

Florida/Caribbean AFP Changes

- **JX1/JX2/JX12**
- **JX3/JX4/JX34**
- **JX5/JX6/JX56**
- **JX7/JX8/JX78**
- **JY3/JY4/JY34**
- **JG5/JG6/JG56**
- **JXE/JNE/JXENS**
- **JXW/JNW/JXWNS**



Florida/Caribbean AFP Changes

Summary of FEA Changes

- **Changing FEAs:**

- *Southbound: JX1, JX5, JX7, JY3, JG5, JXE, JXW*
- *Northbound: JX2, JX6, JX8, JY4, JG6, JNE, JNW*

- **Adding new FEAs:**

- *To allow for more AFP options and analysis: JX3, JX4*
- *New bi-directional FEAs for total AFP throughput: JX12, JX56, JX78, JY34, JG56, JXENS, JXWNS*



Changing AFPs/FEAs

Types of Changes to the FEAs include:

- FEA Throughput Value (FTV) – a new methodology of calculating FEA throughput
 - Updates to FEA line geometry
 - Updates to FTV
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- This will allow for the following changes to Florida AFP design:
 - Evaluating and implementing AFPs based on a bi-directional throughput value derived from sector Monitor Alert Parameter (MAP) values.
 - AFP implementation will remain unchanged; DCC may only induce delay in a single direction to make airspace manageable.
 - Changing to a regional concept of coordination and implementation



FEA Changes

**New FEA Throughput
Value (FTV)
Methodology**

Updated FEA Line
Geometry

Updated FTV Values



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FEA Throughput Value (FTV)

- The legacy method for calculating the Unimpeded Flow Throughput (UFT) used top-percentile (busiest) historical days to establish the baseline unimpeded throughputs.
- This method has provided some results which require further investigations, based on feedback received from the facilities.
- Therefore, a new method for calculating these throughputs, FTV, based upon the MAP values for individual sectors impacted by the FEAs, has been implemented.



FTV Calculation Methodology

1. Using SME and FAA facility feedback, identify sectors adjacent and relevant to the AFPs in question
2. Collect the **minute-by-minute** sector load for each sector for all of FY23 (10/1/22 – present)
3. Identify individual hours (60 consecutive minutes ~ rolling hours) with the following conditions:
 - a. Sector Load **at or below** MAP value for **15 or more minutes** (non-consecutive) within the hour
 - b. Sector Load **above** MAP value for **less than 15 minutes** (non-consecutive) within the hour
4. For each hour that matches both criteria above, calculate the total throughput for that hour
5. Generate percentile values for all of these hours together for the entire FY23 to get an average FTV

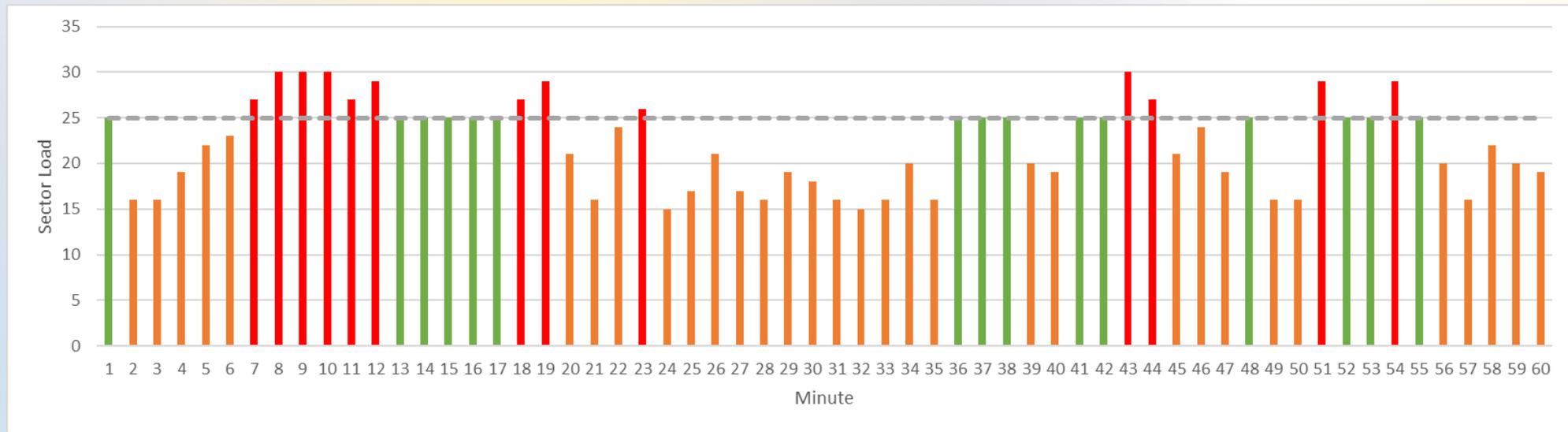
An example showing the implementation of this methodology is shown in the following slides.



