



# Internal Controllable Line Scheduling

## Preliminary Description

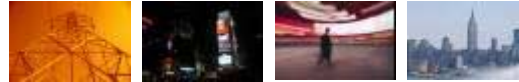
S&PWG

January 9, 2004



# 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**
  - ✓ Initial thoughts would be to accommodate the scheduling of this 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	<ul style="list-style-type: none"> <li>▪ NYISO will optimize and determine the schedule of the facility day-ahead and real-time.</li> <li>▪ All available capacity is subject to optimization in the scheduling tool in day-ahead and real-time.</li> <li>▪ The facility would be under ISO operational control.</li> </ul>
Energy Market and Settlements	<ul style="list-style-type: none"> <li>▪ The financial settlement is based on congestion rent payments to the Merchant Transmission Operator (MTO).</li> <li>▪ Deviations from day-ahead and real-time schedules will be settled at real-time prices and the MTO is financially responsible for non-performance.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ Virtual supply and demand bids using the existing zonal capability open to all market participants would be maintained.</li> </ul>
Merchant Transmission Operator (MTO)	<ul style="list-style-type: none"> <li>▪ The MTO provides its fixed and variable operating cost, if any, for energizing the line and losses. This cost based model parallels the treatment of AC transmission lines.</li> <li>▪ Obligation to inform the NYISO of outages or deratings impacting the controllable line.</li> <li>▪ Responsible for ramping of the controllable line to its schedule (possibly hourly, ¼ hourly, every 5-mins or on request for reliability purposes).</li> </ul>
Rights Holder	<ul style="list-style-type: none"> <li>▪ Requires no scheduling action by the rights holder and value may be realized with no daily interaction.</li> <li>▪ Purchased rights may be viewed as strictly a financial instrument or as a financial hedge against congestion costs.</li> </ul>
Capacity Market	<ul style="list-style-type: none"> <li>▪ The facility would be assigned unforced deliverability rights.</li> <li>▪ In-city requirements are determined as if this line did not exist.</li> <li>▪ Availability of the line and the ICAP generation associated with the UDRs will need to be tracked.</li> </ul>
Credit Requirements	<ul style="list-style-type: none"> <li>▪ It is likely that the MTO will be subject to credit requirements by the ISO. The necessary requirements will need to be determined.</li> </ul>
TCC Auction	<ul style="list-style-type: none"> <li>▪ No TCCs would be sold in the NYISO TCC auction although the TCC auction model would account for the impacts of the line as load and generation at its source and sink.</li> </ul>

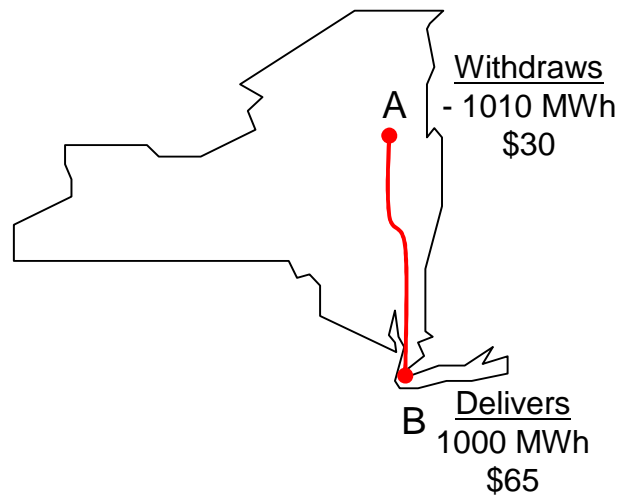


# Example 1: No Deviation In Schedule

Assume:

