New York Action Team

SWAP 2013

By: Leo Prusak, Manager of Tactical Operations

Date: March 27th, 2013

What is the New York Action Team

- The initial core group developed a frame work of goals and actionable items. This framework was completed by the first week of December. The initial core team consisted of the NE MTO, A4A, ATC Council Chairman, 2 Airline representatives, 1 ATCSCC, 1 Terminal and 1 En route representative, 1 NATCA.

- The NY Action Team was led by Leo Prusak and Mark Hopkins.

- All recommendations need to be implementable by the end of March to coincide with the beginning of the 2013 SWAP season. Actionable items will be completed within available resources and currently existing tool sets. The NY Action team will consider a structured strategic plan for specific convective weather scenarios. Triggers will be based on probability.

- Focus on: Diversions, Holding, Taxi-Backs, 3-Hour Tarmac Delays

New York Action Team Objectives

Improve the flow of traffic and airport operations in the New York Metropolitan area. This must be managed in a safe and efficient manner with a more proactive focus on the complexity and importance of situations unique to this airspace.

- Early identification of levels of severity when dealing with severe weather conditions
- Active balancing of arrival and departure throughput
- Provide repeatable operational practices and procedures
- Minimize excessive holding, diversions and taxi back gate returns
- Provide measureable results

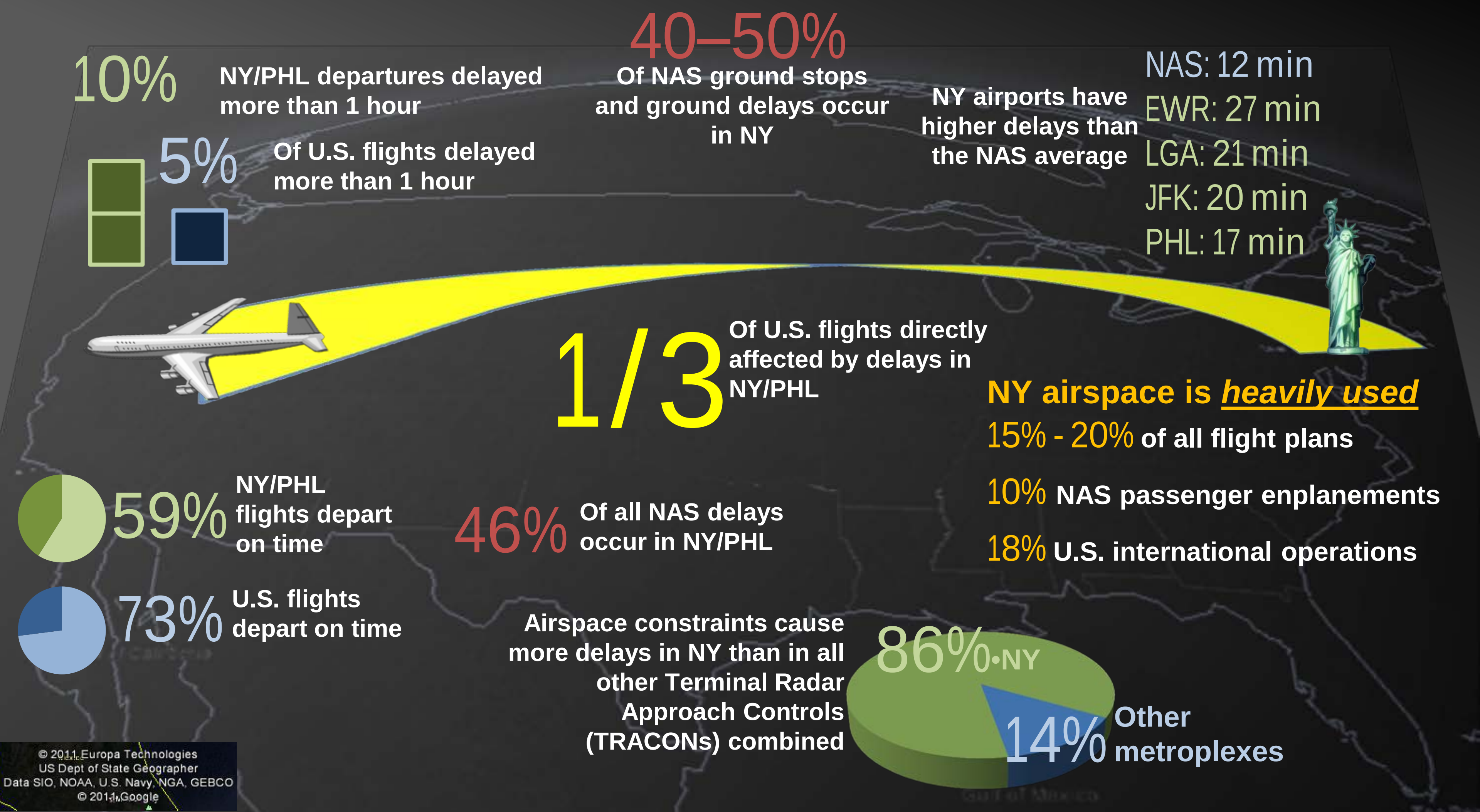
NY Action Team Premise and Basis

1. EWR, JFK, and LGA are scheduled to and operate at 100% capacity for discussion purposes.
2. Capacity is systemic and is shared equally between arrivals and departures over a longer time scale.
3. Thunderstorms in close proximity to the airports cause a direct and unrecoverable loss of capacity.

Strategies that don’t work in New York SWAP events:

1. A wait and see approach to the operation or initiatives
2. “Keeping pressure on the system or airports”
3. A “run to failure” …or “run till the wheels fall off” approach.

Waiting until the NY operation is in disarray, then tactically fixing it, has not proven to be successful.



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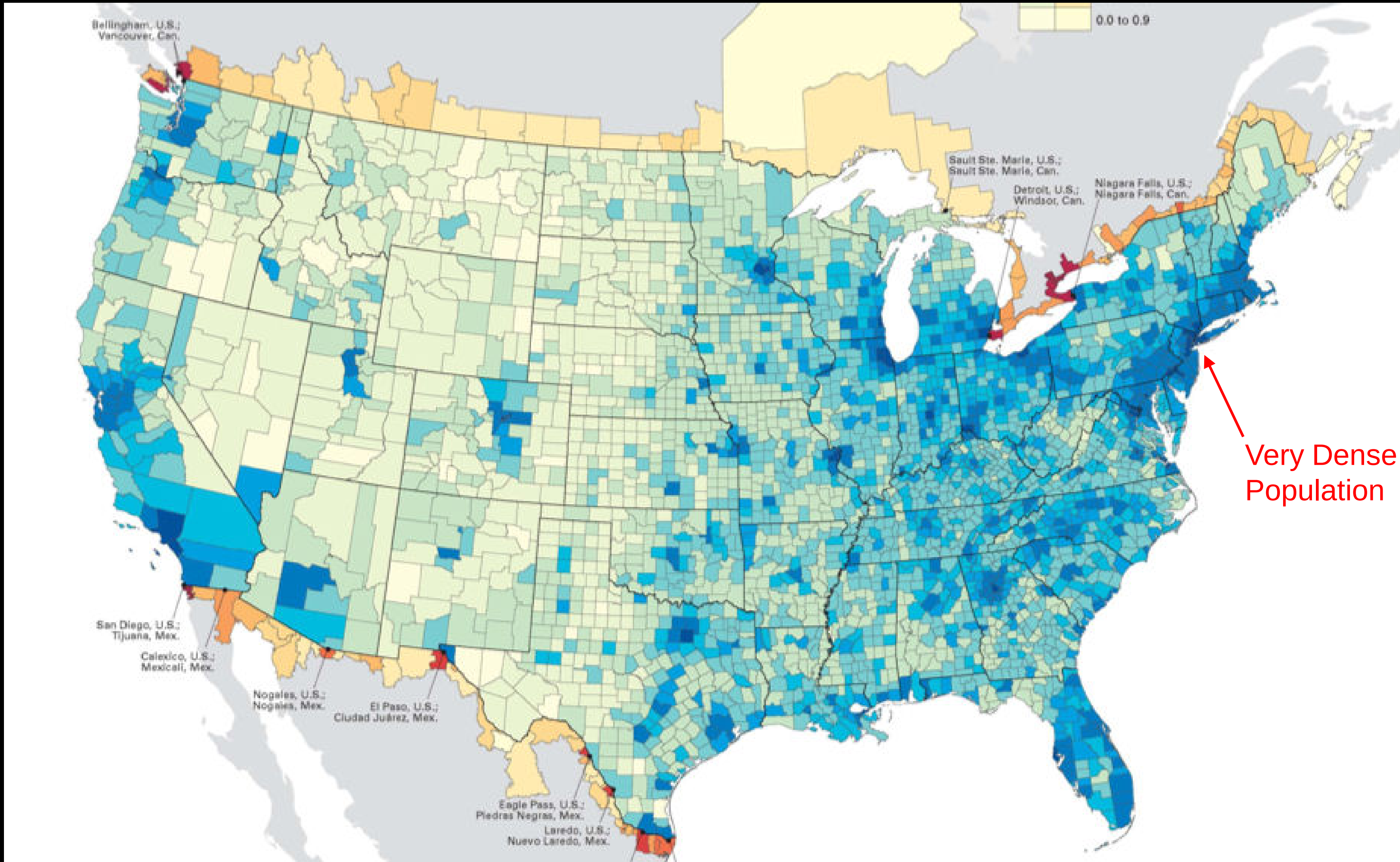
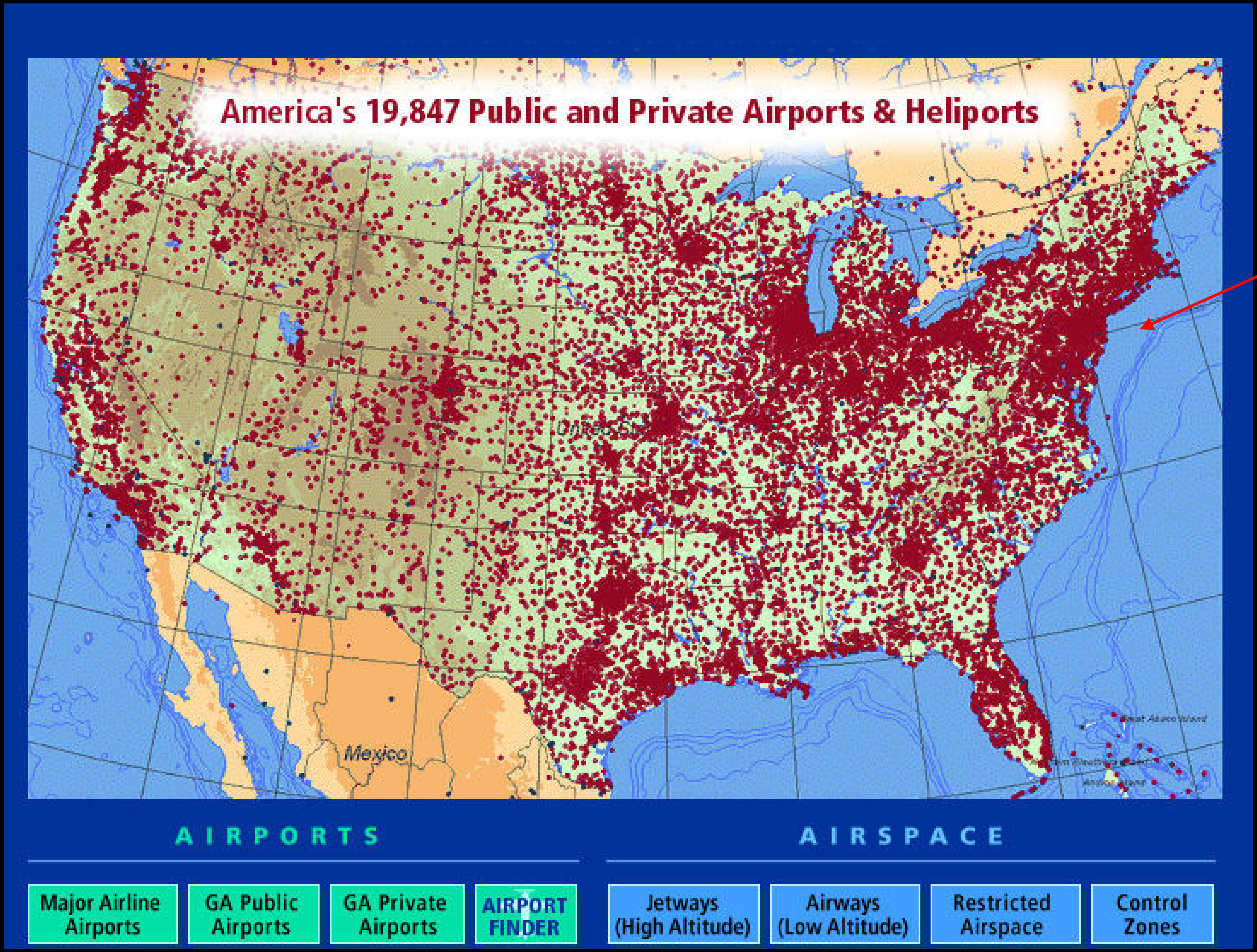
U.S Population Density – by county



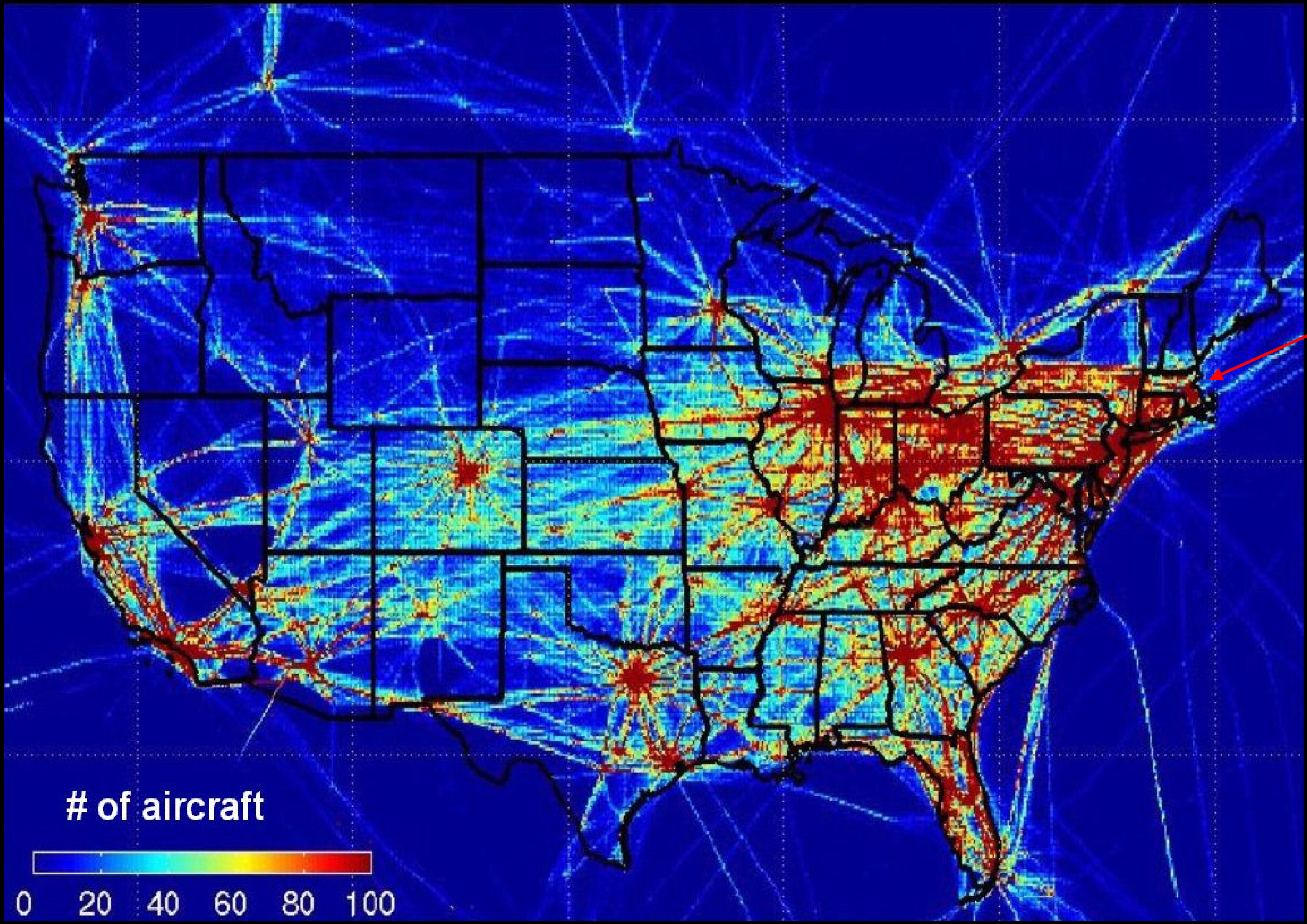
Very Dense Population

Airport Density



Population Density and Airport density are close partners

Traffic Density – 24 hours



People and airports result in very dense air traffic on a daily basis

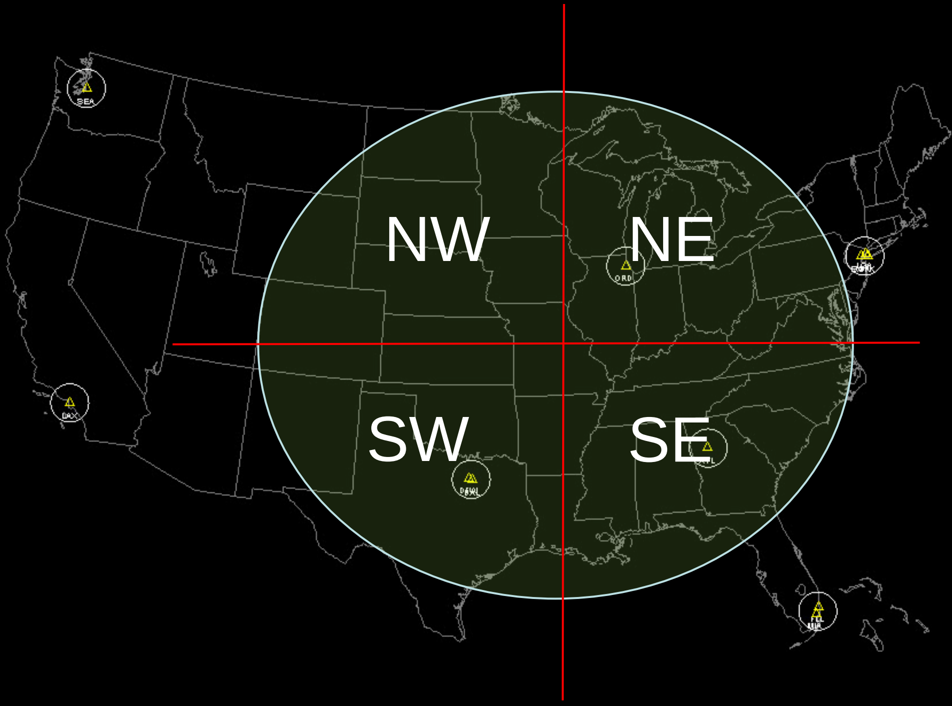
Understanding Airspace Density

We analyzed 7 major markets to determine how airspace is used and how traffic demand is distributed.

