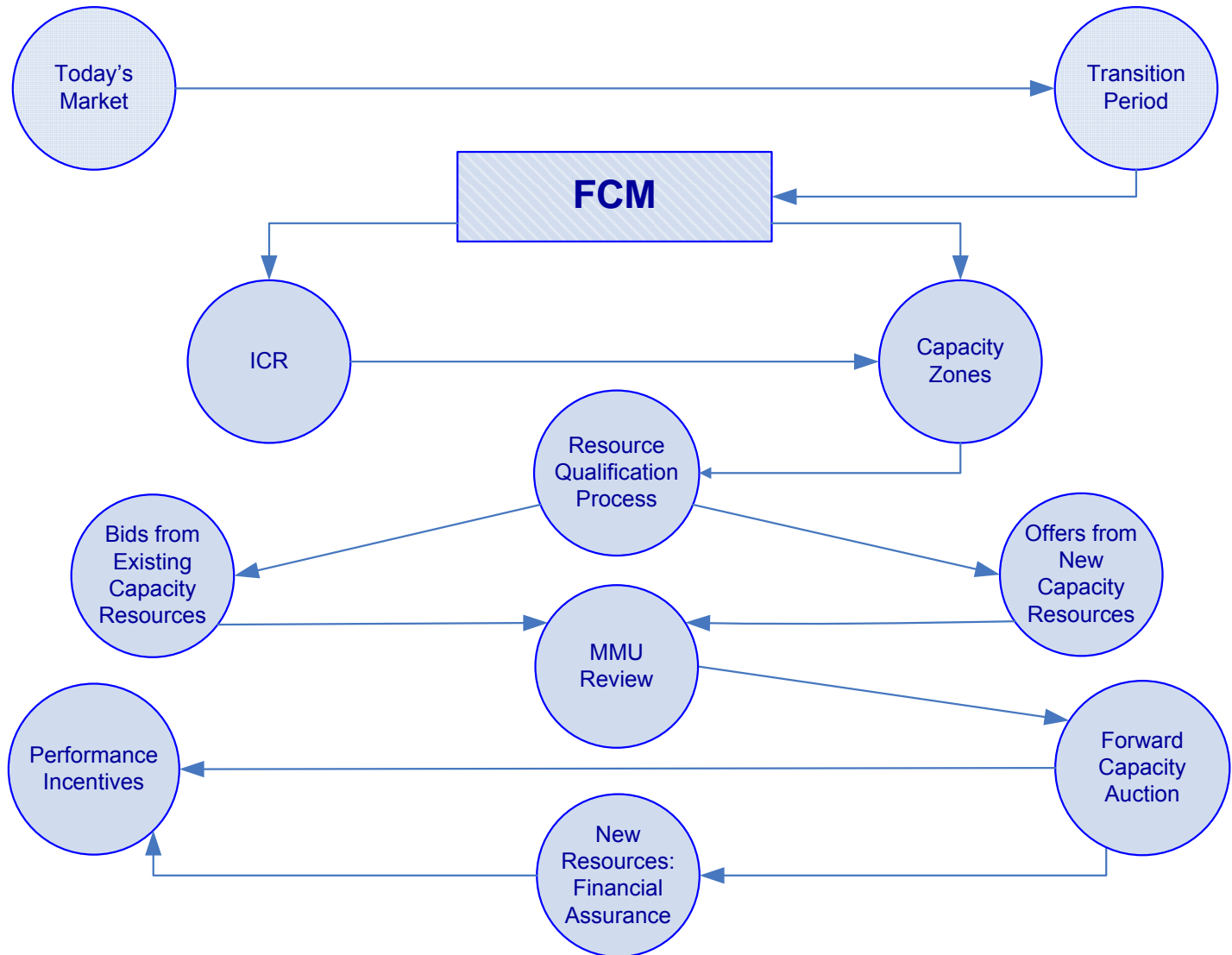


Forward Capacity Market Nuts and Bolts

NECA

November 20, 2006

New England Capacity Market: Overview



FCM Timeline for 1st FCA

Horizon	Action
12/31/2006	Deadline: Show of Interest Application
02/15/2007	FCM rules filed with FERC
01/01/2007 – 10/31/2007	New Resource Qualification Review
04/30/2007	Deadline: Existing Capacity Qualification Packages & De-list requests
05/01/2007	ISO Posts Export and De-List Bid Information
06/15/2007	Deadline: New Resource Qualification and Imports
10/01/2007	Notify New Resources of Qualification and Financial Assurance Requirements as well as disposition of de-list requests
10/12/2007	Deadline: Post Financial Assurance for New Resources
11/01/2007	De-List Bids, Capacity Zones, LSRs & ICR filed with FERC
02/01/2008	FCA #1 – Delivery for June 2010 through May 2011

