Forward Capacity Market (FCM) / Generator Interconnection Process Stakeholder Group

Stakeholder Meeting No. 9
March 25, 2008
Sturbridge, MA

ISO new england

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Agenda

- Welcome and Introductions — 9:30 – 9:45
- FERC Reporting Requirements on Generator Interconnection Queue Stakeholder Process — 9:45 – 10:00
- Continued Discussions on ISO Straw Proposals — 10:00 – 12:00
  - "Conditional Qualification" of Resources
    - Report back from Peter Cramton (through ISO) on market efficiency implications for the straw proposals
  - Intra-zonal deliverability standards
  - Treatment of long lead-time resources and group studies
- Lunch — 12:00 – 1:00
- Straw Proposal discussions, continued — 1:00 – 2:30
- Next steps and process for developing a term sheet/design basis document — 2:30 – 3:00
- Adjourn — 3:00

Schedule

- **Stakeholder Study Group:** September 2007 – May 2008
  - April 10
  - May 2
  - May 16
- **Markets/Reliability/Transmission Committees**
  - Discussion: May - July
  - Reliability Committee/Transmission Committee vote: July 21-22
  - Markets Committee vote: August 11-13 (summer meeting)
- **Participants Committee Vote:** September 5
- **Filing:** October

Objectives

- Address Connecticut's concern for possible "sub-optimal" auction results
  - Use "Conditional" Resource Qualification to allow more competition within the auction
- Include "Overlapping Impact" deliverability standard in the Open Access Transmission Tariff (OATT) Large/Small Generator Interconnection Procedures (LGIP/SGIP)
  - Apply "study group" approach to link with each primary auction (annual re-configuration auction) set of resources
- Accommodate "Long Lead Time" resources via more rigid milestones and Financial Assurance
  - Provide "deliverability certainty" via tariff mechanisms

Objectives (cont.)

- Develop solutions that are consistent with principles identified by the study group
  - For example
    - Improve the efficiency and coordination of the FCM and Generator Interconnection Processes
    - Transparency
    - Incorporate intra-zonal deliverability
- Principles are posted in full with today's meeting materials

Conditionally Qualified Resources (Round 3 – Market Power Issues)

Bob Ethier
Director, Resource Adequacy and Chief Economist

Roger Bacon
Manager, Annual FCM Auctions

Conditionally Qualified Resources: Summary of the Proposal

- New option for Generating Capacity Supply Resources
- A Lower Queue priority resource at the same location could "conditionally qualify" for the Forward Capacity Auction (FCA) along with the primary resource
- When a higher Queue priority resource withdraws from the FCA, the lower Queue resource may take its place and be allowed to clear
  - Depends on the minimization of consumer cost determination within the Clearing Algorithm
- Increases competition within the auction
  - More Resources can qualify for the FCA where overlapping impacts exist
  - Discussions with Peter Cramton confirm desirability of the proposal

Auction Mechanic Issues: Summary

- Queue order may still matter, but not in all possible scenarios
  - Generating Resources are prioritized for the auction based on Queue position
    - Change: More than one resource at the same location may participate
  - A “non-conditional”, or higher queued, resource remaining in the auction through completion may be awarded the capacity obligation
  - If the higher queue resource does not withdraw until the auction closure, it clears “in-merit” and will be awarded the clearing price (see minimum Capacity Award)
  - Conditionally Qualified Resource will not be considered by Cost Optimization and will not clear

Auction Mechanics: Summary (cont.)

- A higher Queue order resource that withdraws based on price may be replaced by the conditionally qualified resource if it has not already withdrawn based on price
- Similar logic to current market mechanisms, but with special auction and clearing issues
  - Competition between primary and conditional resource offers in the final round of auction or in close price range could lead to complexities when choosing between offers
  - Cost minimization selection during execution of Clearing Algorithm

Conditionally Qualified Resources: Market Power Issues

- Basic premise of Forward Capacity Market (FCM) is that the capacity clearing price is set by competitive new entry
- New capacity resources need to be free from entry barriers
- The transmission Queue can serve as an entry barrier because position is based on a first-come-first served priority rather than an economic priority
- Queue position forecloses competition when two or more capacity resources are unable to compete on price due to overlapping transmission impacts

Conditionally Qualified Resources: Market Power Issues (cont.)

- The ideal alternative is to let the economics determine which resource is accepted
- The straw proposal on conditionally qualified resources is a compromise between the current approach (Queue position trumps Economics) and the economically preferred alternative (Economics trumps Queue position)
- Under the proposal it is no longer possible for a mutually exclusive resource to block another simply by Queue position
  - Higher Queued resource must be willing to sell at prevailing price in FCA

Conditionally Qualified Resources: Market Power Issues (cont.)

