



Energy Planning  
& Trading

**HITACHI**  
Inspire the Next



Generation and transmission modeling system  
with nodal and zonal price forecasting

**PROMOD®**

# PROMOD

is the premier integrated electric generation and transmission market simulation system

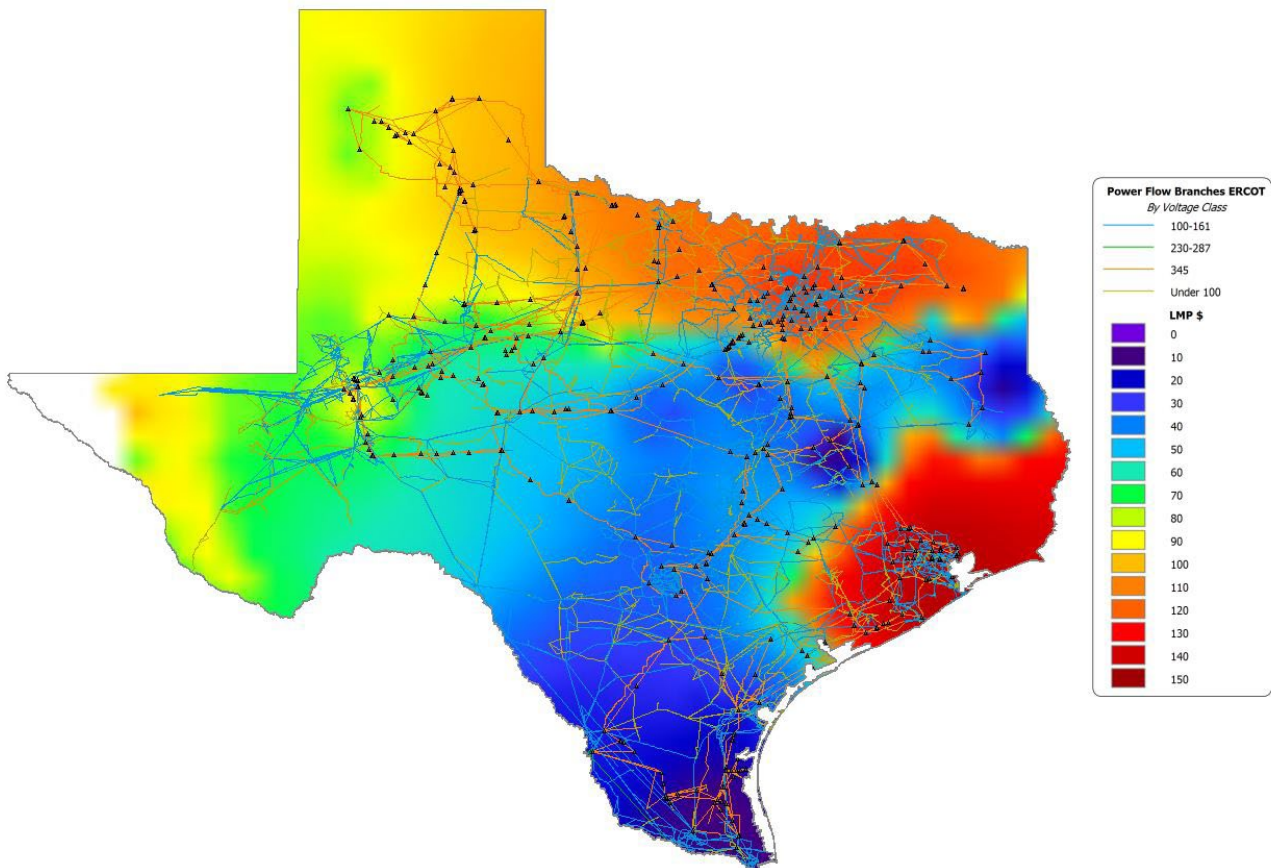
PROMOD is recognized in the industry for its flexibility and breadth of technical capability, incorporating extensive details in generating unit operating characteristics and constraints, transmission constraints, generation analysis, unit commitment/operating conditions and market system operations.

For over 45 years, energy firms have been using PROMOD for a variety of applications that include locational marginal price (LMP) forecasting, financial transmission right (FTR) valuation, environmental analysis, asset valuations (generation and transmission), transmission congestion analysis, and purchased power agreement evaluations.

PROMOD provides valuable information on the dynamics of the marketplace by determining the effects of transmission congestion, fuel costs, generator availability, bidding behavior, and load growth on market prices. PROMOD performs a security constrained unit commitment and economic dispatch, recognizing both generation and transmission impacts at the nodal and zonal level.

PROMOD forecasts energy prices, unit generation, revenues and fuel consumption, external market transactions, transmission flows and congestion and loss prices.

PROMOD is built on robust data structures. This includes the ability to enter time-based data changes and detailed generator data inputs. In addition to unit capacity changes, users can enter data describing future changes to generator data.



Color gradient shows pricing hot spots by voltage level

## Nodal: price forecasting

PROMOD performs a security constrained unit commitment and economic dispatch that is co-optimized with operating reserve requirements, similar to how transmission/independent system operators (TSOs / ISOs) set schedules and determine prices, in order to provide forecasts of LMPs. LMP may be reported for selected nodes, user-defined hubs, or load-weighted or generator-weighted hubs; this may be further broken down into a reference price, a congestion price (showing individual flowgate contributions to congestion), and a marginal loss price.