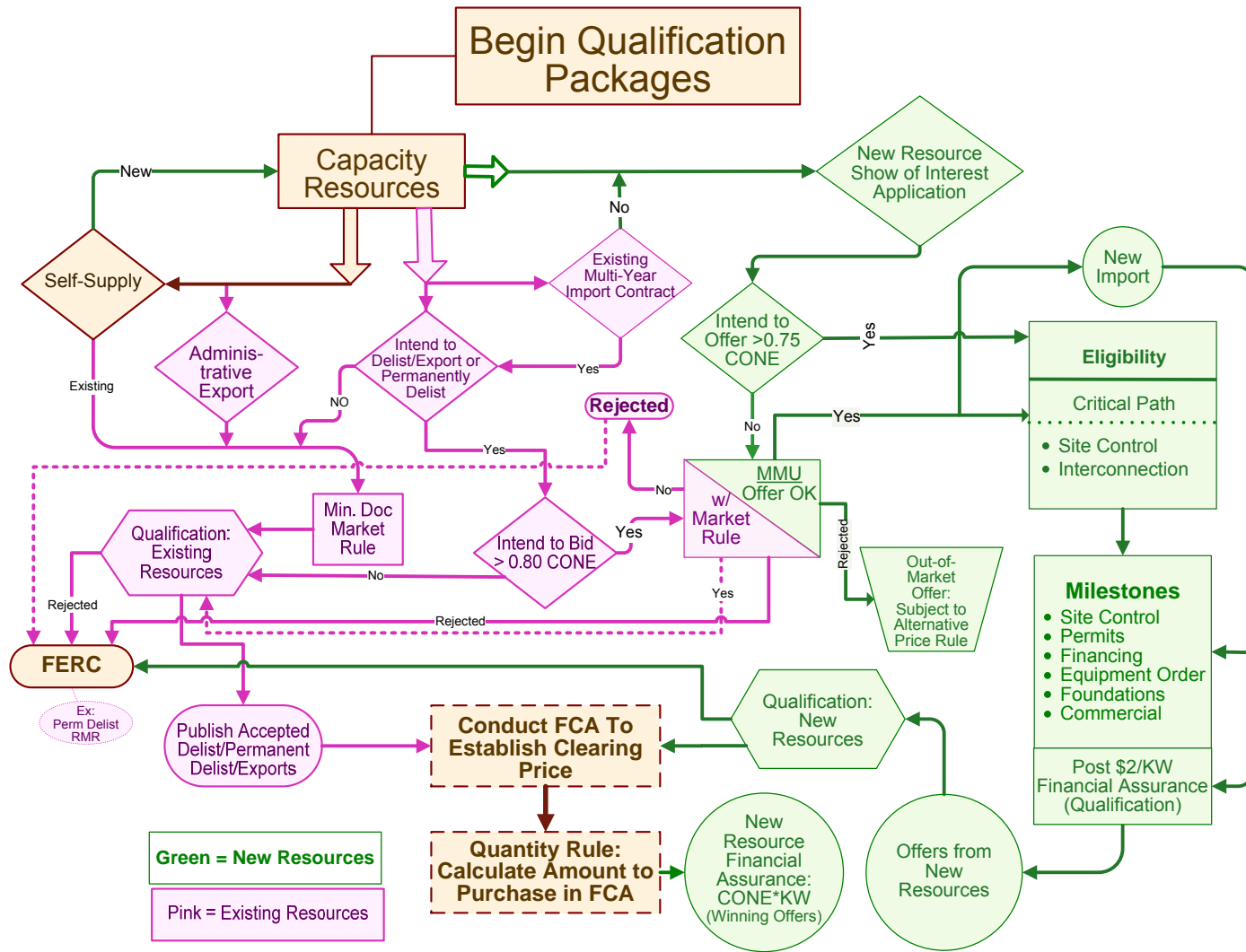
Participation in FCM

1. Qualification Process – New Capacity Resources
 - Show of Interest Application
 - ✓ Information for preliminary analysis of proposal's effect on the New England system
 - Qualification Package
 - ✓ Sufficient information to assess project's viability from a construction perspective
2. Run FCA with Qualified Capacity
 - New resources withdraw from FCA if clearing price falls below desired price
 - Selected if clearing price \geq desired price
3. Cleared resources (old & new) are obligated to provide capacity 2 – 3 years in the future

Background: Qualification Process

1. Qualification required to participate in Forward Capacity Auction (FCA) for:
 - New Resources
 - Existing Capacity
 - Self-Supplied Resources
 - De-list bids (Permanent, Static, etc...)
 - Imports
 - Exports
2. Qualification Process confirms that New Resource is viable and can successfully interconnect

Qualification Process



Qualification Process Overview – 1st FCA

SIA and Initial Interconnection Analysis

1. Project Sponsor
 - Submit SIA 11/01/06 – 12/31/06
 - Pay Qualification Process Reimbursement Cost
2. ISO-NE
 - Review SIA 01/01/07 – 10/01/07
 - Initial Interconnection Analysis

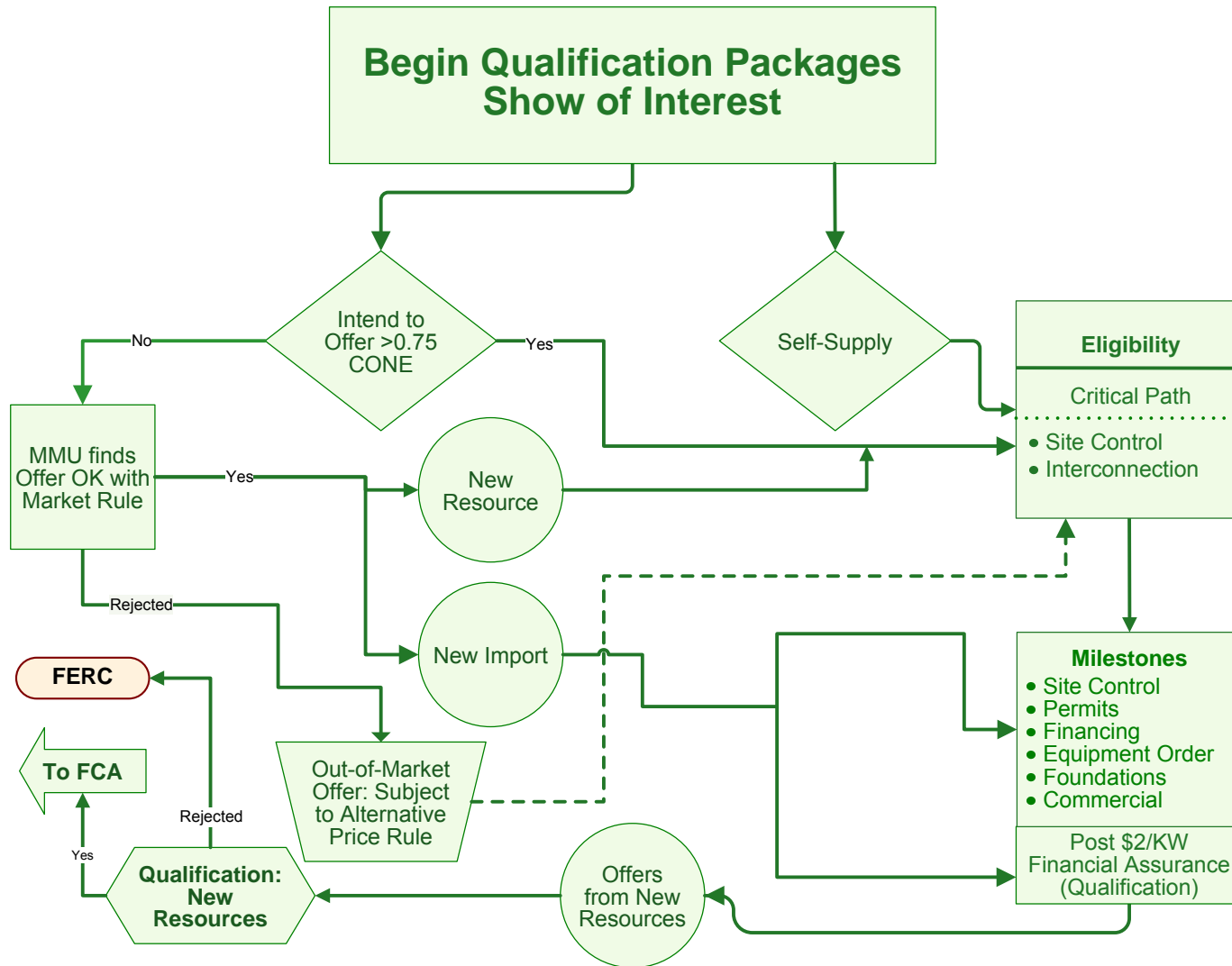
Qualification Package – New Resources

1. Project Sponsor submits package On or Before 6/15/07
2. ISO reviews package
 - Site Control, Critical Path Schedule, etc. 06/15/07 – 10/01/07
 - Issues Qualification Letter 10/01/07

Financial Assurance

1. Due 10 business days after Qualification Letter 10/12/07

Qualification Process: New Resources



Qualification Timeline

1. Initial Interconnection Analysis
 - Several months of study expected for each project
 - ✓ Based on past RFPs
2. Provide sufficient time for project refinement
 - Show of Interest provides minimal information
 - Qualification Package requires more detail later in the process
3. Allow sufficient time for ISO-NE review
 - Unknown number of Qualification Packages
 - Presently, over 50 active requests already in the LGIP/SGIP Interconnection Queue
 - Numerous small up-rates seem probable
 - Unknown number of Demand Resource proposals

New Resource Qualification Timeline

1. FERC filing and review: 4 months
 2. Qualification study and review: 9 months
 - Initial Interconnection Analysis
 - Qualification Package Review
-
3. Total: 13 months

Show of Interest Application

1. ISO-NE opens submittal window
2. Project sponsor
 - Files SIA
 - ✓ ISO-NE Market Participant status not required
 - Pays Qualification Process Cost Reimbursement Fee
3. SIA is a **REQUIREMENT** for Qualification
 - Even if an Interconnection Request (IR) is filed under Schedules 22 and 23 of the Tariff
(LGIP/SGIP - Large/Small Generator Interconnection Procedures)