FTV Methodology Example

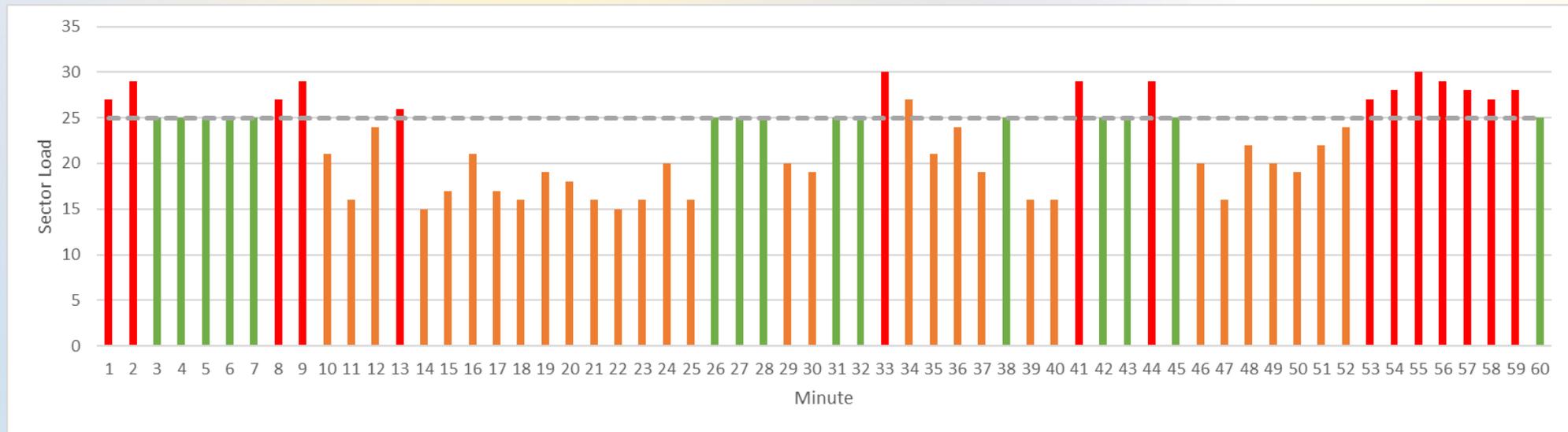
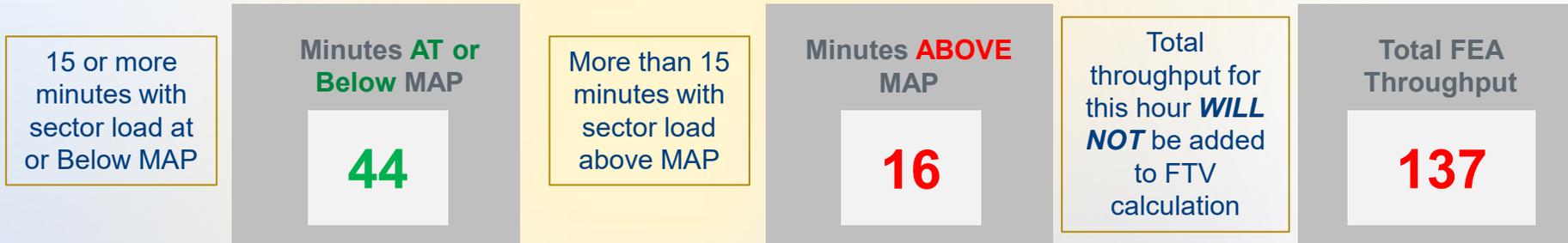
- The following is a sector under analysis with a MAP value of 25. Here is a sample of the sector load data for a one hour period, showing the number of flights entering the sector each minute in a histogram:
- This value is compared against the sector **MAP** value of 25. Some minutes are **at the MAP value**, and some are **above the MAP value**.

