

GTMAX: GENERATION AND TRANSMISSION ANALYSIS SOFTWARE

INTRODUCTION

Argonne National Laboratory developed the Generation and Transmission Maximization (GTMax) model to study complex marketing and operational issues in today's restructured power systems. The software is distributed worldwide by ADICA Consulting. GTMax helps generation companies and utilities maximize the value of their system assets, taking into account firm and non-firm contracts, independent power producer (IPP) agreements, bulk power transaction opportunities, and limitations of energy and transmission resources.

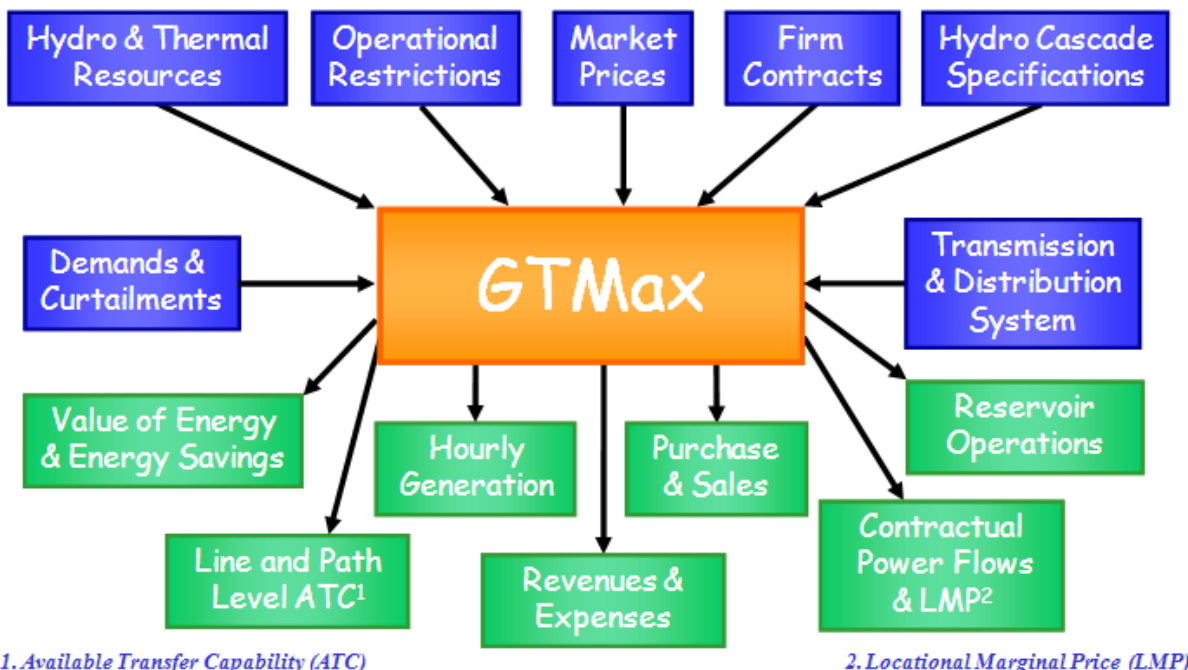
GTMax has a point-and-click interface that uses a node and link representation of power system components including power plants, load centers, interties with other power systems, transmission lines, and bilateral contract delivery points. The software can be applied to represent different power systems with varying levels of detail.

CAPABILITIES

GTMax simulates regional or national generation and transmission systems. The software maximizes net revenues while ensuring that market transactions and system operations are within physical and institutional limitations. Some limitations that are modeled include power plant seasonal and hourly maximum and minimum generation levels, limited energy constraints, contractual transmission capabilities, and terms specified in firm and IPP contracts. GTMax also considers detailed operational limitations such as power plant ramp rates and hydropower reservoir constraints.

In simulating multiple systems, GTMax identifies utilities and assets that can successfully compete by tracking hourly energy transactions, costs, and revenues.

