

PÖYRY ELECTRICITY MARKET MODELLING
INTRODUCING BID3



BID3

Power Market Model

BID3 is Pöyry Management Consulting's power market model, used to simulate the dispatch of all supply and demand in electricity markets. Equally capable of covering both short-term analysis for trading and long-term scenarios, BID3 is a fast, powerful and flexible tool that provides comprehensive price projections in an intuitive and user-friendly interface.

WHAT IS BID3?

BID3 is an economic dispatch model based around optimisation. It simulates the hourly generation of all power stations on the system, taking into account fuel prices and operational constraints such as the cost of starting a plant. It accurately models renewable sources of generation such as hydro, reflecting the option value of water, and intermittent sources of generation, such as wind and solar using detailed and consistent historical wind speed and solar radiation.

WHAT IS BID3 USED FOR?

BID3 provides a simulation of all the major power market metrics on an hourly basis – **electricity prices, dispatch** of power plants and **flows** across interconnectors. BID3 can be run for both **short term** market forecasts and long term **scenario analysis**.

BID3 is the perfect tool to assess the **market value** of power plants under a range of situations, through outputs like market revenue, load factor, fuel and CO2 costs, or the number of starts per year. These results can be computed for a single plant, or for an entire **project portfolio** for planning and investment purposes, assessing the effect of both internal decisions and a large range of external factors.

BID3 can be used for the economic assessment of interconnectors, outlining flows and congestion rent, as well as socio-economic and other commercial benefits.

BID3 has a very detailed description of **intermittent renewable sources**, basing generation on historically observed wind speed and solar irradiation data. BID3 has been used in a wide variety of **policy design** assessments, and allows precise modelling of market designs such as capacity mechanisms and energy-only markets.



Sophisticated **Autobuild module** for scenario generation with optimal new-build, retiral and mothballing.

Optimisation of **start-up and part loading costs** for thermal plant, including start-up.

Comprehensive **plant dynamics**, including.

1. minimum stable generation;
2. ambient temperature effects;
3. minimum on and off times; and
4. start-up ramp rates.

Hourly **renewable generation** based on detailed wind speed and solar radiation data.

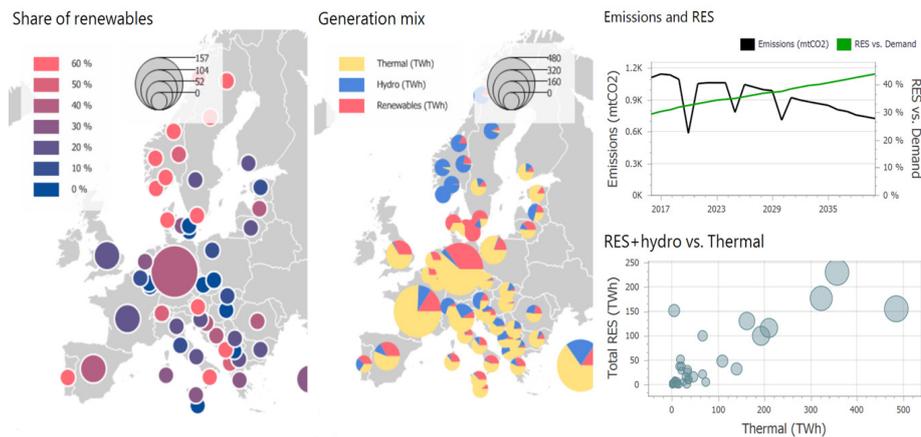
Option valuation for **reservoir hydro** using stochastic dynamic programming.

Detailed **Combined Heat and Power (CHP) modelling**, including heat load, incremental efficiencies, and backpressure and extraction modelling.

