



NYISO

External Transaction Evaluation

NYISO Scheduling & Commitment
Department

Firm/Non-Firm Transactions

- Firm Transactions - NERC Priority 7
 - Evaluated with Security Constrained Unit Commitment (SCUC) and Balancing Market Evaluator (BME)
 - Day Ahead Market (DAM) - SCUC run for 24 hours
 - Hour Ahead Market (HAM) - BME run for 3 hours (only first hour is binding)
- Non Firm Transactions - NERC Priority < 7
 - Evaluated with Non Firm Transaction Selector (NFTS)

Firm Transaction Modeling

■ Imports / Purchases

- Each Transaction modeled as an individual generator
- Transaction decremental bid becomes generator cost

■ Exports / Sales

- Each Transaction modeled as an individual load
- Sink price capped bid evaluated at Proxy Bus LBMP

■ Wheels

- Modeled as a Generation/Load pair



Firm Transaction Evaluation

■ Imports and Exports

- Selected economically concurrent along with internal NY generators based on decremental bids
- Amount may be reduced or increased in order to meet NYISO security limitations
- Economics and security are evaluated concurrently

■ Wheels

- Evaluated based on difference in the congestion components of Proxy bus LBMPs as compared to their decremental bid

Firm Transaction Evaluation

■ Economics

- Energy costs [decremental bid for firms]
- Startup [zero for firms]
- Minimum generation cost [zero for firms]

■ Security

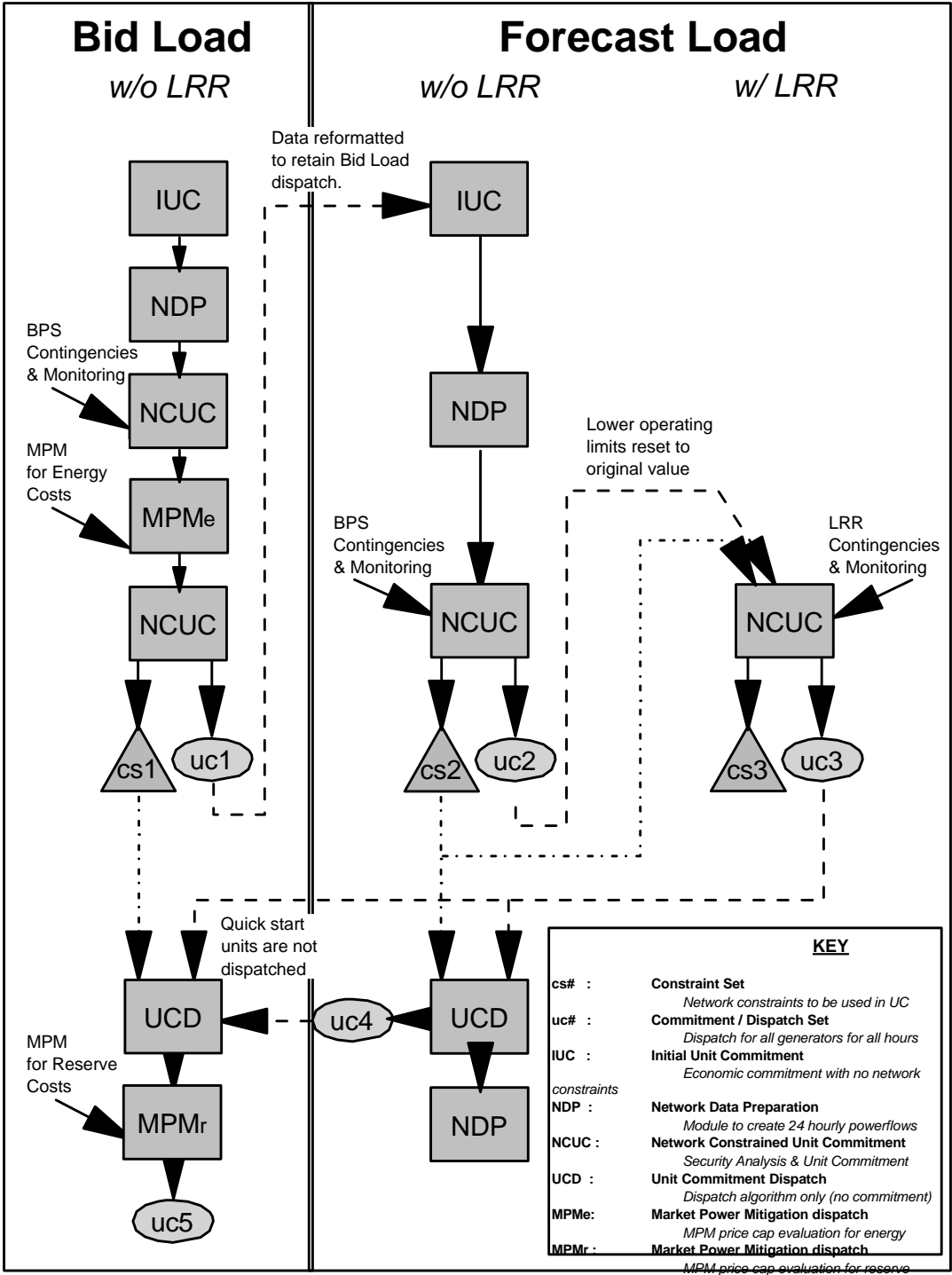
- NYISO Bulk Power System Facility/Interface limits
- External ISO Control Area Interface/Scheduling limits
- Desired Net Interchange (DNI) ramp limitations between consecutive hours



