

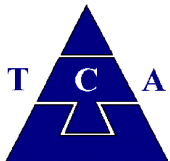
Scheduling External Transactions: Alternatives to Current NYISO Practice

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DRAFT December 18, 2000



Revised 12/19/00

Recap: What's Wrong with Using BME to Schedule External Transactions?

- ▶ BME is poor forecaster of real-time conditions / prices
- ▶ The use of BME in scheduling external transactions is inconsistent with scheduling approaches used by neighbors (result \approx two traffic cops at the same intersection ignoring each other)
- ▶ Hourly evaluation is out of step with our neighbors
 - ▶ Precludes standard products like 5x16 blocks
 - ▶ Precludes ramping in transactions in 15-minute increments or shifting transactions 15 minutes in time to avoid violating ramp constraints
 - ▶ Precludes shorter-notice schedule changes, e.g., 20 minutes in PJM
 - ▶ Precludes real firm service
- ▶ Reliance on model-based scheduling of ties in general has precluded firm service in advance of day-ahead
- ▶ Without firm service into and out of NY, there can be no liquidity in the forward market, as traders who cannot be assured the ability to cover short/long positions through imports/exports will not trade long-term
- ▶ Ties are not used efficiently as a result of the above

What's Wrong with Using BME? (cont.)

- ▶ HA-RT price differences cause financial harm/risk to market participants, e.g.,
 - ▶ Imports cut by BME have to buy out of DA obligation at RT prices (even if they would have been economic in RT)
 - ▶ Transactions not taken by BME but economic in RT face lost opportunity cost
 - ▶ Hourly transactions taken by BME may be uneconomic in RT
 - ▶ Same true for off-dispatch generation
- ▶ Even if harm is mitigated through uplift, someone pays
- ▶ Provides perverse incentives for market participants not to adhere to schedules as they trade off obligations from BME's poor forecast against real-time reality

BME Can't Solve a Seams Problem

- ▶ Fundamental differences between analysis, conditions modeled, and nature of BME and real-time dispatch make it impossible for BME to ever work well
- ▶ BME can't calculate an "accurate" price for the other side of a boundary if it doesn't have all the information
- ▶ As long as ISOs on each side of a boundary calculate prices independently, scheduling external transactions on the basis of those prices will never work
- ▶ Customers' bids don't reflect costs, but the need to self-schedule their way in; so the solution will never be "economic"
- ▶ Even if BME could be improved, its use should not be mandated for external scheduling if market participants believe they can self-schedule their transactions more economically
 -) The same can be said for internal off-dispatch generation

Is a Third (HA) Settlement the Answer for Externals?

- ▶ No, inefficiencies won't disappear, but will be borne through uplift or higher prices/volatility to consumers
- ▶ The scheduling approach will still be inconsistent with those of our neighbors, will still preclude firm service
- ▶ Will still result in energy scheduled by BME flowing from high priced to low priced control area in RT
- ▶ Development/implementation of the third settlement and continued efforts to fix and maintain BME requires a serious commitment of resources that will divert energy from truly fixing the problems
- ▶ Further entrenches us in the model-based approach to tie scheduling for the long term, which may never really work
- ▶ Settlements still won't cover liquidated damages costs or costs due to inter-ISO price differences

Reservation-Based Scheduling of the Ties

- ▶ Tried-and-true method; has been proven in PJM to be compatible with 2-settlement LBMP-like market
- ▶ Reservation-based scheduling on both sides of a border in the medium term could be replaced relatively easily with single reservation-based system in the longer term, solving a major seams problem
 - ▶ This single process could either be an extension of the approach described here, or the more efficient flow-based approach being adopted elsewhere in the Eastern Interconnection
- ▶ Until then, matching procedural schedules and business practices with those of our neighbors will facilitate consistent pricing across the region
- ▶ Approach would solve hourly scheduling problems, but would also be a desirable option in DA scheduling, thereby enabling longer-term firm service
- ▶ Combination of real firm service and real-time settlement of external transactions will create conditions needed for market makers to create hourly market

Isn't "Economic" Scheduling More Efficient than Reservation-Based?

- ▶ Possibly in theory, but experience has shown us otherwise
- ▶ The BME model will probably never be "good enough"
- ▶ As long as a reservation-based system is used on the other side of the border, and as long as prices there differ from NYISO-modeled prices at proxy bus (by more than wheeling charge), "economic" scheduling doesn't make sense
- ▶ Even with separate reservation-based systems, market participants will trade reservations such that they get used by those who value them most highly (auction-based initial allocation, while not required, would encourage this)
- ▶ Real-time market outcomes and price differences between NY and its neighbors will encourage transmission customers to efficiently use tie capacity; adaptive learning over time will only improve this process (**unlike BME, which has no way to learn from its mistakes, nor any incentive to do so**)

Reservation-Based Scheduling: The Proposal

- ▶ Reserving transmission service
 - ▶ Under simplest approach, customer pays TSC rate for tradable firm service reservation, based on reserved (not scheduled) capacity
 - ▶ Would include simplifications of external TSC rates currently under consideration
- ▶ Scheduling external energy transactions
 - ▶ PJM-like approach presented here in NY terms (as a starting point)
 - ▶ Two time frames:
 - ▶ Up to day-ahead
 - ▶ Hourly
 - ▶ Would require reservation of ramp space
- ▶ BME used for reliability purposes only with regard to externals
- ▶ Approach is also an alternative to price-based scheduling in SCUC (provides long-term firm service)
- ▶ Real-time prices used to settle deviations from DA schedules