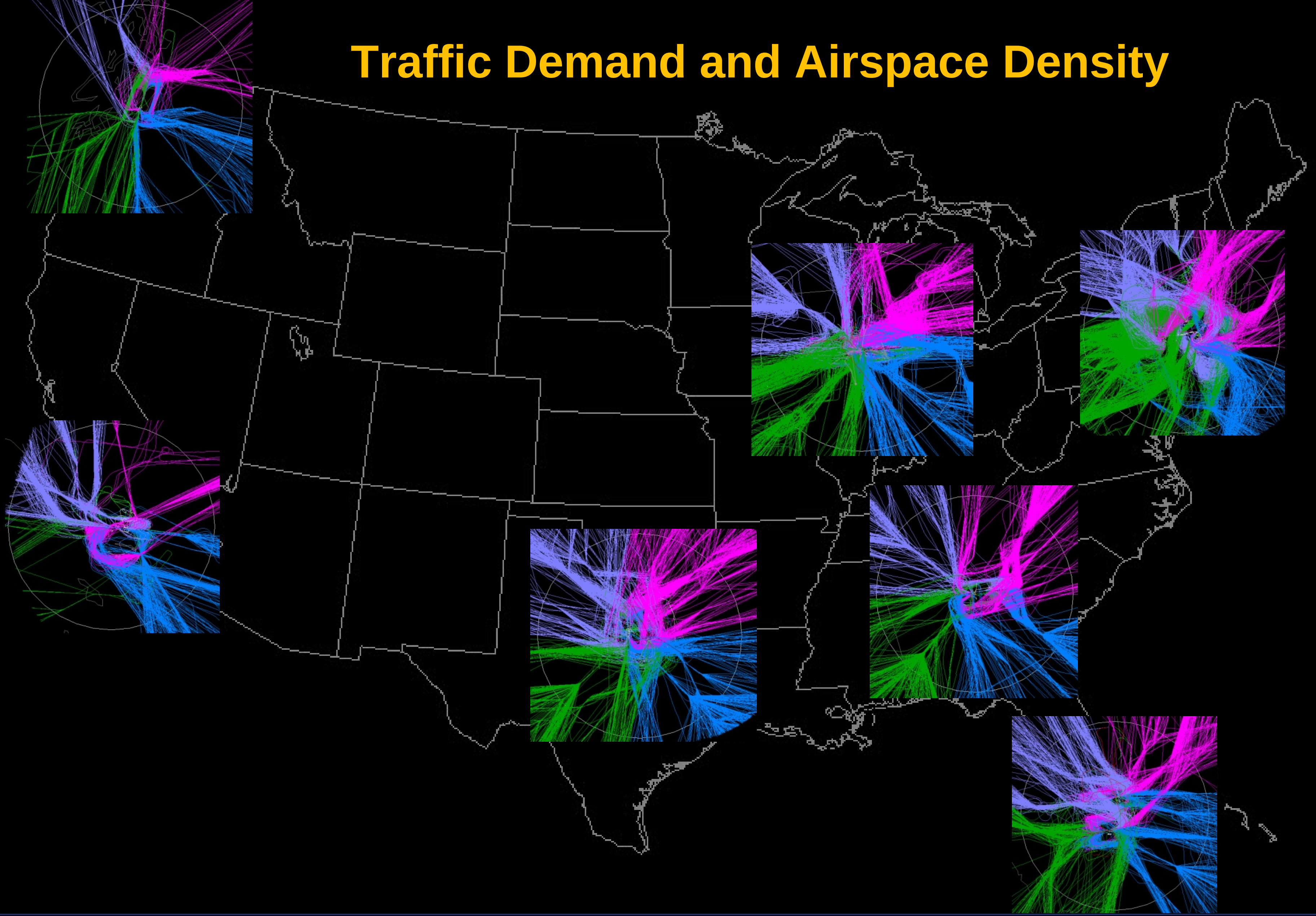
We picked 4 "corner" markets; NY, MIA, LAX, and SEA and 3 internal markets; ORD, DFW, and ATL.

We divided the airspace into 4 quadrants and measured all flight tracks at 50 NM.

This "big picture" analysis provides a perspective of airspace density and traffic demand which ultimately has significant implications related to severe weather impacts and delay.

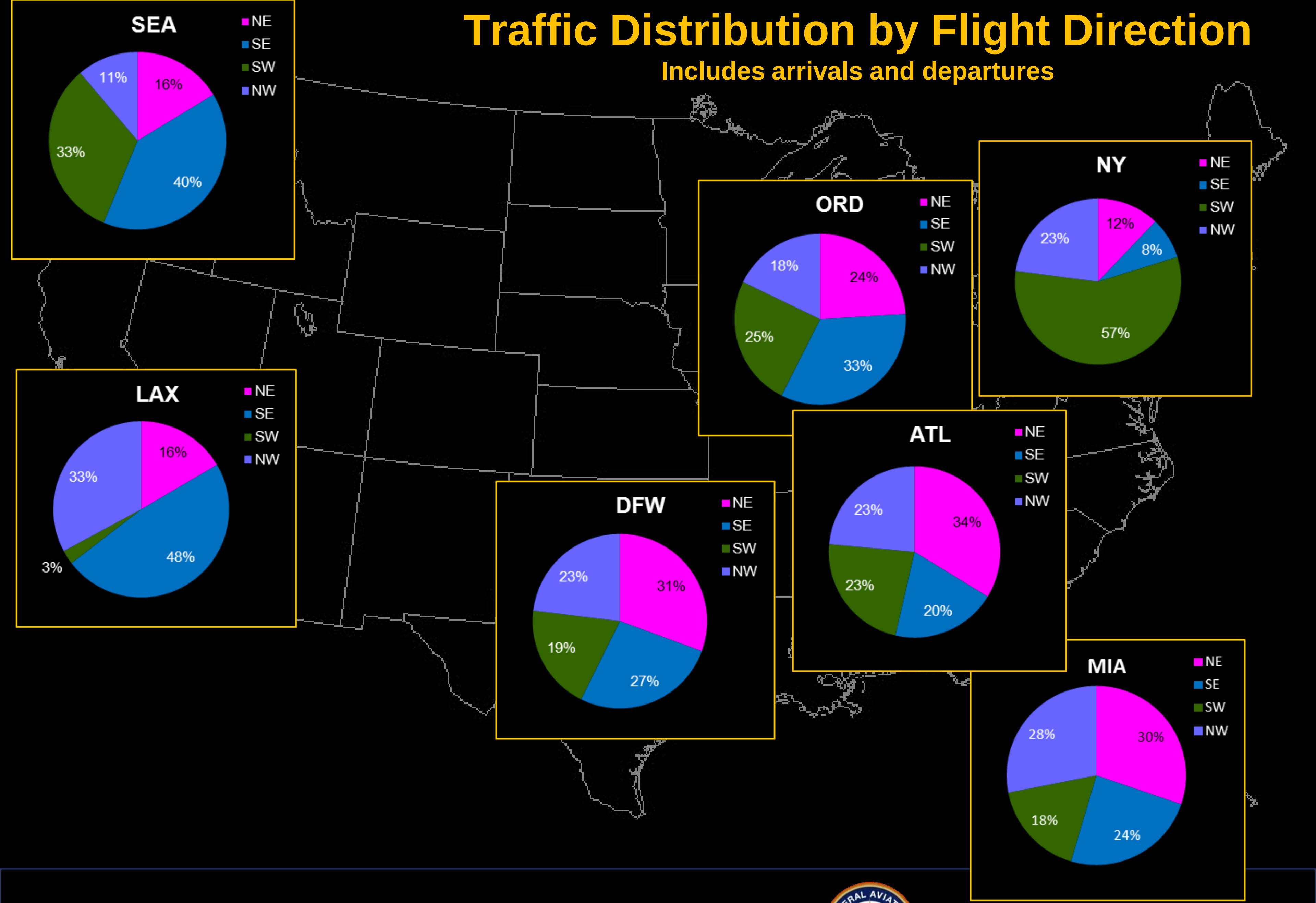


Traffic Demand and Airspace Density



Traffic Distribution by Flight Direction

Includes arrivals and departures



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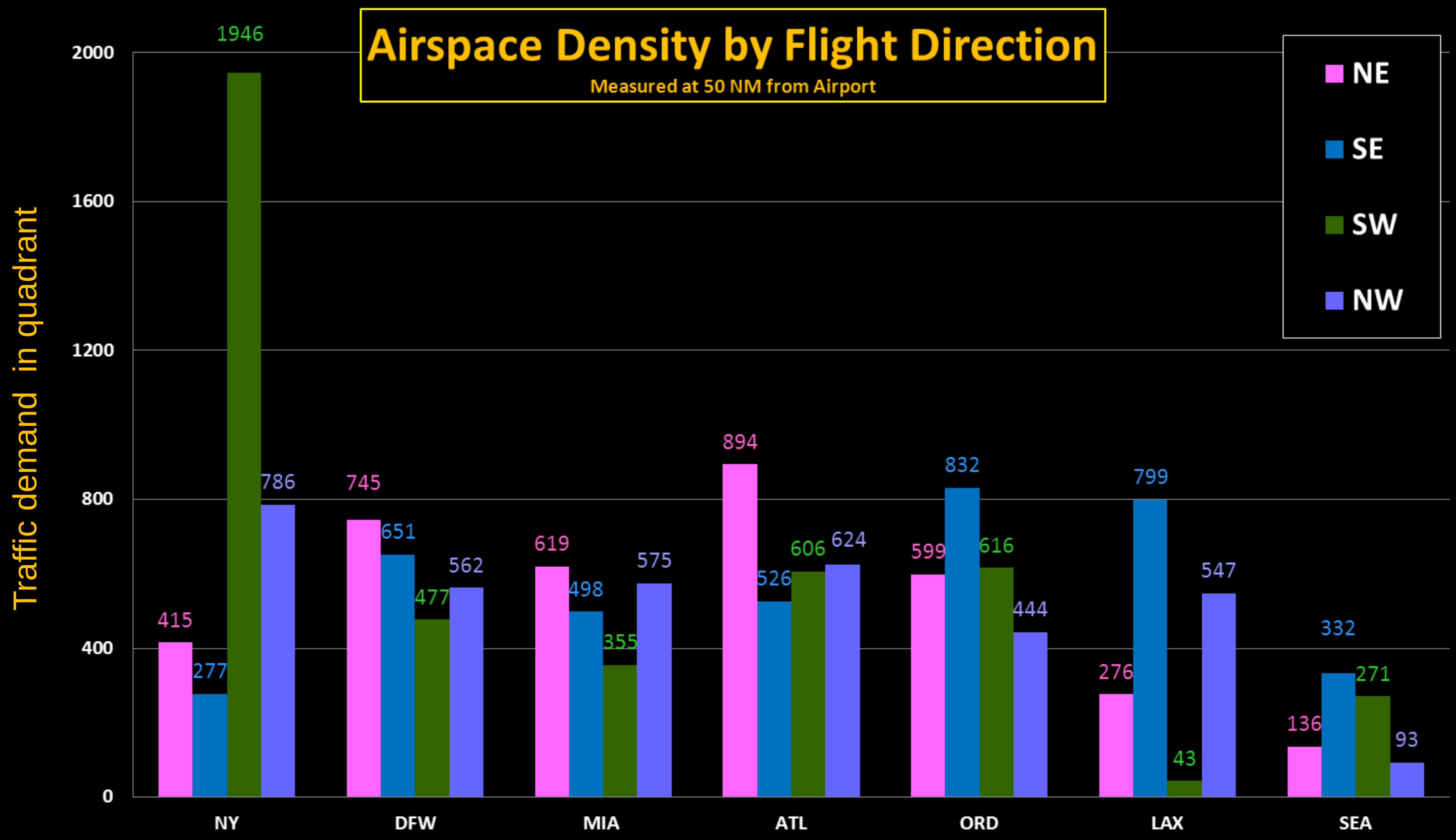

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Airspace Density and Severe Weather Impacts

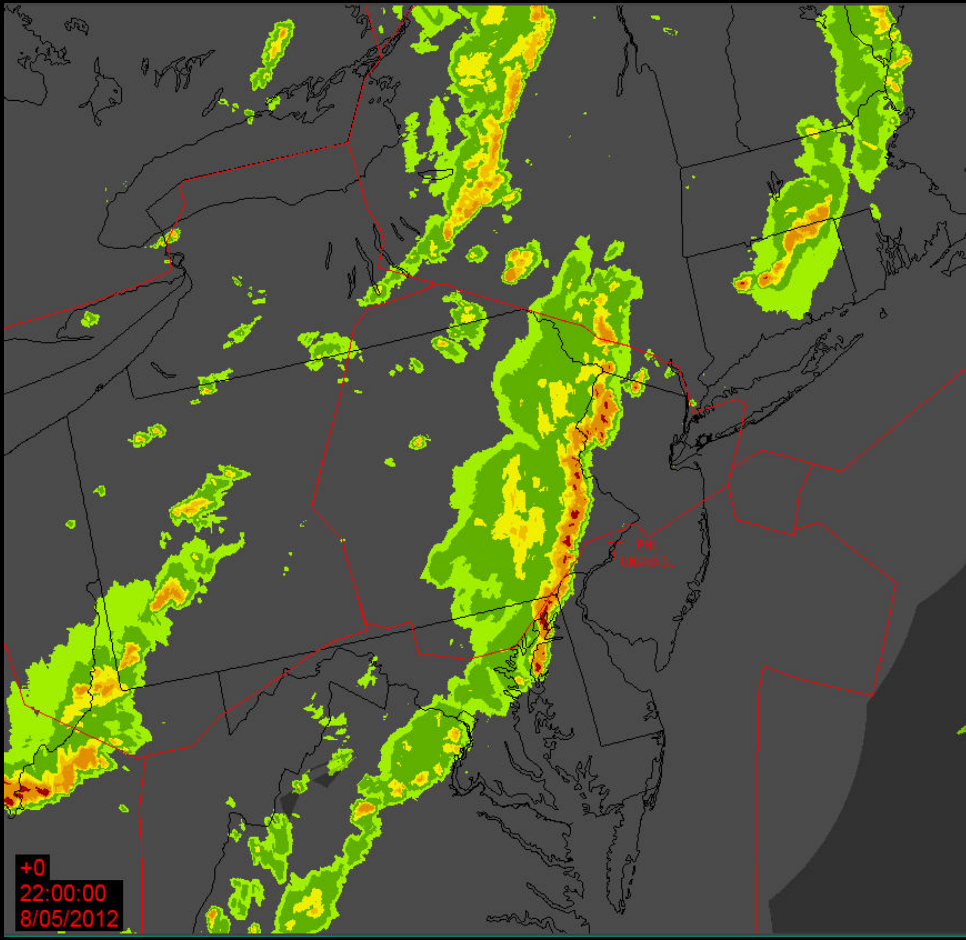
New York is geographically disadvantaged from a traffic demand and airspace use perspective in general.

Airspace structure and traffic demand measured together equal airspace density.

