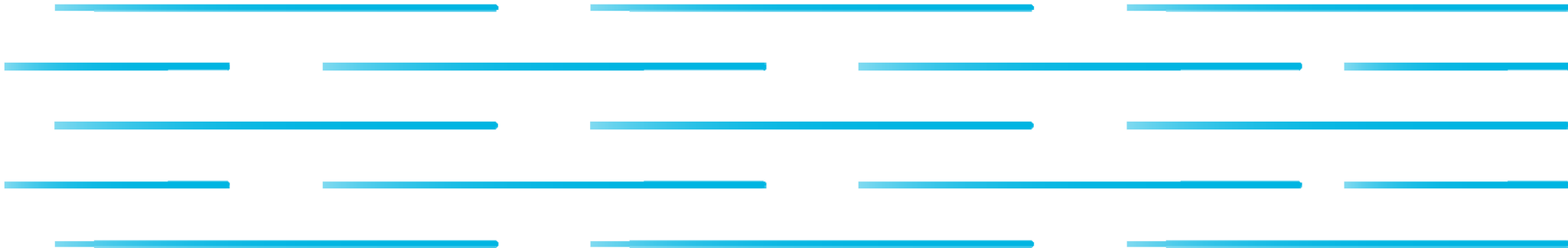




# Probabilistic Locality Exchange Factor Analysis

March 22, 2017

**DRAFT**



# Overview

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## Methodology

## System Topologies

- Current IRM Topology
- Contract Topology
- Reserve Sharing Topology

## Schedule and Next Steps



# Methodology

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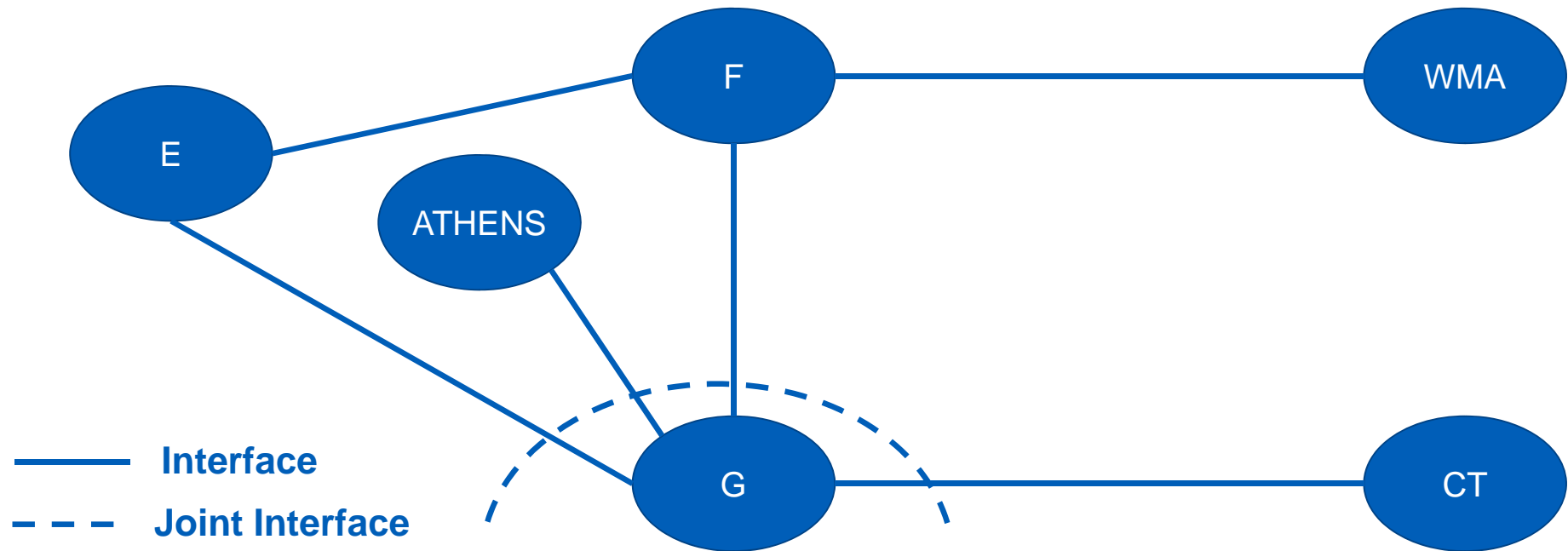
- 1) Update System Topology and Set System at IRM / all LCRs
- 2) Model the Export Contract
- 3) Add to zones of excess west of Total East (A, C, D) until the IRM is satisfied
- 4) Iteratively shift from zones of excess west of Total East to GHI until the LOLE from Step 1 is met