Show of Interest Application - Contents

1. Project Identification
 - name
 - location
 - Asset ID (if relevant)
 - Sponsor's contact information
 - Sponsor's Market Participant status
2. Project Characteristics
 - Description of equipment type and configuration
 - ✓ Re-powering, Environmental, etc.
 - Location plan
 - Simple line diagram of plant and facilities
 - MW Capacity (Max & EcoMin)
 - Other project-specific data
3. Project Status
 - Expected commercial operation date
 - Desired FCM Commitment Period
 - Status under the generator interconnection procedures

Qualification Process: Cost Reimbursement Fees

1. Credited to ISO's revenue requirement
 - Tariff Section IV.A
2. Actual costs to ISO of FCM Qualification review
 - Reconciled upon later of
 - ✓ First day of Commitment period or
 - ✓ Date of commercial operation
 - Under-collection invoiced
 - Over-collection refunded
3. ISO-NE will not be collecting Qualification Cost Reimbursement fees until after FERC approval of the FCM market rule, expected Q2 2007

Qualification Cost Reimbursement Fees (con't)

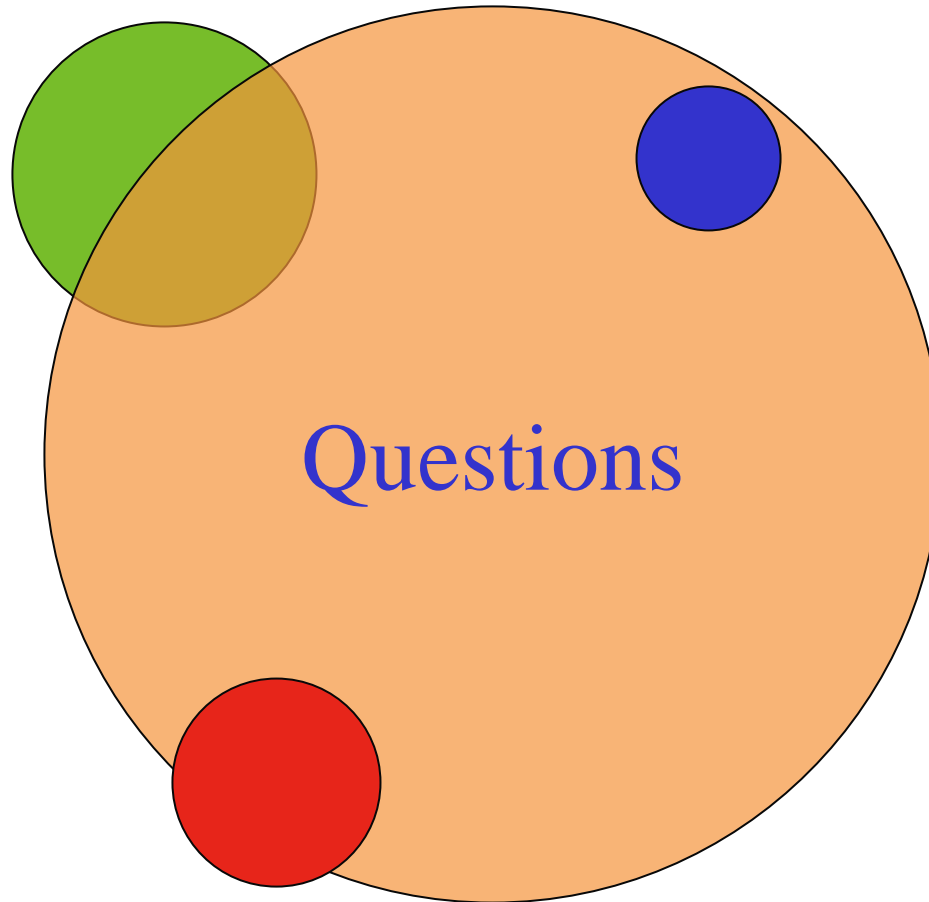
New Generating Resources			Imports	Demand Resources	
≥ 20 MW	< 20 MW ≥ 2 MW	< 2 MW		≥ 5 MW	All Other
<ul style="list-style-type: none"> ▪ Uprates ▪ Repowering ▪ Environmental Compliance ▪ Intermittent Resources 			Resources located outside of ISO-NE Control Area	Connected to Administered Transmission System	
\$25,000	\$ 7,500	\$ 500	\$ 6,000	Same as New Generating Resources	\$ 500

Initial Interconnection Analysis

1. Power flow and short circuit studies
 - Preliminary analysis by ISO-NE to identify
 - ✓ Potential system violations
2. System Topology
 - Derived from Installed Capacity Working Group (ICWG) Design Basis Document
 - ✓ As approved by the NEPOOL Participants Committee
3. Overlapping Impacts
 - Multiple Projects contribute to the same system violation
 - Multiple Projects together cause a violation that does not arise when an individual component is analyzed
4. Reliability Committee will promulgate definitions and selection criteria

Initial Interconnection Analysis: Interconnection Request (LGIP/SGIP IR)

1. FCM Initial Interconnection Analysis
 - Does not replace LGIP/SGIP Interconnection Request
2. Completed LGIP/SGIP required for new project
 - Exhaustive analysis
 - Provides detailed information to the Project Sponsor
 - ✓ Necessary interconnection and network transmission upgrades
 - ✓ Expected upgrade costs
 - May identify issues missed by Initial Interconnection Analysis
3. Applicants may submit LGIP/SGIP to FCM
 - Any time during Qualification process
 - May reduce analytical burden
 - ✓ Reimbursement fee reduced correspondingly



Qualification Package - Generation

1. Minimum Requirements:

- Site Control
- Critical Path Schedule (CPS)/Milestones

2. Additional information required for:

- Up-rates, Re-powers or Environmental Compliance
- Offers below $0.75 * CONE$
- Willingness to be rationed in the Auction
- Self-Supply Resources
- Intermittent Resources

3. Information must be consistent with Show of Interest Application

Qualification Process - Intermittent Resources

May request Qualified Capacity Value up to nameplate capacity

- Supported by applicable site specific data (e.g. wind/hydro site data)
- Satisfies milestone requirements, and
- Validates its Qualified Capacity value during Commitment Period
 - ✓ Actual data replaces modeled data as it becomes available
 - ✓ Qualified Capacity value is reduced if claimed capacity is not delivered

Qualification Process: New Import Capacity

1. Same qualification process as other New Capacity. Additionally, New Import obligation must be backed by:
 - Existing external resource
 - ✓ Qualification package must include description of external resource
 - ✓ No site control or critical path required
 - ✓ Evidence of external resource de-list in its local control area
 - New external resource
 - ✓ No initial interconnection analysis
 - External control area
 - ✓ No site control or critical path required
 - ✓ System load and capacity projection for control area required
 - Must demonstrate excess supply exits in external control area
2. Eligibility limited to a one year Commitment Period

Demand Resources - Definition

1. Demand Resources: installed measures (i.e., products, equipment, systems, services, practices and/or strategies) that result in additional and verifiable reductions in end-use demand on the electricity network in the New England Control Area.
 - Energy Efficiency
 - Load Management
 - Distributed Generation
 - Demand Response.