Severe weather size, location, and orientation to major markets determine delay impact.

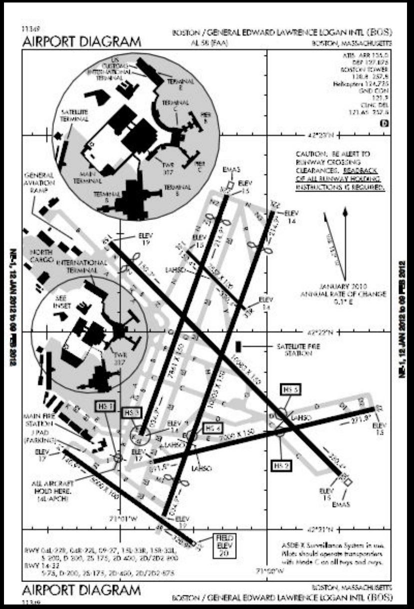
In a macro sense, airspace density and severe weather are two of the most important factors in determining this type of delay in the NAS.

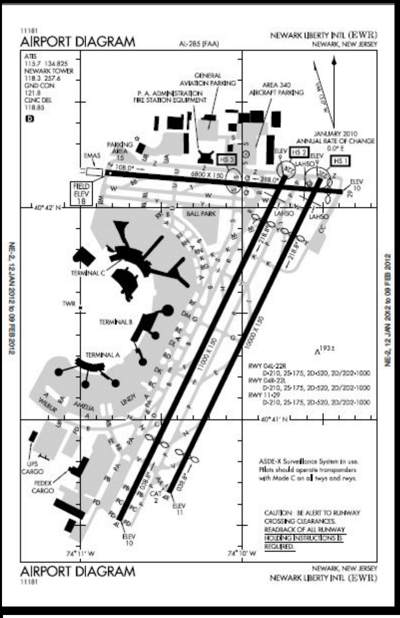
Because of these factors in NY, severe weather impacts are disproportionate to any other market in the NAS.

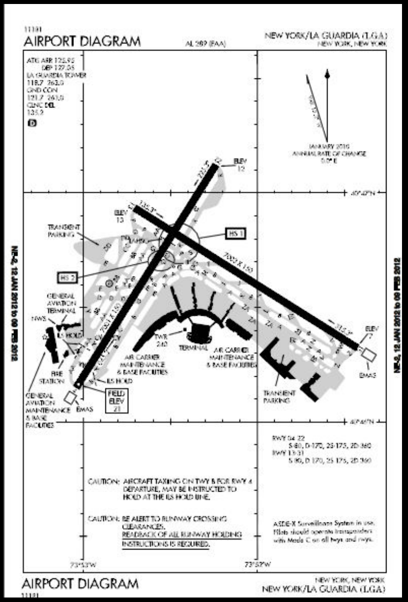


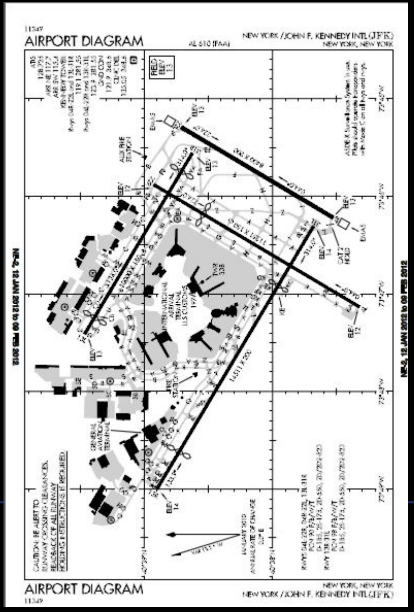
Perspective

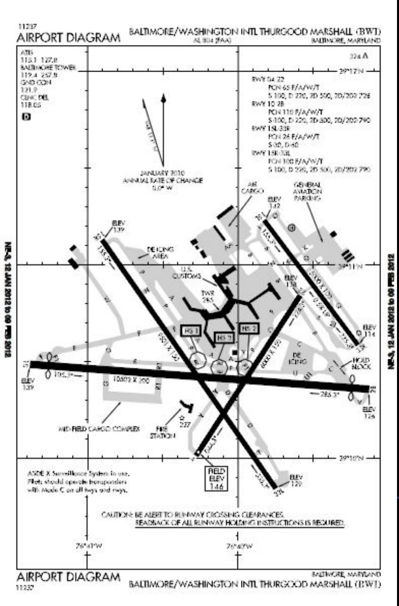
Older Airport Designs

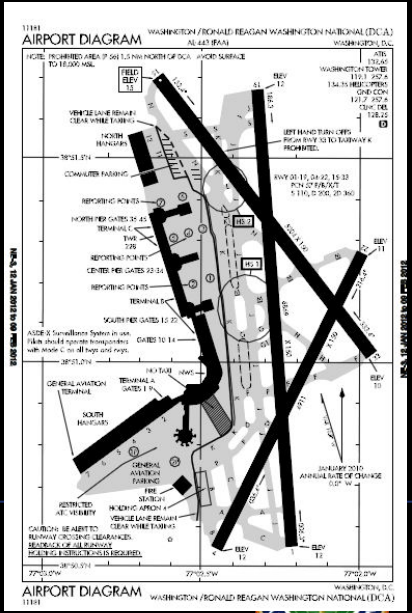










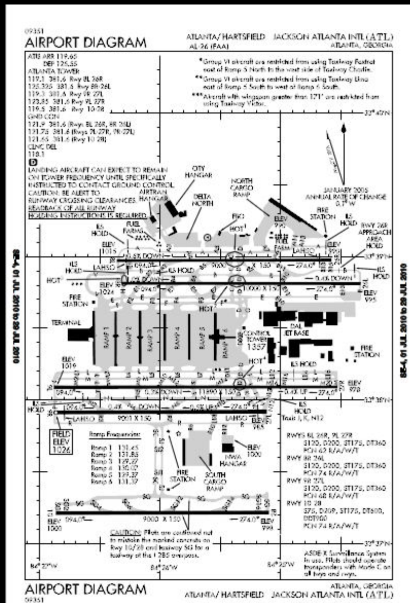


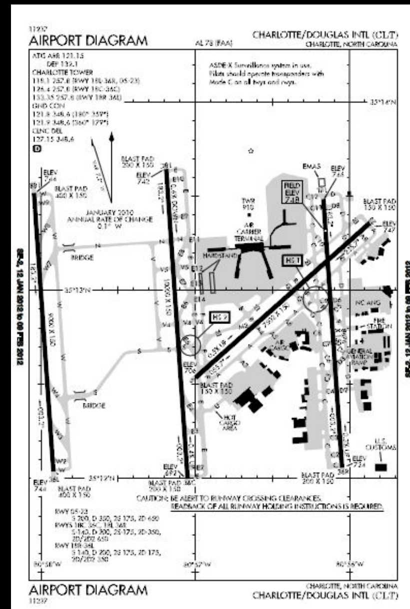
BOS, EWR, LGA, JFK, BWI, and DCA

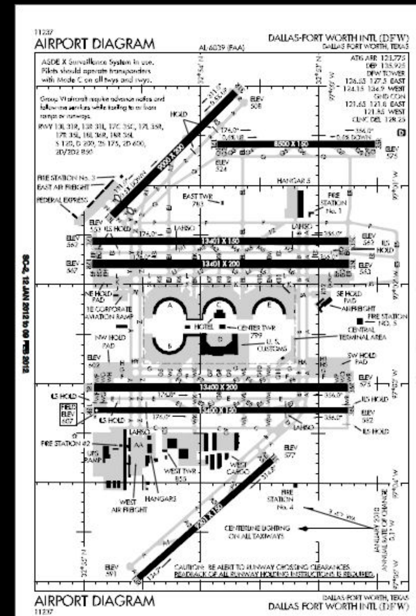
Older airports are generally located in urban-coastal areas, have intersecting runways, and small land areas.

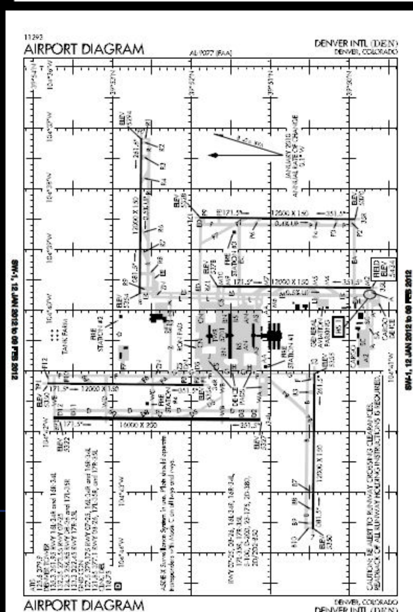
All northeast airports compete for use of the same airspace resources.

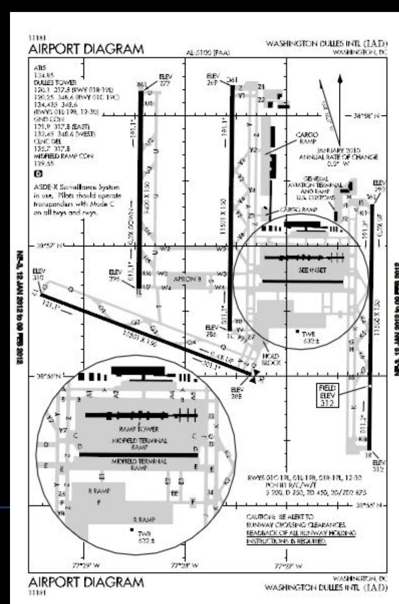
Modern Airport Designs

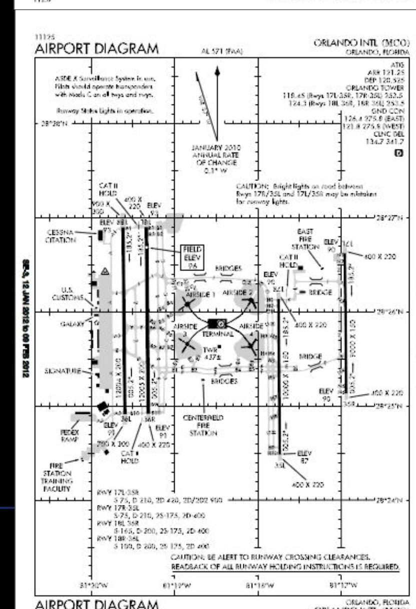










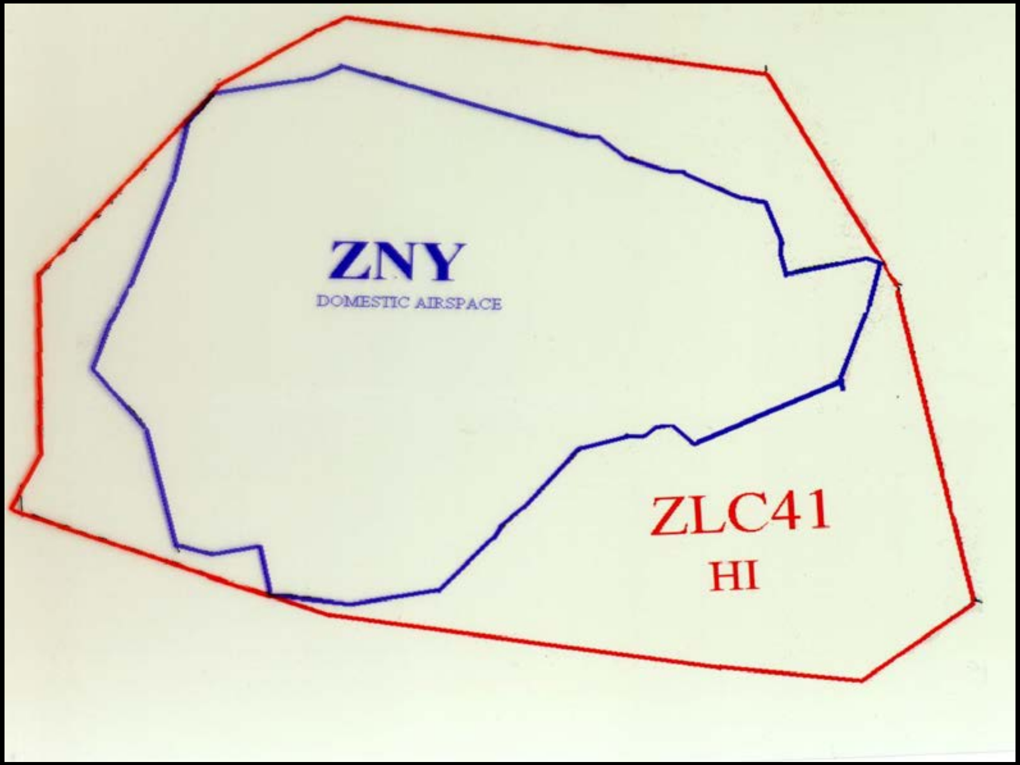


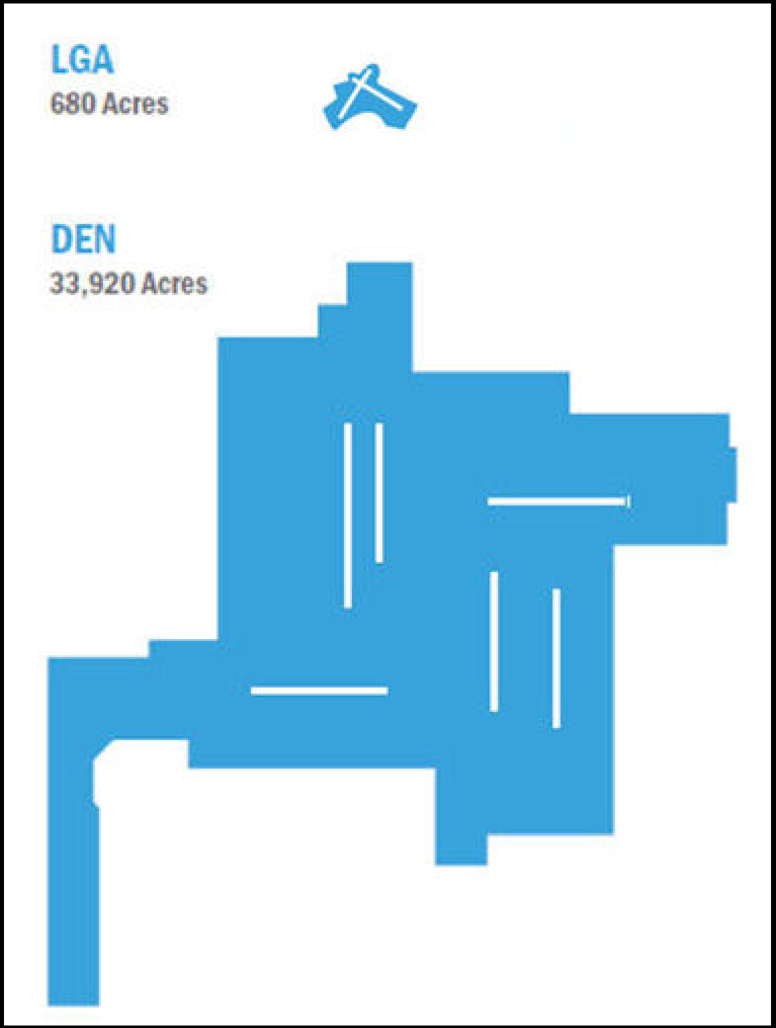
ATL, CLT, DFW, DEN, IAD, and MCO

Modern airport designs have multiple parallel runways which are generally more efficient.

