

Comparing residential energy use on similar weather days

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The microgrid for the Smart Neighborhood in Hoover, Alabama, consists of solar panels and a battery pack and allows homes to disconnect from the main power grid. Credit: Southern Company

To better determine the potential energy cost savings among connected homes, researchers at Oak Ridge National Laboratory [developed a](#)

[computer simulation](#) to more accurately compare energy use on similar weather days.

"Since no two weather days are alike, we created a simulated weather identification model that keeps environmental impacts such as temperature changes and sunlight consistent," said ORNL's Supriya Chinthavali. "This will help address the challenge of quantifying [energy cost](#) savings, which utility companies and homeowners are most interested in."

The team is analyzing [energy use](#) data from a neighborhood-level research platform comprising 62 homes called [Smart Neighborhood](#), powered by traditional electric grid and microgrid sources.

The goal is to co-optimize energy cost, comfort, environment and reliability by controlling the connected homes' devices—particularly the HVAC and water heater, a home's largest energy consumers.

Future analysis by ORNL, Southern Company and university partners will include potential [energy cost savings](#) details.



The Smart Neighborhood in Hoover, Alabama, a 62-home development is connected to a microgrid operated by ORNL's open source controller. The research is sponsored by the DOE Building Technologies Office and supports BTO's Grid-Interactive Efficient Buildings strategy. Credit: Southern Company

Provided by Oak Ridge National Laboratory

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