Demand Resources - Types

1. Proposed rules for the FCA define Demand Resources by the way in which they reduce load, not by technology.
 - Different technologies – i.e., energy efficiency, load management, and distributed generation – reduce load (or can be designed and/or operated to reduce load) in different ways.
2. Demand Resource Types include:
 - On-Peak Demand Resources
 - Seasonal Peak Demand Resources
 - Critical Peak Demand Resources
 - Real-Time Demand Response Resources
 - Real-Time Emergency Generation Resources

Demand Resources – Qualification

1. Minimum Project Size: 100 kW
2. Project must be located in a single Load Zone
3. Qualification Package (Due 6/15/07 for 1st FCA)
 - Detailed Project Description
 - Source of Funding
 - Customer Acquisition Plan
 - Measurement & Verification Plan
 - ✓ Every project must follow an ISO-NE approved Measurement & Verification Plan to demonstrate its Demand Reduction or Output during specific Performance Hours.
 - Critical Path Schedule

FCM Qualification Package - Evaluation

1. All required documentation?
2. All required milestones on CPS?
 - Do CPS milestones meet definitional requirements?
 - Do the proposed milestone sequences and/or durations create obvious schedule inconsistencies?
 - Any milestone durations flawed?
3. Any large obstacles to success?
4. Market Monitoring Evaluations
 - Described in the Settlement Agreement

Notification of Qualification Status

1. New Capacity Qualification Package Questions
 - ISO-NE notifies the Project Sponsor in writing 6-8 calendar weeks before the end of the qualification review period.
 - The Project Sponsor must respond to ISO-NE's questions within 2 calendar weeks

2. New Capacity Resource Qualifies
 - ISO-NE notification letter to Project Sponsor includes:
 - ✓ Resource's MW Qualified Capacity
 - ✓ Resource's Financial Assurance Requirements
 - ✓ Preliminary list of potential transmission upgrades
 - ✓ Overlapping interconnection impacts with other qualified New Capacity Resources
 - ✓ Other information as appropriate

FCM Qualification Package – Process (con't)

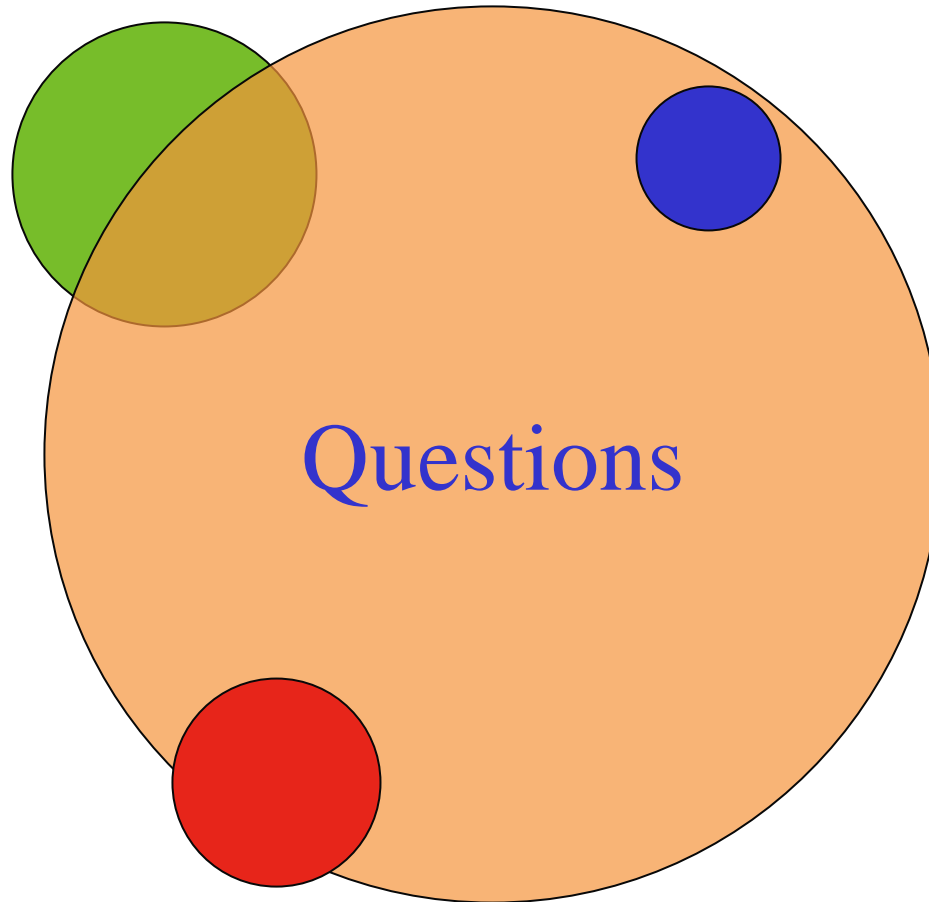
1. Project clears in the auction
 - ISO-NE continues to monitor the Critical Path Schedule until the Commitment Period
2. Upon request, process can carry forward into associated reconfiguration auctions if
 - The Project is not offered into the Primary Auction or
 - The entire MW offering does not clear in the Primary Auction

Monitoring of Winners – Milestone Exceptions

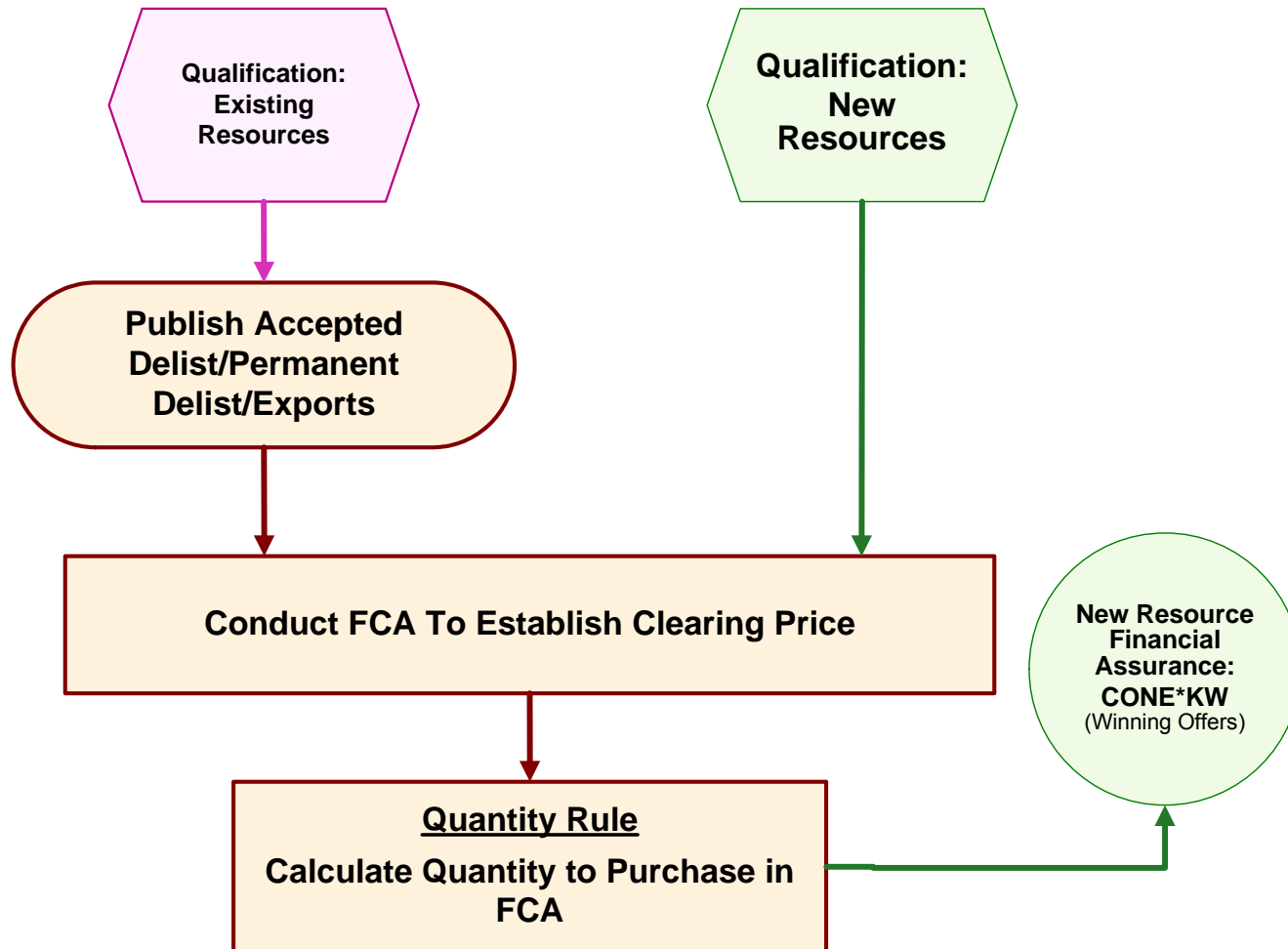
1. If ISO-NE finds that a CPS exception has occurred, the monitoring process is adjusted accordingly:
2. Project Sponsor is required to report:
 - The cause of the exception
 - Effect on the overall schedule
 - Plan for eliminating or effectively mitigating the exception
3. ISO-NE will review the material supplied by the project sponsor
 - ISO & Project Sponsor will agree to a revised date for achieving the missed milestone
 - ✓ The latest date to reasonably expect satisfaction of all milestones before the beginning of the commitment period

