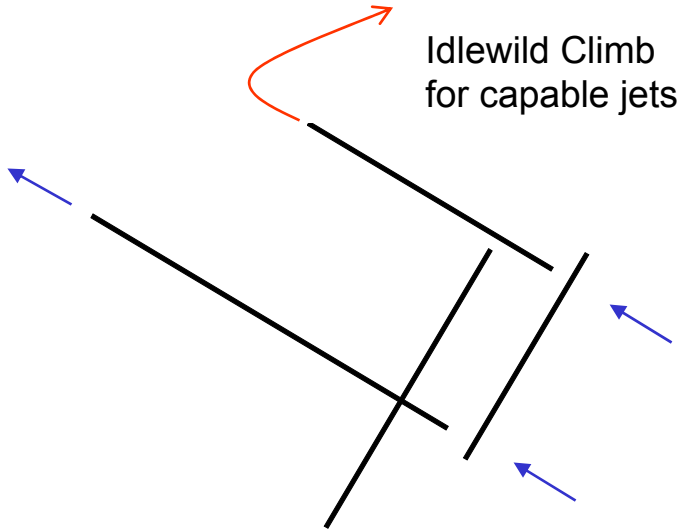


Delay Savings with New Usage of Runways

- EWR and JFK can use runways more efficiently under Integrated w/ ICC alternative



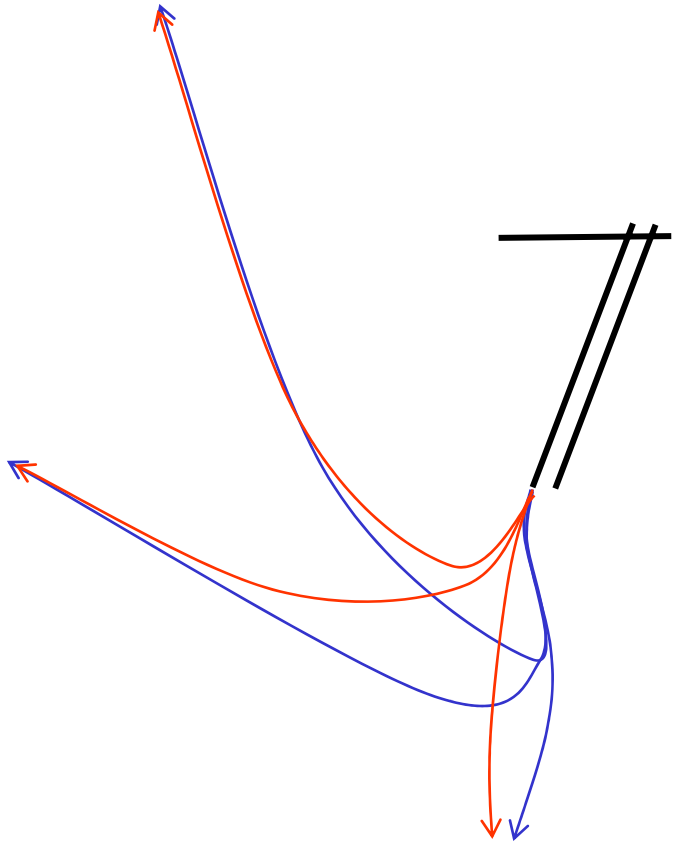
18%
decrease in
arrival delay



19%
decrease in
departure delay

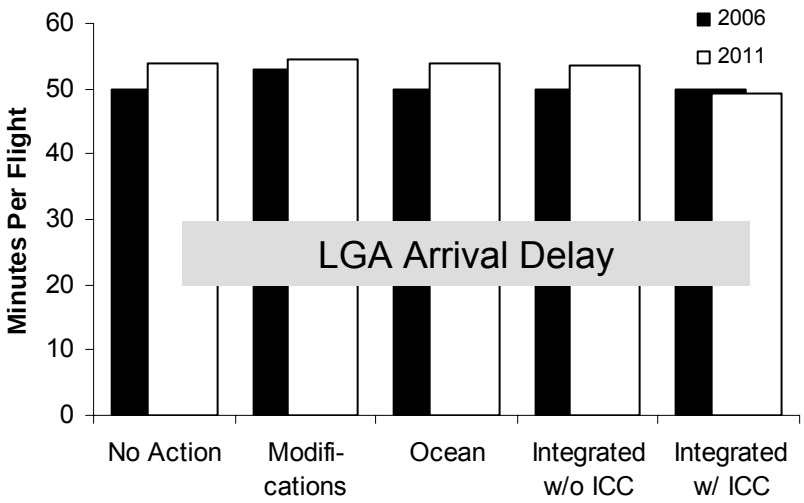
Delay Savings with Fanned Departure Headings