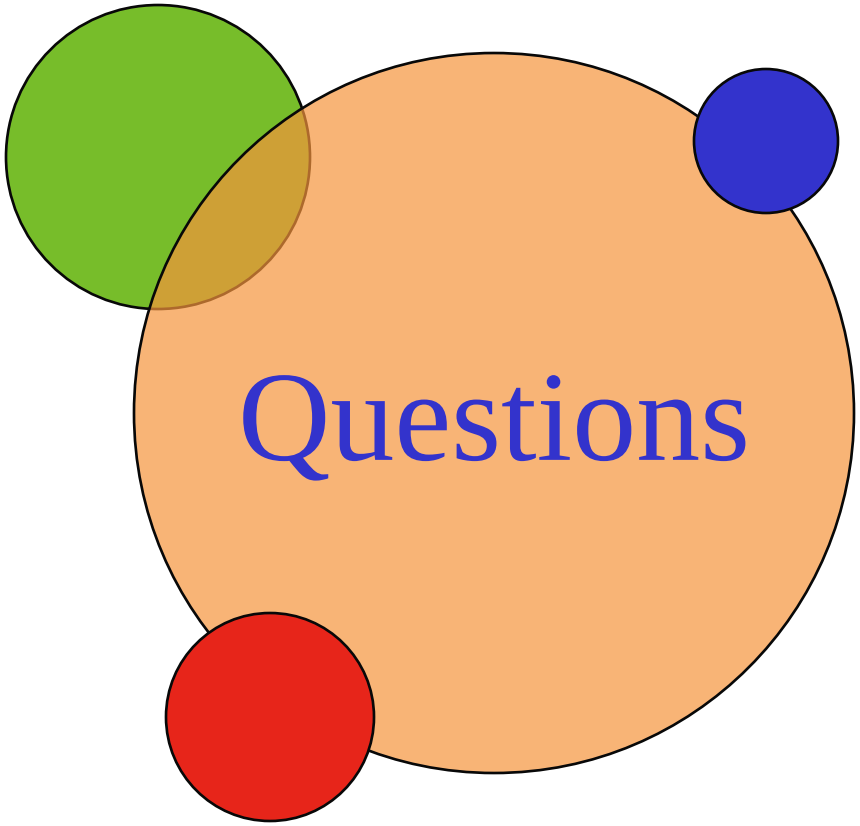
- Should conditionally qualified resources be informed of the exit of the primary resource?
  - Release of such information could change bidding incentives
  - Informing a conditional resources of its status ***during*** the auction does put it on par with the primary resource
  - If the conditional resource can identify the primary resource, then disclosing the exit of the primary resource reveals the primary resource's reservation price
  - A primary resource may desire to maintain the privacy of that information
  - On balance, it may be best not to disclose the exit of the primary resource during the auction

Conditionally Qualified Resources: Illustration of Auction Mechanics with Clearing Algorithm

- Assume two resources sought to qualify but only one at a time could meet the overlapping impacts test
- Higher queued resources would be qualified, lower queued resource would be "conditionally qualified"
- Both would post Financial Assurance
- Both would participate in the FCA from the start price
- While the conditionally qualified resource would know its conditional status through its Qualification letter, during the auction it wouldn't know if the higher queued resource had withdrawn
- At the close of the auction, if both remain, the higher queued resource would clear
- If higher queued resource withdraws, the conditional resource may clear
  - Both will be considered in optimization as appropriate

Decision is Needed

- Do we proceed with this straw proposal?
- If the answer is YES
  - Market Rules changes will be needed
    - Section III.13.2 Annual Forward Capacity Auction – To state the auction clearing mechanics needed to manage the complex cases of the straw proposal
    - Section III.13.1. Forward Capacity Auction Qualification – To define the qualification requirements needed to accept conditionally qualified resources and send them to the FCA
- Implementation of conditionally qualified resources may be possible for the third FCA, provided we decide in the near future.



Conditionally Qualified Resources (Appendix with Illustration of Principal)

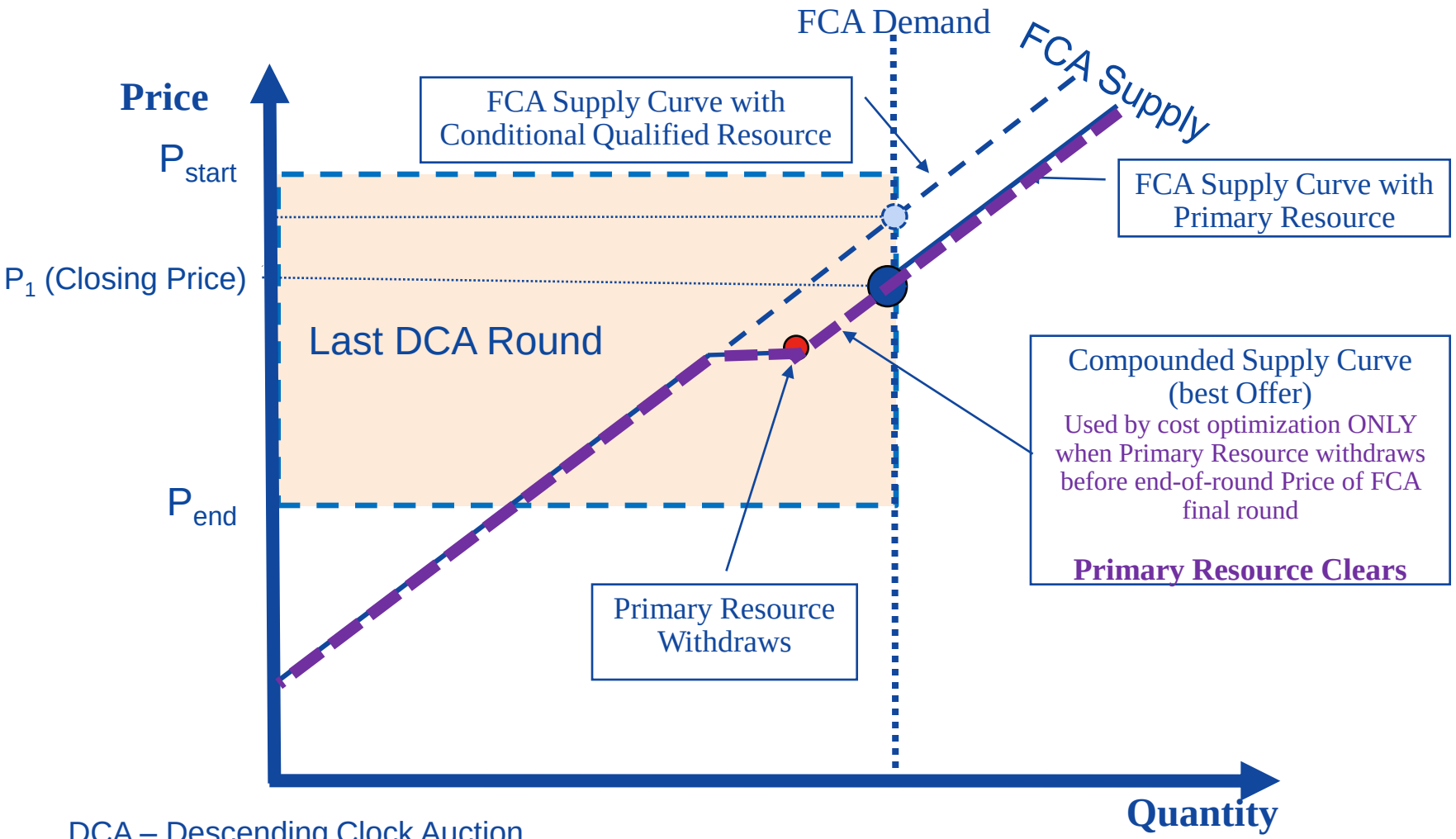
Conditionally Qualified Resources: Illustration of Auction Mechanics with Clearing Algorithm