15 or more minutes with sector load at or below MAP	Minutes AT or Below MAP 47	Less than 15 minutes with sector load above MAP	Minutes ABOVE MAP 13	Total throughput for this hour WILL be added to FTV calculation	Total FEA Throughput 134
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FTV Methodology Example

- Rolling forward to the next 60-minute period where there are at least 15 minutes at MAP, we can see there are now *more* than 15 minutes with a sector load exceeding MAP, meaning this hour will not be included in the FTV calculation



FEA Changes

New FEA Throughput
Value (FTV)
Methodology

**Updated FEA Line
Geometry**

Updated FTV Values



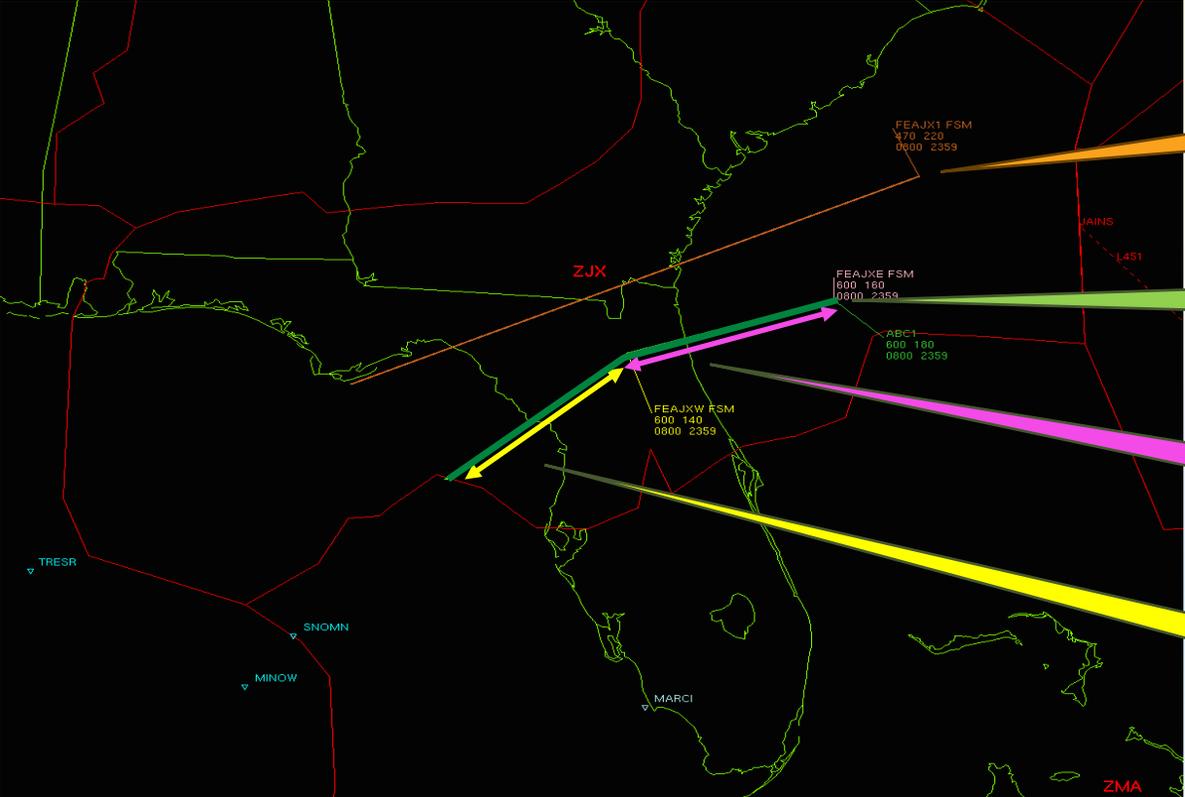
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Updated FEA Line Geometry