Firms in Day-Ahead Market

■ SCUC Multi-pass evaluation

- Import transactions dispatched in “Bid Load” pass are guaranteed at least that amount for all subsequent passes
- At end of “LRR Forecast Load” pass, maximum capacity of external transaction amounts is determined
- “Forecast Re-dispatch” pass determines external transaction schedules based on economics and ISO security limitations
- “Bid Re-dispatch” sets first settlement contracts with external transaction amounts fixed from “Forecast Re-dispatch” pass



Firms in Hour-Ahead Market

■ BME Single pass evaluation

- All accepted DAM transactions are given a priority and re-evaluated with any additional HAM transactions
- All transactions are subject to NYISO security limitations in HAM
- Transaction schedules are determined and fixed for real-time market (SCD)



Firms in DAM and HAM

- ISO DNI ramp limitations
- ISO BPS facility/interface limitations
- Control Area Transfer/Scheduling limitations
- Subject to external control area checkout
- Lower priced resources may exist in HAM than DAM



Non Firm Transaction Evaluation

- Same evaluation in DAM and HAM
 - Not accepted if there is congestion between source bus and sink subzone.
 - Accepted if there is sufficient flow based on ATC
 - DNI ramp limited between consecutive hours
 - Evaluated sequentially ranked by NERC priority (1-6) and bid submission time
- Subject to control area checkout



MIS Reporting

■ DAM

- Firms from SCUC - - Advisory Accepted
- Non-Firms from NFTS - - Advisory Accepted
- Confirmed day-ahead by NYISO Scheduling staff
 - Firm transaction statuses modified to Bid Accepted