- Descending clock auction expects quantities offered to decrease as price falls
- The descending clock auction works under most scenarios if the primary resource is larger than the conditionally qualified resource, but there are complex cases that must be modeled
  - Scenario 1: conditional unit qualifies for 100 MW, primary unit qualifies for 125 MW
  - When primary unit leaves the FCA, quantity falls by net of 25 MW
  - Scenario 2: conditional unit qualifies 300 MW, primary unit qualifies for 200 MW
  - When primary unit drops out, quantity increases by net of 100 MW

Conditionally Qualified Resources: Illustration of Auction Mechanics with Clearing Algorithm (cont.)

- Special Market Rules will be required to meet complex scenarios
- Auction must descend far enough to reveal increased quantity at lower price
  - Below minimum MW needed to meet the Installed Capacity Requirement
- Market Rules will control not Queue position if a primary unit offers fewer MW than the conditional resource and withdraws from the auction during the last round of the auction
- Illustration of the principal follows

Conditional MW ≤ Primary MW: Illustration of Principle Complexity Scenario (1)



DCA – Descending Clock Auction

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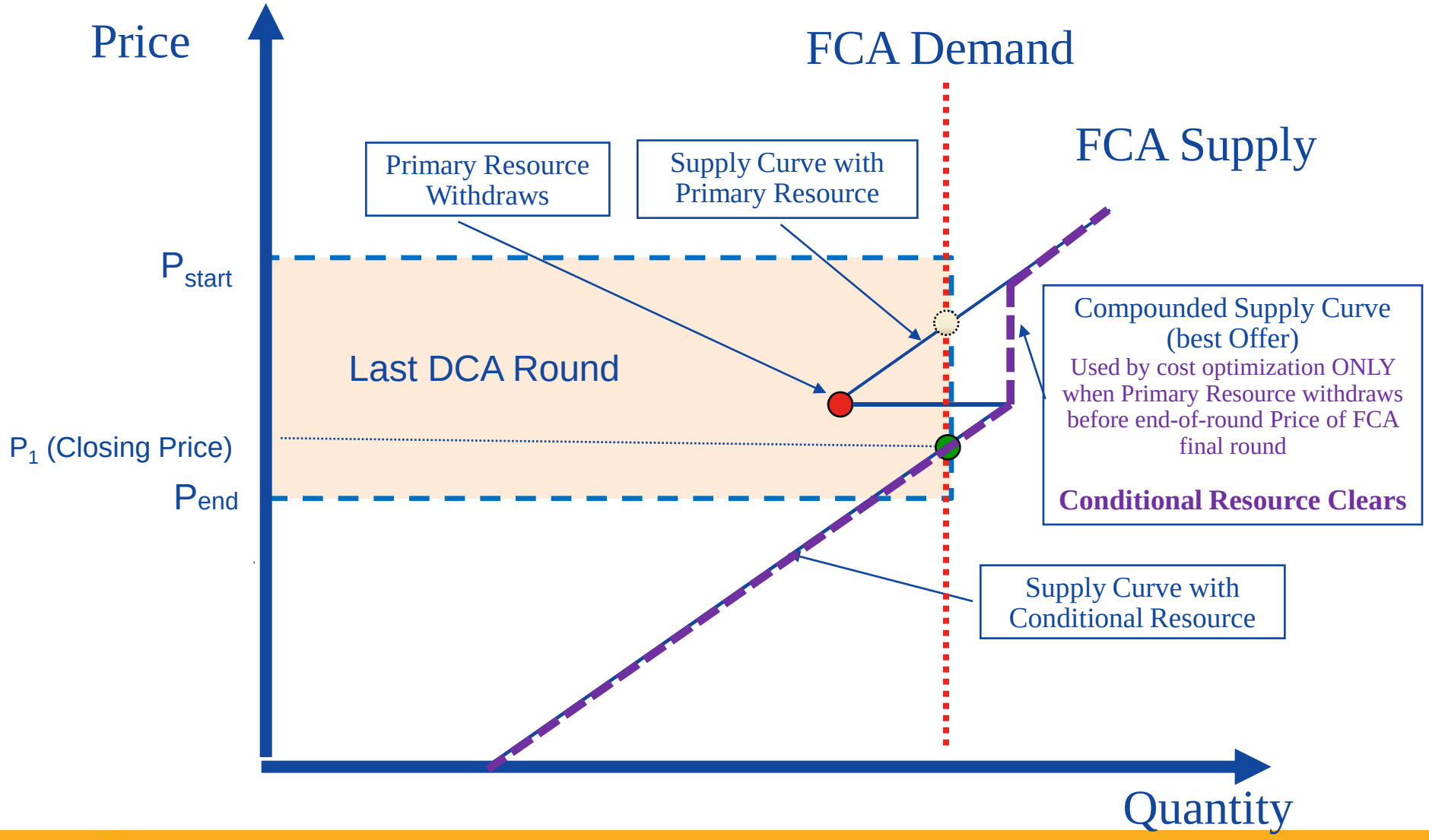
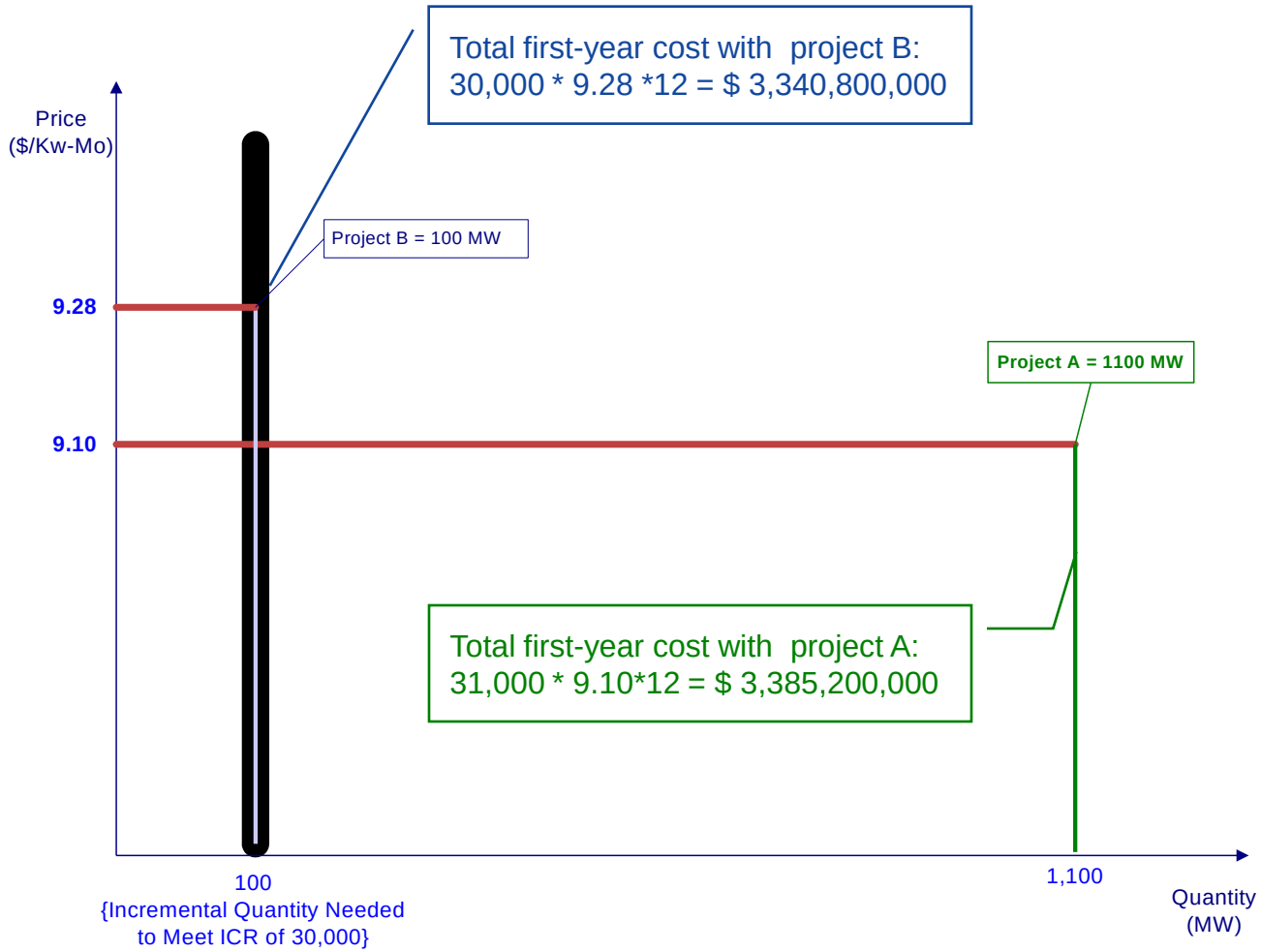
Conditional MW > Primary MW: Illustration of Principal -- Complexity Scenario (2)