# Current IRM / LCR Topology

# F&G to ISONE Topology

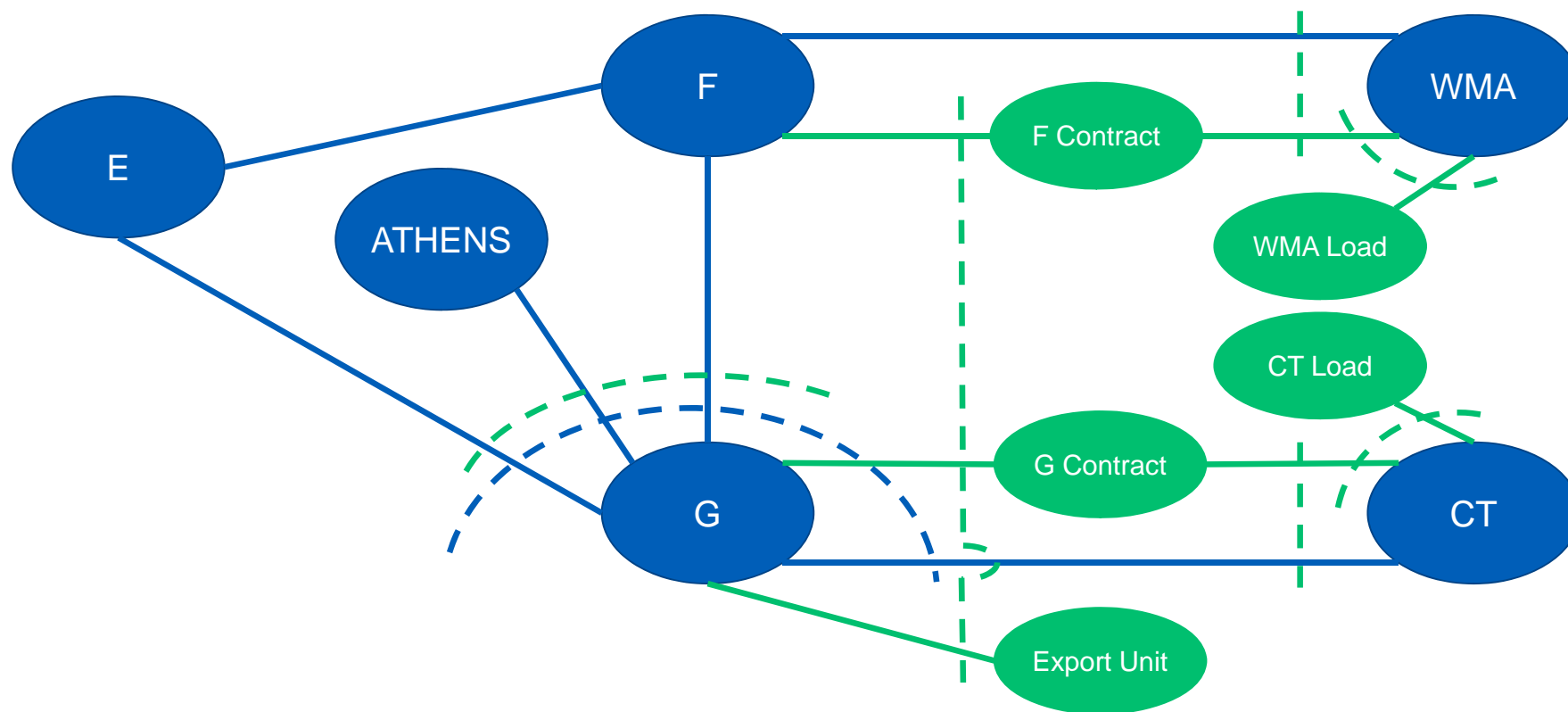
## Current IRM / LCR Topology



# Contract Topology

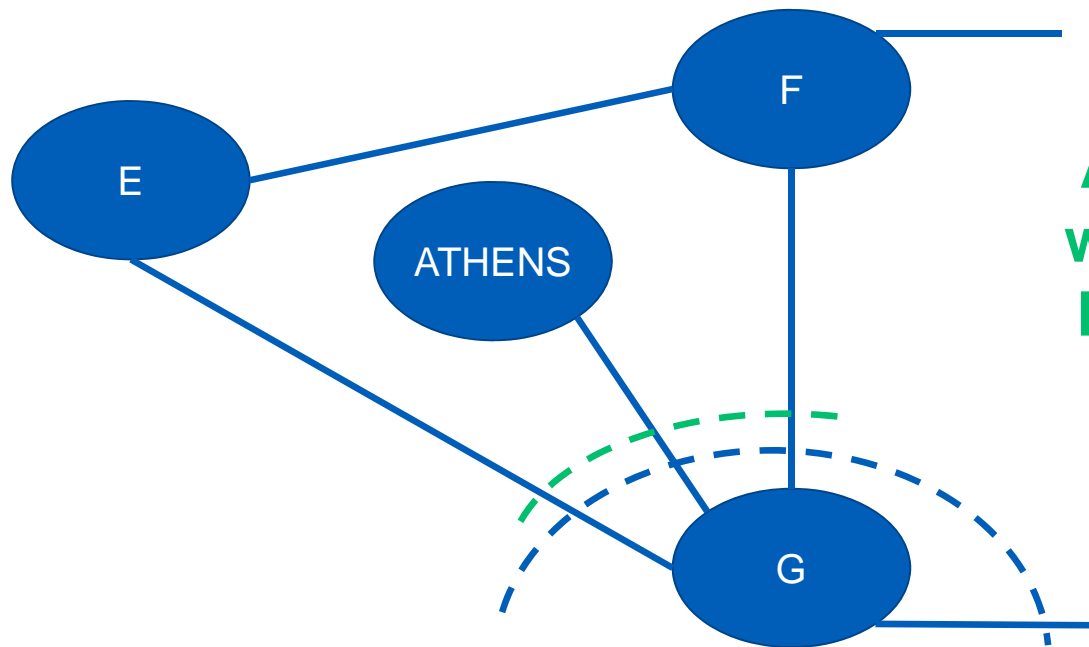
# F&G to ISONE Topology

## Contract Topology



# F&G to ISONE Topology

Contract Topology – New York Only UPNY-SENY Interface



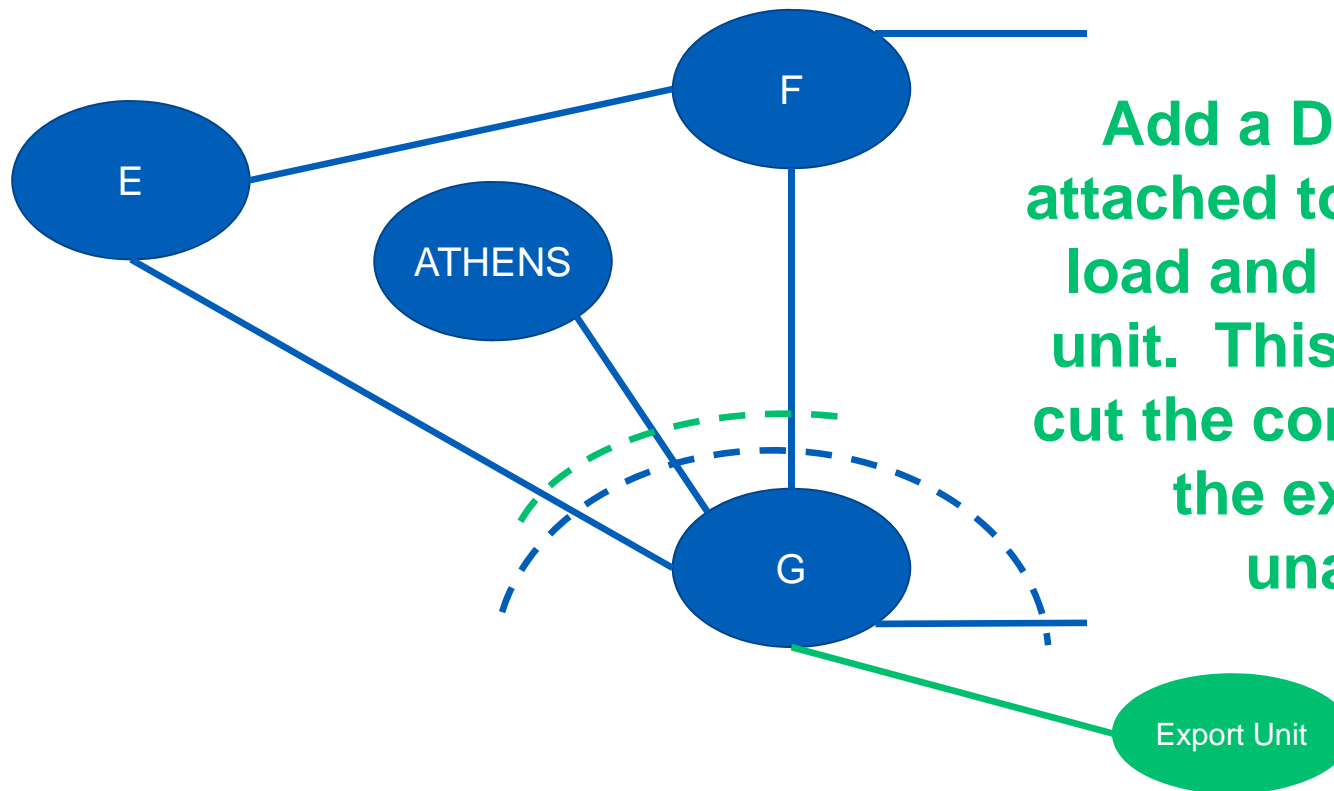
**Add an open interface which crosses only the NY components of the existing UPNY-SENY interface.**





# F&G to ISONE Topology

## Contract Topology – Export Unit Bubble



**Add a Dummy Bubble attached to Zone G with no load and only the export unit. This will allow us to cut the contract flow when the export unit is unavailable.**