Reserving Transmission Service

- ▶ Required for exports or wheels only—not imports—on paths out (NY to PJM, NE, Ont, HQ) or through (all combinations except Ont-HQ and HQ-Ont)
- ▶ Reservations would be tradable
- ▶ Would not include TCCs, or any change to congestion settlement
- ▶ Service could be reserved up to (TTC-TRM) of path
 - ▶ Would require NYISO to post TTC/ATC for these paths
- ▶ Alternative reservation methods (scheduling is same with either)
 - ▶ Pro-forma approach (simplest)
 - ▶ Periodic auctions (more involved)
- ▶ DA market purchases/sales at external proxy wouldn't need reservation (could be "financial only" as in PJM)

Reserving Transmission Service (cont.)

- ▶ PJM-NY and NY-PJM transactions would require transaction schedules with both ISOs, but:
 - ▶ A PJM-NY transaction would require a reservation only in PJM
 - ▶ A NY-PJM transaction would require a reservation with NYISO
- ▶ I.e., imports to a control area require scheduling, but not reservation of service in that control area
 - ▶ Same is true for scheduling transactions between NY-NE and NE-NY
- ▶ Ideally, agree with neighbors on TTC/maximum firm ATC in each direction; alternatively, limit maximum firm ATC for export to no more than what importing control area is consistently willing to schedule (i.e., “lower of”)
 - ▶ Circulation would be deducted and firm counterflows would not create firm capacity
- ▶ Non-firm
 - ▶ Willing to buy through (if implemented): allocate up to level of requests; not willing to buy through: allocate up to remaining ATC

Reserving Transmission Service: Alternative Reservation Methods

- ▶ Approach 1 (simplest): Pro-forma approach
 - ▶ Requests for longer-duration/firmer service supercede requests for shorter-duration/non-firm but for right of first refusal, otherwise first-come, first-served; uses standard OASIS software
 - ▶ Transmission customer would pay TSC rate for firm service reserved, non-firm could be discounted (e.g., \$0.67/MW hourly rate in PJM)
 - ▶ Secondary exchange could be outsourced or left to develop on its own
- ▶ Approach 2 (more involved): Periodic auctions
 - ▶ E.g., annual, seasonal, monthly, weekly, daily, on-peak, off-peak
 - ▶ Transmission customer would pay auction clearing price in addition to or instead of TSC; auction revenues allocated in same fashion as TSCs
 - ▶ Non-firm service could be auctioned, or sold at flat discounted rate
 - ▶ Auctions could be strictly primary or could allow for resale as well
 - ▶ Auction function could be outsourced
 - ▶ Secondary exchange could be outsourced or left to develop on its own

Scheduling External Transactions

- ▶ **Wheels or exports:**
 - ▶ Firm service: MW quantity limited to transmission reservation(s)
 - ▶ First-come, first-served to reservation holders
- ▶ **Imports:**
 - ▶ MW quantity limited (agreed with neighbor or “lower of,” see below)
 - ▶ First-come, first-served
- ▶ **Flexibility on start/stop times (15-minute increments) to facilitate meeting ramp constraints**

Scheduling External Transactions (cont.)



- ▶ Up to day-ahead
 - ▶ Time frame: out as far as transmission reservation (or for imports, as far as external CAO can confirm); non-binding until DA deadline
 - ▶ Fixed transactions: scheduled without regard to price (i.e., self-scheduled), can be DA or pre-scheduled RT
 - ▶ DA dispatchable transactions: scheduled if economic in DA analysis (based on dec bid, price-capped load bid, or “up-to” congestion bid)
 - ▶ Pre-scheduled real-time transaction not considered in bid load pass
- ▶ Hourly
 - ▶ Day-ahead schedules considered fixed
 - ▶ New hourly schedules: fixed only

Scheduling External Transactions (cont.)

- ▶ Ramp space
 - ▶ Allocated on first-come, first-served basis; reserved or queued when schedule is submitted
 - ▶ Dispatchable DA transactions: excess ramp above that needed for economic schedule is released
- ▶ MW limits
 - ▶ Agree with neighbors on how much can be scheduled as firm; alternatively, do not schedule more firm transactions than what neighbor is willing to schedule (i.e., "lower of," not counting circulation or even firm counterflows)
- ▶ Non-firm service
 - ▶ Scheduled up to MW quantity of non-firm reservations on path, subject to ramp constraints etc.
 - ▶ May be desirable for transmission customers to be able to queue requests above availability; could be FCFS or auction-based
- ▶ Would require PJM EES-like interface/application
- ▶ Transaction curtailment (within a class) would be pro-rata

Scheduling External Transactions (cont.)



- ▶ Would it be possible to hoard transmission capacity?
 - ▶ Since TSCs would be based on reserved (not scheduled) capacity, they would act as a disincentive to reserve capacity but not schedule a transaction or sell the reservation
 - ▶ Because scheduling is first-come, first-served, reservation holders have incentive to schedule or sell their reservation early
 - ▶ Capacity not scheduled by DA deadline becomes hourly non-firm capacity available for reservation and scheduling by others (i.e., “use it or lose it”)
 - ▶ For the above reasons, hoarding would not be profitable (in the absence of market power)
 - ▶ As a backstop to these disincentives (and given the possibility of market power), MMU should monitor for patterns of reservation hoarding