Day-Ahead Market Clearing Process

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Reliability Engineer
3-7 days out

Day-Ahead Operator

- Schedule outages
- Reliability units required for next day
- Reactive interface limits
- Constraints and switching solutions

Process Flow

INPUT → RSC → [PROBE] / SPD → SFT → Post RSC Commitment → RESULTS
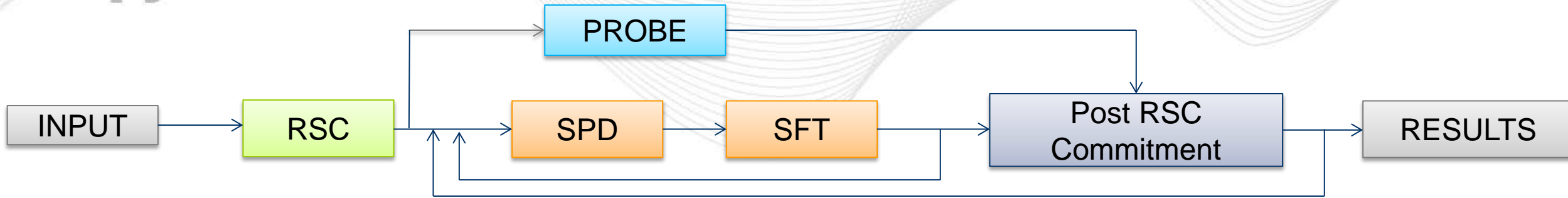
The **Resource Scheduling and Commitment (RSC)** application is the first step in the Day-Ahead Market clearing process. This is a mixed linear program that provides unit commitment solutions by modeling major transfer constraints and includes various market inputs such as increment and decrement bids, price sensitive demand, economic demand response, import and export bids, and transactions. Up-to congestion transactions are not included in this application.

The **Scheduling Pricing and Dispatch (SPD)** application is the second step to solve the Day-Ahead Market and models all constraints identified by SFT. It includes up-to congestion transactions and provides the dispatch solution with pricing.

The **Simultaneous Feasibility Test (SFT)** runs following SPD which evaluates base case and monitored contingencies for any violations.

PROBE runs concurrent to SPD and SFT and provides a recommendation to the DA Operator that modifications to the RSC Commitment may be necessary. PROBE models for all constraints and includes the application of the TPS test and optimizes pumped storage resources. The PROBE application acts as a separate decision support tool that is not connected to the PJM network or databases.

Post RSC Commitment accounts for the PROBE recommendation, Dispatcher Must Run Change Requests, Real time constraint information, Minor hourly begin/end of run, TPS mitigated unit commitment and schedule change, Small generator commitment change due to MIP Gap. Typically ~10 unit adjustments needed (600-800 normally committed via RSC)

- Sacrifice RSC convergence tolerance for solution speed
    - **PROBE** solves fast as a stand alone tool

- Simultaneous vs. Sequential optimization

- Subset of constraints (RSC) vs. full constraint model (SPD-SFT/PROBE)

- Account for Real-time conditions:
    - Emergencies
    - Switching solutions (not accounted for in original Day-Ahead case)