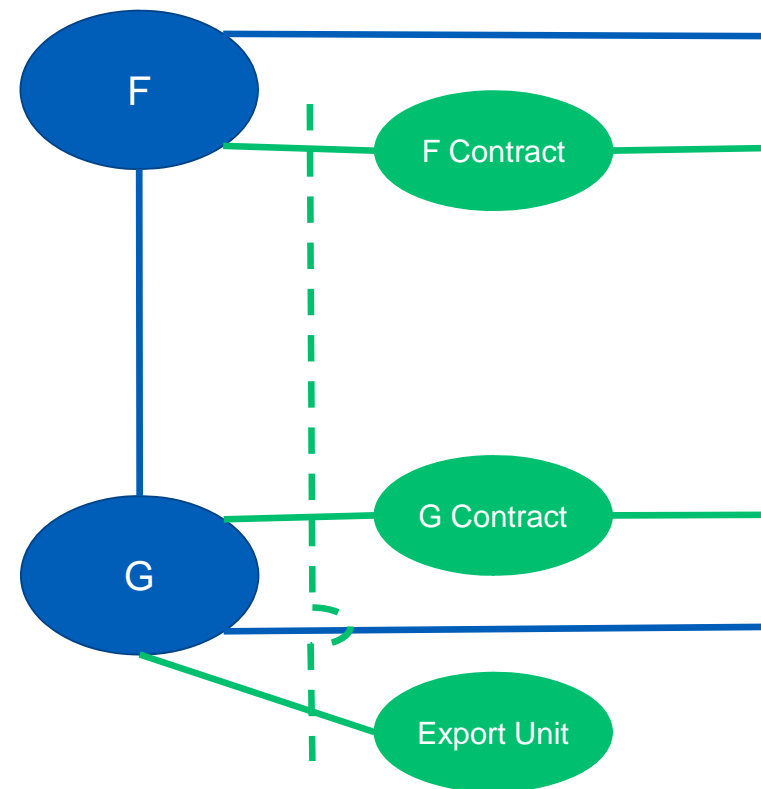


# F&G to ISONE Topology

## Contract Topology – Contract Balance

**Balance the flow out of the export unit bubble and across the F and G contract paths.**

**For example, if the export unit is unavailable, the contract path flows will be held to zero because flow from the dummy bubble to Zone G is zero.**