Monitoring of Winners – Milestone Exceptions (con't)

1. Monthly CPS updates required until the exception has been eliminated or mitigated
 - Cure period depends on the CPS exception event
2. If the project will not achieve commercial operation in time for the commitment period, it
 - Loses its awarded capacity OR
 - Must arrange to cover its obligation:
 - ✓ For a period of up to two years
 - ✓ With a bi-lateral contract with capacity that has been qualified for the relevant Commitment Period



Qualified Resources: Eligible for the FCA



Forward Capacity Auction: Overview

1. Primary FCA: 3 years ahead of delivery
 - e.g. Auction held in early 2008 for delivery in mid-2010
2. Total Installed Capability Requirements purchased through primary FCA
 - ICR from System Planning Analysis
 - Local sourcing requirements for each Capacity Zone
 - ✓ Based on constraints expected to bind during commitment period
 - Reconfiguration Auctions
 - ✓ Opportunity to adjust MW
3. Starting price = 2 x Cost of New Entry (“CONE”)
 - Initial starting price = \$15/kw-month

FCA: Existing Resources

1. Price takers

- Cannot set market price

2. De-List bids

- MW of existing capacity it is willing to remove from FCA at various prices
- De-Listed Capacity Resources opt out of FCA for entire Commitment Period (or Periods for Permanent De-List)
- All De-List bids submitted during Qualification are binding for that FCA

3. Annual Commitment Period

Note: These Definitions are also used in Reconfiguration Auctions

Existing Capacity: De-List Bids

De-List Bid Category	Market Monitor Approval	Time of Submission
Static (annual)	Required – If bid ≥ 0.8 CONE	At Qualification
Dynamic (annual)	Not Required	Auction Cycle: P/Q pairs
Permanent (forever)	Required – If bid ≥ 1.25 CONE	At Qualification
Export (annual)	Required – If bid ≥ 0.8 CONE	At Qualification

FCA: New Capacity

1. Offers MW it is willing to supply at various prices
2. Specifies whole-year commitment period
 - 1 – 5 years
 - ✓ Longer commitment reduces investor risk
 - ✓ Auction price indexed for inflation after first year

Note: These Definitions are also used in Reconfiguration Auctions

FCA: Offers and Bids (con't)

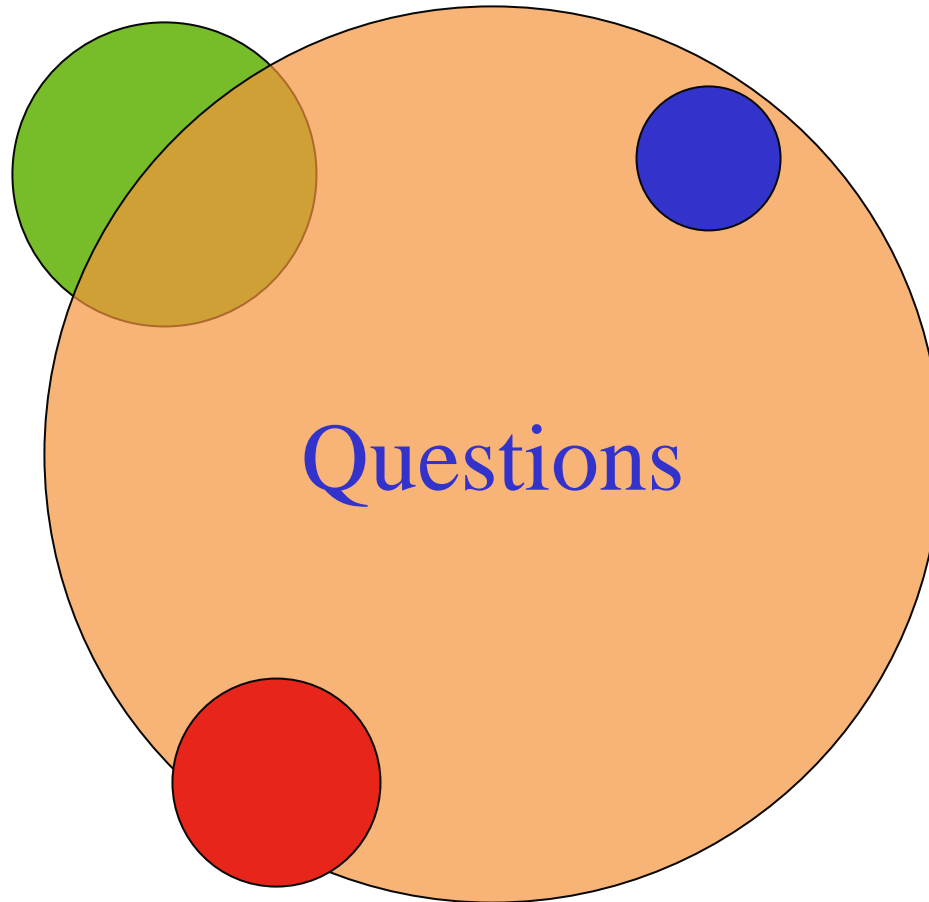
1. Imports

- Annual Commitment
- Existing Import Capacity
 - ✓ Capacity that has a multi year contract
- New Import Capacity
 - ✓ Capacity offered into the FCA each year

2. Exports

- Annual Commitment
- Multi – Year Exports
 - ✓ Administrative Delist
- Treated as de-list bids for purposes of ‘Quantity Rule’

Note: These Definitions are also used in Reconfiguration Auctions



Descending Clock Auction Mechanics

1. Auction is conducted in discrete rounds
2. Each round, Auctioneer announces:
 - Excess supply at the end of prior round
 - Start of round price (higher price)
 - End of round price (lower price)
3. Participants submit offers and bids at prices within announced range
4. Auctioneer determines excess supply at end of round price
5. Clearing price is determined in final round
 - Excess Supply ≈ 0