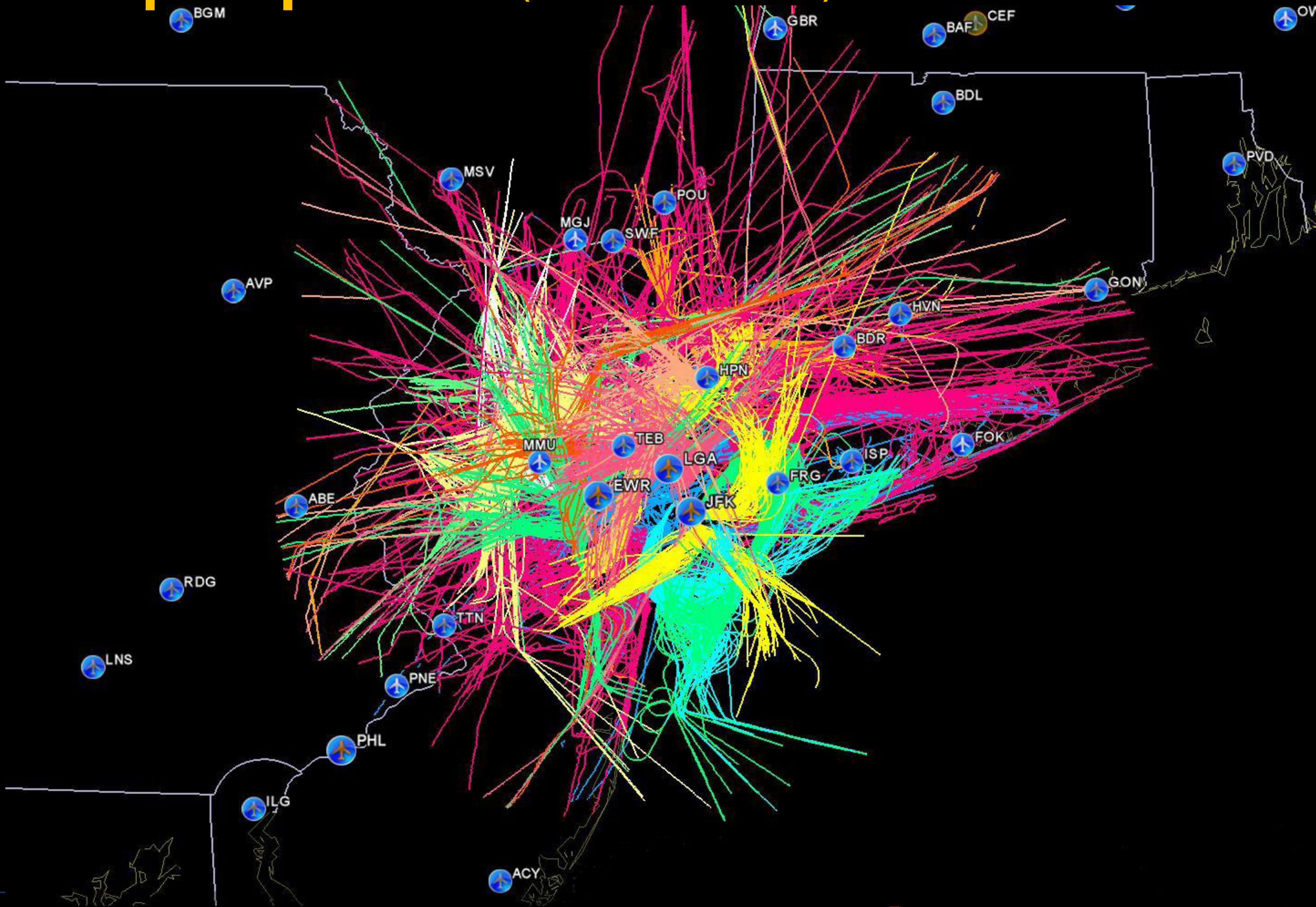
Also, in most of these cases they are not competing with other major airports for airspace resources.

Some perspective





More perspective (5 Hours of NY area traffic)



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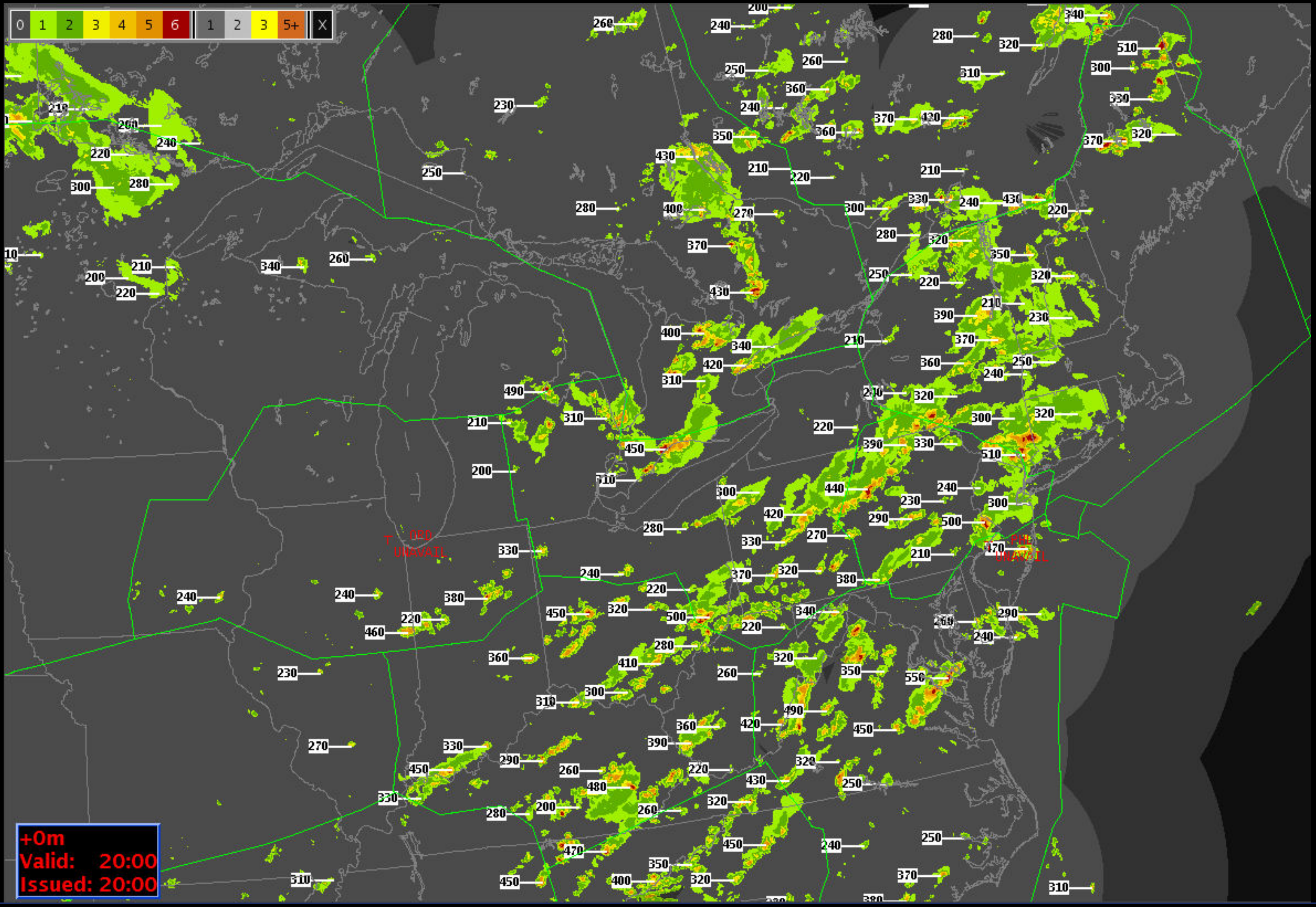
More perspective (July 15, 2012 - 70+ TRW's in Northeast airspace)



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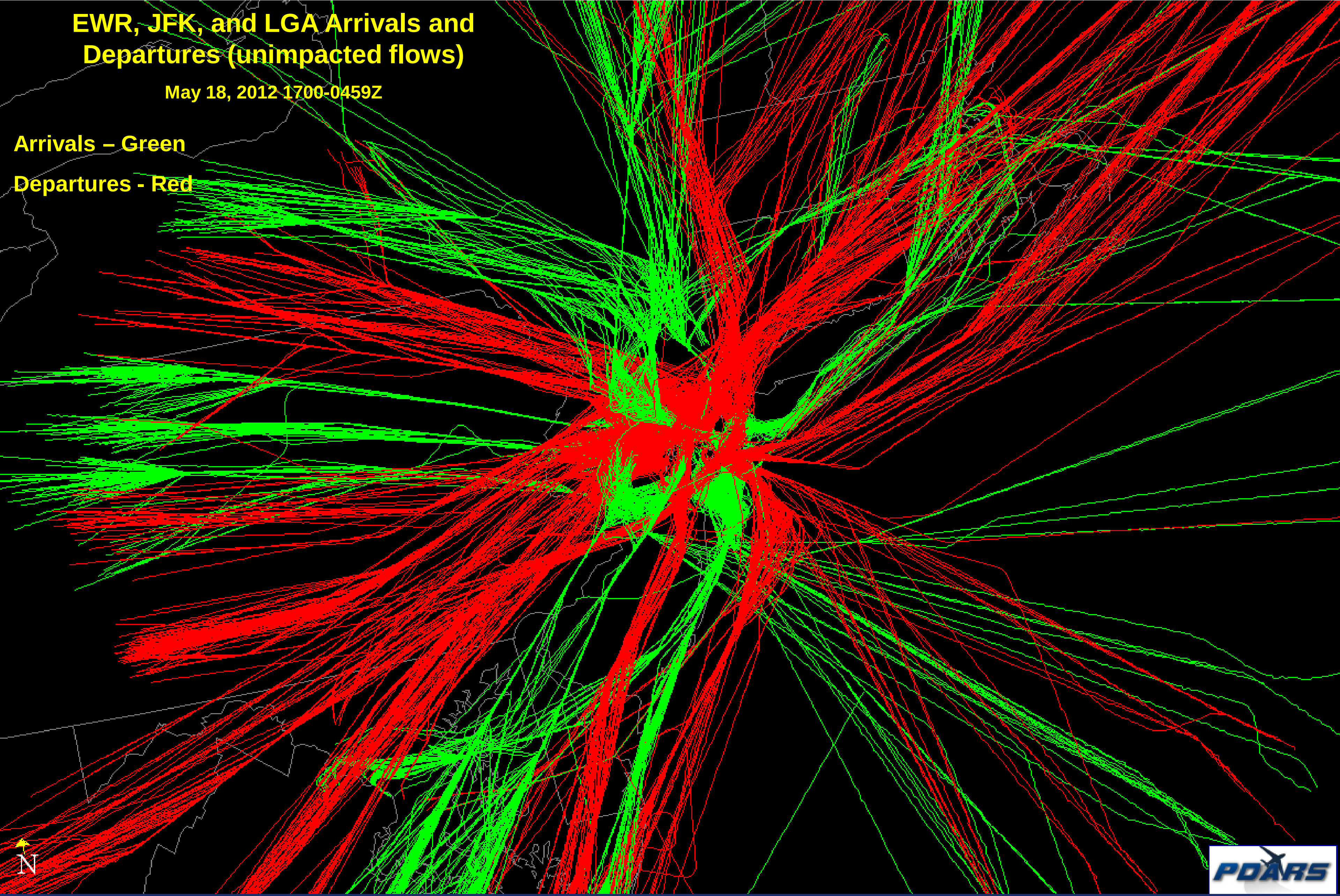
EWR, JFK, and LGA Arrivals and Departures (unimpacted flows)

May 18, 2012 1700-0459Z

Arrivals – Green

Departures - Red

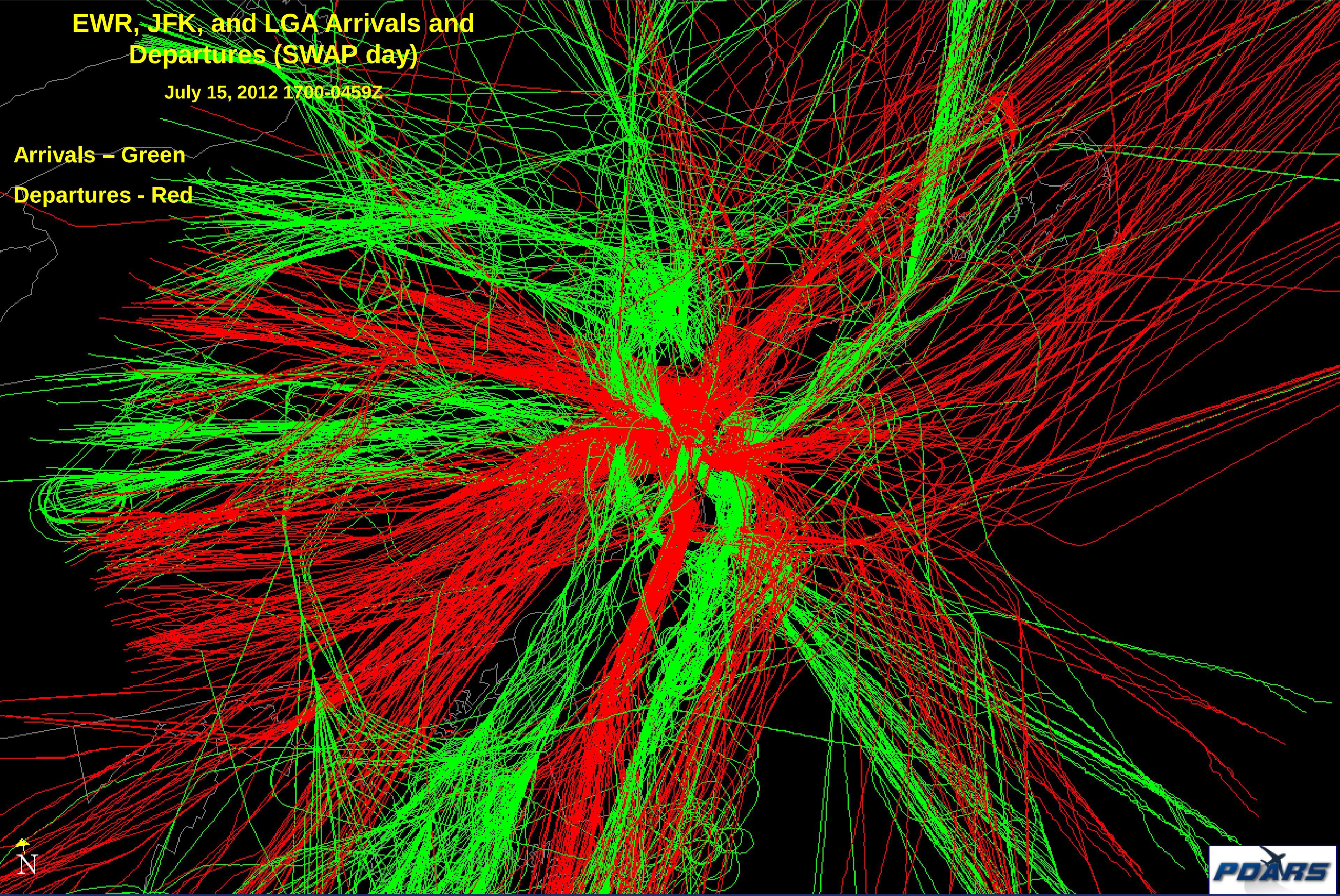


EWR, JFK, and LGA Arrivals and Departures (SWAP day)

