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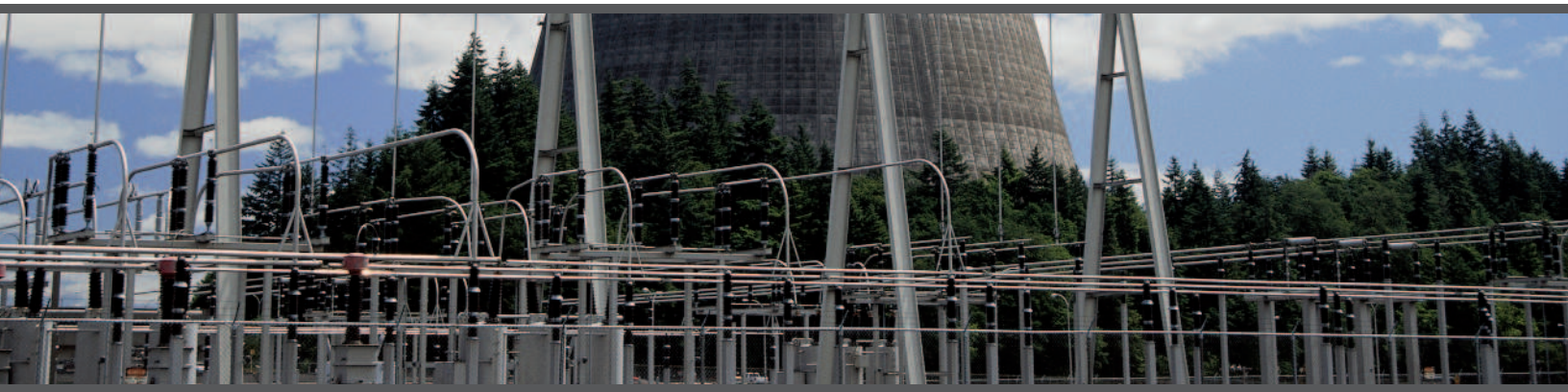
Product Overview

Promod IV



Generator and Portfolio Modeling System with Nodal LMP Forecasting & Transmission Analysis

Promod IV is the industry-leading Fundamental Electric Market Simulation solution, incorporating extensive details in generating unit operating characteristics, transmission grid topology and constraints, and market system operations.

Promod IV algorithms can be exercised in the following modes, depending upon the scope, timeframe, and simulation resolution that align with the decision focus:

Nodal

Locational Marginal Price (LMP) Forecasting □ Promod IV performs a security constrained unit commitment and economic dispatch that is co-optimized with operating reserve requirements, similar to how ISOs set schedules and determine prices. LMP may be reported for selected nodes, user-defined hubs, or load-weighted or generator-weighted zones; this may be further broken down into a reference price, a congestion price (showing individual flowgate contributions to congestion), and a marginal loss price.

Financial Transmission Right (FTR), Congestion Revenue Right (CRR) and Transmission Congestion Contract (TCC) Valuation □ Promod IV provides all market participants and energy companies with the powerful tools needed to quantify market prices, identify binding constraints, and evaluate economic impacts of the specific constraints that have strategic significance to specific portfolios and business needs.

Renewable Energy Curtailment □ Promod IV simulates the effects of intermittent energy schedules from wind and solar projects on transmission congestion, and forecasts the amount of energy that would be curtailed considering the opportunity costs from production tax credits.

Economic Transmission Analysis □ Promod IV provides market participants and energy companies with the ability to quickly evaluate the economic benefit/cost, the increase/decrease in hourly/monthly congestion, and the increase/decrease in reliability metrics associated with transmission expansion and outage scheduling.

Zonal

Power Market Analysis Promod IV simulates, on an hourly basis, the applicable market area under a variety of operating or market conditions. This information is then used to quantify the operating risks associated with each facility and develop a detailed forecast of market prices and system operation under various conditions. Promod IV can be used to perform long-term, transportation-based simulations of regional markets with robust hourly unit commitment and dispatch decisions, using the capacity expansion determined by MarketPower.

System Reliability

Multi-Area Reliability (MARELI) MARELI calculates loss-of-load probability, expected unserved energy, and loss-of-load hours for a system in which inter-tie limitations and pooling agreements constrain the extent to which different areas within a system can or will support one another. The model can also be used to determine the effective capacity support provided to each area by virtue of its interconnections. Applications for MARELI include:

- assessing the availability of support from neighboring areas,
- evaluating the need for additional transmission capability,
- integrated planning within a power pool, and
- Identifying relatively reliable or unreliable areas within a network.

North America Simulation Ready Data

Ventyx provides a complete database for the North America power markets that is ready-to-run in Promod IV. The database is broken out by the three main electric interconnections: Eastern, Western (WECC), and ERCOT. Included in the database are detailed operating characteristics for all generating units, hourly load shapes and forecasts for each area, and a zonal transmission topology. For nodal analysis, additional datasets are available which include a detailed transmission topology from a future powerflow case, flowgate limits and contingencies, and LMP hub definitions. For long-term analysis, Power Reference Case data may be added which include 25-year projections of fuel and emission costs, generic unit and zonal transmission expansion, and environmental retrofits and retirements.

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Ventyx, an ABB company, is the world's leading supplier of enterprise software and services for essential industries such as energy, mining, public infrastructure and transportation. Ventyx solutions bridge the gap between information technologies (IT) and operational technologies (OT), enabling clients to make faster, better-informed decisions in both daily operations and long-term planning strategies.

Some of the world's largest private and public enterprises rely on Ventyx solutions to minimize risk, enhance operational and financial performance, and execute the right strategies for the future.

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