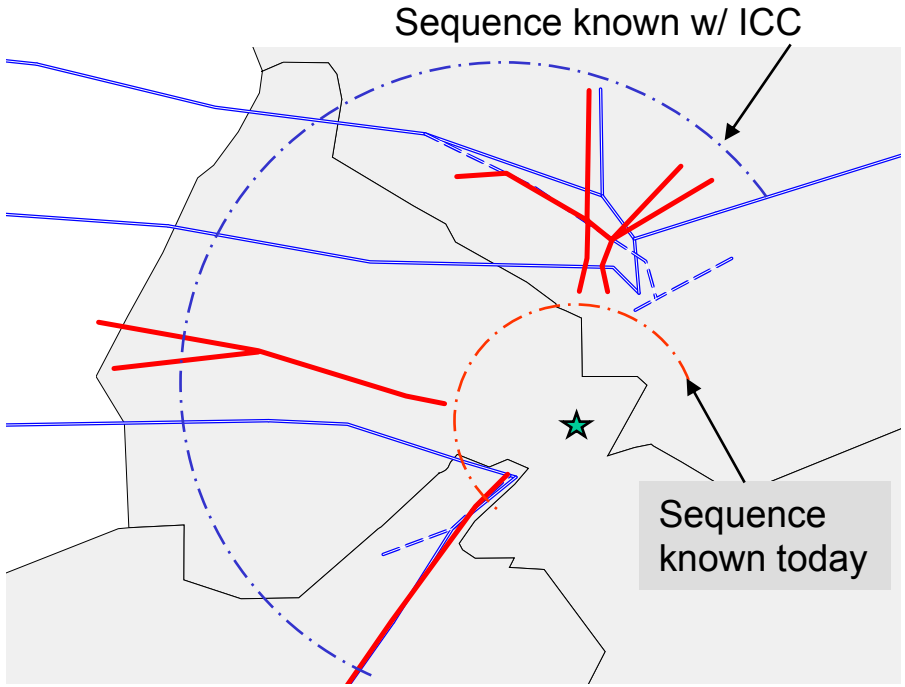
- Three departure headings from EWR 22R
  - Provided in all alternatives except No-Action, Ocean
  - +3 deps/hour during peaks
  - 31% decrease in departure delay (averaged over NE, SW)
- Three to six departure headings from PHL
  - Provided in all alternatives except No-Action, Ocean
  - 11% decrease in departure delay (2011, West configuration)



Delay Savings with Arrival Improvements

- When necessary, holding is done under terminal rules
- Integrated w/ ICC, arrival sequence is known earlier
  - No rigid LoA to be enforced
  - Provides arrival benefits to LGA and TEB where other mechanisms can not



