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POWER GRID CONTINUOUS-TIME SCHEDULING, PRICING, & STORAGE OPTIMIZATION

COMPUTING

Software suite that enables more cost-effective and efficient power grid operations.

TECHNOLOGY TYPE

Simulation & Modeling

STAGE OF DEVELOPMENT

- Concepts developed.

- Mathematical methods coded and tested on test power systems operations.

IP PROTECTION

U.S. Utility Patents Issued

Systems and Methods for Power System Management

US10296030B2

Systems and Methods for Managing Power Generation Resources

US10282687B2

FUNDING TO DATE

\$150k from the NSF.

LEARN MORE

Reference Numbers: U-6036, U-6072, U-6279

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TECHNOLOGY SUMMARY

The lag between demand spikes and energy production, a common situation referred to as a ramping scarcity event, results in higher consumer prices, overburdened energy grids, and higher costs to utility companies.

U of U researchers have developed a software suite composed of multiple algorithms that generate continuous-time estimates of the most efficacious strategies for energy pricing, generation, scheduling, and storage. Continuous-time demand optimization is based on marginal pricing, flexible loads, and power generation ramping trajectories. These optimization algorithms have been created to avoid ramping scarcity events, more accurately predict consumer prices, and off-load overburdened energy grids to available energy storage devices.

FEATURES AND BENEFITS

- Distributes grid supply and demand resourcefully, leading to greater system efficiency.
- Avoids expensive ramping scarcity events.
- Reduces costs to consumers and energy grid operators.
- Supports energy storage interconnection guidelines.

RECENT PUBLICATIONS

Khatami, R., Parvania, M., & Khargonekar, P. P. (2018). Scheduling and pricing of energy generation and storage in power systems. *IEEE Transactions on Power Systems*, 33(4), 4308-4322. doi:

[10.1109/tpwrs.2017.2782676](https://doi.org/10.1109/tpwrs.2017.2782676)

For more information, please visit the [Utah Smart Energy Lab](#) website.

INVENTOR PROFILE

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