

Generation Assets

Solution overview

Value, hedge and analyse one or more thermal, hydro or wind generator types in a single asset portfolio or in a portfolio consisting of assets, derivatives, virtual power plants or power purchase agreements. Lacima's solution for generation assets provides structuring, valuation and risk teams with the ability to quickly and efficiently value and analyse a full range of generation assets.

Business benefits and key functional features

- **Value** generation assets to optimise trading outcomes
- **Value, hedge and analyse** tolling agreements and power purchase agreements
- **Maximise** calculation speed and optimise profitability by choosing any of the comprehensive set of available dispatch models
- **Analyse** the effectiveness of hedges for a power plant or a portfolio of plants
- **Obtain decision support** for valuation assessments for electricity generation assets, virtual power plants and power purchase agreements
- **Perform scenario analysis** for a wide range of user defined parameters, forward curves, portfolio mixes or volatilities
- **Calculate full distributions** for revenues, profits and volumes
- **Implement with no costly replacements** of existing deal capture systems and databases
- **Achieve full transparency** with published analytics methods readily available to clients

Generators modelled

Thermal Generator

The two available models cover a wide range of thermal generator types. The Ramping Generator is an optimisation algorithm that focuses on flexible assets, while the Price Based Generator is an algorithm specifically created to reduce calculation run times for base load plants, peaking plants and plants with highly constrained specific running regimes. The generator types include Nuclear, Coal, OCGT, CCGT, CHP, dual fuel or fuel switching, and multiple OCGT units connected to a single HRST.

Value and optimise a wide range of thermal, hydro or wind generation assets to maximise trading profitability.

Calculate full distributions for revenues, profits and volumes.

Lacima provides the ability to handle the following constraints and flexibilities for this generator type:

- Perform spark spread based optimisation (green or dark)
- Capture emissions costs of CO₂, NO_x and SO_x
- Apply fixed and variable costs (including VOM)
- Schedule full maintenance and apply forced outages
- Utilise minimum stable and must run levels
- Incorporate hot, cold and warm up/down ramp rate parameters
- Incorporate hot, cold and warm start up costs
- Utilise generation level dependent heat rates
- Incorporate minimum up and down times
- Choose from a range of single factor and multi-factor models.
- Easily and efficiently manage all parameters and forward curves
- Auto-calibrate all model required price curve volatilities to historic spot or forward prices.

Hydro Generator

The two available models cover a wide range of hydro generator types. The Pump Storage Generator is an optimisation algorithm that focuses on maximising the value of pump storage hydro facilities, while the Hydro Reservoir is an algorithm specifically created to handle hydro generators with constraints in available energy and stochastic water inflows. Cascading hydro facilities can also be accurately modelled.

Lacima provides the ability to handle the following constraints and flexibilities for this generator type:

- Apply fixed and variable costs (including VOM)
- Efficiently manage top reservoir volume constraints, pumping rates, generation rates
- Schedule full maintenance and apply forced outages
- Apply inflow and outflow constraints
- Enter reservoir capacity constraints
- Use in conjunction with Lacima's hybrid models to enable implementation of snow melt and rain inflow
- Cascade outflows into other units as inflow to represent a complete hydro system.

Wind Generator

The Wind Generator is a dispatch algorithm focussing on accurately translating wind velocity into generation level for a single turbine or a whole farm.

Lacima provides the ability to handle the following constraints and flexibilities for this generator type:

Perform scenario analysis for a wide range of user defined parameters, forward curves, portfolio mixes or volatilities.

- Apply fixed and variable costs (including VOM)
- Schedule full maintenance and apply forced outages
- Apply forced outages to a single turbine or a whole farm of turbines

Key systems features

- Integrate easily with any energy trading and risk management system and benefit from seamless data transfer and consolidated reporting.
- Upload data (including market curves, historical data, valuations and previous runs) automatically and quickly.
- Manage all your data. Recreate results as all data is saved.
- Manage forward quotes and create forward curves.
- Export results and analyse risk factors with ease
- Enjoy the flexibility of a spreadsheet within an application environment providing all the security and controls for good risk management practice and auditability

Models and methodologies

Models are developed and implemented by peer recognised experts.

- Models report on intrinsic, extrinsic and full optimal value
- Users can choose from a range of models
- All parameters and forward curves can be easily and efficiently managed
- All model required price curve volatilities can be auto-calibrated to historic spot or forward prices

Generation Assets is a solution in the Valuation & Optimisation Suite within Lacima Analytics – Lacima’s groundbreaking application for energy risk management, valuation and optimisation. Each suite or single solution can be delivered individually or combined seamlessly with any other suite(s) and solution(s) in Lacima Analytics to create an answer tailored to your specific needs.

About Lacima

Lacima is a specialist provider of software and advisory services dedicated to valuation, optimisation and risk management for global energy markets. We help you to maximise your profit potential and make more informed decisions by providing tools that yield more accurate valuations, hedging analysis and risk exposure analysis for portfolios of financial contracts and physical assets.

Clients of our software and services include structuring, valuation and risk teams in vertically integrated energy companies, energy retailers, financial institutions and large energy consumers in Europe, North America and Australasia.

Our software solutions have been developed and implemented by peer-recognised experts in energy analytics, offering an unparalleled level of expertise and personalised support.

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