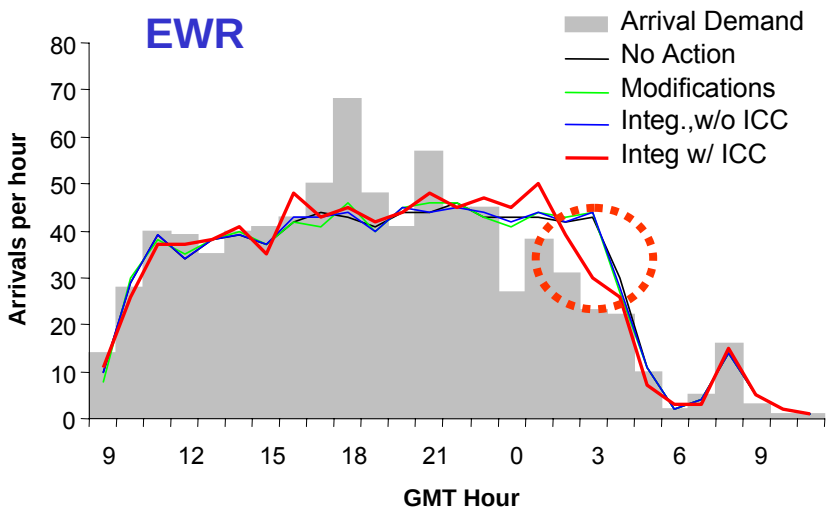


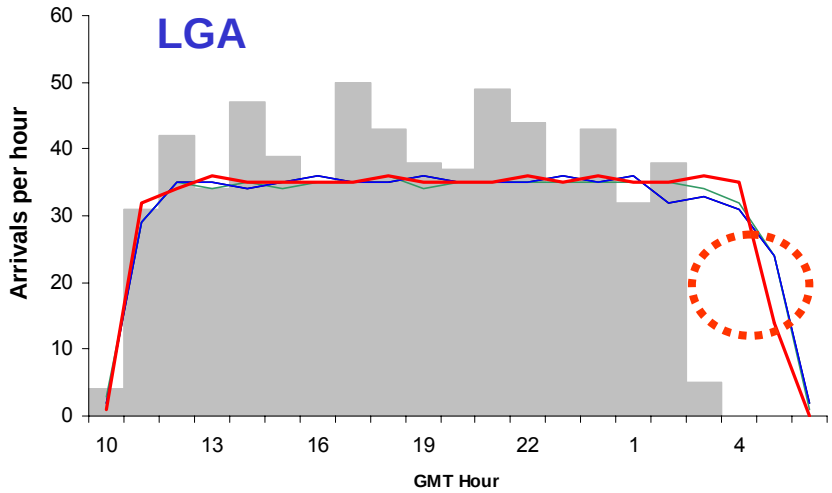
LGA arrival routes on background of today's facilities: Current and Integrated w/ ICC

Improved Access to System

- Unconstrained demand forecasts, extreme traffic
- Let the traffic fly, then measure the time at which arrivals finally run out

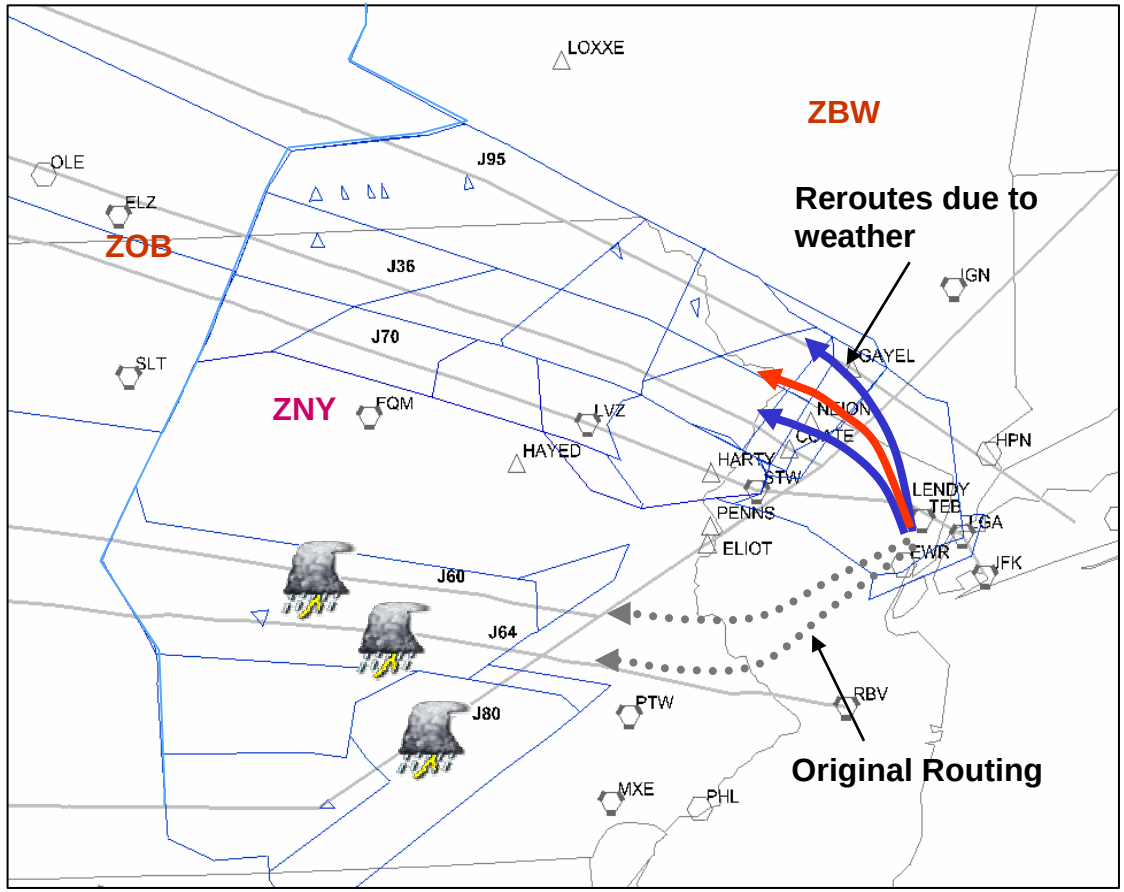
- Changes only at EWR, LGA
- 1 hour improvement in integrated airspace w/ ICC





