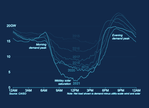
Maximize use of renewable energy without sacrificing reliability

A new unit commitment method for effective integration of renewable energy into the power system

It's possible to accelerate carbon reduction targets with existing assets and help secure a mixed-generation fleet's future ability to reliably meet demand.

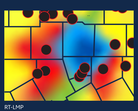
Due to their variable and uncertain nature, renewable energy sources pose significant challenges to unit commitment optimization.

CHALLENGE 1



Variability, including weather volatility, drives uncertainty

CHALLENGE 2



Transmission constraints

CHALLENGE 3

Siloed workflows

Current Unit Commitment Optimizer algorithms are unable to accurately manage uncertainty and output variability, leading to an increase in operating costs, energy prices and carbon emissions.

Lack of visibility is ultimately contributing to an increased carbon footprint.

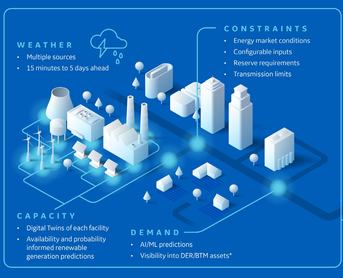
INTRODUCING

Fleet Orchestration

Fleet Orchestration employs stochastic modeling and a fast-solving, multistage probabilistic unit commitment engine. This new method incorporates uncertainty and variability into the planning and optimization process, allowing for more efficient, sustainable and cost-effective integration of renewable energy.

With more accurate renewable energy forecasts, power utilities can better anticipate and manage fluctuations in supply and demand, reduce the need for excessive reserves and expensive power purchases, and improve overall system efficiency and carbon footprint.

An Intelligent Fleet



STOCHASTIC UNIT COMMITMENT OPTIMIZER

- 15 minute, day, and week ahead recommendations
- Integration with Energy Management System*
- Visibility into how to best navigate the uncertainty of matching generation and demand

UNCERTAINTY

- Variability is captured from all inputs
- Fast solution architecture allows model to factor in the impact of variability

*GE Grid Product

01 Advanced Digital Twin Modeling

Digital Twin models of each power plant in the fleet provide probabilistic insight into future generation capacity continuously updated on 3 key inputs

1. Weather impacting each facility
2. Degradation or upgrade impacts on plant performance
3. Outages impacting availability

02 Configurable

Combines this stochastic generation information with configurable input from customers on upcoming demand and other inputs impacting operations

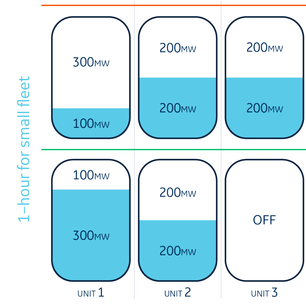
03 Fast Run Time

Analyze 1000s of scenarios in seconds, updating recommendations as frequently as every 15 minutes

04 Single Source of Truth

Across the entire organization

Spinning Reserve Before & After Implementing Recommendations



BEFORE

If units are at part load, unused capacity = spinning reserve

500MW Generation
700MW Spinning Reserve

AFTER

If units are at baseload or off, no spinning reserve

500MW Generation
300MW Spinning Reserve

Fleet Orchestration maintains reliability while maximizing the benefits of your renewable energy sources.

RESULT

$10M+

of annual savings

6GW fleet in North America

Ready to explore a more sustainable and cost-effective power generation across your fleet that benefits both the environment and your customers?

Speak with a GE representative