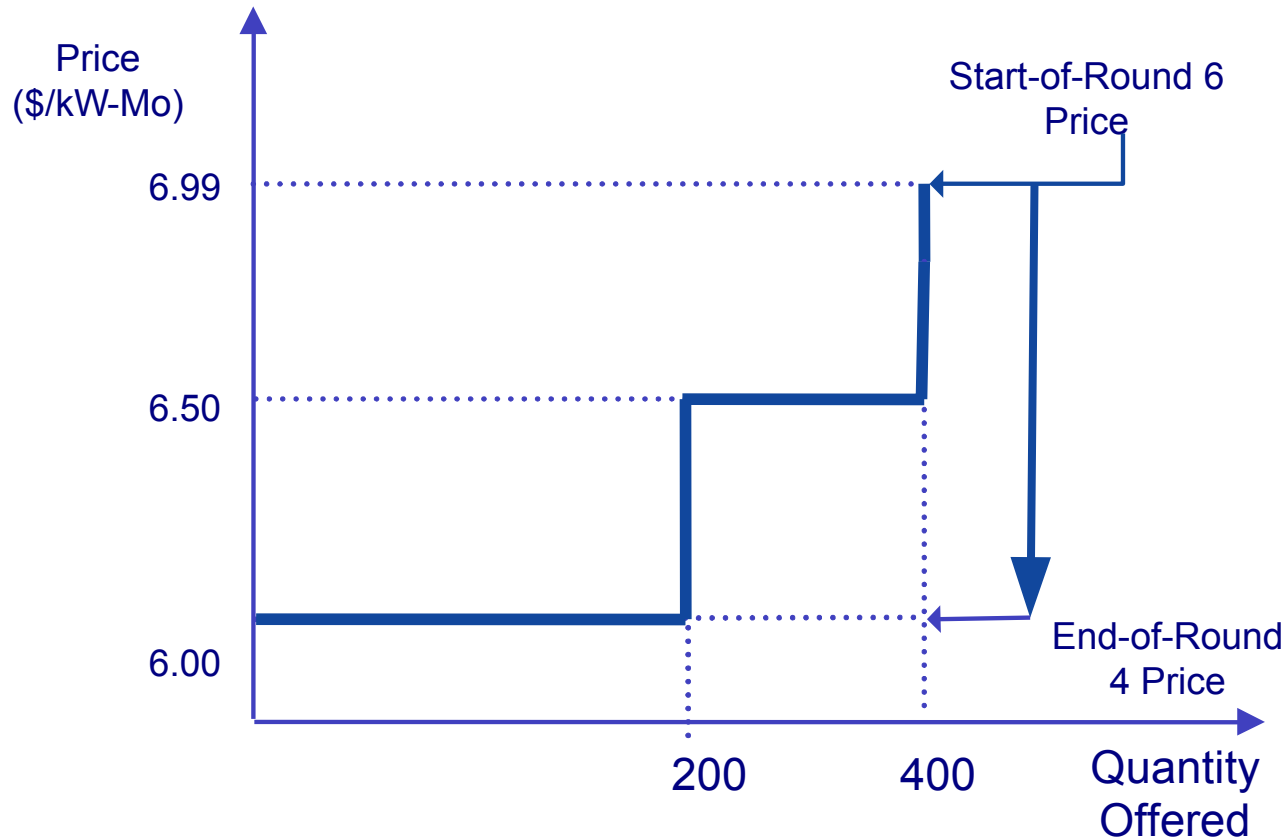
Descending Clock Auction: Example

Assumptions:	
ICR	30,000 MW
Existing Capability	23,000 MW
New Resources needed to meet ICR	7,000 MW
Participating New Capacity	10,000 MW

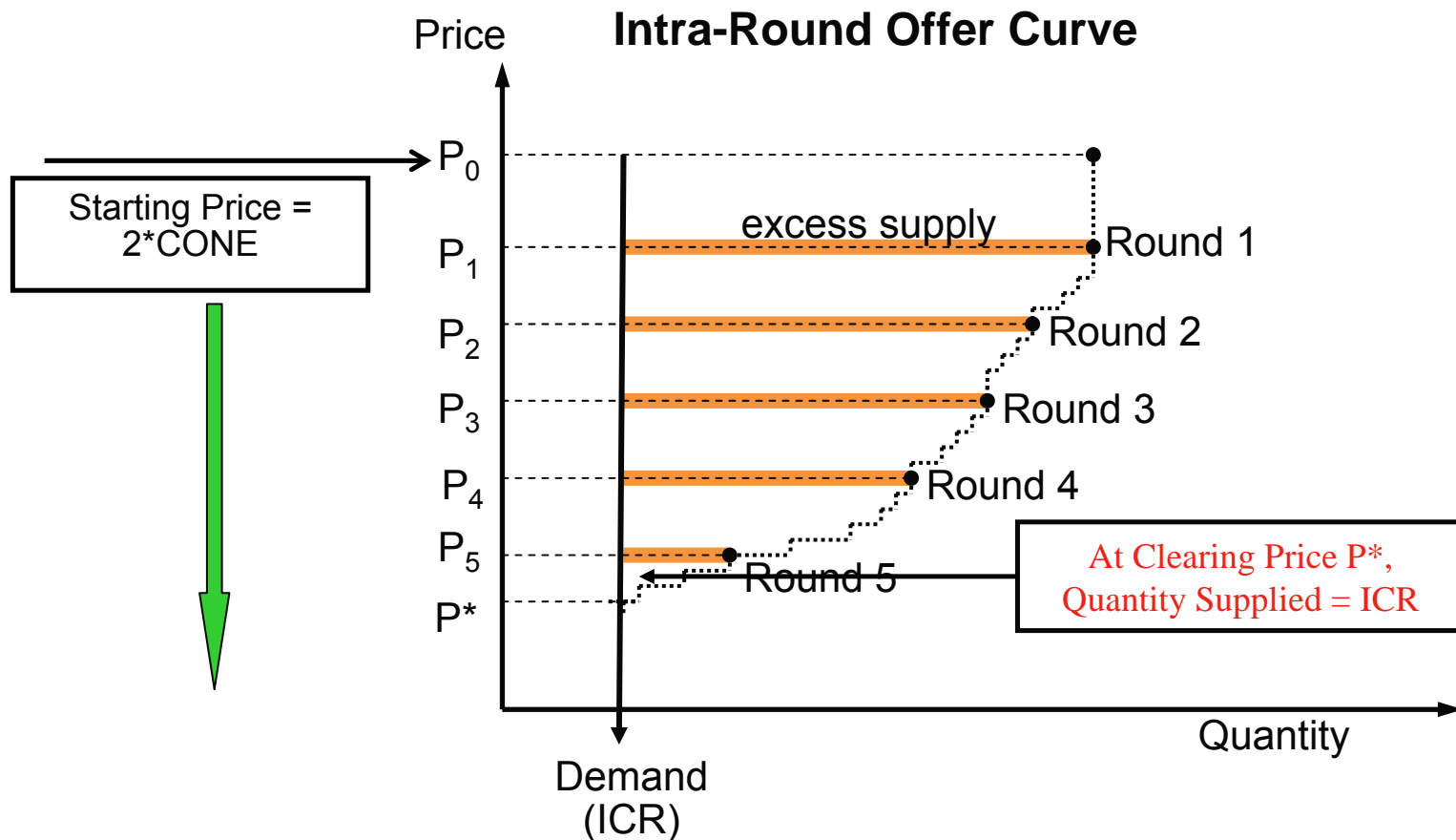
Round	Start of Round Price (\$/kW-MO)	End of Round Price (\$/kW-MO)	End-of-Round Resource Offers (MW)	Excess Capacity (MW)
1	\$15.00	\$ 9.50	33,000	3,000
2	\$ 9.49	\$ 9.00	32,500	2,500
3	\$ 8.99	\$ 8.00	32,000	2,000
4	\$ 7.99	\$ 7.50	31,000	1,000
5	\$ 7.49	\$ 7.00	30,750	750
6	\$ 6.99	\$ 6.00	29,800	-200
FINAL		\$ 6.50	30,000	0