Flexibility in Routing

- Test scenario:
  - Convective weather closes J80/J60/J64 for 2 hours
  - North gate reroutes
- Expanded route choice in Integrated w/ ICC Alternative saves **12.6 minutes** per departure
- Modifications, Ocean Routing, and Integrated w/o ICC have zero benefit in this case



Available reroutes in No-Action, Modifications, Ocean, Integrated w/o ICC

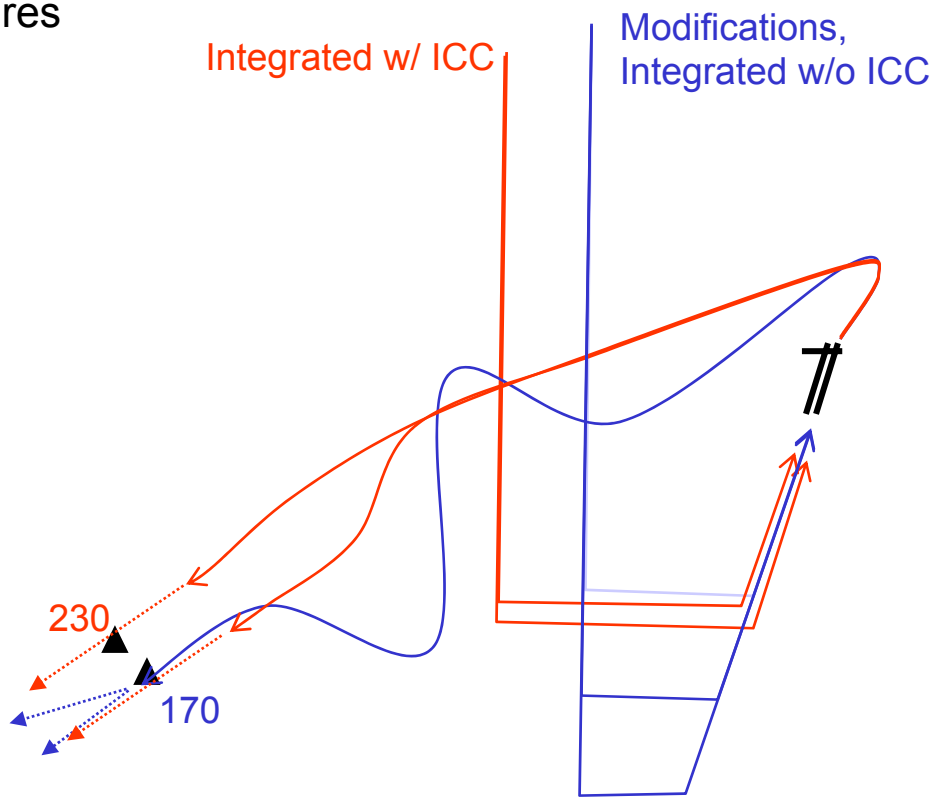
Available reroutes in Integrated w/ ICC Alternative

