

# IBM Software Group

## Unit Commitment



### Solution Description

The energy and utilities industry currently faces many challenges, such as the burden to help mitigate the negative impact of climate changes. In many parts of the world, delivery infrastructures, power transmission lines and gas pipelines are overtaxed, as investments have not kept pace with growing demand and aging equipment. Unit commitment—or short-term generator scheduling while taking account of start-up costs and time delays—has historically proven to be one of the toughest optimization problems to solve.

The Unit Commitment solution supports resource planning, allowing organizations to determine long-term investments in supply- and demand- side resources. Years of improvements in computation algorithms and hardware make our optimization tools more powerful than ever. The last ten years have seen a revolution in solving unit commitment problems. Optimization models can rapidly solve the bigger, more complicated models to address the complex issues facing the modern energy and utility industry.

### Features & Benefits

The Unit Commitment solution helps companies effectively deal with the many issues currently facing the energy and utility industry:

- Select bids and schedule power generators to cost-effectively meet hourly demands, taking full advantage of renewable resources and available storage
- Make the best use of seasonal water availability and balance the competition among power generation, irrigation, recreation, fisheries and other uses
- Ensure your generators serve loads at the lowest cost, while effectively using available transmission and operating securely in the face of multiple contingencies
- Ensure your pipeline and compressor capacities meet the needs of multiple shippers and numerous delivery points
- Make maximum use of refueling outages to perform critical maintenance in a safe manner, while ensuring fast return to service

### Value Proposition

Our optimization tools find non-obvious solutions, maximizing value and minimizing costs. At the same time, the Unit Commitment solution considers the many complex requirements and limitations of modern energy and power system operations. The solution allows for faster decision processes and decreases response time, allowing operators and planners to focus on critical complexities rather than on routine issues. Most importantly, the solution produces quantifiable benefits on the bottom line—often with payback in less than a year.

#### IBM Segment

- ILOG Optimization

#### Business Function

- Generator Optimization

#### Target Industry

- Energy and Utilities

For more information, contact:

#### IBM Corporation

Kristen Meyer  
703-889-5302  
kristenmeyer@us.ibm.com  
[www.ibm.com/software](http://www.ibm.com/software)

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