Building the Energy Markets of Tomorrow . . . Today

Internal Controllable Line Scheduling

Preliminary Description

S&PWG

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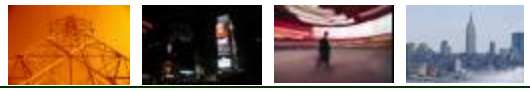
Preliminary Conceptual Description

- Conjunction LLC Empire Connection HVDC Line
  - ✓ Will be conducting an open auction for 10-year (or longer) Transmission Capacity Rights (TCRs)
  - ✓ Also planning to facilitate a secondary trading of TCRs that will permit holders to subdivide their capacity rights into shorter term contracts, or strips, as short as one hour or as long as several years.
  - ✓ The TCRs do not assign any physical scheduling rights to the holders.
- NYISO
  - ✓ Scoping out a generic proposal to accommodate the scheduling of any internal controllable facility as described in the following table.
  - ✓ In this proposal, the value to the rights holders is realized through revenue streams from day-ahead and real-time congestion rents and capacity payments available to suppliers from the unforced deliverability rights (UDRs) that this facility will provide.



Design Characteristics

NYISO Optimization Method	
NYISO Scheduling	▪ NYISO will optimize and determine the schedule of the facility day-ahead and real-time. ▪ All available capacity is subject to optimization in the scheduling tool in day-ahead and real-time. ▪ The facility would be under ISO operational control.
Energy Market and Settlements	▪ The financial settlement is based on congestion rent payments to the Merchant Transmission Operator (MTO). ▪ Deviations from day-ahead and real-time schedules will be settled at real-time prices and the MTO is financially responsible for non-performance. ▪ Settlement among the rights holders is managed by the MTO and provides the MTO the flexibility to structure the terms of their congestion rent contracts as desired. ▪ Depending on the scheduling frequency, a production cost guarantee could be necessary to ensure that the MTO is not harmed by real-time prices that are inconsistent with the schedule assigned to them by the ISO. ▪ Virtual supply and demand bids using the existing zonal capability open to all market participants would be maintained.
Merchant Transmission Operator (MTO)	▪ The MTO provides it's fixed and variable operating cost, if any, for energizing the line and losses. This cost based model parallels the treatment of AC transmission lines. ▪ Obligation to inform the NYISO of outages or deratings impacting the controllable line. ▪ Responsible for ramping of the controllable line to its schedule (possibly hourly, ¼ hourly, every 5-mins or on request for reliability purposes).
Rights Holder	▪ Requires no scheduling action by the rights holder and value may be realized with no daily interaction. ▪ Purchased rights may be viewed as strictly a financial instrument or as a financial hedge against congestion costs.
Capacity Market	▪ A facility would be assigned unforced deliverability rights. ▪ In-city requirements are determined as if this line did not exist. ▪ Availability of the line and the ICAP generation associated with the UDRs will need to be tracked.
Credit Requirements	▪ It is likely that a MTO will be subject to credit requirements by the ISO. The necessary requirements will need to determined.
TCC Auction	▪ No TCCs would be sold in the NYISO TCC auction for the line itself. ▪ The owner of a facility may be eligible for awards of expansion TCCs. ▪ Intend to permit purchase of TCCs to/from the injection and withdrawal points of a facility.

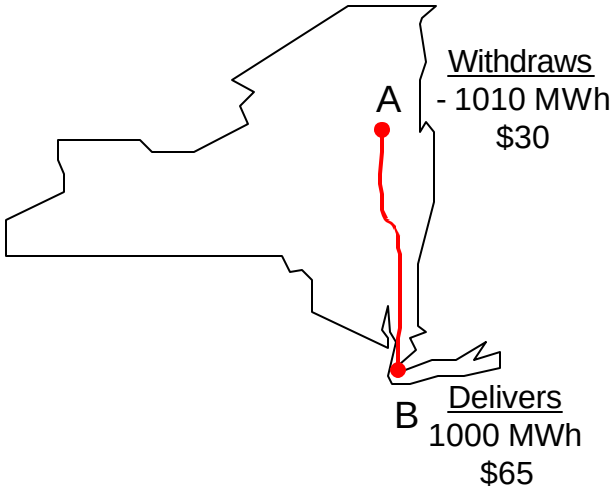
Example 1: No Deviation In Schedule

Note - These are fictional numbers for example only.