Time/Distance below 18,000 ft

Contributes to:
- Expedite Arrivals and Departures
- Reduce Complexity

Improved by:
- Added departure fixes
- Shorter approach paths
- Reduced vectoring

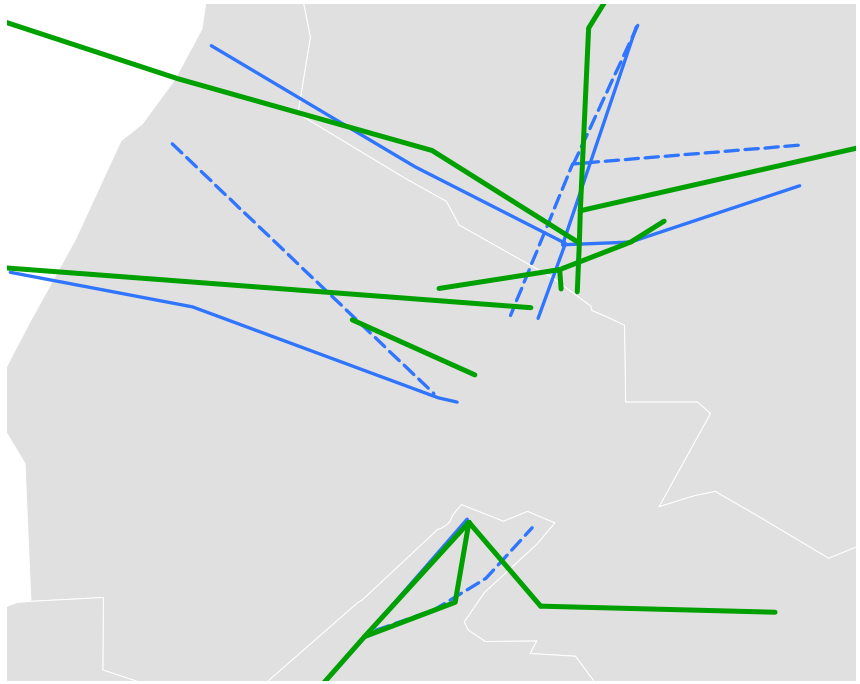
Future No Action	**18.5**
Modifications	**18.2**
Ocean Routing	**18.8**
Integrated w/o ICC	**18.2**
Integrated w/ ICC	**18.6**



Route Lengths Increase in Integrated w/ ICC Alternative

- Tradeoff of distance impacts against delay improvements during peak times

	Δ Flying Distance (nmi)	Δ Flying Time (min)
Modifications	**0**	**-0.9**
Ocean Routing	**4.5**	**3.9**
Integrated w/o ICC	**-1.2**	**-1**
Integrated w/ ICC	**3.7**	**-1.4**



Example: EWR arrival routes on background of today's facilities: Current and Integrated w/ ICC

Direct Operating Costs to Customers

	Existing Facilities	Integrated Control Complex
No Action	0	3.5 min/flt **$151 M/yr**
Modifications to Existing Airspace	0.24 min/flt **$9.5 M/yr**	3.65 min/flt **$168 M/yr**
Integrated Airspace	0.31 min/flt **$13.7 M/yr**	4.57 min/flt **$225 M/yr**
Ocean Routing	–6.72 min/flt **($307.5 M)/yr**	–6.15 min/flt **($268 M)/yr**