- The existing geometry of the JX1, JX3, JX5, and JX7 have been re-designed.
- These new FEA lines have been relocated to overlay the existing FEAJG5, FEAJXW, FEAJXE, FEAJY3 lines.
- The following slides compare the revised FEAs to the existing FEA structure.



FEAJX1 Updated Line Geometry



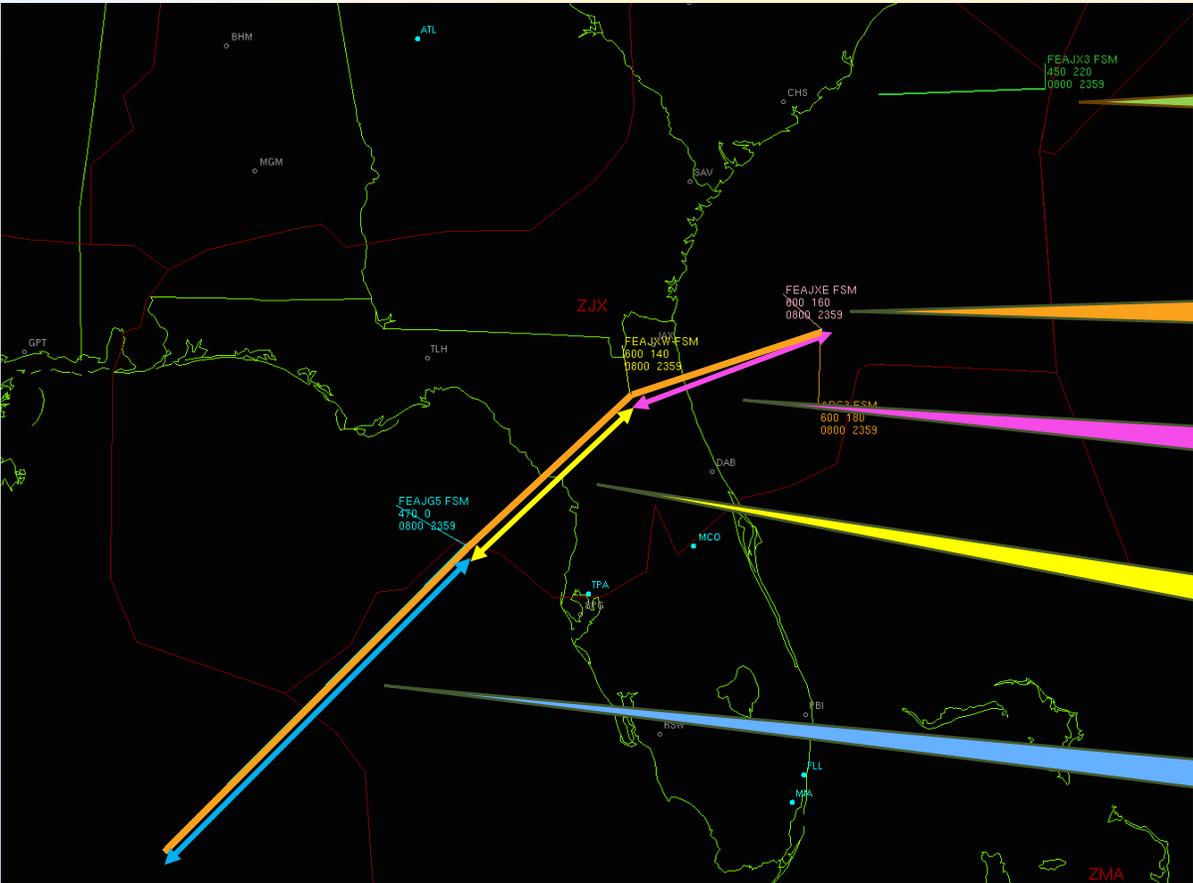
Existing JX1 (orange)