July 15, 2012 1700-0459Z

Arrivals – Green

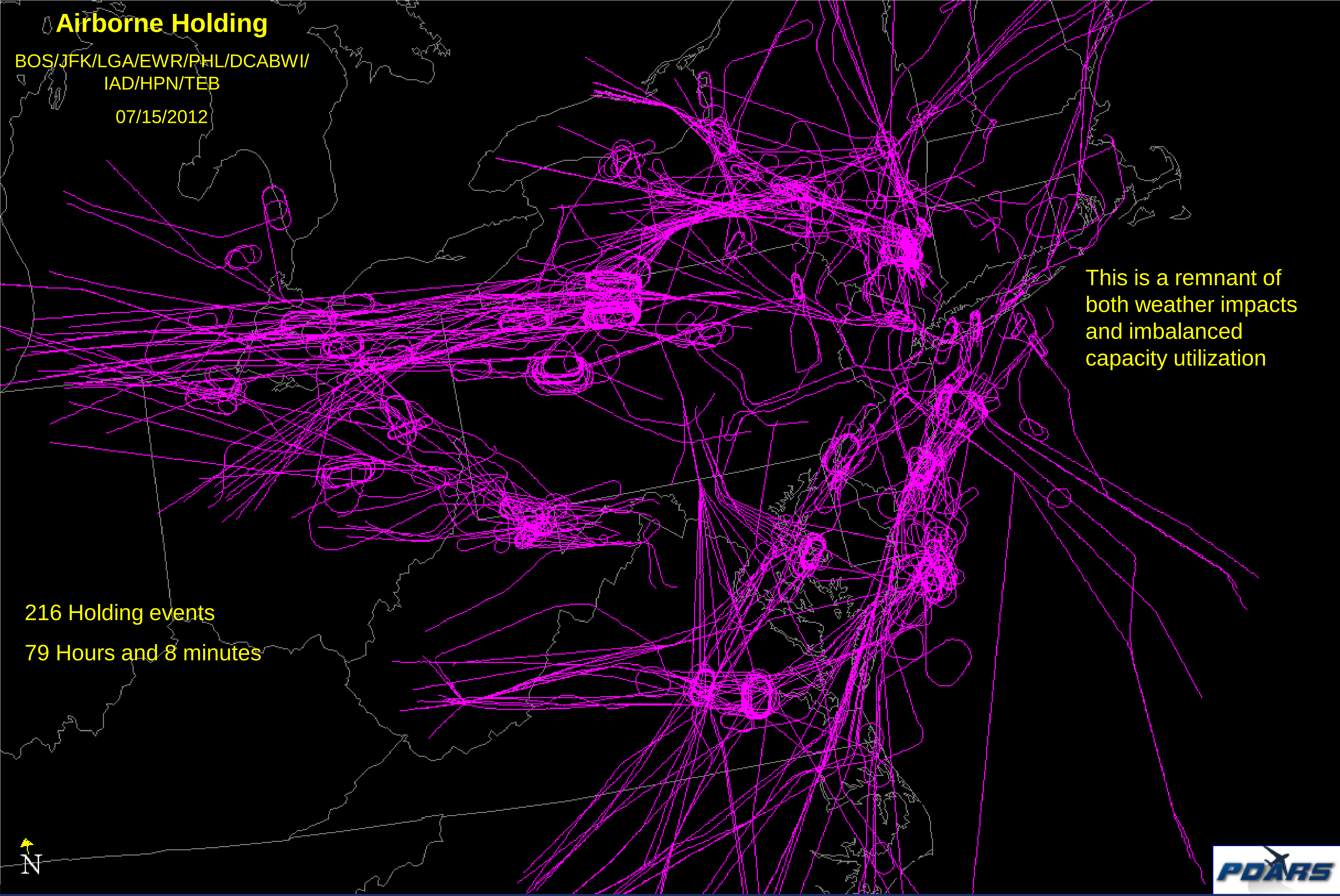
Departures - Red



Airborne Holding

BOS/JFK/LGA/EWR/PHL/DCABWI/
IAD/HPN/TEB

07/15/2012



This is a remnant of both weather impacts and imbalanced capacity utilization

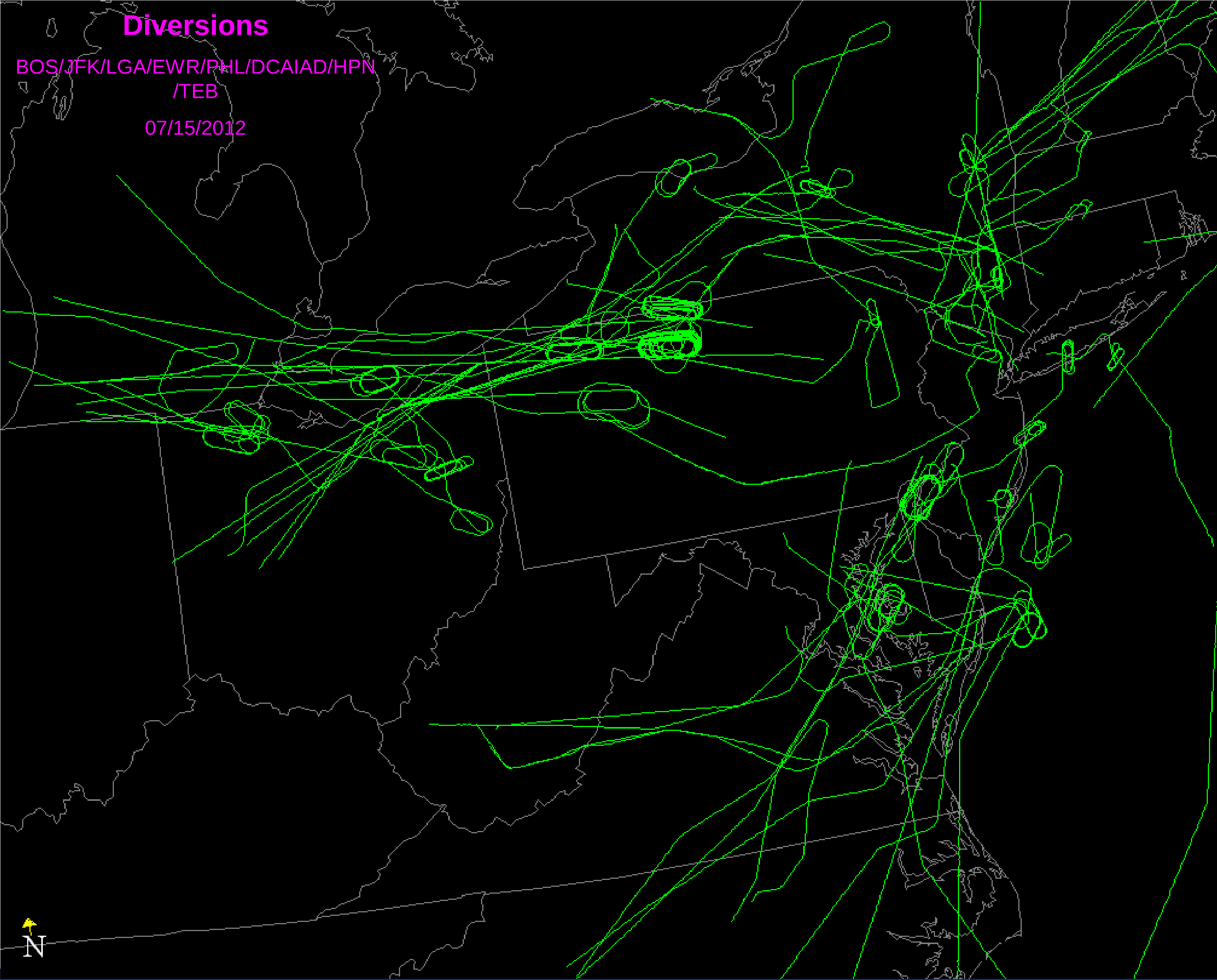
216 Holding events

79 Hours and 8 minutes

Diversions

BOS/JFK/LGA/EWR/PHL/DCAIAD/HPN /TEB

07/15/2012



This is also a remnant of both weather impacts and imbalanced capacity utilization

AirportDest	Grand Total
EWR	19
JFK	5
PHL	2
LGA	5
DCA	3
IAD	2
HPN	18
BOS	1
TEB	8
Grand Total	63

Analysis

Step 1 – Determine Which Days Were Most Impacted

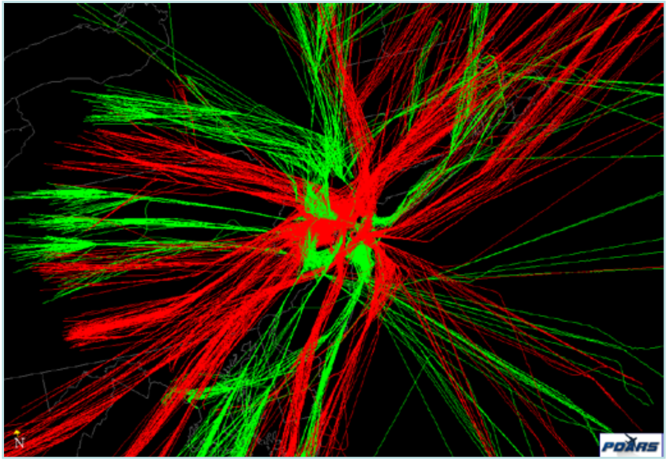
Through analysis of hourly arrival and departure throughput data for 2011 and 2012, we attempted to identify the most impacted weather days for EWR, LGA, and JFK.

Used a simple parameter (hours with more than 30 scheduled departures and less than 20 actual departures, April 1- Sept 15th).

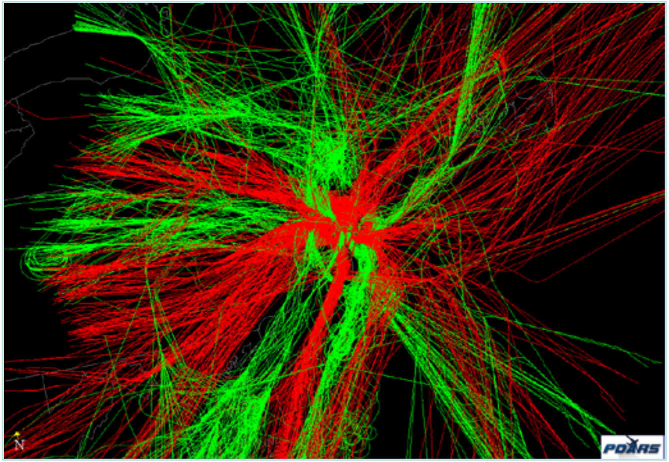
Compared IAD and BOS as cross-reference to see if the same results were found. They were not.

We found 22 severely impacted days in 2011 and 19 days in 2012.

Clear Weather traffic flows



Severe Weather traffic flows



WX	Airport	Date	Day	Icl Hour	Arrivals	Depts	Diff
y	EWR	4/19/2011	Tue	14	37	19	18
y	EWR	4/28/2011	Thu	12	33	9	24
y	EWR	4/28/2011	Thu	13	25	11	14
y	EWR	6/9/2011	Thu	19	30	14	16
y	EWR	6/9/2011	Thu	18	25	15	10
y	EWR	6/17/2011	Fri	16	40	7	33
y	EWR	6/17/2011	Fri	14	32	11	21
y	EWR	6/23/2011	Thu	14	39	19	20
y	EWR	6/23/2011	Thu	12	37	18	19
y	EWR	7/8/2011	Fri	15	34	9	25
y	EWR	7/8/2011	Fri	16	29	16	13
y	EWR	7/8/2011	Fri	18	31	19	12
y	EWR	7/25/2011	Mon	14	29	10	19
y	EWR	7/26/2011	Tue	20	34	19	15
y	EWR	7/29/2011	Fri	18	38	12	26
y	EWR	8/9/2011	Tue	14	39	17	22
y	EWR	8/15/2011	Mon	16	40	8	32
y	EWR	8/15/2011	Mon	15	40	19	21
y	EWR	8/19/2011	Fri	16	31	8	23
y	EWR	8/19/2011	Fri	18	25	11	14
y	EWR	8/19/2011	Fri	17	26	16	10
y	EWR	8/25/2011	Thu	12	30	16	14
y	EWR	9/6/2011	Tue	14	33	13	20
y	EWR	9/6/2011	Tue	16	30	17	13
y	EWR	9/7/2011	Wed	12	31	19	12
					818	352	466
					32.7	25 events	18.6

WX	Airport	Date	Day	Icl Hour	Arrivals	Depts	Diff
y	JFK	4/28/2011	Thu	14	33	16	17
y	JFK	4/28/2011	Thu	15	32	18	14
y	JFK	5/26/2011	Thu	20	31	19	12
y	JFK	6/9/2011	Thu	17	34	11	23
y	JFK	6/9/2011	Thu	18	22	6	16
y	JFK	6/9/2011	Thu	19	23	11	12
y	JFK	6/17/2011	Fri	16	30	9	21
y	JFK	6/17/2011	Fri	17	32	12	20
y	JFK	6/17/2011	Fri	20	27	18	9
y	JFK	7/7/2011	Thu	16	41	15	26
y	JFK	7/25/2011	Mon	14	45	19	26
y	JFK	7/29/2011	Fri	19	31	15	16
y	JFK	7/29/2011	Fri	18	25	17	8
y	JFK	8/1/2011	Mon	15	46	18	28
y	JFK	8/1/2011	Mon	16	39	13	26
y	JFK	8/1/2011	Mon	17	30	13	17
y	JFK	8/18/2011	Thu	19	37	16	21
y	JFK	8/18/2011	Thu	20	22	8	14
y	JFK	8/19/2011	Fri	16	34	16	18
y	JFK	8/19/2011	Fri	17	29	17	12
y	JFK	8/19/2011	Fri	18	27	19	8
y	JFK	8/25/2011	Thu	14	37	19	18
y	JFK	9/6/2011	Tue	15	42	19	23
y	JFK	9/7/2011	Wed	14	35	19	16
							421
						24 events	17.5

WX	Airport	Date	Day	Icl Hour	Arrivals	Depts	Diff
y	LGA	4/27/2011	Wed	20	31	19	12
y	LGA	4/28/2011	Thu	14	24	10	14
y	LGA	4/28/2011	Thu	12	18	8	10
y	LGA	5/18/2011	Wed	16	31	17	14
y	LGA	5/26/2011	Thu	18	34	18	16
y	LGA	6/9/2011	Thu	17	34	9	25
y	LGA	6/9/2011	Thu	16	28	14	14
y	LGA	6/9/2011	Thu	18	20	8	12
y	LGA	6/17/2011	Fri	14	36	14	22
y	LGA	6/17/2011	Fri	15	26	7	19
y	LGA	6/17/2011	Fri	17	28	14	14
y	LGA	6/24/2011	Fri	15	31	18	13
y	LGA	6/24/2011	Fri	16	30	18	12
y	LGA	7/8/2011	Fri	14	31	13	18
y	LGA	7/8/2011	Fri	15	22	14	8
y	LGA	7/25/2011	Mon	19	21	12	9
y	LGA	7/26/2011	Tue	20	30	13	17
y	LGA	7/29/2011	Fri	18	29	14	15
y	LGA	7/29/2011	Fri	19	21	8	13
y	LGA	7/29/2011	Fri	20	26	15	11
y	LGA	8/1/2011	Mon	17	29	8	21
y	LGA	8/1/2011	Mon	16	27	11	16
y	LGA	8/9/2011	Tue	17	34	16	18
y	LGA	8/9/2011	Tue	16	25	13	12
y	LGA	8/9/2011	Tue	18	28	18	10
y	LGA	8/15/2011	Mon	16	28	14	14
y	LGA	8/15/2011	Mon	15	26	14	12
y	LGA	8/19/2011	Fri	16	25	15	10
y	LGA	8/19/2011	Fri	17	21	12	9
							410
						29 events	14.1

2011 data

Note the average imbalance between arrivals and departures on severely impacted weather days is:

EWR 18.6
JFK 17.5
LGA 14.1

2011 dates

4/19/2011	EWR		
4/27/2011		LGA	
4/28/2011	EWR	LGA	JFK
5/18/2011		LGA	
5/26/2011		LGA	JFK
6/9/2011	EWR	LGA	JFK
6/17/2011	EWR	LGA	JFK
6/23/2011	EWR		
6/24/2011		LGA	
7/7/2011			JFK
7/8/2011	EWR	LGA	
7/25/2011	EWR	LGA	JFK
7/26/2011	EWR	LGA	
7/29/2011	EWR	LGA	JFK
8/1/2011		LGA	JFK
8/9/2011	EWR	LGA	
8/15/2011	EWR	LGA	
8/18/2011			JFK
8/19/2011	EWR	LGA	JFK
8/25/2011	EWR		JFK
9/6/2011	EWR		JFK
9/7/2011	EWR		JFK

2012 dates

5/15/2012		EWR	
5/21/2012	LGA		
5/24/2012		EWR	
5/29/2012	LGA		
6/22/2012	LGA	EWR	JFK
6/25/2012	LGA	EWR	JFK
7/18/2012	LGA	EWR	JFK
7/26/2012	LGA	EWR	
7/28/2012	LGA	EWR	JFK
8/1/2012	LGA		JFK
8/5/2012	LGA	EWR	
8/9/2012	LGA	EWR	
8/10/2012	LGA	EWR	
8/15/2012	LGA	EWR	JFK
8/27/2012	LGA		
9/2/2012	LGA		
9/4/2012	LGA		
9/5/2012		EWR	JFK
9/8/2012		EWR	

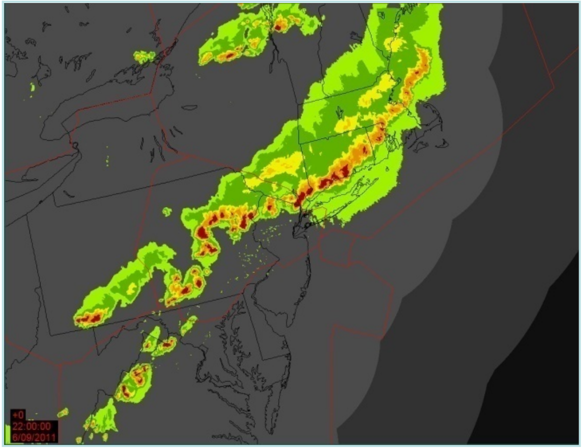
Step 2 – Confirm Weather

Dates when throughput performance met search criteria were reviewed via the CIWS weather archive by day and hour to confirm weather.

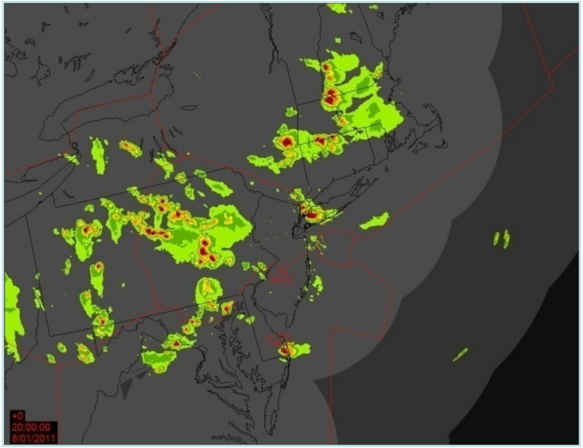
Not every day had severe weather, and subsequently those dates were dropped from further analysis.