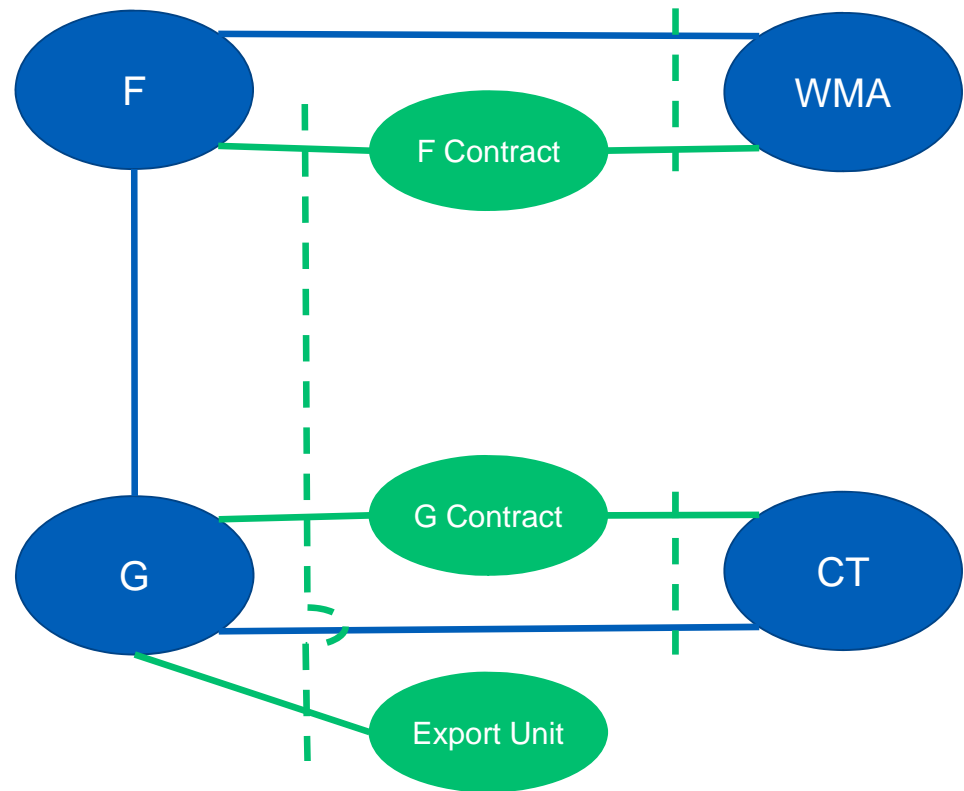


# F&G to ISONE Topology

## Contract Topology – NY to ISONE Limits

**F and F Contract joint flow to WMA is held to the same limit as F to WMA in the base topology**

**G and G Contract joint flow to CT is held to the same limit as G to CT in the base topology**



# F&G to ISONE Topology

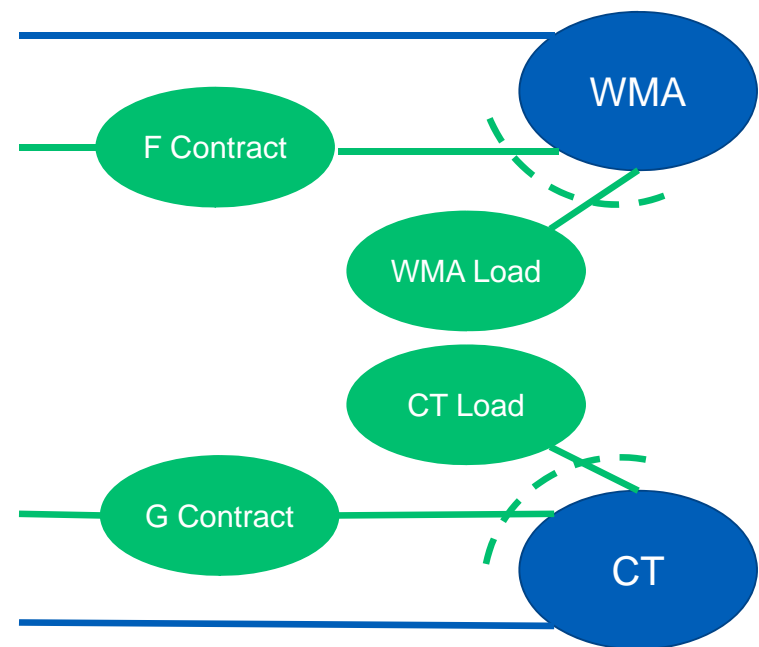
## Contract Topology – Load Balance

### Add WMA and CT Load Bubbles

$$\text{Load} = \text{Contract Size} \times \text{Capacity Split} \%$$

If the export unit is unavailable, the contract will not flow. The joint interfaces added will not allow flow from CT and WMA to the load bubbles if the contract is not flowing.

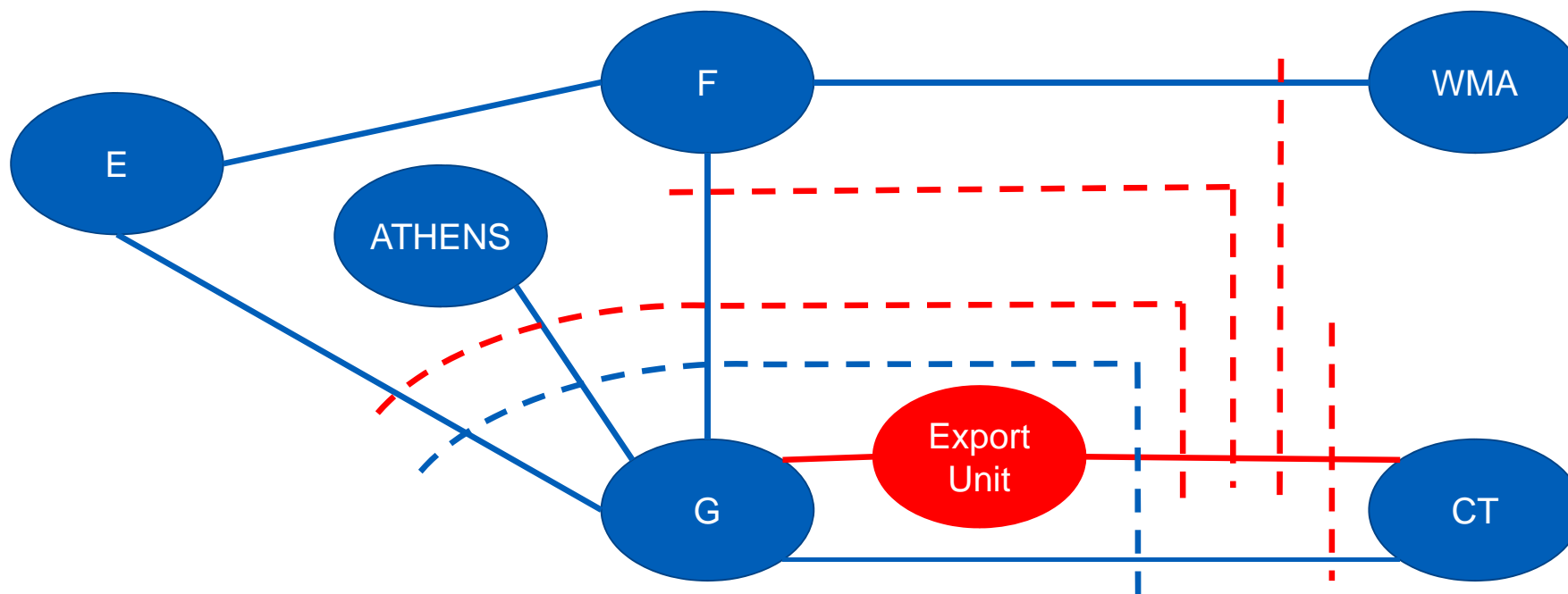
This will only add load to ISONE if the contract is delivered