Revised JX1 (green)

Existing JXE (pink)

Existing JW (yellow)

FEAJX3 Updated Line Geometry



Legacy JX3 (green)

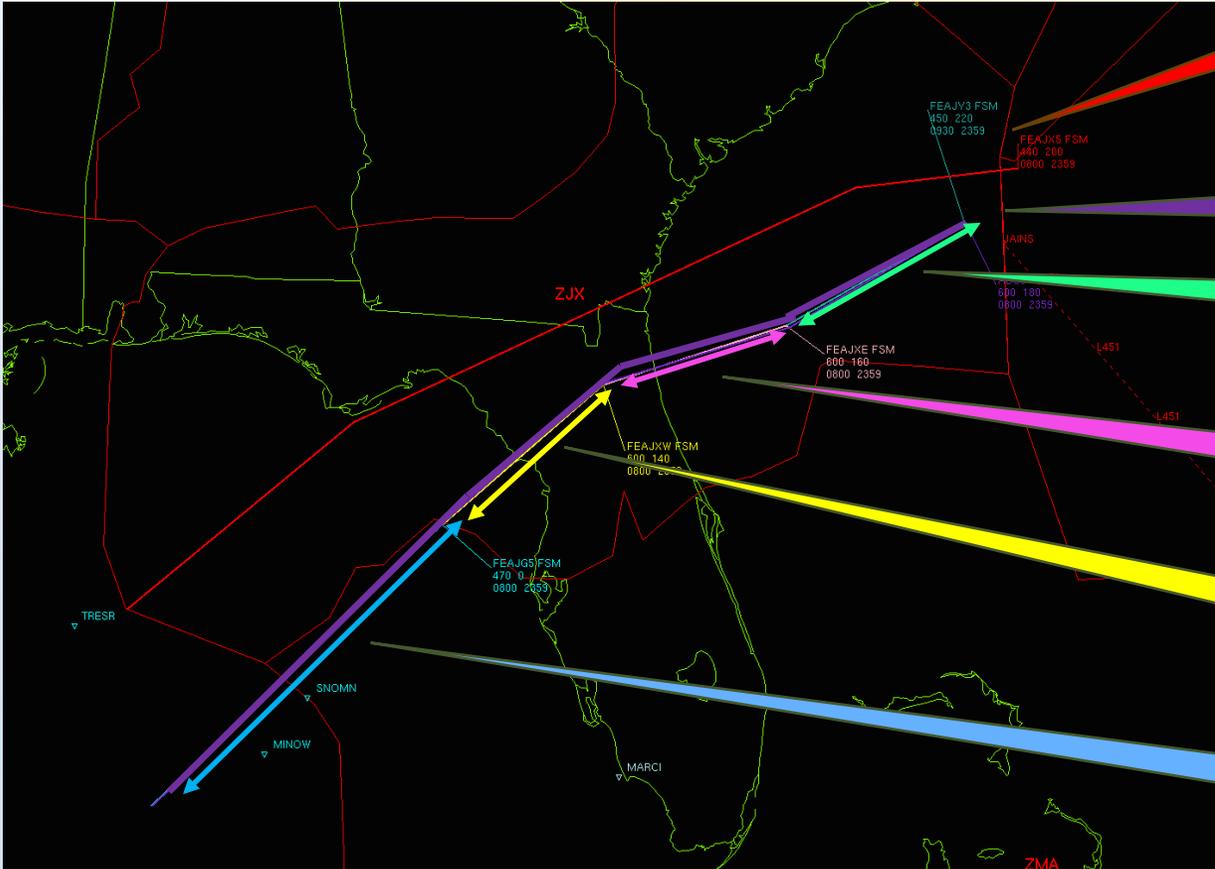
Revised JX3 (orange)