Assume:

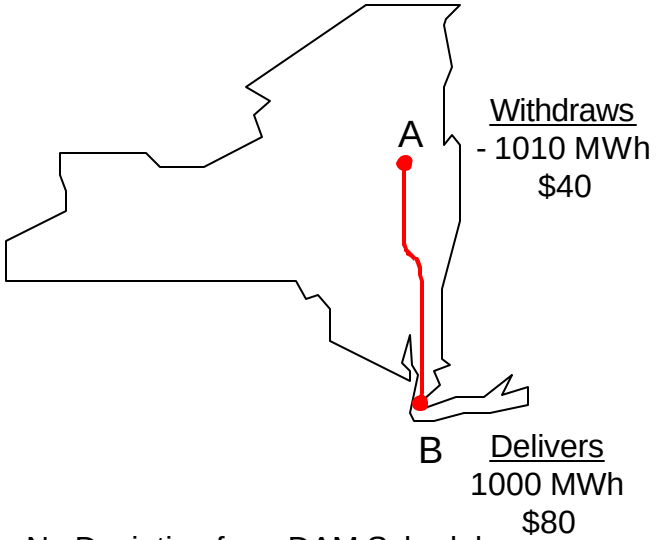
- Single line with a delivery capacity at point B of 1,000 MW.
- ~ 1% losses between injections at A and withdrawals at B.
- Variable cost of operating the line is $2/MWH (incremental conversion losses and O&M costs) and reflects the hurdle rate used by the NYISO in optimizing use of the line.

Day-Ahead



Day Ahead Revenue = $34,700

Real-Time



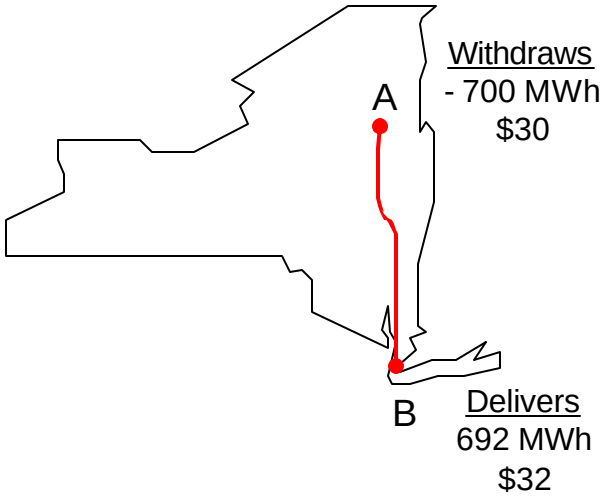
No Deviation from DAM Schedule:
Real-Time Revenue = $0

Example 2: RT Schedule Increase

Note - These are fictional numbers for example only.

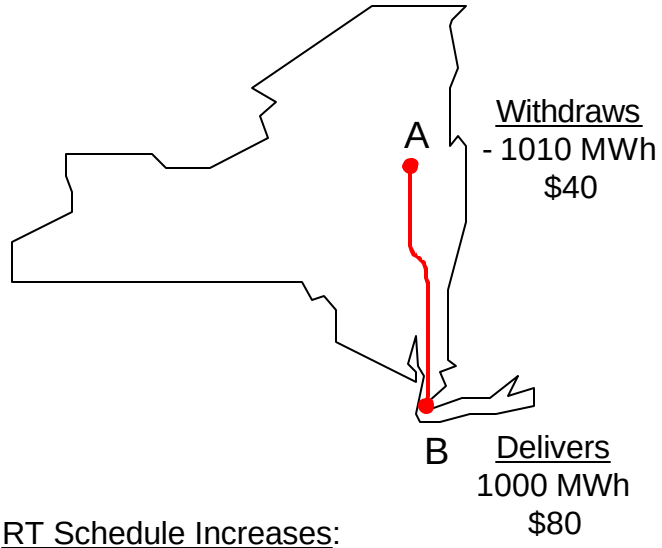
Here, because of the low margin only 700 MWh of injections and 692 MWh of withdrawals are scheduled in the day-ahead market and in real-time, the higher prices cause the line to be fully scheduled.

Day-Ahead



Day Ahead Revenue = $1,144

Real-Time



RT Schedule Increases:
Purchases Additional 310 MWh @ $40
Sells Additional 308 MWh @ $80
Real-Time Revenue = $12,240