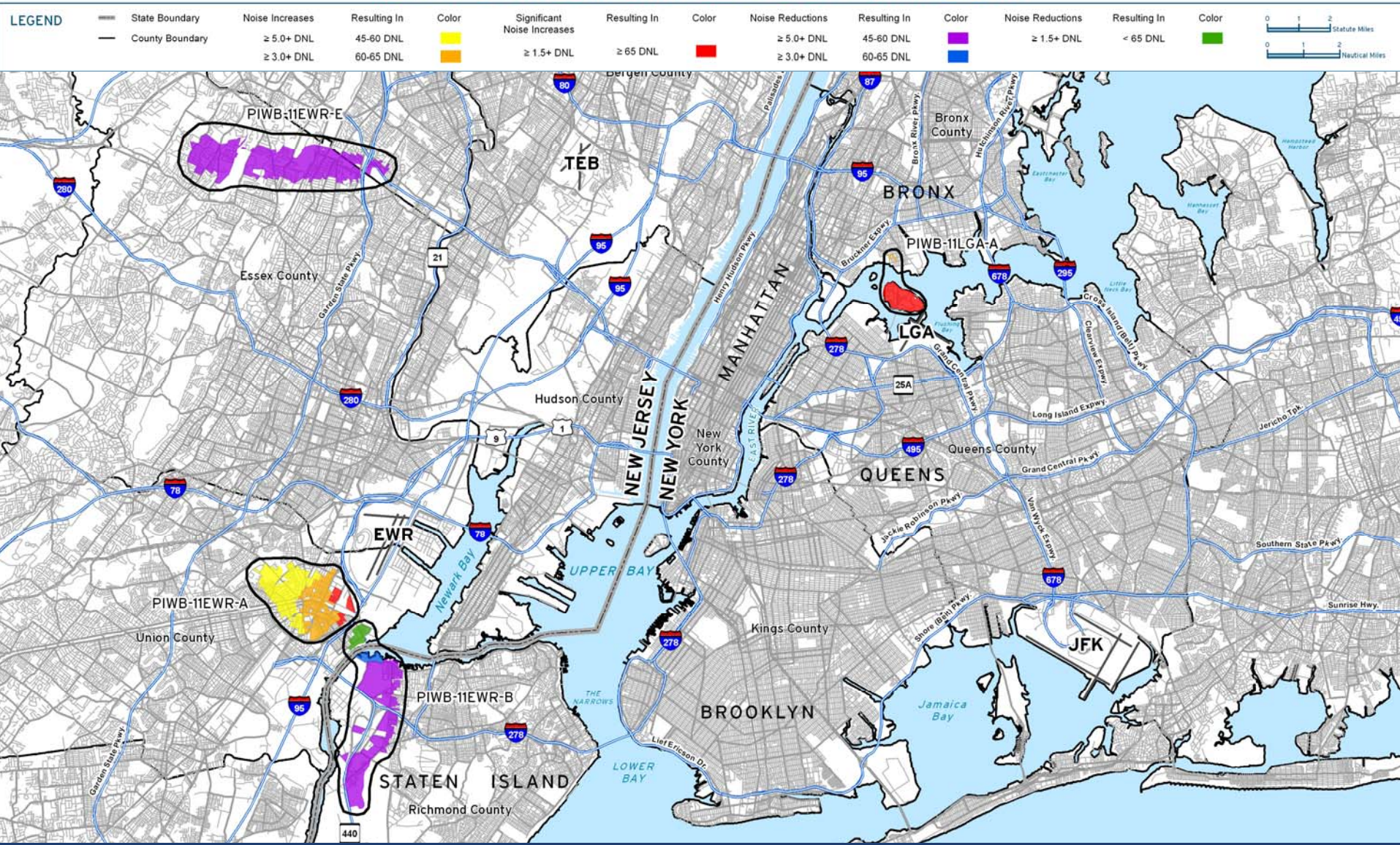
- APO cost estimates (2004 dollars), 2011 traffic
- Includes increased airport throughput due to integrated control of arrivals and departures