Existing JXE (pink)

Existing JXW (yellow)

Existing JG5 (blue)

FEAJX5 Updated Line Geometry



Existing JX5 (red)

Revised JX5 (purple)

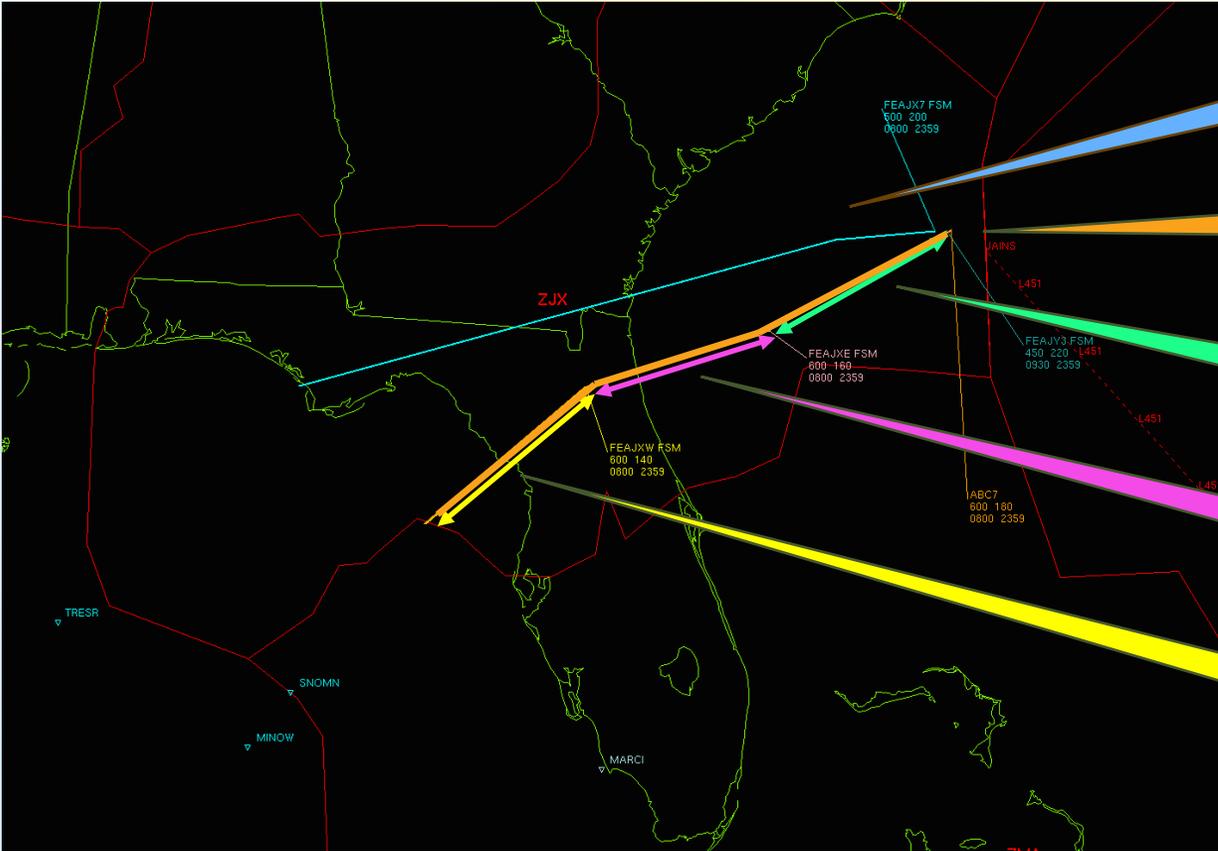
Existing JY3 (teal)