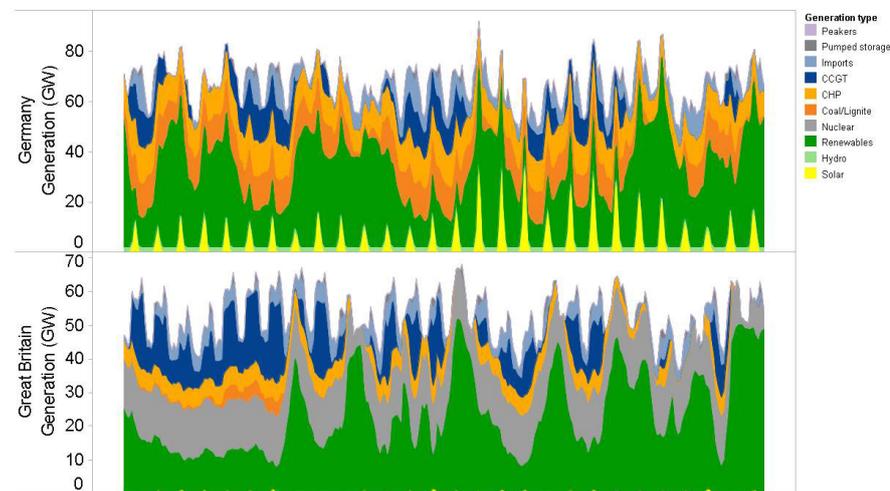
Sophisticated treatment of **Demand Side Management** and storage, allowing simulation of flexible load such as electric vehicles and heat.

Sub-hourly modelling with up to 1 minute resolution.

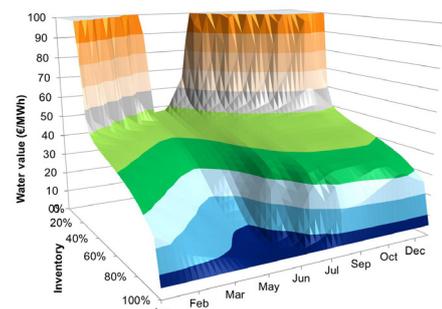
Co-optimisation of energy and reserve holding, including inertia, primary, secondary and tertiary.



Sophisticated charting and dashboards allowing instant visualisation of data



The impact of intermittent wind or solar generation can be easily visualised



Water value curves reflect the option value of reservoir hydro generation based on the time of year and the fullness of the reservoir

WHERE DOES BID3 COVER?

Europe



WHY BID3?

BID3 is unique, by its origins as well as by its functionality and data.

BID3 has been fully developed by Pöry's European **market experts**, and Pöry uses the model to underpin its best-in-class services and advisory work to its clients. A very large range of companies and institutions trust Pöry for their independent and **high-quality power market projections**.

BID3 combines state-of-the-art simulation of thermal-dominated markets, reservoir hydro **dispatch under uncertainty**, demand-side response and scenario-building tools.

We can provide access to **detailed data sets**, all collated, fully tested and used by Pöry. Databases are delivered 'ready to go' with fully tested backcasts for a number of historical years. This gives immediate trust in the quality and robustness of results produced by the model. Data sets contain all that is needed to begin running simulations, such as all power plants and their technical characteristics, hourly renewables data, demand and interconnection.

BID3 is already used and trusted by a variety of utilities, regulators, and operators. BID3 is a fully commercial, **flexible** and **user-friendly** model, supported by a large team of power market experts in Pöry.

Data is available for a large number of countries worldwide and is continually expanding





Engineering balanced sustainability™

Contact us:

+44 (0)1865 812224
BID3@poyry.com

Poyry Management Consulting (UK) Ltd.
King Charles House
Park End Street
Oxford
OX1 1JD
United Kingdom

VISIT OUR WEBSITE

For more information about BID3 as well as links to our other services, please visit:
www.poyry.com/BID3

www.poyry.com

Pöyry is an international consulting and engineering company. We serve clients globally across the energy and industrial sectors and provide local services in our core markets. We deliver management consulting and engineering services, underpinned by strong project implementation capability and expertise. Our focus sectors are power generation, transmission & distribution, forest industry, chemicals & biorefining, mining & metals, transportation and water. Pöyry has an extensive local office network employing about 6,000 experts. Pöyry's net sales in 2015 were EUR 575 million and the company's shares are quoted on Nasdaq Helsinki (Pöyry PLC: POY1V).