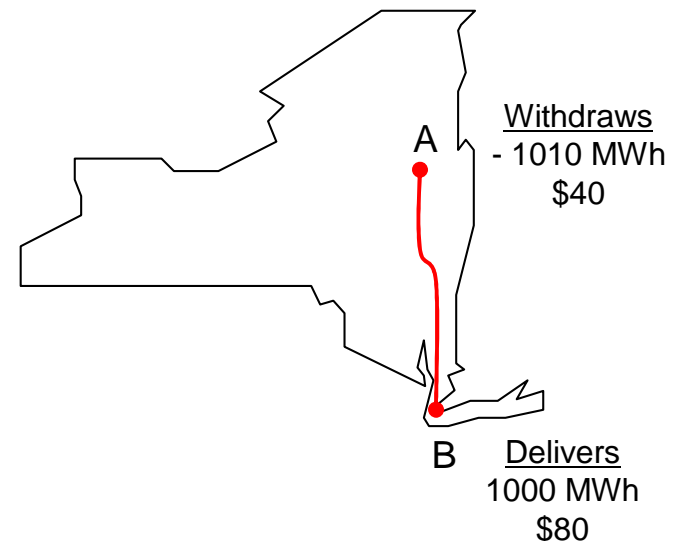
- Single line with a delivery capacity at point B of 1,000 MW.
- ~ 1% losses between injections at A and withdrawals at B.
- Variable cost of operating the line is \$2/MWh (incremental conversion losses and O&M costs) and reflects the hurdle rate used by the NYISO in optimizing use of the line.

## Day-Ahead



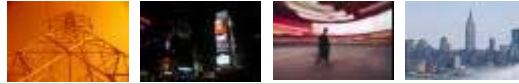
Day Ahead Revenue = \$34,700

## Real-Time



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

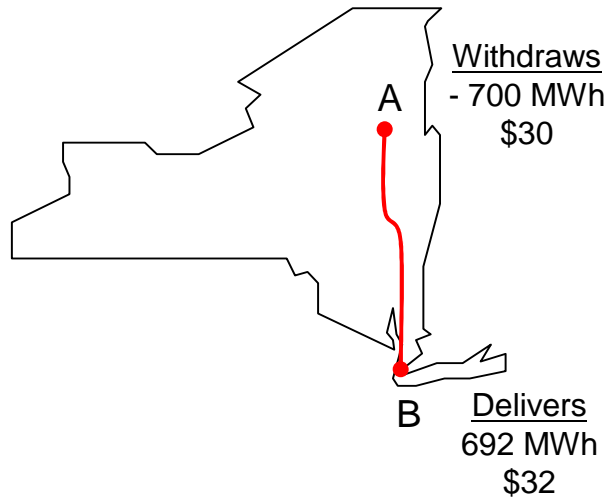
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## Example 2: RT Schedule Increase

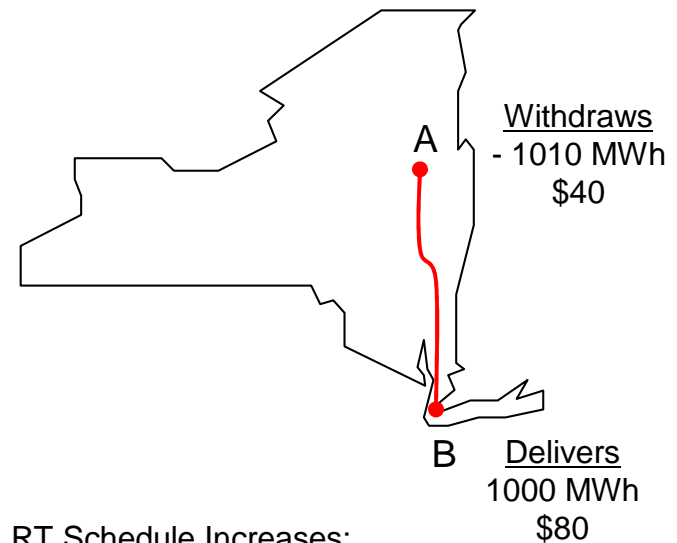
Here, because of the low margin only 700 MWh of injections and 692 MWh of withdrawals are scheduled in the day-ahead market and in real-time, the higher prices cause the line to be fully scheduled.

### 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

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