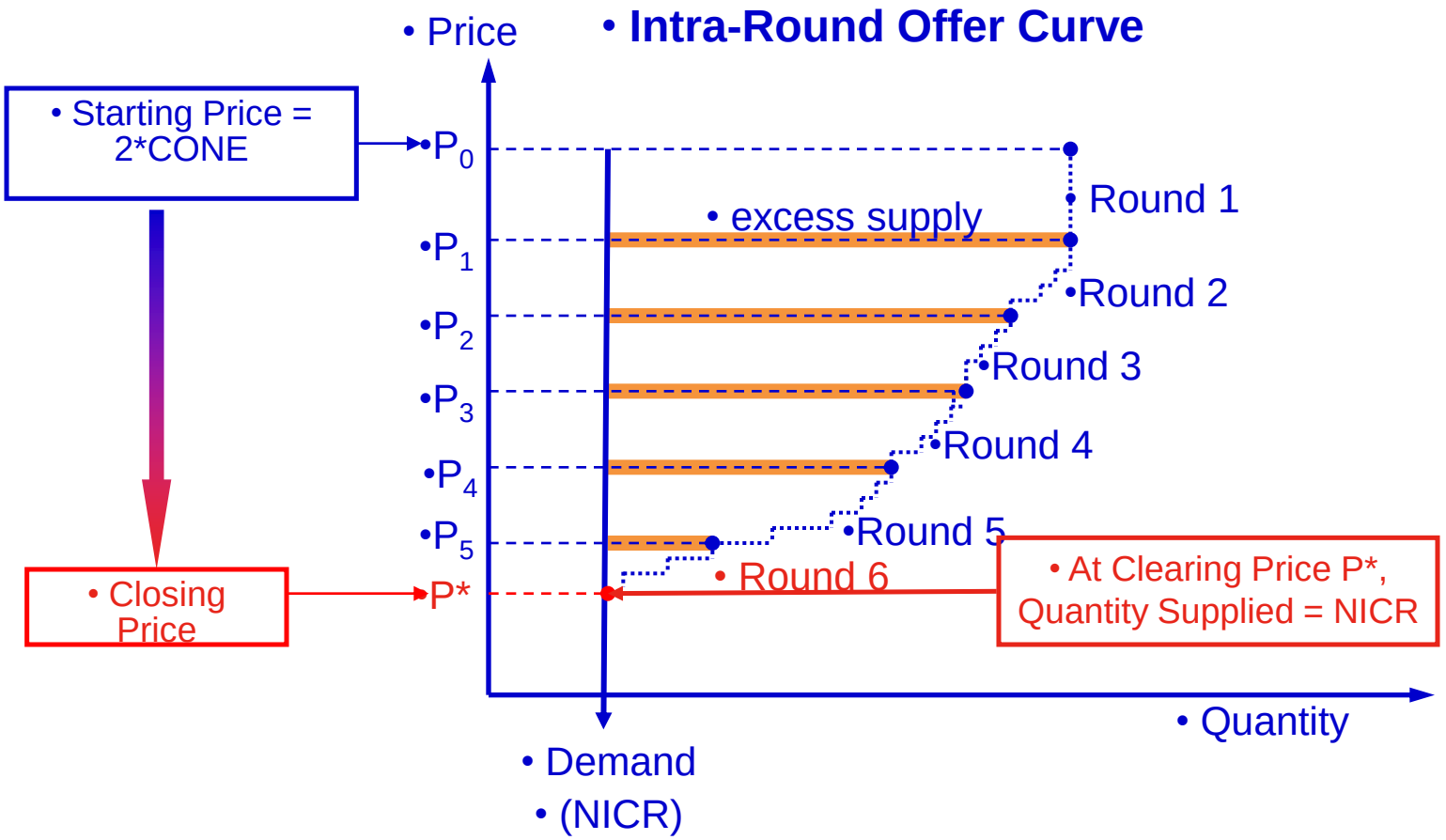
Closing the Auction: Minimizing Total Cost



Conditionally Qualified Resources: Review of Clearing Selection Criteria at or near Closing Price

- **Resource A – 80 MW** - high in Queue (rationable)
- **Resource B – 100 MW** – conditionally qualified with A (not rationable)
- **Resource C – 200 MW** – unrelated new resource in same capacity zone (not rationable)

Descending Clock Auction Mechanics



NICR – Net Installed Capacity Requirement

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Conditionally Qualified Capacity Resources: Clearing Algorithm Selection Criteria

FCA – single zone/last round ICR = ***1,000 MW***

Start of Round Price = $12.00 End of Round Price = $9.00

Offer Price Range	Resource A	Res B (Conditional)	Resource C	Max Excess Capacity above ICR	
$12.00 - $10.01	80 MW	100 MW	200 MW	150 MW	(Max (Res A, Res B) B is accounted for)
$10.00 - $ 9.51	80 MW	100 MW	0 MW	- 50 MW	(Res A is withdrawn; Res B is accounted for)
$ 9.50 - $9.00	0 MW	100 MW	0 MW	- 50 MW	DCA Closing Price = $10.00

Resource C (unrelated new resource) withdrew at $10.00

Resource A withdrew at $ 9.50

Resource B is offered until end-of-round

DCA Closing Price: $10.00

ICR – Installed Capacity Requirement

Example of Clearing Algorithm Issues with Conditional Qualified Capacity Resources (cont.)

- In order to meet ICR non-rationable criterion, Resource C MUST clear
  - It will set the Closing Price ($10.00)
- Any of the two Resources (A or B) offered at a lower price will be sufficient to meet ICR
- The Clearing Algorithm and cost minimization would be used to select between the two alternatives
- In this example, assuming no other resources are involved in the selection, Resource A sets the Clearing Price and is selected over Resource B
  - Resource A = $9.50 X ***1,000*** MW = $9.5 million
  - Resource B = $9.00 X ***1,100*** MW = $9.9 million

Interconnection & Forward Capacity Market Process Flows

Al McBride, Project Manager, New Resource Qualification
Rich Kowalski, Manager, Transmission Planning

ISO new england

Interconnection & FCM Process Flows

- The following slides are intended to support discussion of the interactions between Interconnection FCM processes

Interconnection Process Flow (Current Rules)

Interconnection "Space"

Submit Interconnection Request
- Queue Position Established
- Minimum Interconnection Standard Priority Established
- Establish Commercial Operations Date (COD)

↓

Pursue Studies (MIS)
- Feasibility/System Impact Study
- Facilities Study

↓

Execute Interconnection Agreement

↓

Proceed to Commercial Operations
- Pay For Upgrades
- Critical Path Schedule Progress