Predominant WX Type

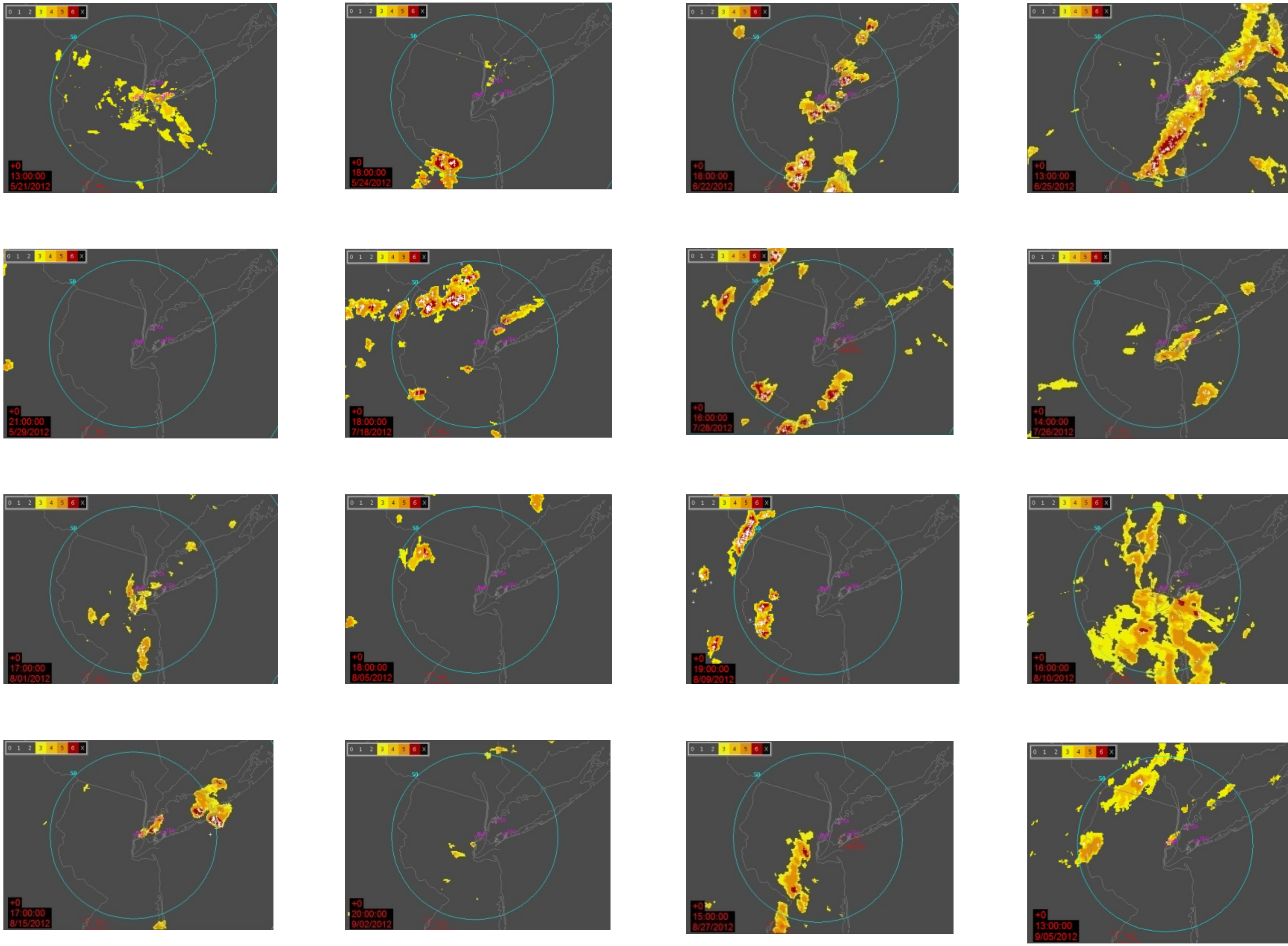
Line Storms



Pop-up Storms



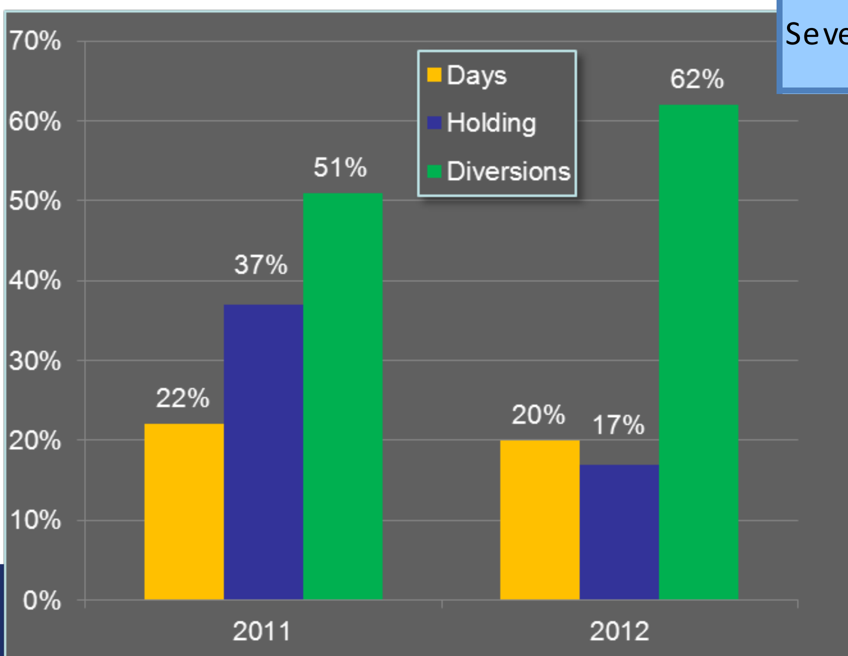
50 NM Weather on Severely Impacted Days



Step 3 – Correlate NAS Disruptions

- In a perfect world, the percentages would be reasonably linear.
- It shouldn't be this easy to find disparate data based on our simple parameters.

	2011	2012
SWAP Days	98	94
Severely Impacted Weather Days	22	19
	22%	20%
Cumulative Holding Hours	4,468	2,584
Severely Impacted Weather Days	1,646 Hours	448 Hours
	37%	17%
Total Diversions	1,520	1,375
Severely Impacted Weather Days	772	849
	51%	62%



The 41 days identified as "severely impacted" resulted in a total of 491 ground stops for arrivals to EWR, JFK, and LGA.

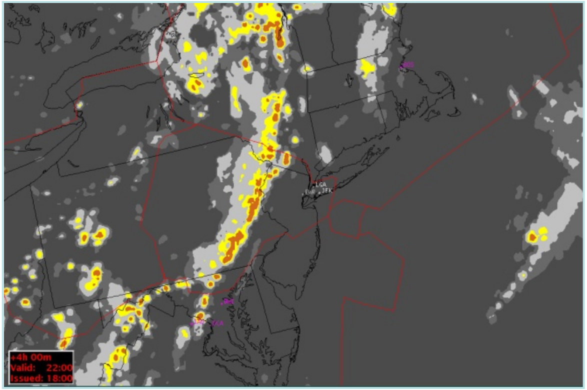
Step 4 – Cross-reference 4 Hour Forecast

After confirming severe weather existed on the days indicated by the basic parameter search, we reviewed the CoSpa archive to assess forecast accuracy. (pictures to the right are considered forecast "hits")

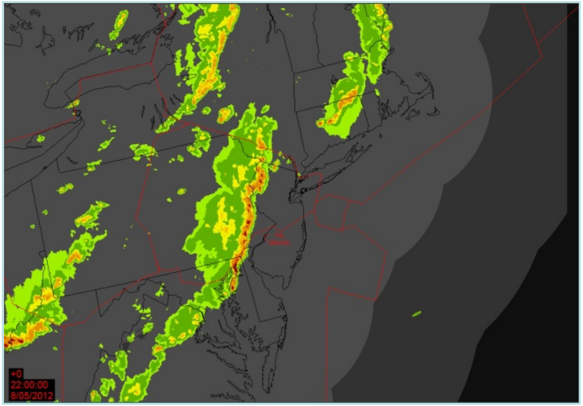
The objective was to determine if we had accurate information (in enough time) to take meaningful action to prevent significant disruption and disarray in the NAS and on airport surfaces.

Our analysis of 2011 showed 18 forecast "hits" and 4 "misses", or 81% forecast accuracy.   2012 data showed 15 forecast "hits" and 4 "misses", or 78% forecast accuracy

4 hour Forecast

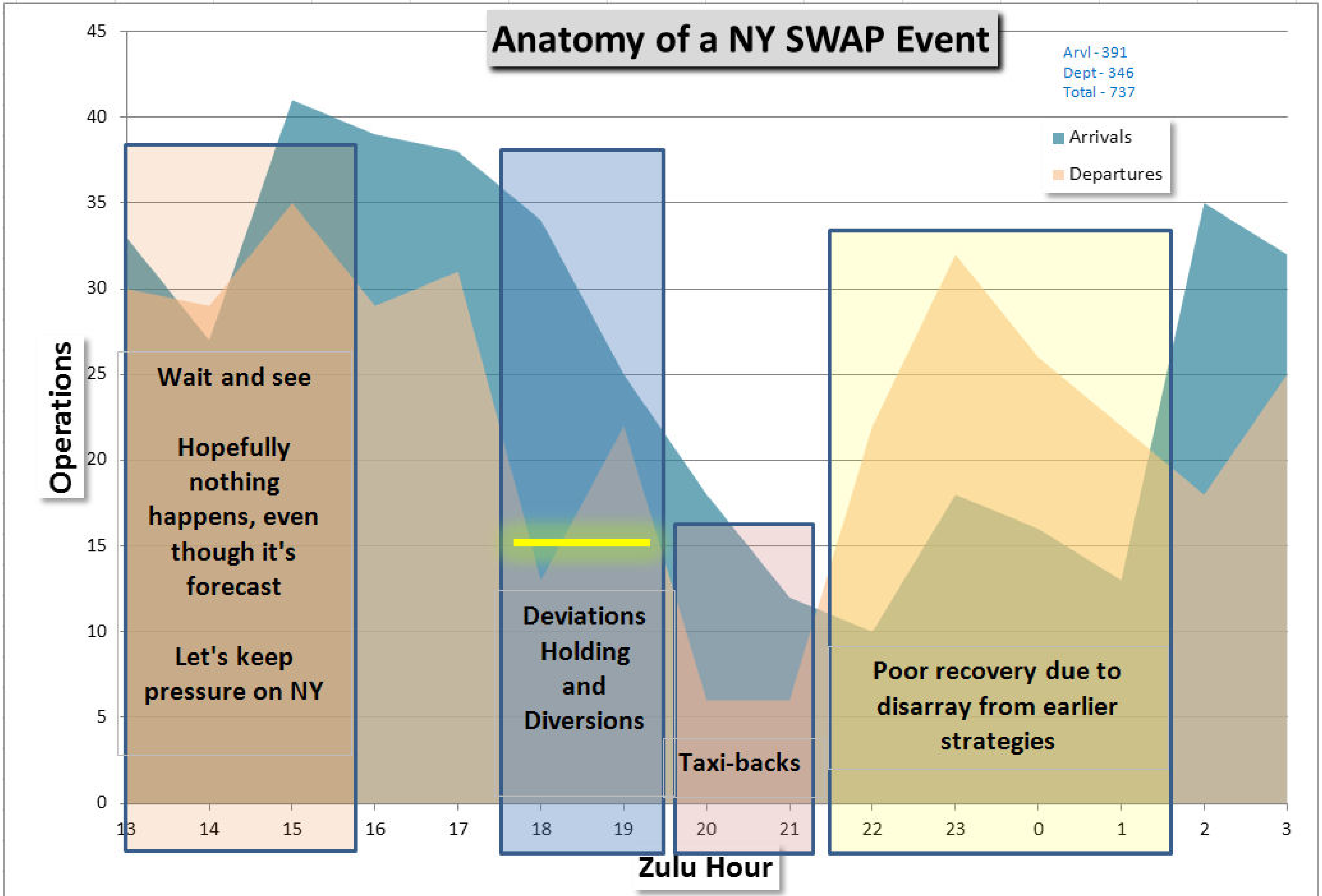


Actual WX

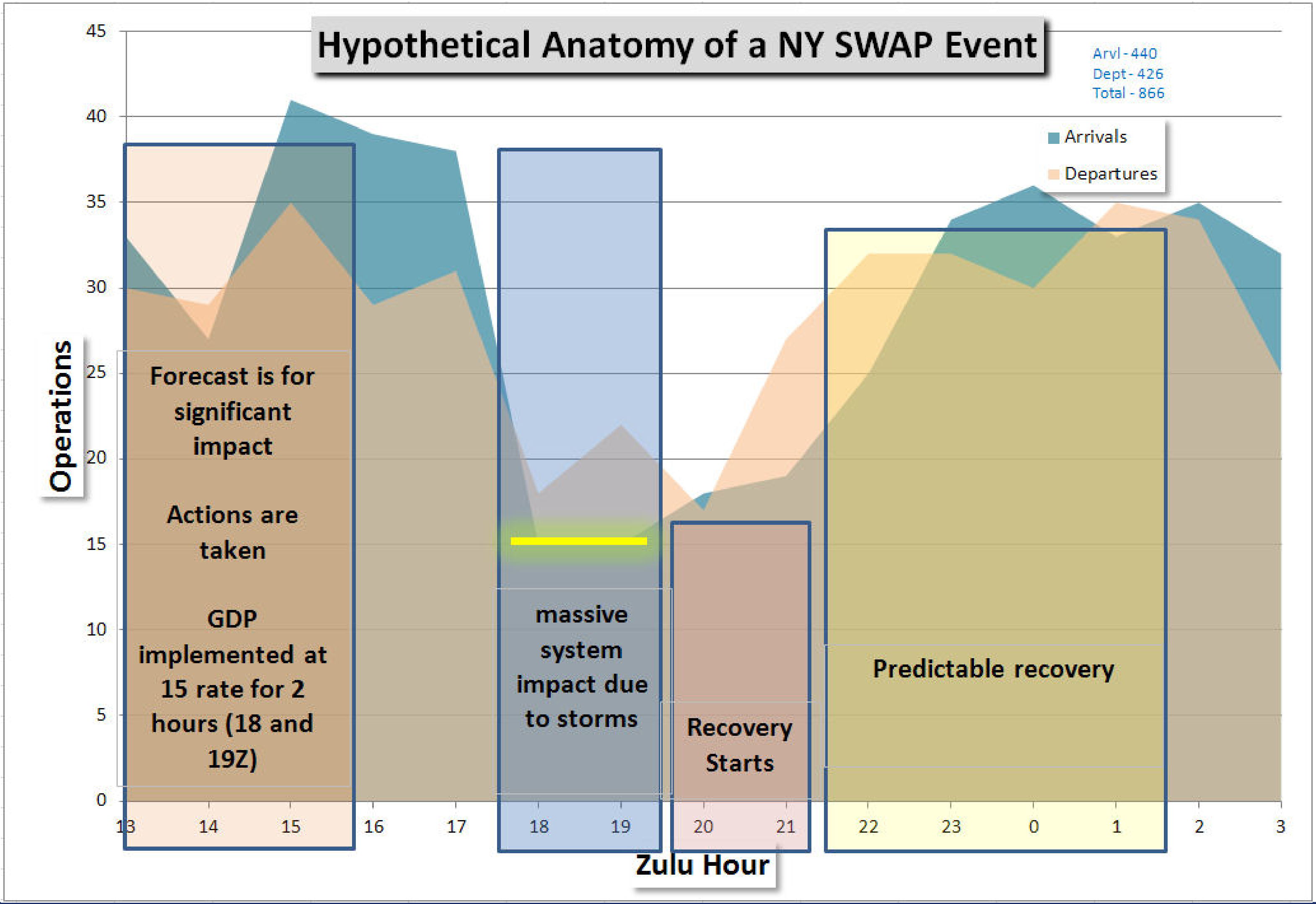


Short, High Impact GDP's

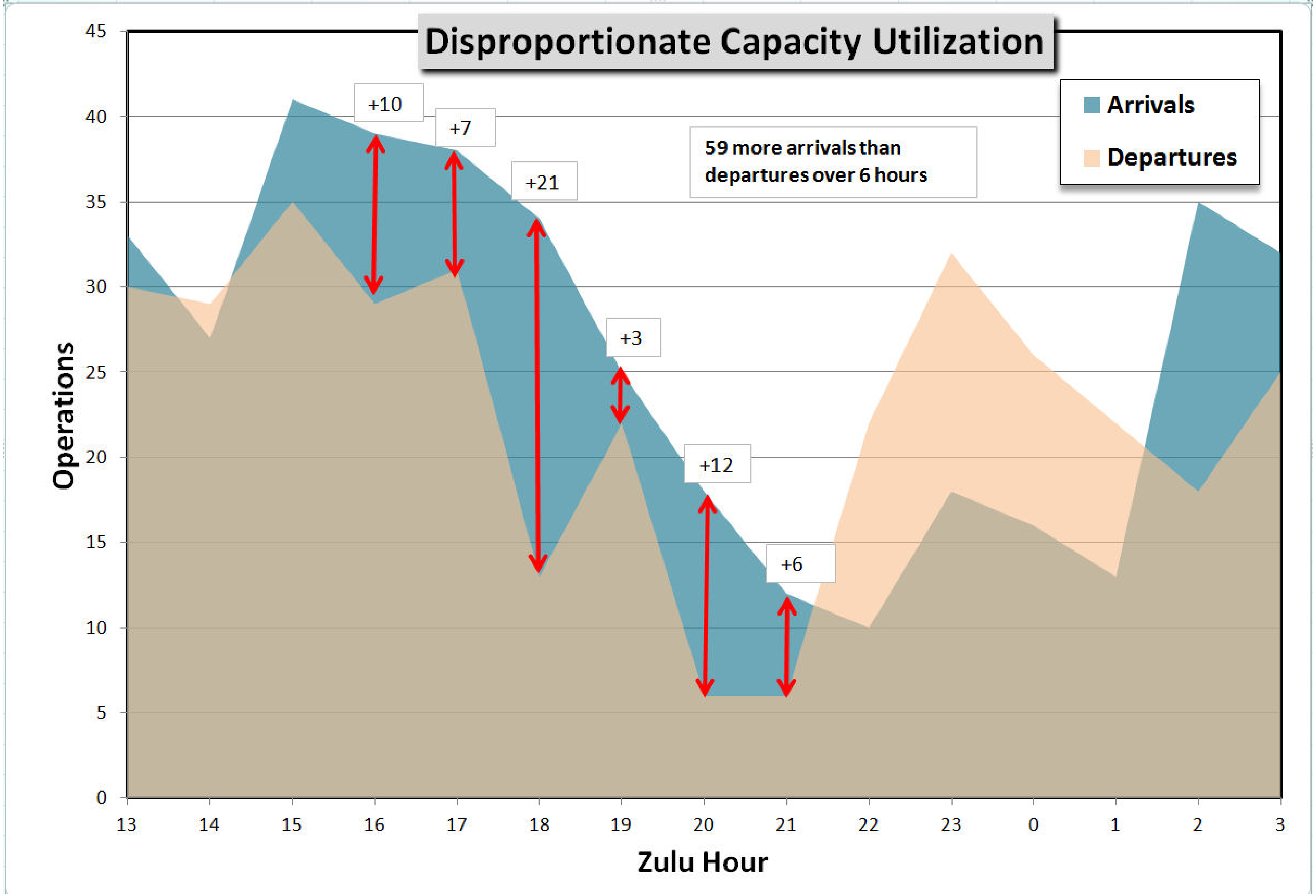
Step 5 – What Causes this? Anatomy of SWAP on Severe Days



Step 5 – What Causes this? Hypothetical Anatomy



Capacity Distribution


Disproportionate Capacity Utilization
Arrivals
Departures
59 more arrivals than departures over 6 hours
+10
+7
+21
+3
+12
+6
Operations
45
40
35
30
25
20
15
10
5
0
13
14
15
16
17
18
19
20
21
22
23
0
1
2
3
Zulu Hour

Thunderstorms cause significant delay and disruption in the NAS, particularly at New York area airports.