GTMAX INPUT INFORMATION AND MODEL RESULTS



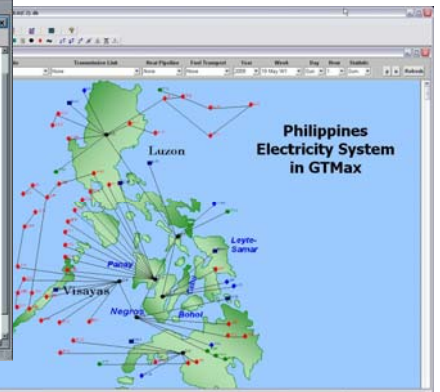
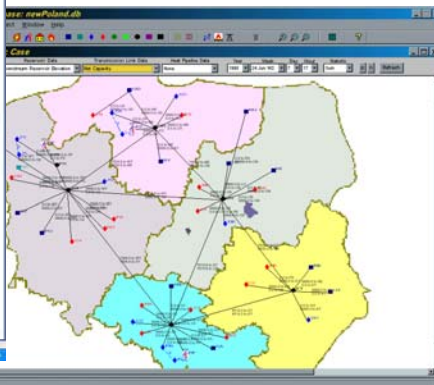
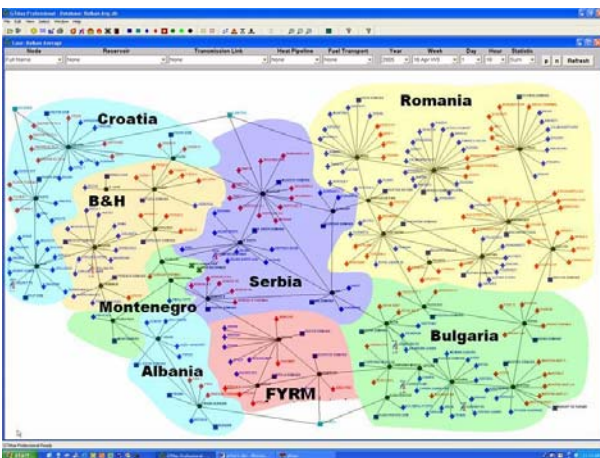
DISTINGUISHED ACCOMPLISHMENTS

USAID conducted a Technology Review of the GTMax software. Factors considered in this review, include: suitability and cost-effectiveness of the software solution; maintenance; training; and staffing. Upon completing this review, USAID procured 15 GTMax licenses for utility companies in seven countries of Southeast Europe.

As specified in the Terms of Reference for a Generation Investment Study for Southeast Europe, executed for the European Union and World Bank, the WASP model was used to develop long-term expansion plans for national power systems in the region and the GTMax software was used to analyze hourly operation of the regional electricity market to identify projected trades between regional market hubs, LMPs across the regional network, and economic benefits of regional trading.

GTMax worldwide clients include electric utilities, government institutions and regulatory bodies, power merchants, transmission companies and research institutes, which use this software to:

- Evaluate investment options in new generation and transmission assets
- Evaluate firm contracts, energy exchange agreements, and IPP agreements
- Estimate available transmission capability
- Optimize hydro and thermal generation
- Develop optimized spot market strategies
- Project regional hourly market clearing prices under different market rules and bidding strategies



- Analyze the effect of potential legislation on the electricity market
- Analyze competitiveness of individual generators to assess stranded cost issues
- Analyze potential for distributed generation and demand side management (DSM)
- Compute the cost associated with environmental legislation

REFERENCE APPLICATIONS

The model is currently used by:

- A large US utility company to determine hourly, weekly, and seasonal power and energy offers to customers and fine tune hourly resource generation patterns, spot market transactions, energy interchanges, and power wheeling
- The US Bureau of Reclamation to compute the economic and financial costs associated with environmental restrictions on hydropower operations
- A large US energy marketing office to identify operational strategies that optimize the value of company resources while taking advantage of market opportunities
- A large international power merchant to assess the financial viability of two transmission line projects in the Balkans
- The Polish Energy Market Agency to estimate the competitiveness of small gas-fired cogeneration in Poland's newly restructured energy markets
- A large US utility company to compute available transmission capabilities for future postings on regional Open Access Same-time Information Systems (OASIS)

Sample GTMax screen captures are displayed below:

LEARN MORE ABOUT THE GTMAX SOFTWARE AT WWW.ADICA.COM

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