

## Web tool helps determine best energy storage options

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(Phys.org) -- Sandia National Laboratories and the Department of Energy have released a new tool to help utilities, developers and regulators identify the energy storage options that best meet their needs.

Partnering with DNV KEMA, a global testing and <u>consulting firm</u>, Sandia is releasing <u>Energy Storage</u> Select, or ES-Select, software under a public license to the company. The <u>tool</u> makes it easier to conduct a quick, high-level analysis of energy storage options and determine the value of energy storage technologies for a specified application, which developers say will increase the <u>adoption</u> of energy storage technologies.

"ES-Select is the first of a suite of easily accessible web tools to help potential users and regulators to make decisions on energy storage options in specific applications," said Imre Gyuk, program manager of DOE's Energy Storage program.

The application is available for free download on Sandia's Energy Storage website. "This tool is designed to help users to understand at a basic level what storage can do. If it looks beneficial from a cost standpoint, they can explore the options further," said Sandia project manager Dhruv Bhatnagar.

Utilities and developers who want to use energy storage have many technologies to consider, including flywheels, compressed air, pumped hydro and thermal storage and six types of electric batteries. All have different costs, and estimating revenue from using various applications is



difficult. Researching all relevant cost factors independently could take days or weeks in the past, but ES-Select aggregates all relevant factors into a single decision-support tool that runs in a few minutes. If the results are favorable for a particular technology, users can determine whether to run detailed, site-specific analysis using other tools.

"ES-Select is an educational and decision-support tool for deployment of energy storage on the power grid," said Ali Nourai, executive consultant for DNV KEMA, and co-developer of ES-Select. "It has been created for public use to promote the understanding of storage technologies and the benefits they offer when applied on the electric grid."

The tool aids decisions about what storage technologies would work best in a given situation. For example, if a business pays more for electricity during the day than at night, the owner could use the tool to quickly evaluate several energy storage options to determine the cost-benefit of buying lower-cost electricity at night and storing it for use during the day.

Users can input the application they are interested in, as well as such parameters as energy costs and discount rates. The program produces a list of <u>storage technologies</u> and their predicted benefits and associated costs. ES-Select aggregates all of the inputs and assumptions – monetary value for an application, technology costs, performance characteristics and operation and maintenance costs – and quickly spits out recommended options.

Rather than basing decisions on a single factor such as capital cost, ES-Select assesses how an energy storage technology performs while addressing uncertainties in application value, storage cost, cycle life, efficiency, discharge duration and other parameters.

"With funding from DOE's Energy Storage Program, Sandia has worked



with KEMA to develop a user friendly, freely accessible tool to evaluate potential applications of energy storage," said Gyuk. "We hope that this tool will contribute to the widespread adoption of storage on the grid."

ES-Select should benefit utilities, independent power producers, industrial and commercial enterprises, regulators, lawmakers and the public, including those doing research on energy storage. "We've already had a lot of people asking about this program, and we know many are anxious to use it," said Bhatnagar. "I think this will encourage those who might not have considered energy storage before to think more seriously about it and evaluate its potential as a viable option."

More information: <a href="http://www.sandia.gov/ess/">www.sandia.gov/ess/</a>

Provided by Sandia National Laboratories

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