## Nodal: transmission and congestion valuation

PROMOD performs valuation of transmission, congestion and associated financial instruments, such as financial transmission rights (FTRs), congestion revenue rights (CRRs) and transmission congestion contracts (TCCs), by providing 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.

## Nodal: renewable energy valuation

PROMOD simulates the effects of intermittent energy schedules from wind, solar, and other renewable projects on transmission congestion, and forecasts the amount of energy that may be curtailed considering the opportunity costs from production tax and renewable energy credits. This information enables the user to evaluate renewable projects and their impacts on the wider generation and transmission system.

Nodal: economic transmission analysis PROMOD provides market participants and energy companies with the ability to evaluate the economic benefit, changes in transmission congestion, and impact to generation assets associated with transmission expansion and outage scheduling. By simulating the energy market in detail, users are able to see the LMP and its components, transmission flows, and the behavior of the generating units.

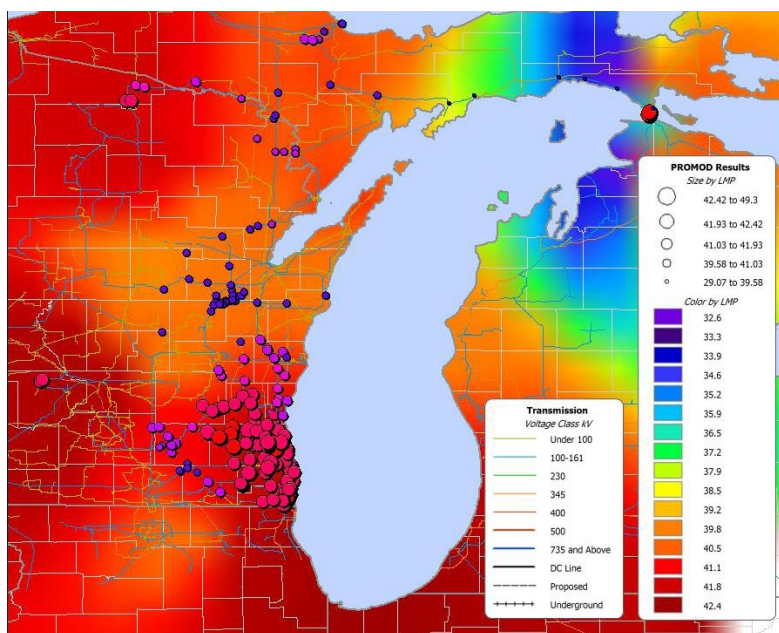
## Zonal: power market analysis

PROMOD simulates, with the applicable region under a variety of conditions. This information is then used to quantify the operating risks associated with each facility and develop a detailed forecast of zonal market clearing prices and system operation under these conditions. PROMOD is also used to perform long-term, transportation-based simulations of regions with robust unit commitment and dispatch algorithm, using the capacity expansion determined by our Power Reference Case, Capacity Expansion or Market Power solutions.

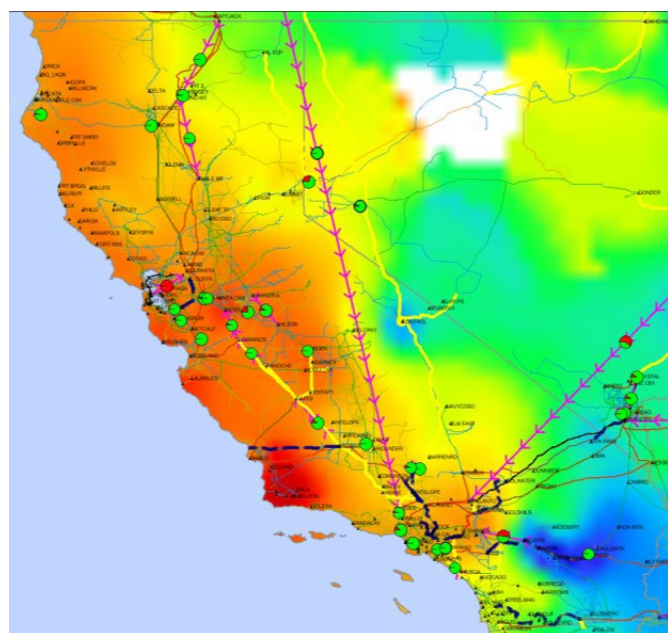
## Learn more

Hitachi Energy provides best-in-class simulation-ready data that is used and analyzed by hundreds of analysts internally and externally. Simulation-Ready Data (SRD) is derived from our Velocity Suite product and read by PROMOD to simulate the grid and provide beneficial results.

SRD is updated twice a year and models the three interconnections in North America: the Eastern Interconnect, the Western Interconnect and ERCOT. SRD has multiple options including zonal, nodal and future cases based on our clients' needs. Several international datasets are available as well and custom regions available upon request.



Visualize grid results using GridMaps



Use customizable, time varying heat maps to analyze impacts to the grid

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