# Reserve Sharing Topology

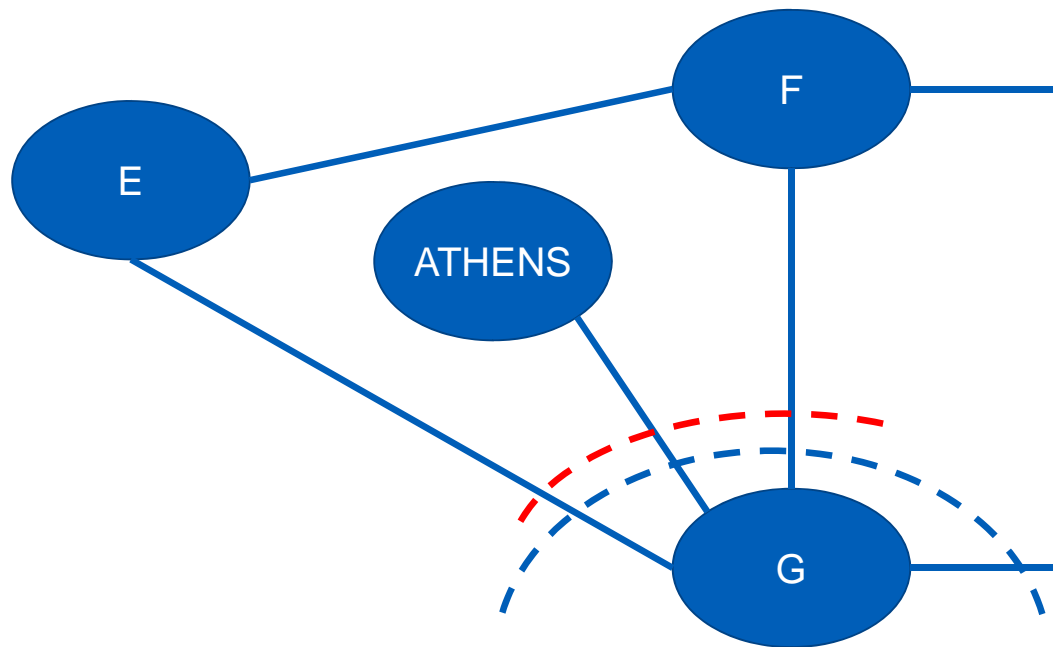
# F&G to ISONE Topology

## Reserve Sharing Topology



# F&G to ISONE Topology

Reserve Sharing Topology – NY Only UPNY-SENY Interface



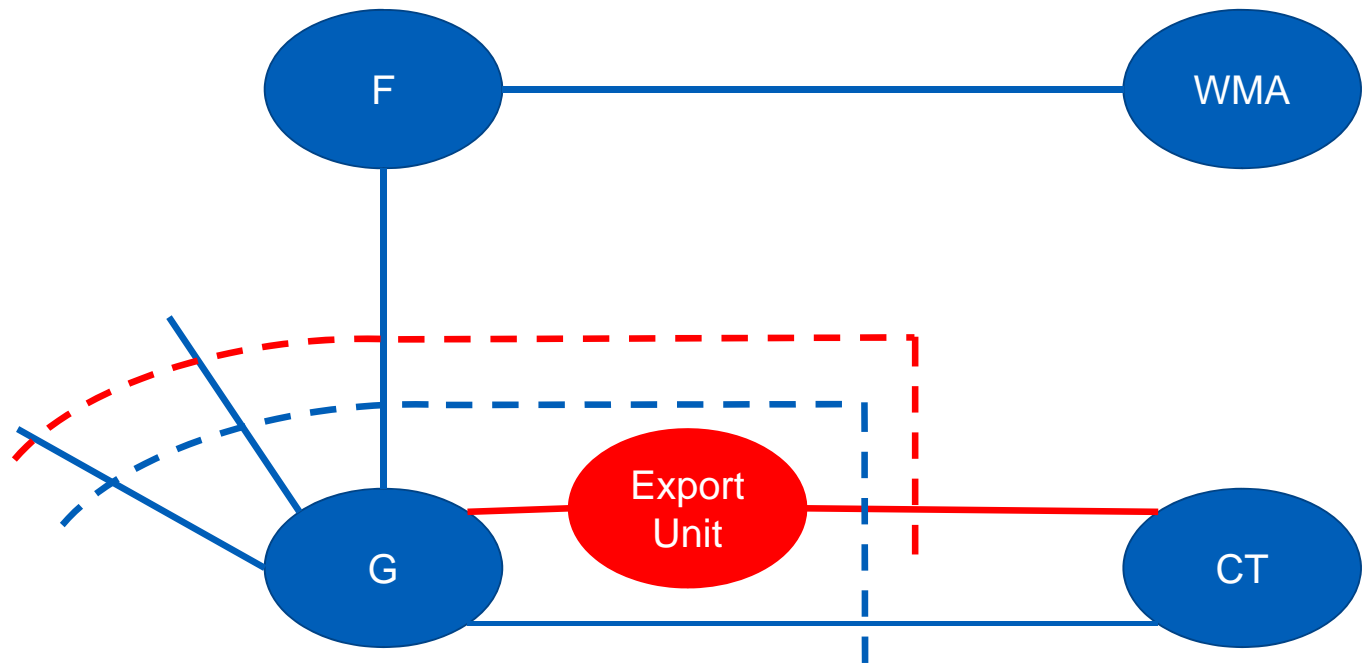
**Add an open interface which crosses only the NY components of the existing UPNY-SENY interface.**



# F&G to ISONE Topology

## Reserve Sharing Topology – Export Unit Pool

**Add a new pool containing only the export unit. Assign the reserve sharing priority out of this pool to ISONE first and NYISO second.**