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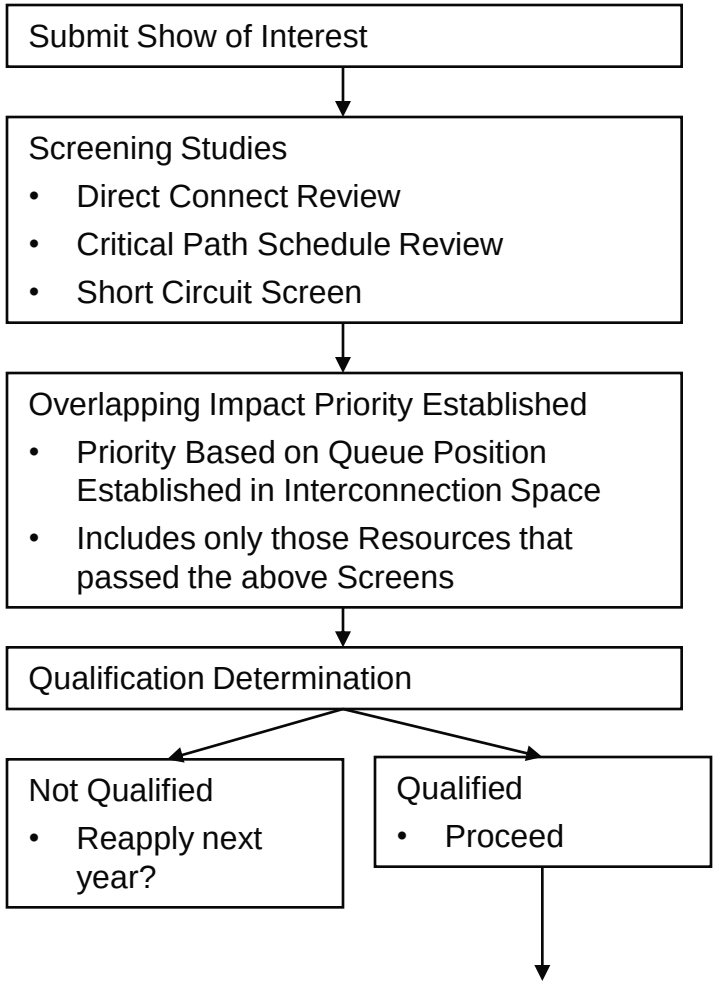
COD

FCM "Space"

FCM Qualification Flow (Current Rules)

Interconnection "Space"

FCM "Space"



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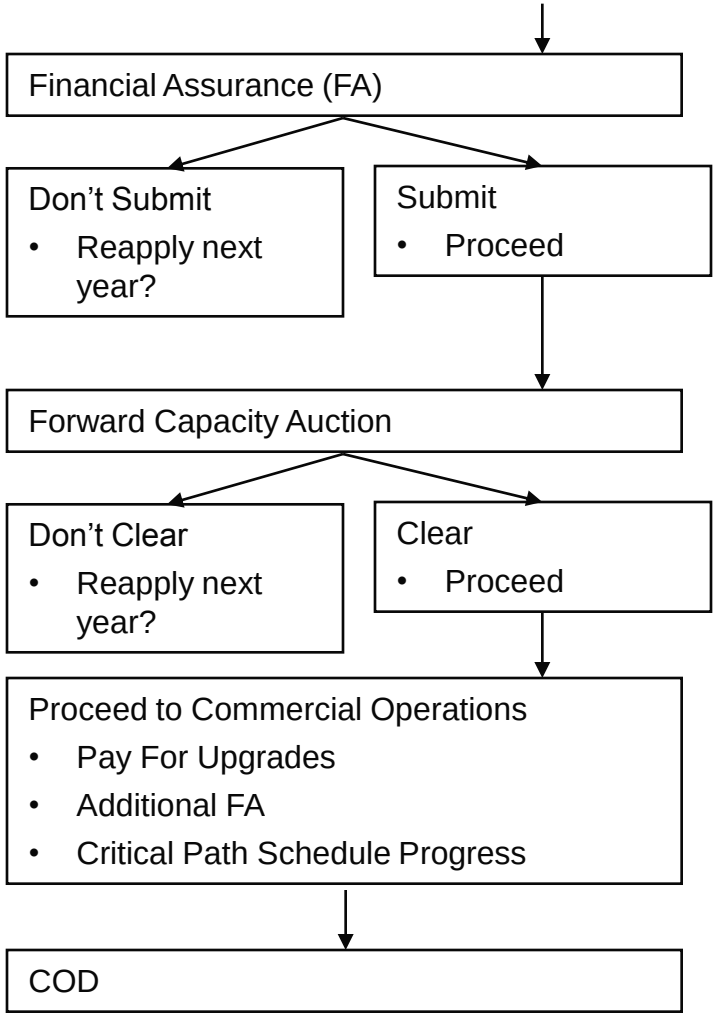
FCM Qualification Flow (Current Rules)

Interconnection "Space"

FCM "Space"