Most often this weather occurs between 1:00 p.m. and 9:00 p.m. local between April 1 and September 15.

During this time period, scheduled operations at EWR, JFK, and LGA are close to the airports VFR capacities on optimal runway configurations. Some level of delay is experienced at all three airports under the best of circumstances.

We use GDP's, AFP's, Mile-in-Trail, and reroutes to manage significant delays and disruption in the NAS. We experience numerous undesirable, unplanned, and unpredictable events that further determine operational outcomes including ground stops, off route deviations, airborne holding, diversions, departure stops, and DOT-3 taxibacks.

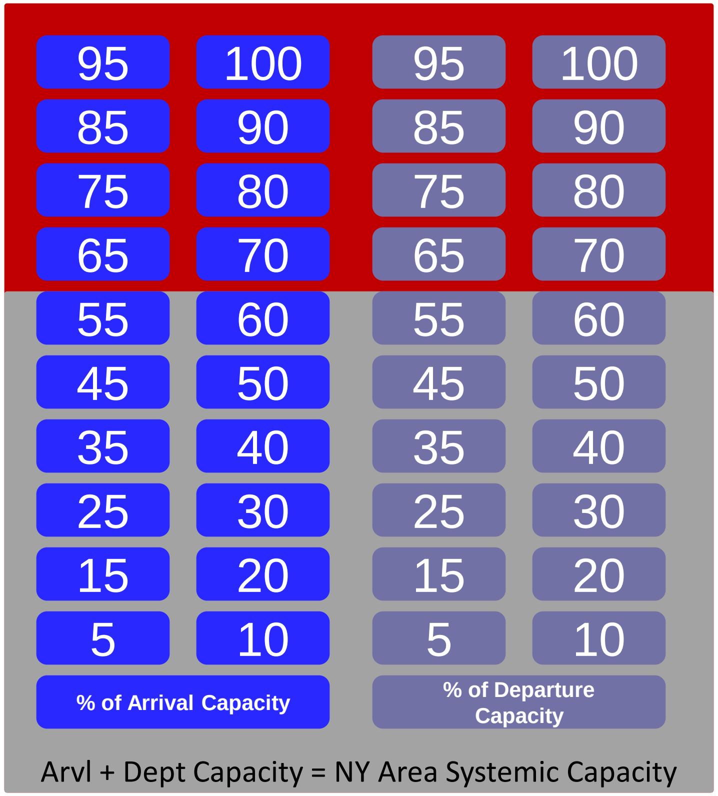
The delay and disruption on severely impacted weather days may be best expressed as a capacity distribution or capacity usage problem. Undesirable and unpredictable outcomes are remnants of poorly distributed capacity. Air traffic demand must be skillfully managed to match useable capacity.

Capacity distribution and usage over *x* hours

95	100	95	100
85	90	85	90
75	80	75	80
65	70	65	70
55	60	55	60
45	50	45	50
35	40	35	40
25	30	25	30
15	20	15	20
5	10	5	10
% of Arrival Capacity		**% of Departure Capacity**	

Arvl + Dept Capacity = NY Area Systemic Capacity

Impact of Thunderstorm on Capacity



Thunderstorms in close proximity to the NY airports causes a loss of capacity.

In the figure to the right, "red" represents a 40% loss of systemic capacity.

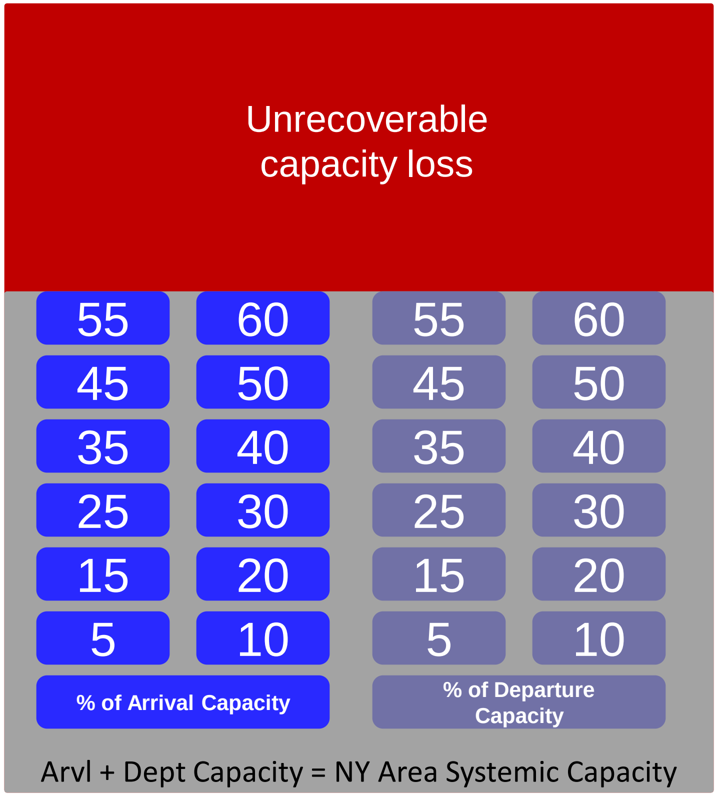
The loss of capacity, if forecast early enough, can be managed to an operational outcome that <u>does not</u>:

1. Have significant airborne holding and diversions
2. Create an impression that the operational plan is not effective
3. Exhaust air traffic operational and airline personnel
4. Saturate airport surfaces

The capacity loss on severely impacted weather days is not “arrival” or “departure” capacity. It’s systemic in nature.

In order to acknowledge and address the linear capacity loss, we must act more aggressively and earlier to respond to forecast conditions.

Proportionate capacity distribution



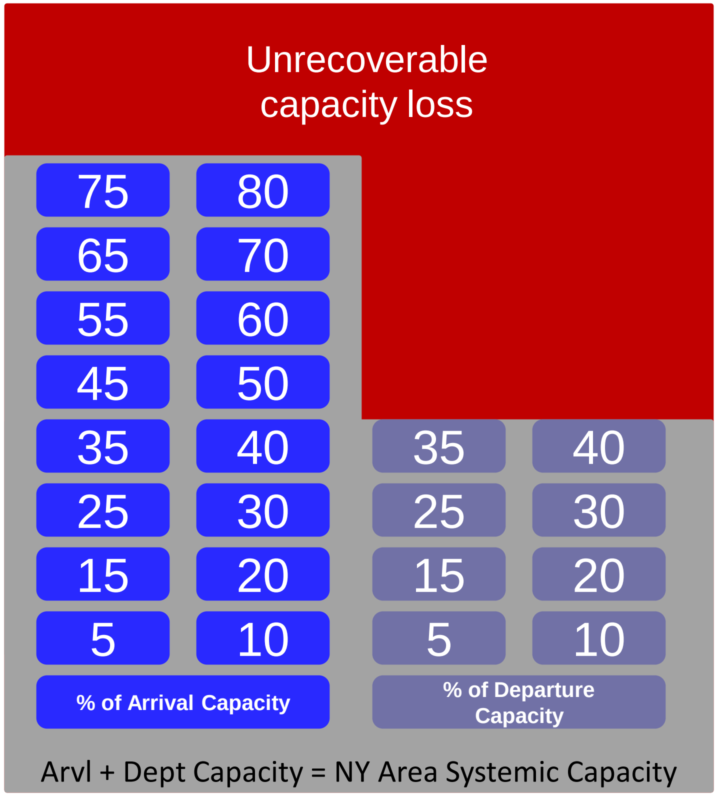
If we do not act to reduce arrivals early enough, the resulting imbalance will be managed later with inefficient traffic management initiatives such as, ground stops, airborne holding, and diversions.

Systemic capacity is aggregated across the arrival and departure operations and trade-offs occur when there is an imbalance.

Operational remnants of imbalance give the impression we're doing good with arrival traffic but not departures.

However, a closer look at system disarray and disruptions seems to prove otherwise.

Imbalanced capacity distribution

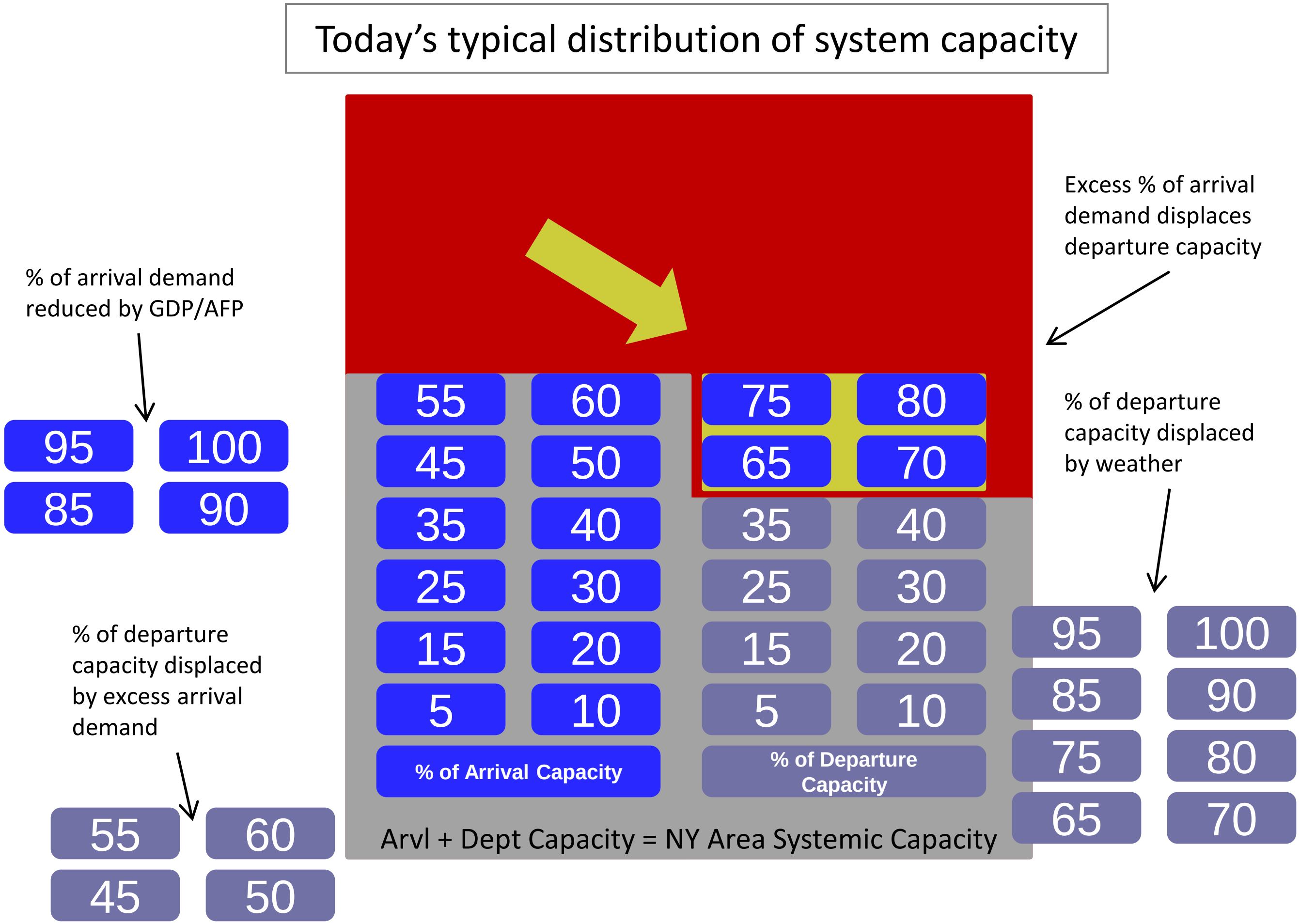


Typically, we use AFP's and GDP's to reduce arrival demand.

If we reduce arrival demand by 20% when system capacity is reduced 40% we have an imbalance.

The imbalance causes ground stops, airborne holding, diversions, surface congestion and departure stops.

On severely impacted weather days we often experience a 2 to 1 ratio of arrivals to departures.

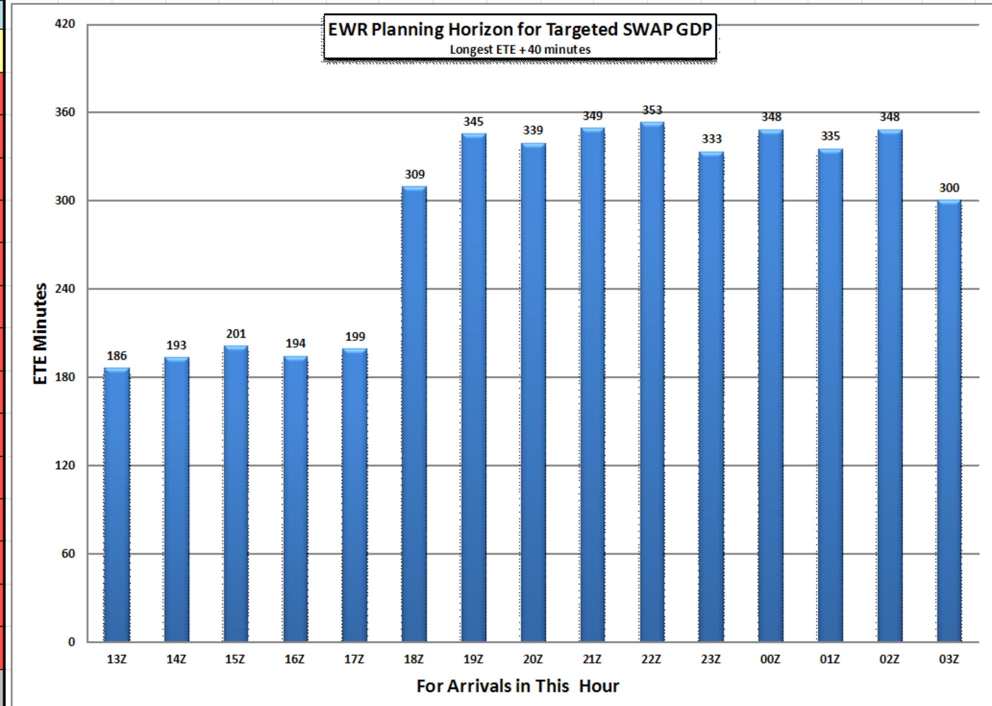


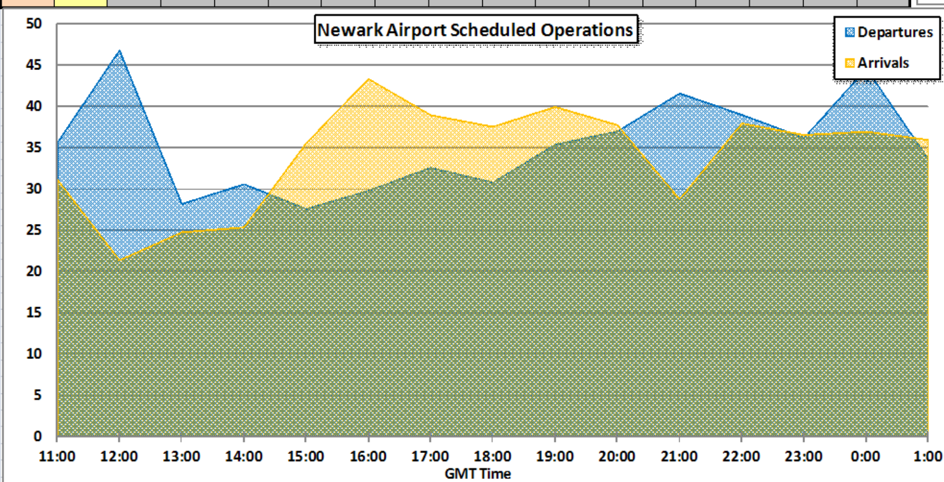
Guidance and Boundaries

EWR Planning Matrix — Estimated Weather Impact Time (columns) vs. Time Now (rows)

Time Now	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	1:00
11:00		N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N
12:00			N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N
13:00				N	N	N	N	Y	Y	Y	Y	Y	N	N	N
14:00					N	N	N	N	Y	Y	Y	Y	N	N	N
15:00						N	N	N	N	Y	Y	Y	N	N	N
16:00							N	N	N	N	Y	Y	N	N	N
17:00								N	N	N	N	Y	N	N	N
18:00									N	N	N	N	N	N	N
19:00										N	N	N	N	N	N
20:00											N	N	N	N	N
21:00												N	N	N	N
22:00													N	N	N
23:00														N	N
0:00															N
1:00															

Given the weather forecast, can a low rate GDP be implemented?