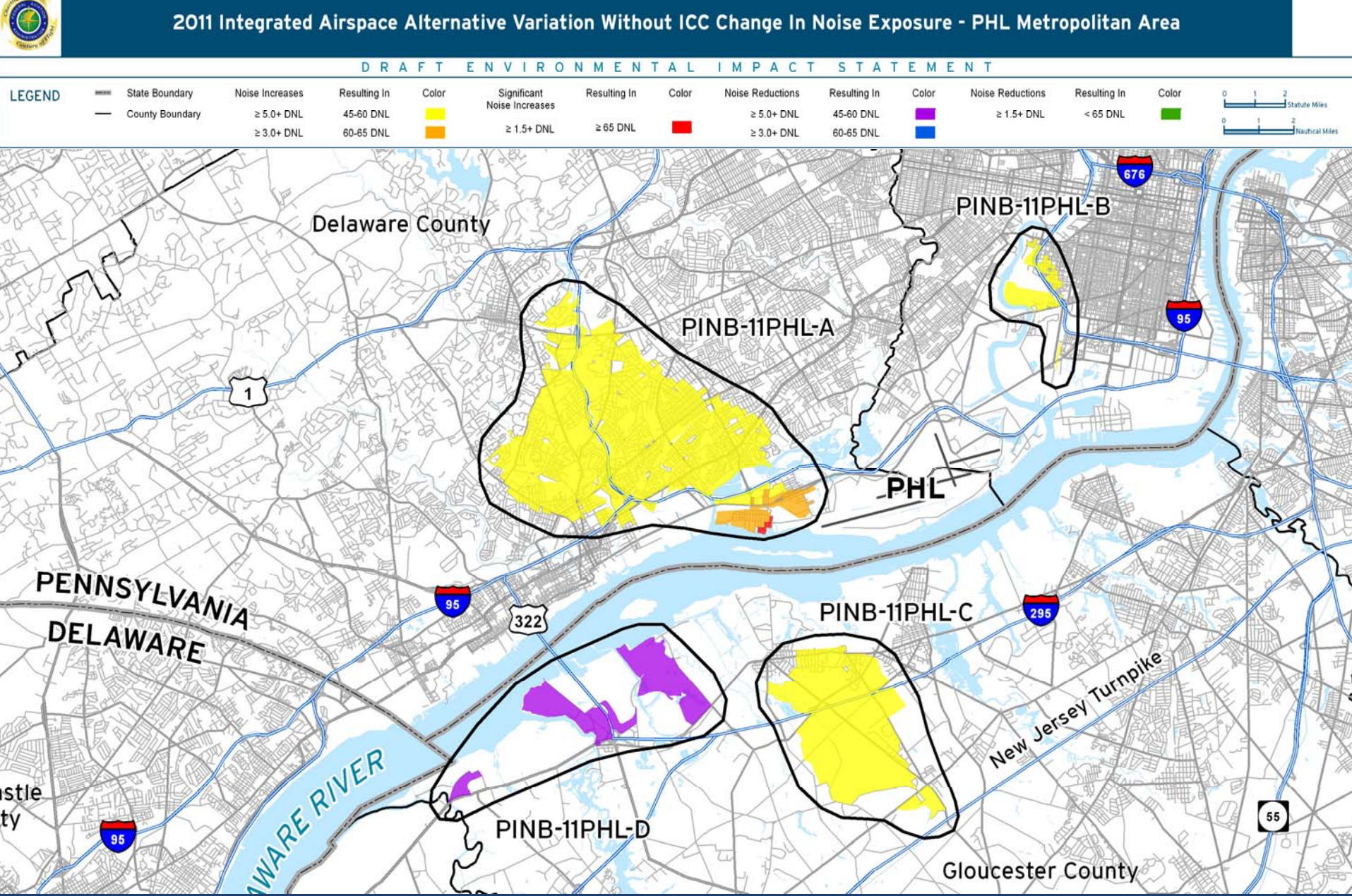
Scenarios simulated in TAAM for the EIS

Scenario simulated in TAAM for MTO study

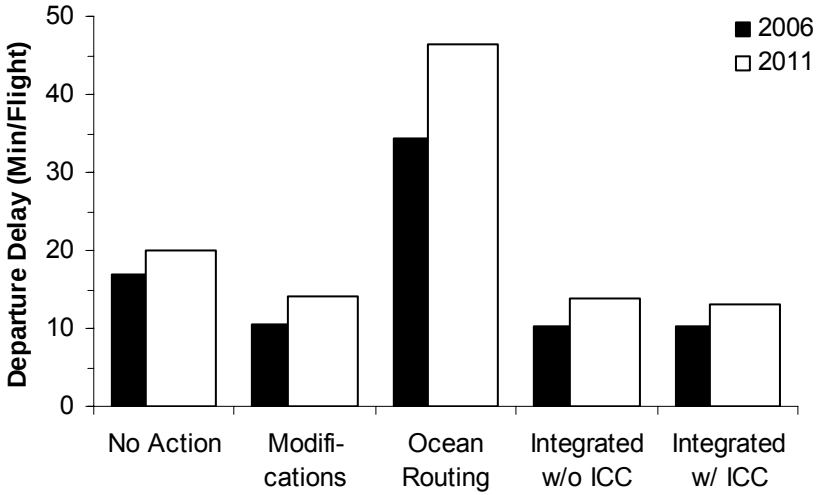
2011 Integrated Airspace Alternative Variation with ICC Change in Noise Exposure – NY/NJ Metropolitan Area

DRAFT ENVIRONMENTAL IMPACT STATEMENT



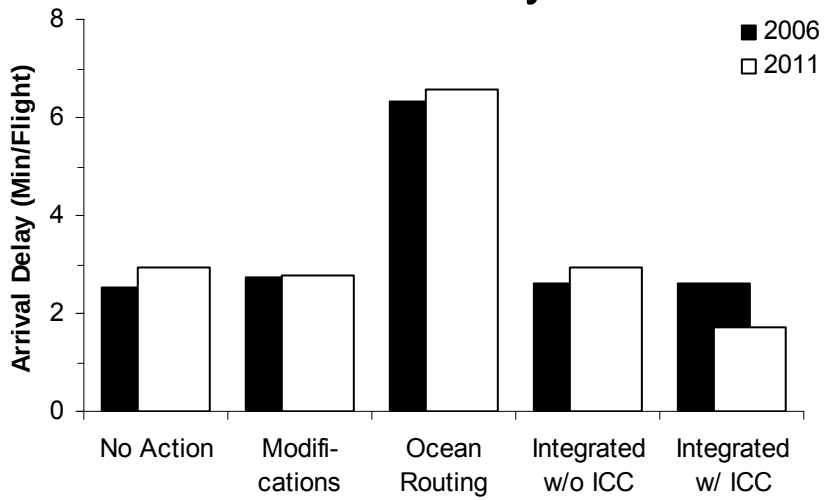

2011 Integrated Airspace Alternative Variation Without ICC Change In Noise Exposure - PHL Metropolitan Area
DRAFT ENVIRONMENTAL IMPACT STATEMENT
LEGEND
State Boundary
County Boundary
Noise Increases
≥ 5.0+ DNL
≥ 3.0+ DNL
Resulting In
45-60 DNL
60-65 DNL
Color
Significant Noise Increases
≥ 1.5+ DNL
Resulting In
≥ 65 DNL
Color
Noise Reductions
≥ 5.0+ DNL
≥ 3.0+ DNL
Resulting In
45-60 DNL
60-65 DNL
Color
Noise Reductions
≥ 1.5+ DNL
Resulting In
< 65 DNL
Color
Statute Miles
Nautical Miles
Delaware County
PINB-11PHL-A
PINB-11PHL-B
PHL
PINB-11PHL-C
PINB-11PHL-D
PENNSYLVANIA
DELAWARE
New Jersey Turnpike
Gloucester County
676
95
1
322
295
55

Ocean Routing Alternative
Does Not Meet the Purpose of the Redesign



- Departure delay at EWR

- Arrival delay at JFK



Summary and Conclusions

- Operational results are promising
  - Without major changes in airport capacity (e.g., new runways), we will not see huge delay reductions or throughput increases
- Airspace improvements will provide operational improvement
  - Increasing departure headings and maximum use of available runways will result in increases of 1-3 operations per hour
- These improvements will have noise impacts
  - Several mitigation techniques are under consideration
- Ocean Routing does not meet the purpose and need of the project
- Integration of the terminal and en route airspace is *crucial* to achieving efficiencies