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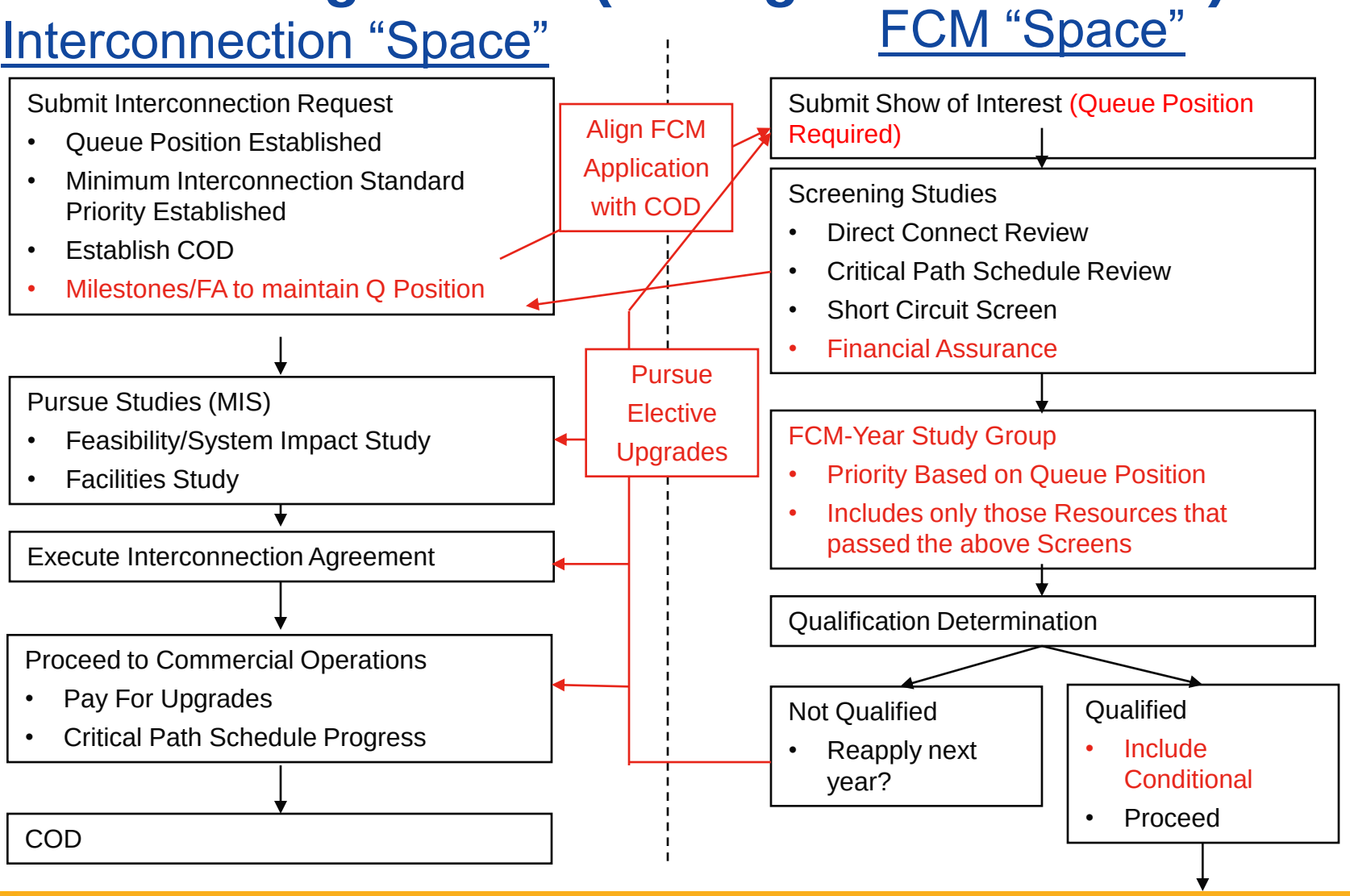
Interconnection & FCM Process Flow Potential Alignments (Changes in Red Text)