Descending Clock Auction Mechanics

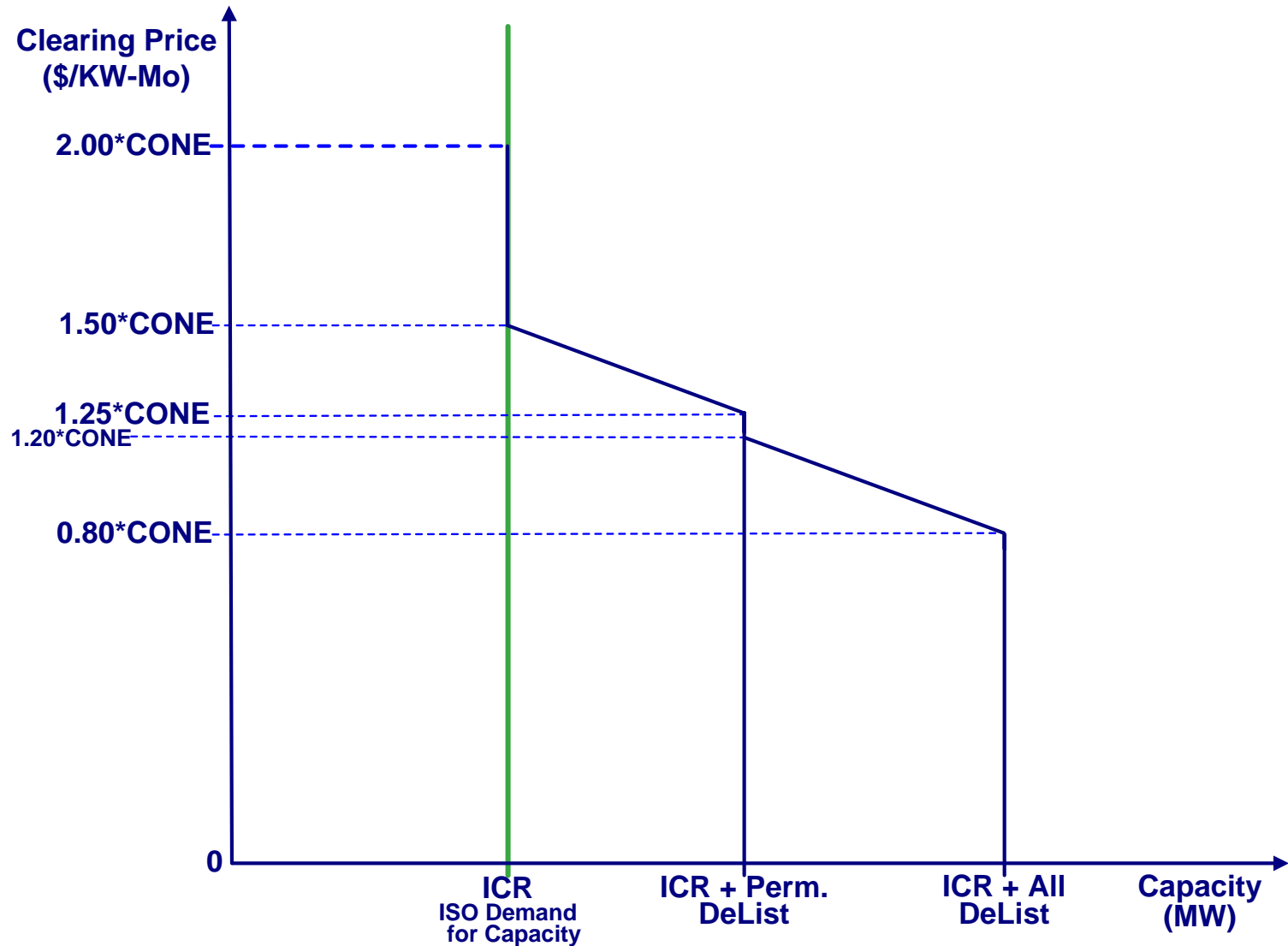
Supply Offer, Round 6



Descending Clock Auction Mechanics (Continued)