Low rate GDP, New York SWAP Planning Guidelines (Concept/Test)

1. ETE Chart and Scheduled Operation Charts are for information only.

2. The matrix in the upper left was determined using a combination of longest ETE and scheduled traffic demand.

3. LGA has a shorter planning horizon and greater available usable times. JFK and EWR are identical.

4. Generally, 2 hour low rate (15-22) GDP's should be implemented at all 3 airports for the same time frame. Plus or minus one hour for EWR and JFK can be sensible given the variable impact time for the forecast weather.

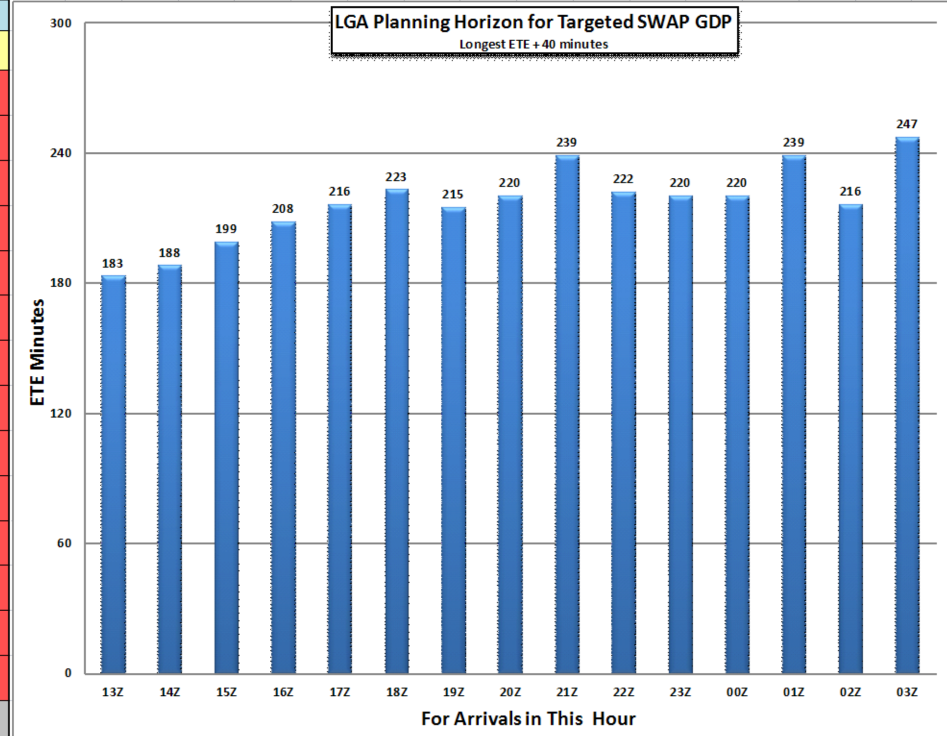
5. After 2 hours, GDP rates should be raised to normal rates for single runway operations, unless EWR or JFK have a secondary arrival runway available. In that case, higher rates should be considered.

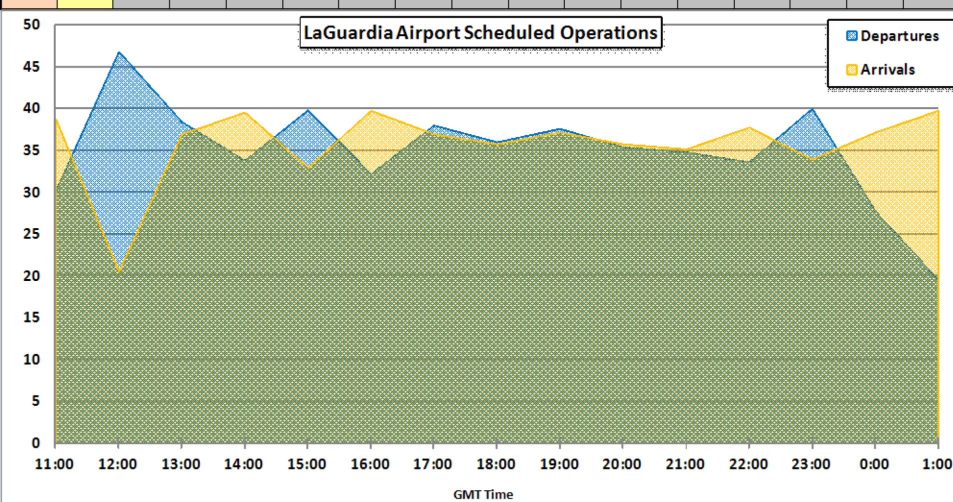
6. The goal of this program is to reduce airborne holding, diversions, and to reduce airport surface congestion during times when the airport environment is being impacted by severe weather.

Estimated Weather Impact Time (columns) / **Time Now** (rows)

LGA Planning Matrix	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	1:00
11:00		N	N	N	N	N	Y	Y	Y	Y	Y	Y	N	N	N
12:00			N	N	N	N	Y	Y	Y	Y	Y	Y	N	N	N
13:00				N	N	N	Y	Y	Y	Y	Y	Y	N	N	N
14:00					N	N	Y	Y	Y	Y	Y	Y	N	N	N
15:00						N	N	Y	Y	Y	Y	Y	N	N	N
16:00							N	N	Y	Y	Y	Y	N	N	N
17:00								N	N	Y	Y	Y	N	N	N
18:00									N	N	Y	Y	N	N	N
19:00										N	N	N	N	N	N
20:00											N	N	N	N	N
21:00												N	N	N	N
22:00													N	N	N
23:00														N	N
0:00															N
1:00															

Given the weather forecast, can a low rate GDP be implemented?





Low rate GDP, New York SWAP Planning Guidelines (Concept/Test)

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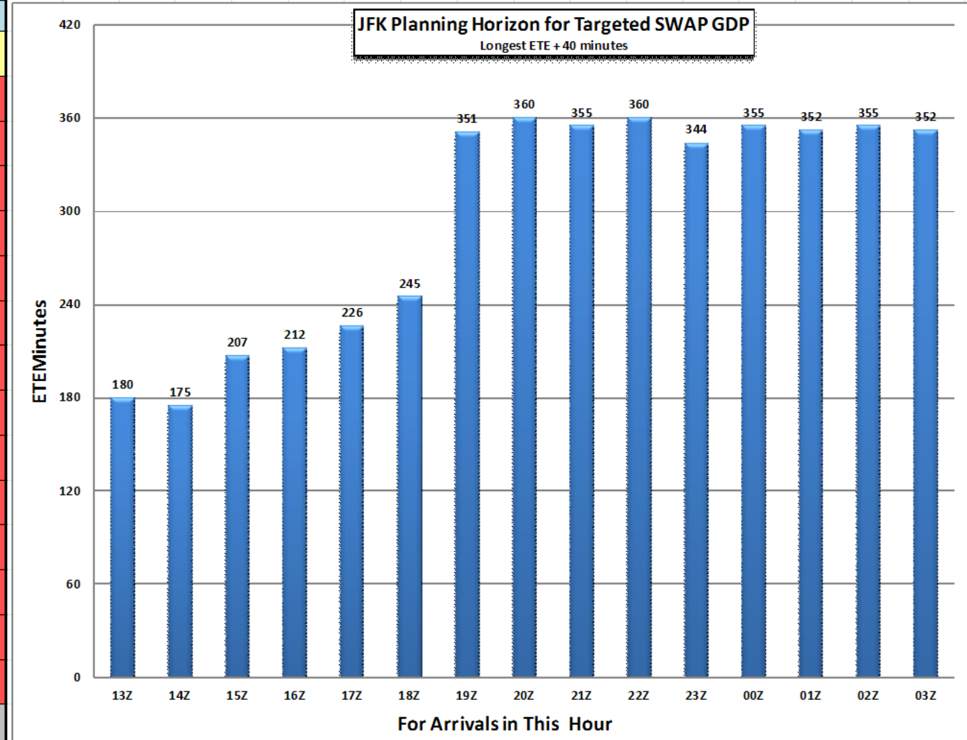
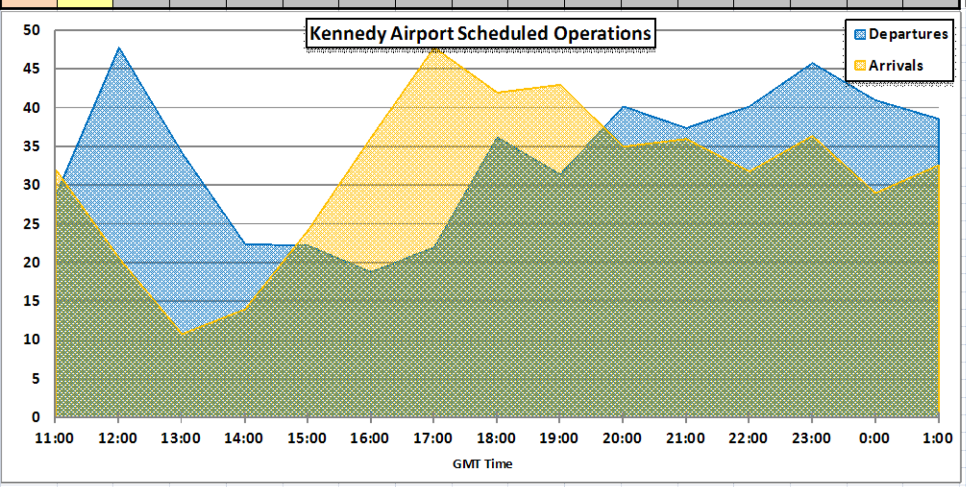
JFK Planning Matrix	Estimated Weather Impact Time														
Time Now	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	1:00
11:00		N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N
12:00			N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N
13:00				N	N	N	N	Y	Y	Y	Y	Y	N	N	N
14:00					N	N	N	N	Y	Y	Y	Y	N	N	N
15:00						N	N	N	N	Y	Y	Y	N	N	N
16:00							N	N	N	N	Y	Y	N	N	N
17:00								N	N	N	N	Y	N	N	N
18:00									N	N	N	N	N	N	N
19:00										N	N	N	N	N	N
20:00											N	N	N	N	N
21:00												N	N	N	N
22:00													N	N	N
23:00														N	N
0:00															N
1:00															

Given the weather forecast, can a low rate GDP be implemented?





Low rate GDP, New York SWAP Planning Guidelines (Concept/Test)

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6. The goal of this program is to reduce airborne holding, diversions, and to reduce airport surface congestion during times when the airport environment is being impacted by severe weather.

What's new for SWAP 2013:

- ATCSCC NY Coordinator Position
- Severity index for levels of SWAP Events
- Proactive departure and arrival SWAP strategies
  - Very low rate GDP's for NY airports, possibly with AAR's between 15-22
  - Very low rate AFP's
  - Use of Integrated Collaborative Routing
  - Reroute around ZNY airspace to provide better departure capacity
  - Reroutes off usable airways to reduce demand before they close
  - Recovery strategies to reuse routes in a more timely manner
  - "Required" use of Escape Playbooks (SERMN, PHYLER, etc)
- Use of TFM Weather Portal
- Revised procedures for the New York Hotline
- Changes to the planning process and planning advisories
  - Establishing "Traffic Flow Priorities" for SWAP events
  - Detailed Information in the Planning Advisories
  - Requiring facilities to "Accept and favor rerouted traffic"

Severity index for SWAP Levels

SWAP Level 1

Weather is expected to be 100 miles or more from N90 airspace and/or there is minor impact expected to ZNY arrival/departure gates, and to over flight routes

This level of SWAP provides for developing some basic structure, route expectations, and planning capability. The objective is to manage expectations and complexity early. Customers should begin filing appropriate route solutions and managing their flights in response to the actions taken or planned

Note: Traffic Flow Priority – Initiatives to support the planned priorities should be the focus

SWAP Level 2

All initiatives in SWAP Level 1 are included

Weather is expected to be between 50-100 miles from N90 airspace and/or there is moderate impact expected to ZNY arrival/departure gates, and possibly to over flight routes

This level of SWAP provides for increasing structure and reducing holding, diversions, and other serious complexity issues. The objective is to prioritize airspace availability, reduce airborne inventory, and manage surface congestion issues

Note: Traffic Flow Priority – Initiatives to support this priority require increased airspace structure

SWAP Level 3

All initiatives in SWAP Level 1 and 2 are included

Weather is expected to be within 50 miles from N90 airspace and/or there is moderate or greater impact expected to ZNY arrival/departure gates, and possibly to over flight routes

This level of SWAP provides real-time constraint, route and volume management. The focus of this stage is to prioritize traffic that requires more expeditious handling, and that requires a much higher priority than other traffic sharing the same airspace. The objective is to reduce diversions, holding, surface delays and taxi-back situations.

Note: Traffic Flow Priority – Initiatives to support this priority take overriding authority.

Roles and responsibilities clarified

TCA	TRC	NY Coordinator
NRP	SATELLITE AIRPORT INFORMATION	ROUTE AVAILABILITY, REROUTES, CLOSURES TO ROUTES, OFFLOADS
EDCT'S AND CHANGES	3-HOUR TARMAC INFORMATION	ROUTE PLANNING
NON-PREF ROUTE REQUESTS	DIVERSIONS	DIVERSIONS
INTER-FACILITY ISSUES	TAXI-BACKS	TAXI-BACKS
EN ROUTE ISSUES – FUEL, EXEMPTIONS FROM REQUIRED REROUTES	AIRPORT SPECIFIC INFORMATION FOR NY AIRPORTS	HOLDING IN EXCESS OF 15 MINUTES DEPARTURE DELAYS IN EXCESS OF 30 MINUTES
NAIMES OUTAGES	AIRPORT EQUIPMENT ISSUES	HOTLINE ISSUES
E-CVRS/E-STMP		REROUTES TOWERS HAVE AVAILABLE TO USE (SERMN, DUCT)
DIVERSION RECOVERY PAGE		

Summary

After reviewing two years of SWAP events and condensing it down to 41 days, and further condensing it to a few hours on each of those days, our findings, expected actions, and outcomes are:

- Forecast products are adequate
- Targeted GDP's (15-22 rate) for 2 hours
- Reducing arrivals for two hours at EWR, LGA, and JFK should:
  - Balance the arrivals and departures
  - Alleviate pressure on ZNY, ZBW, ZDC, and ZOB by removing 100-130 arrival flights out of the NAS.
  - Provide coherent and predictable routes for arrivals and departures in consideration of the unrecoverable capacity loss
  - Reduce the number of diversions
  - Reduce the amount of holding
  - Increase the throughput at the airports
  - Reduce the number of taxi-backs
  - Produce to a smooth recovery
  - Provide ATC and customer predictability
  - Accomplish more total flights at the end of the day, and if not, reduce adverse NAS impacts

Support for teams recommendations

- Team participants expressed a variety of views and opinions during the meetings.

- Most of the SWAP actions we currently take have been in place for a very long time.

- We did not seek or get 100% buy-in or consensus for every proposal.

- Team did acknowledge a need to do something different, however, what we do differently has some varying opinion.

- Team co-leads made decisions to move forward.

- Recommendations are data-driven.

Challenges

- Due to the unpredictable nature of severe weather, we will often have to take action without knowing 100% what the results will be.

- Risk management and uncertain decision making will play key roles in actions and outcomes. *Sometimes our actions will be unsuccessful.*

- FAA and airline personnel commonly postpone decision making until they know they are “right.” This cultural issue will take time to overcome.

Next steps

- Training has been developed and needs to be completed.
- Refine and produce performance metrics specifically for NY SWAP. Once matured, responsibility for reporting these measures will be with the AJR System Efficiency office.
- Re-adjust plans as necessary based on results.
- Team will conduct bi-weekly telcons to discuss actions and results.
- Ensure results and metrics are shared with NATCA and operational workforce.