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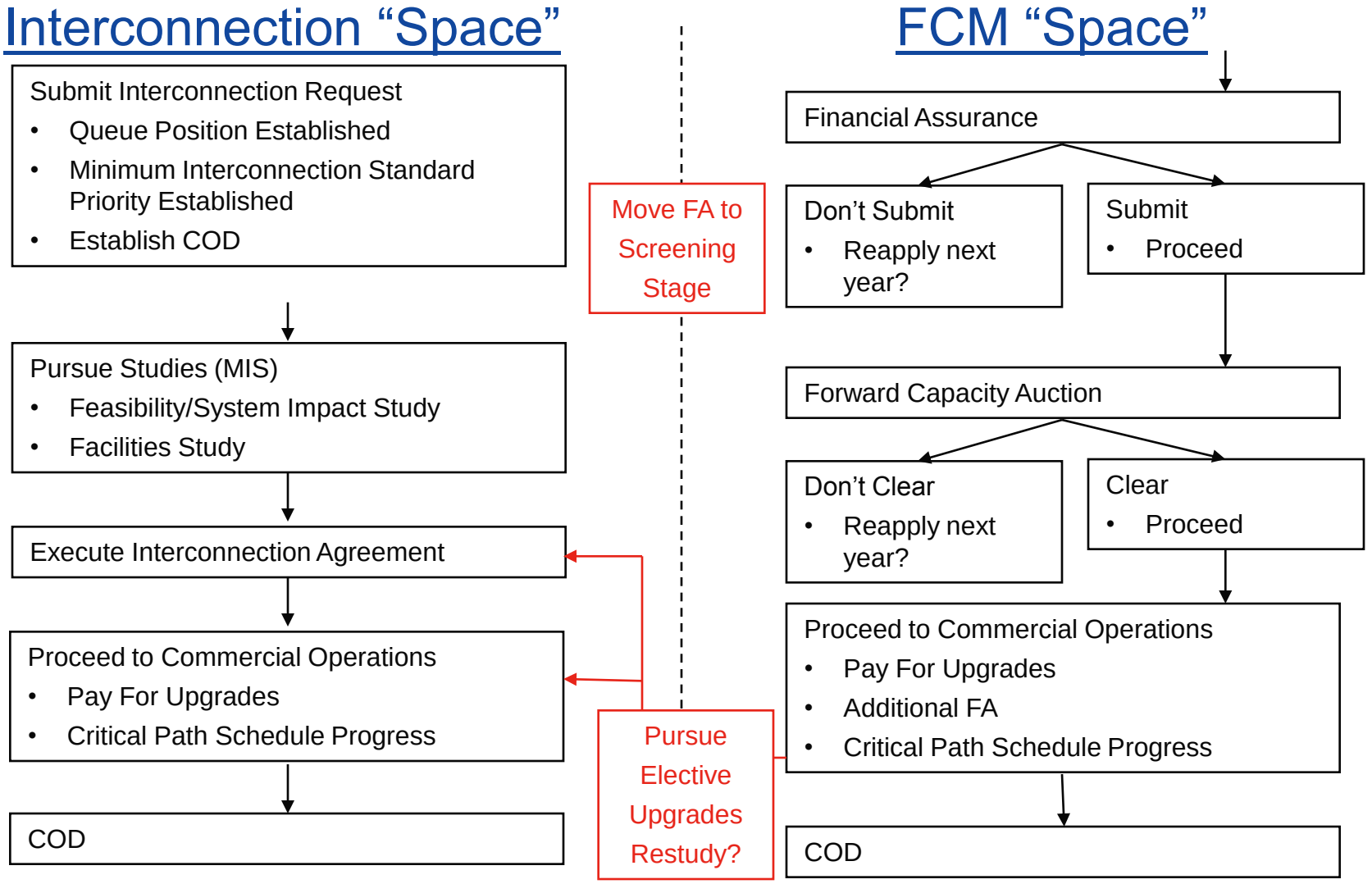
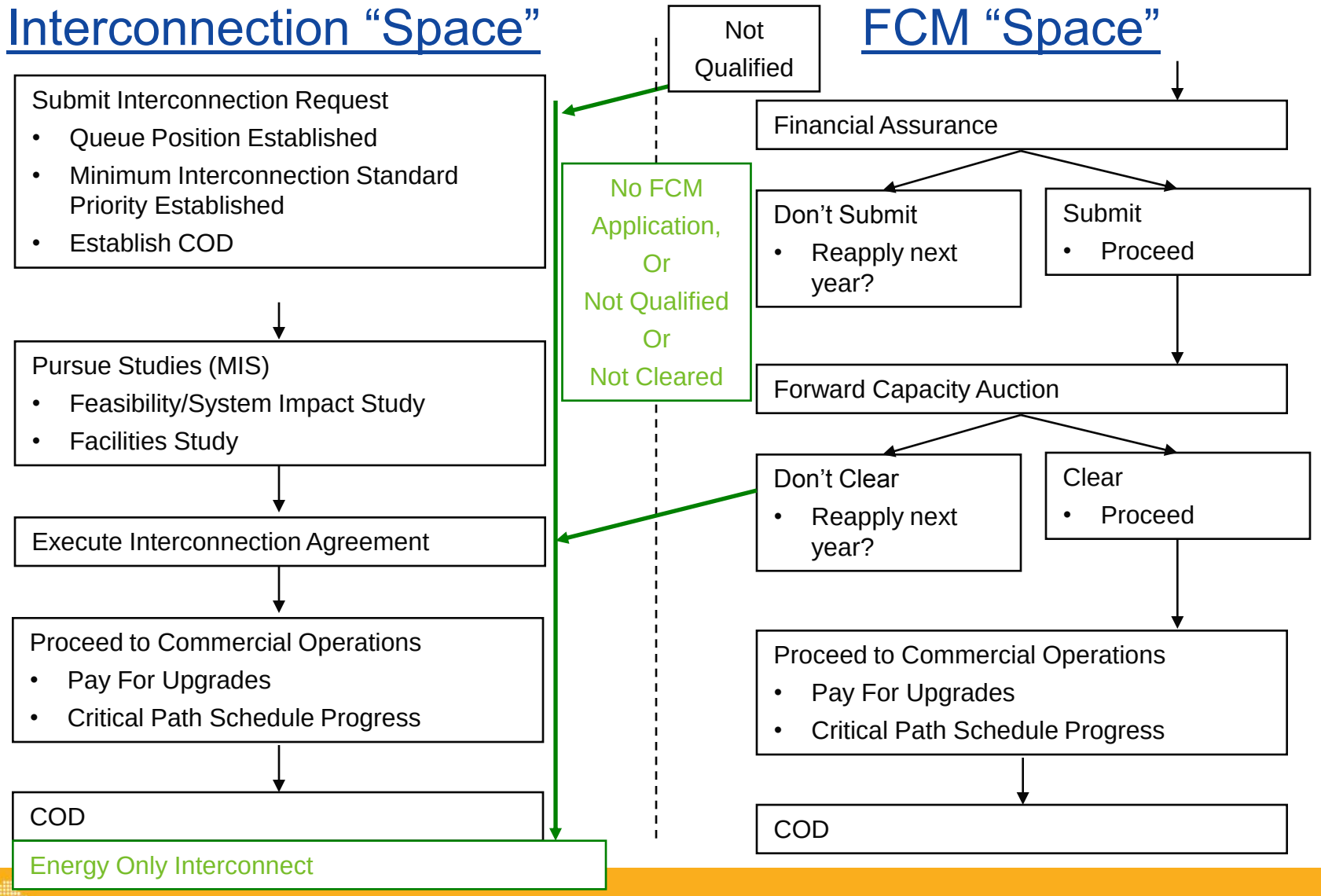


Energy Only Interconnection (Changes in Green Text)



Summary

- Continue effort to align interconnection processes
  - Ensure Overlapping Impact study group includes otherwise qualified resources
  - Enable Conditional Qualification
  - Allow for Energy Only Interconnection
  - Include Milestones/Financial Assurance in the Interconnection Queue Process
  - Incorporate Overlapping Impact upgrades more formally in the Interconnection Process