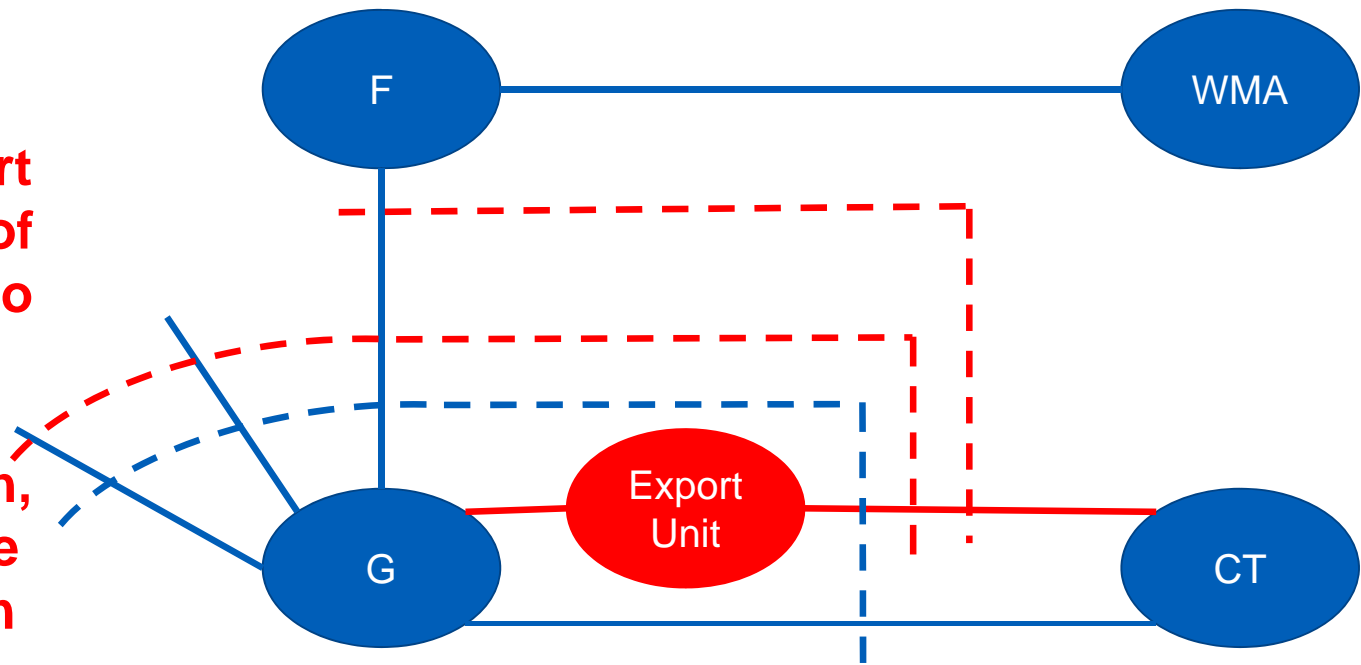


# F&G to ISONE Topology

Reserve Sharing Topology – Unload Capital - Hudson Valley

**Subtract the appropriate percentage of export unit to CT flow out of UPNY-SENY and F to G.**

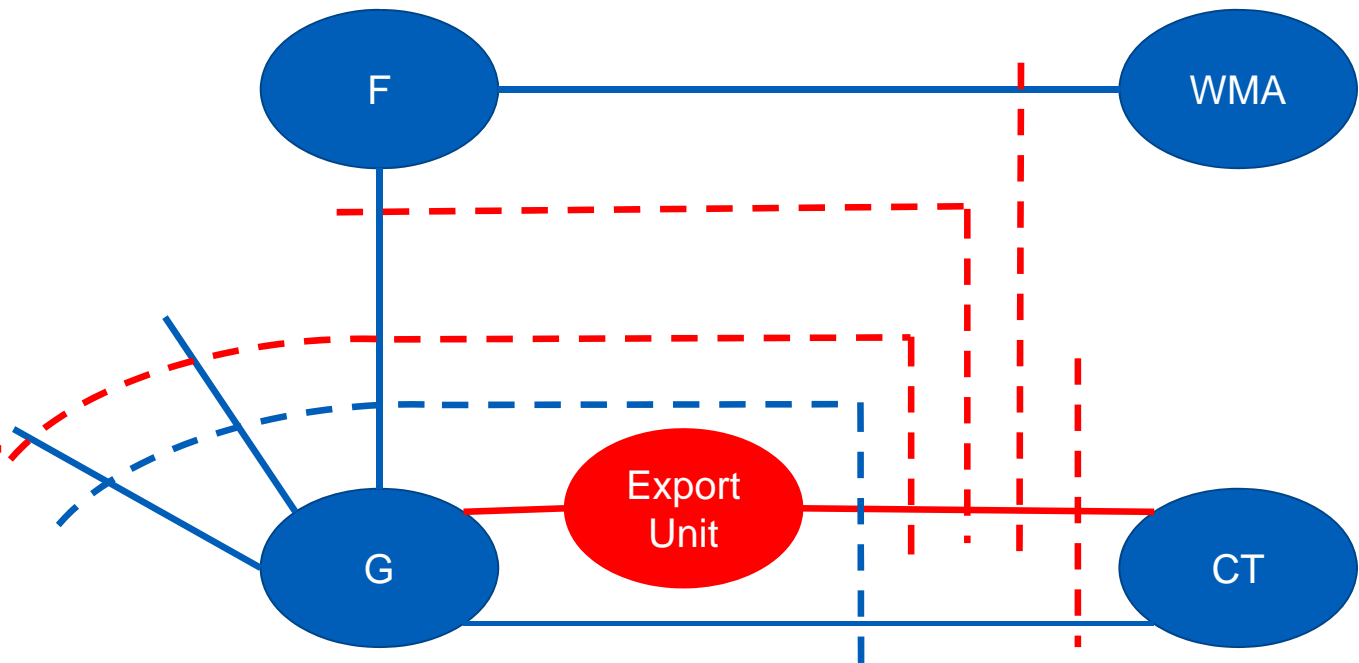
**Using this approach, these interfaces are only adjusted when the export unit is supplying power to ISONE.**