■ HAM

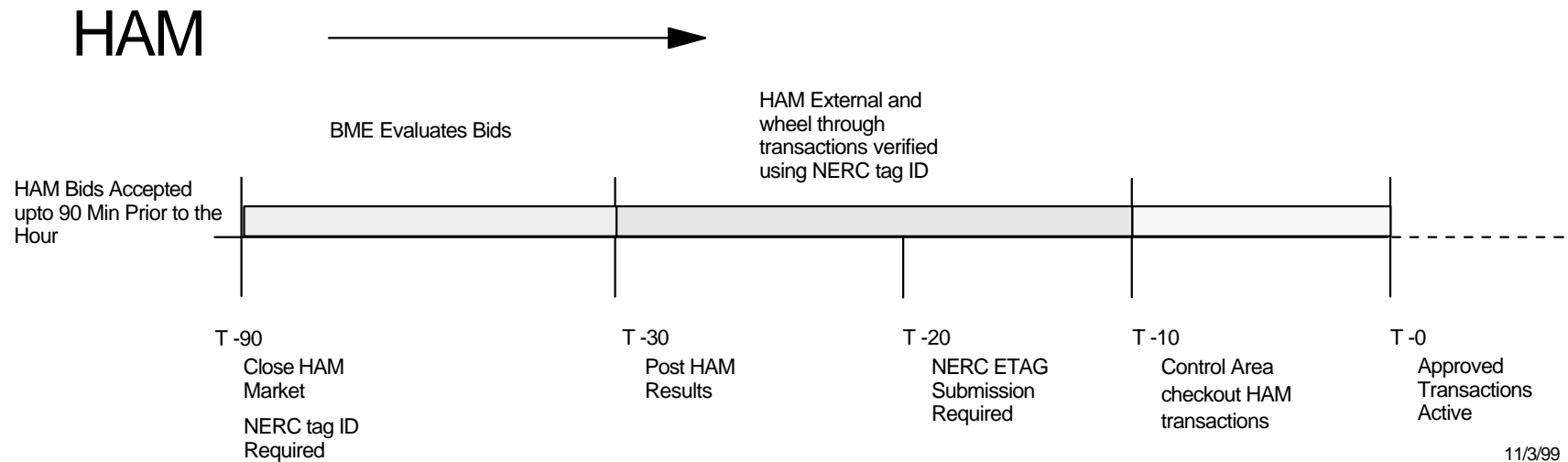
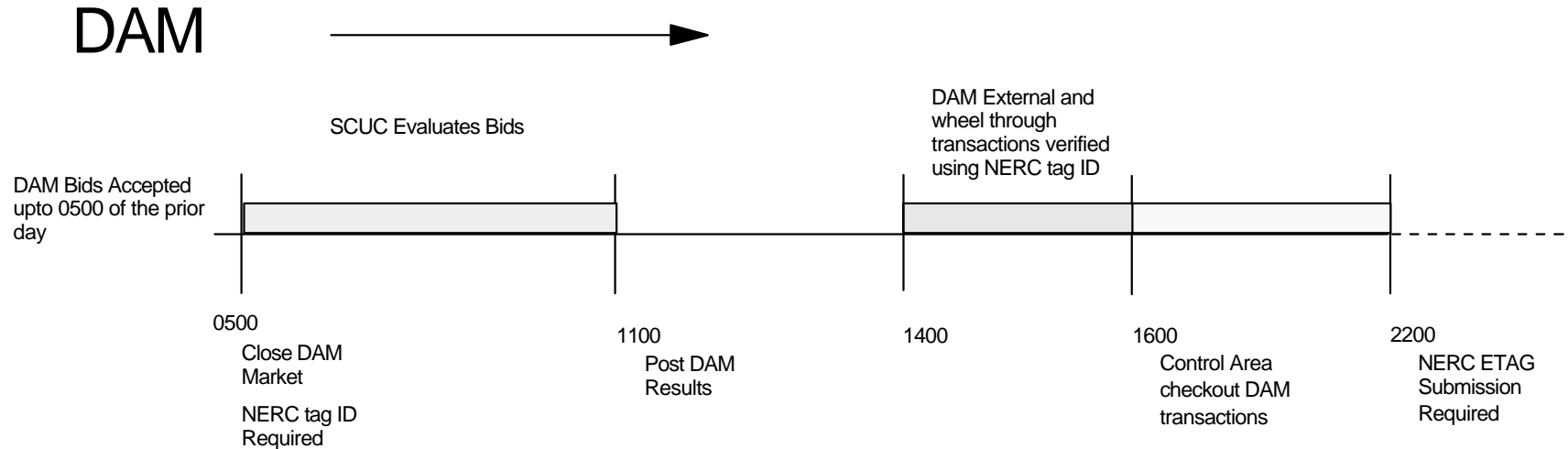
- Firms from BME - - Advisory Accepted
- Non-Firms from NFTS - - Advisory Accepted
- Confirmed hourly by NYISO Dispatch staff
 - Firm transaction statuses modified to Bid Accepted

Control Area Checkout

- Verifies transactions with neighboring Control Areas (CA)
- Subject to external CA security issues such as ramping limitations
- Subject to external CA scheduling and/or NERC tagging requirements
- Separate Check-Out Processes for the Day-Ahead, Hour-Ahead and Real-Time Markets

NYISO Scheduling Timeline

Day Ahead Market (DAM) and Hour Ahead Market (HAM)



IS+ Reporting

■ DAM

- Transactions modified or not confirmed by external CA's are checked out with NYISO Scheduling staff receive email notification

■ HAM

- Transactions modified or not confirmed by external CA's are checked out hourly with NYISO Dispatch staff receive email notification

■ Real-Time

- Transactions modified in-hour with NYISO Dispatch for security limitations staff receive email notification

IS+ Reporting - Email Message

- PJM Adjusted Schedule
- IMO Adjusted Schedule
- ISONE Adjusted Schedule
- HQ Adjusted Schedule
- NYISO Adjusted Schedule
- Additional Comment Field

Real Time Operation - IS+

■ Real-time Market

- If congestion occurs in SCD, non-firms are curtailed in-hour upon agreement by all control areas involved.
- In the event of an security limitation, firms are curtailed in-hour upon agreement by all control areas involved.
- IS + can provide ranking of transactions by decremental bids and the level of impact on a transmission interface or by NERC priority



Real Time Operation - IS+

- Security Violations after BME has run...
 - NYISO determines reduction amount and location of relief required (ex. 100 MW across Central East)
 - Presumes non-firm has already been cut (there has been little or no use of non-firms in NY)
 - 95% of the time “level of impact” is used due to short time requirements to relieve security violations