Existing JXE (pink)

Existing JXW (yellow)

Existing JG5 (blue)

FEAJX7 Updated Line Geometry



Existing JX7 (blue)

Revised JX7 (orange)

Existing JY3 (teal)

Existing JXE (pink)

Existing JXW (yellow)

FEA Changes

New FEA Throughput
Value (FTV)
Methodology

Updated FEA Line
Geometry

Updated FTV Values

Updated FTV Values

UPDATED FEA GEOMETRY	JX1	S/B	JX2	N/B	JX12	↑↓	JY3	S/B	JY4	N/B	JY34	↑↓
	MAX	209	MAX	232	MAX	354	MAX	64	MAX	74	MAX	110
	FTV	167	FTV	161	FTV	304	FTV	51	FTV	48	FTV	83
	JX3	S/B	JX4	N/B	JX34	↑↓	JG5	S/B	JG6	N/B	JG56	↑↓
	MAX	245	MAX	247	MAX	412	MAX	47	MAX	66	MAX	87
	FTV	189	FTV	187	FTV	354	FTV	30	FTV	35	FTV	58
	JX5	S/B	JX6	N/B	JX56	↑↓	JXE	S/B	JNE	N/B	JXENS	↑↓
	MAX	279	MAX	318	MAX	511	MAX	93	MAX	108	MAX	165
	FTV	227	FTV	222	FTV	422	FTV	68	FTV	82	FTV	133
	JX7	S/B	JX8	N/B	JX78	↑↓	JXW	S/B	JNW	N/B	JXWNS	↑↓
	MAX	261	MAX	291	MAX	465	MAX	144	MAX	126	MAX	237
	FTV	208	FTV	203	FTV	382	FTV	109	FTV	91	FTV	187

*Hours evaluated between 1100 – 0200 UTC

MAX: maximum aircraft through affected sectors in normal conditions for 1 hour where the sector remained at or below MAP value for more than 15 mins *and* above MAP value for *less than* 15 minutes

FTV: average of hours evaluated where 99% of the time aircraft through all affected sectors were at or below MAP value

How is FTV/MAX Used to Set an AFP Rate?

- Using FCAJX5 as an example:
 - The JX56 FTV is **422** aircraft per hour. The Maximum Throughput Value for the evaluated area is **511** aircraft per hour. These values represent the combined value of traffic both north- and southbound through the evaluation area.

JX56	↑↓
MAX	511
FTV	422

- Assuming only volume constraints, both above values should keep the sectors and airspace manageable.
- The rate for each hour of the AFP will be calculated by subtracting the northbound hourly throughput value of the applicable FEA (*in this case FEAJX6*) from the accepted baseline rate of the day between **422** and **511** using the JX56.
- The remaining value will be allowed in the applicable southbound FEA (*in this case JX5*) and will create the hourly rates for a potential variable-rate FCAJX5 AFP.

With the addition of non-volume-related constraints (e.g., weather, rocket launches, equipment outages, staffing events, etc.), the discussion of an AFP should begin at the posted FTV of **422**, with the potential for a rate reduction below the FTV rate.



AFP Considerations

- **Is there a constraint that lasts 3-4 hours or longer?**
 - What is the constraint--volume, weather, rocket launch, equipment outages, staffing constraints, other special activity that limits/changes the normal flow of air traffic?
- **Can the critical decision window be met?**
 - The constraint must be at least 2-3 hours in the future for the optimal utilization of an AFP, as an AFP takes several hours for the full effect to take place.
 - This is not an airborne TMI and will do very little to solve a problem happening in the current moment.
- **Are there other TMIs that may be in place and could have an effect on the AFP? Will any TMIs be issued in conjunction?**
 - Miles-in-Trail (MIT), Playbook Routes, Ground Delay Programs (GDPs), and Ground Stops could all impact the AFP rate.
- **Are route-out options available, if necessary, or are additional AFPs needed to mitigate volume in adjacent ARTCCs?**



Questions?



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