# F&G to ISONE Topology

Reserve Sharing Topology – NY to ISONE Limits

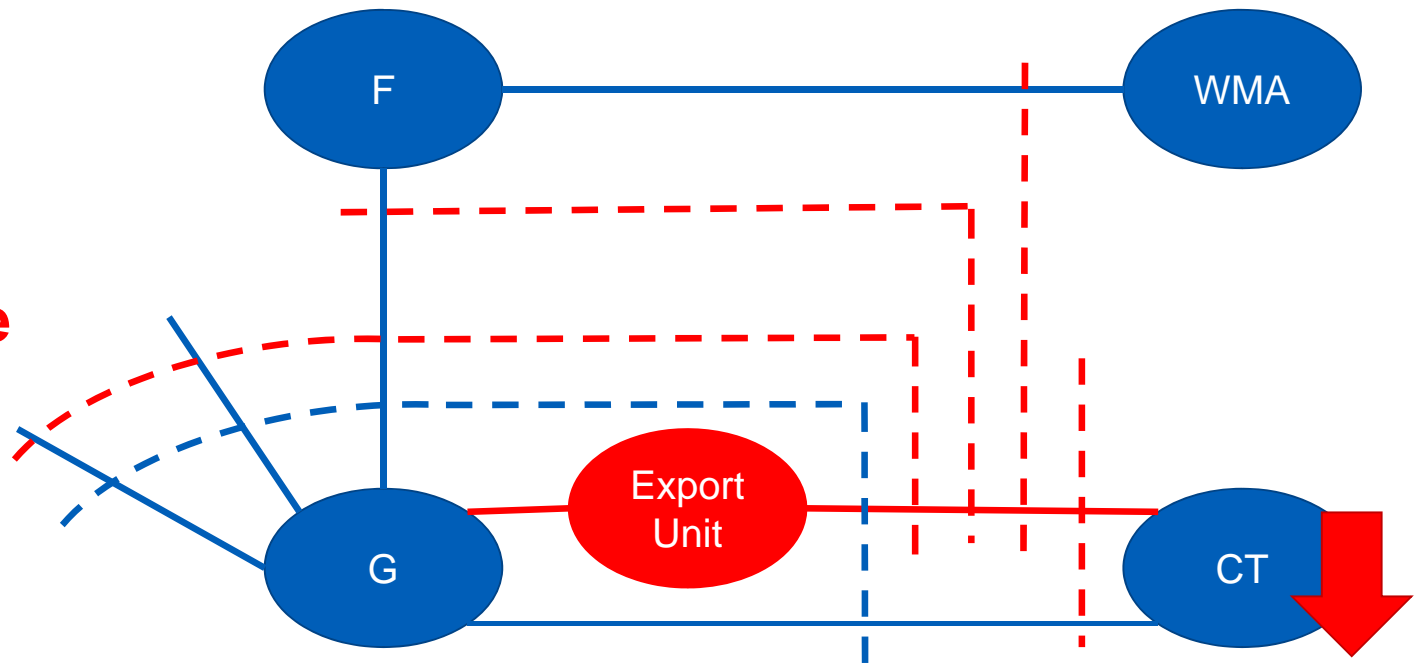
**Add the appropriate percentages of export unit to CT flow to the F to WMA and G to CT interfaces.**



# F&G to ISONE Topology

## Reserve Sharing Topology – ISONE Load

**Add load to Connecticut which is the same size as the export unit.**



# Schedule and Next Steps

# Sensitivities Currently Under Consideration

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In order to perform the analysis, and based on input at NYISO stakeholder meetings, it is apparent that these different topologies each provide information that might be useful to considering potential market scenarios

The next step is to consider key sensitivities in order to assess the robustness of the model and the outcomes

- GE notes that the NYISO's Locality Export Capacity rule applies to each of its neighboring Control Areas. It has not considered whether the methodologies described in the presentation might be suitable if a topology was developed in relation to any neighboring Control Area other than ISONE, and the different sensitivities that might be appropriate to consider

The following sensitivities are currently being considered using each topology

- Deterministic LE Factor Flow Split – 47.8% UPNY-SENY Backflow
- 0% UPNY-SENY Backflow (100% flow from G to CT)
- 100% UPNY-SENY Backflow (100% flow from G to F to WMA)



# Schedule

Description	Forum	Date
<del>Present Initial Methodology to Stakeholders</del>	<del>ICAPWG</del>	<del>01/27/2017</del>
Proposed Methodology and Export Topologies	ICAPWG	03/22/2017
Presentation of Final Results to Stakeholders	ICAPWG	TBD