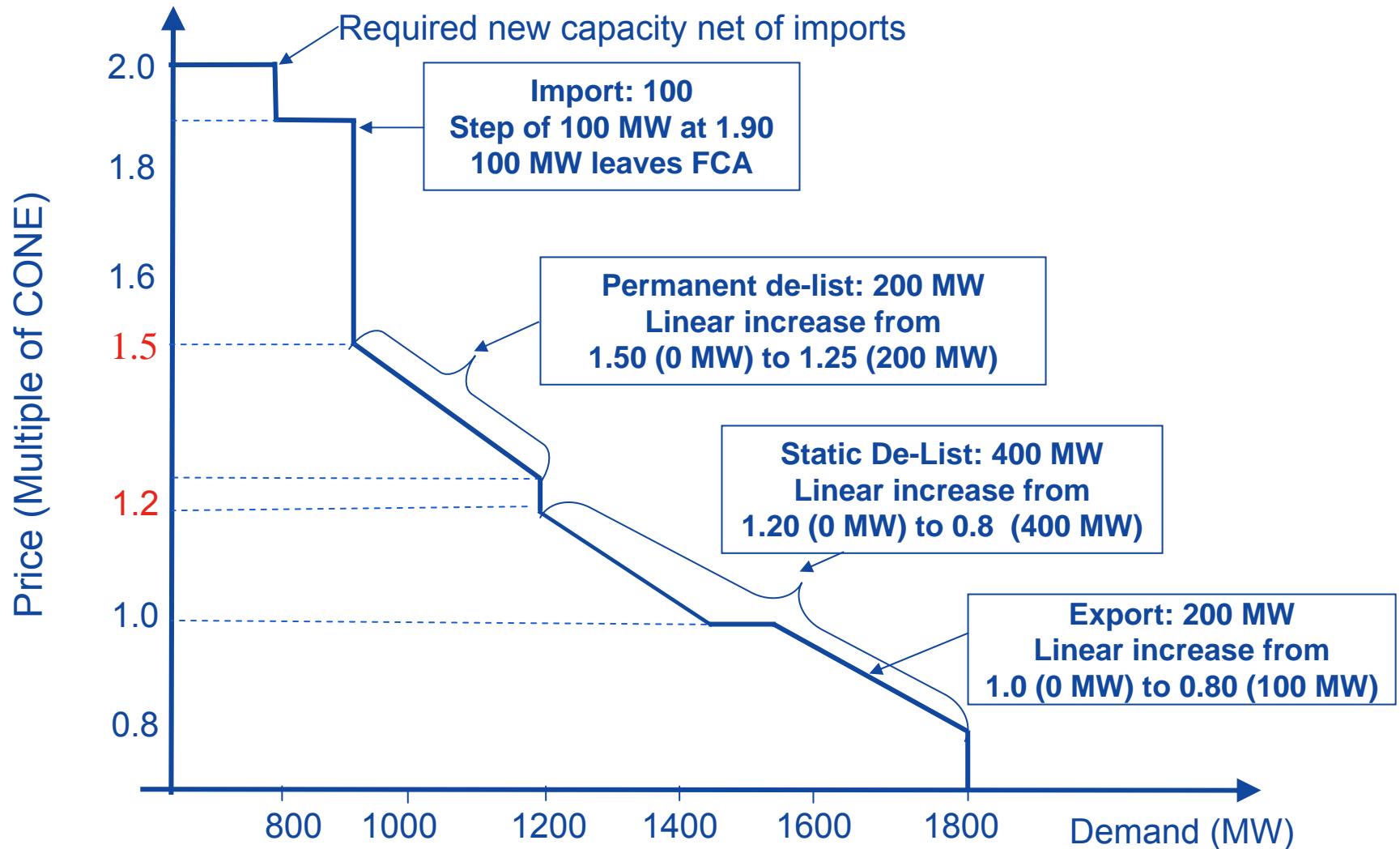
De-list Bids in the FCA: Quantity Rule

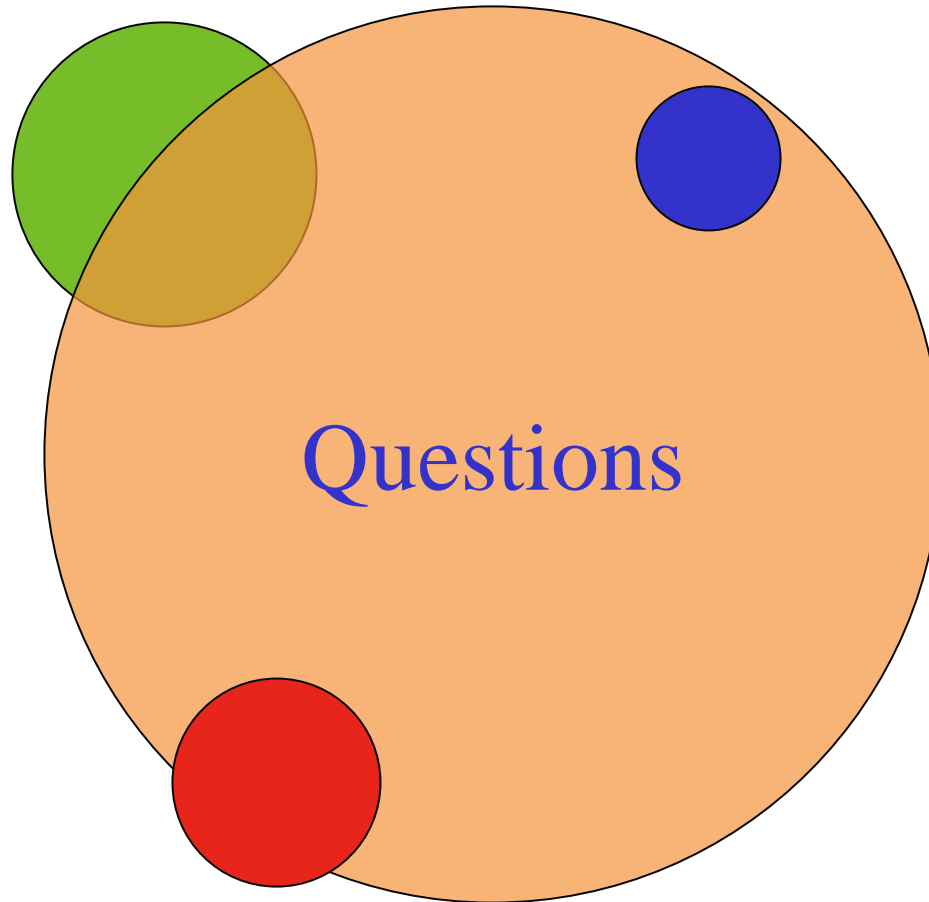


Example – Delist Bids and Demand in FCA

Type of Bid	Price (CONE X)	Quantity (MW)	Demand Impact
Import	1.90	100	Import Leaves FCA at 1.90
Permanent De-list	1.80	200	Pro-Rata purchase Linear increase from 1.50 (0 MW) to 1.25 (200 MW) Above 1.80: purchase deferred to Reconfiguration Auction
Static De-list	1.30	400	Linear increase from 1.20 (0 MW) to 0.80 (400 MW)
Export	1.00	200	Step of $(.2/.4) \times 200 = 100$ MW at 1.00 Linear increase from 1.00 (0 MW) to 0.80 (100 MW)

De-list Bids and Demand in the FCA





Clearing In The FCA

1. Dynamic De-list bids

- Subject to Reliability Review by the ISO
- Enter FCA when prices drop below $0.8 \times \text{CONE}$
- Accepted pro-rata if more are bid than needed

2. New Resources

- Must enter full amount of the Qualified Capacity in first round of the FCA
- Supplier can reduce quantity in subsequent rounds as the price drops

Clearing In The FCA – Capacity Zones

Import-Constrained Capacity Zone - FCA concludes when:

- Total system capacity = ICR OR
- Remaining Capacity offered into zone = Local Sourcing Requirement (LSR)
 - ✓ Whichever occurs first
- Clearing Price for Zone = price at which either of these conditions is met
- The auction for that Zone is then complete

Note: Clearing Price May Be Higher in Import Zone

Clearing In The FCA – Capacity Zones (Con't)

Rest-of-Pool Capacity Zone - FCA for ROP Zone concludes when:

- Total system capacity = ICR
 - ✓ No more than maximum capacity transfer from export-constrained zone
- Zonal Clearing Price is set by this condition

Export-Constrained Capacity Zone - FCA for these zones concludes when:

- Total system capacity = ICR
 - Capacity offered into zone \leq Maximum Capacity Limit
- OR
- ✓ Whichever occurs *last*

Note: Clearing Price May Be Lower in Export Zone

Capacity Prices and CONE: First Three Successful Auctions

1. Start-of-Auction Price = 2 x CONE
2. CONE Determination
 - Until 1st Successful Auction
 - ✓ CONE = \$7.50/kW-month
 - After 1st Successful Auction & before 2nd Successful Auction
 - ✓ CONE = \$3.75/kW-month + $\frac{1}{2}$ Capacity Clearing Price from the 1st Successful Auction
 - After 2nd Successful Auction and before 3rd Successful Auction
 - ✓ CONE = \$1.88/kW-month + $\frac{3}{4}$ average Capacity Clearing Price from the 1st and 2nd Successful Auctions
3. First 3 Successful Auctions clearing price collar:
 - Minimum: \$4.50/Kw-month
 - Maximum: \$10.50/Kw-month

Note: Controls The Outcome Of
First Three Auctions

Capacity Prices and CONE: Subsequent Successful Auctions

1. Start-of-Auction Price = 2 x CONE
2. If the auction is successful and new capacity sets the clearing price, then:
 - $\text{CONE FCA}_t = \{0.70 \times (\text{CONE FCA}_{t-1}) + 0.30 \times (\text{Capacity Clearing Price in year}_t)\}$
3. Otherwise:
 - $\text{CONE FCA}_t = \text{CONE FCA}_{t-1}$

