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Study finds Iowa Stored Energy Park cost-effective

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A major study by RW Beck, an SAIC Company and leading national energy consulting firm, has projected that the Iowa Stored Energy Park (ISEP) will be cost-effective over its operating lifetime.

ISEP is a proposed \$400 million, 270 Megawatt (MW), compressed air energy storage (CAES) facility to be located at Dallas Center, Iowa, near Des Moines. In-service is planned for 2015. The very innovative project will take renewable wind and other resources available on the electric transmission grid during off-peak weeknight and weekend hours when customer electric loads and prices are low, and store the energy as compressed air in a unique geologic structure 3000 feet underground. Then, the compressed air will be used during higher value, on-peak hours on weekdays to generate electricity and deliver it back to the grid when customers need it most.

ISEP is planned to be a regional resource. But for illustrative purposes, its 270 MW generation output is more than twice the size of the electric load of downtown Des Moines on a hot summer day. Its 220 MW compression (storage) cycle could absorb the output of 100 to 150 large wind machines when operating at their rated wind speed.

The study examined future ISEP costs and benefits when operated in the Midwest Independent Transmission System Operator (MISO) market over a 20-year time period starting in 2015. MISO is the regional operator of the electric transmission grid in all or parts of 13 Upper Midwest states and the Canadian province of Manitoba.

The study included development of capital and operating costs for ISEP as well as conventional natural gas-fired combined-cycle and simple-cycle combustion turbine generation alternatives. It included the “intrinsic” value of the alternatives when dispatched into forecasted MISO market off-peak and on-peak prices, and ancillary services needed to offset variations in regional grid operations. It also included the “extrinsic” value of the alternatives in providing options to address future price volatility.

The study examined the operation of ISEP and alternatives in the MISO market as a whole. It concluded that additional value not included in the study may be available for ISEP if combined with a specific entity's wind energy portfolio to "time-shift" wind production that occurs during off-peak times to on-peak, where available transmission capacity allows.

"ISEP will be a time machine for energy", said Bob Schulte of Schulte Associates LLC, ISEP Executive Director and Project Manager. "It will mean clean energy for the region and jobs for Iowa. Subject to the results of our geology testing over the coming months, ISEP's innovative storage capabilities and operational flexibility will further increase the I.Q. of the Smart Grid."

In addition to RW Beck, other subject matter experts contributing to the study included Customized Energy Solutions (CES) of Philadelphia, PA for ancillary services and MISO operations, and Brulin Associates of Chesterfield, Virginia for CAES facility design and performance. A summary of the study results can be found at www.isepa.com. Details of the study are available to entities interested in participating in the project.

ISEP is owned by the Iowa Stored Energy Plant Agency (ISEPA). Members include South Iowa Municipal Electric Cooperative Association (SIMECA) of Greenfield, Iowa; Missouri River Energy Services (MRES) of Sioux Falls, South Dakota; Central Minnesota Municipal Power Agency (CMMPA) of Blue Earth, MN; and ten individual municipal utilities in Iowa.

In total, ISEPA represents 95 municipal utilities located in Iowa, Minnesota and the Dakotas. The study was sponsored by ISEPA, with funding provided by the U.S. Department of Energy (DOE). ISEP development has been funded by the ISEPA members, DOE and the Iowa Power Fund.

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