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FuelCell Energy Announces Carbon Capture Solution for Canadian Oil Sands

- *Potential to reduce carbon footprint for Canadian oil sands extraction by capturing approximately 28 million pounds of carbon dioxide annually while producing 8 million kilowatt hours of ultra-clean power with one fuel cell power plant*
- *Scalable fuel cell carbon capture solution could lead to greater carbon capture at Canadian oil sands*
- *Multi-phase project beginning with engineering study to prove application and potentially leading to megawatt-scale fuel cell carbon application at an existing gas-fired plant*

DANBURY, Conn., Nov. 17, 2016 (GLOBE NEWSWIRE) -- FuelCell Energy (Nasdaq:FCEL), a global leader in the design, manufacture, operation and service of ultra-clean, efficient and reliable fuel cell power plants, announced a contract with Alberta Innovates for an engineering study on a fuel cell carbon capture application at a Husky Energy-owned heavy oil thermal facility near Lloydminster, Saskatchewan, Canada. A second potential site, the Scotford bitumen upgrading facility near Edmonton, Alberta, Canada, will also be evaluated as part of the engineering study. The upgrader is part of the Shell-operated Athabasca Oil Sands Project (ASOP), a joint venture between Shell Canada Energy (60%), Chevron Canada Corporation (20%) and Marathon Oil Canada Corporation (20%). Under the contract, FuelCell Energy will develop and prove the application for a carbon capture configured megawatt-class fuel cell power plant to simultaneously concentrate and capture carbon while producing ultra-clean power. Alberta Innovates will lead the project as part of a consortium effort with Husky Energy and MEG Energy as well as Canada's Oil Sands Innovation Alliance (COSIA) members BP, Canadian Natural Resources Limited, Cenovus Energy, Devon Canada Corporation, Shell, and Suncor. Completion of the study may then lead to the installation of the megawatt-scale fuel cell carbon capture system, supported by the oil sands industry.

"We are dedicated to increasing the value of Alberta's energy resources by implementing low-carbon technologies that improve the environmental profile and production efficiency of Alberta's oil sands," said Dr. Zhihong (John) Zhou, Vice President, Clean Energy, Alberta Innovates. "This fuel cell carbon capture solution can check all three of these boxes, and demonstrates our commitment to achieving our goals."

"The Canadian oil sands are a key near-term market for carbon capture and we are pleased to provide a potential solution to enhance these oil sands operations with affordable, efficient and clean carbon capture via fuel cells," said Chip Bottone, Chief Executive Officer, FuelCell Energy, Inc. "We look forward to joining forces with Alberta Innovates to prove this game-changing application and work towards demonstrating the system at commercial-scale for an oil sands application."

The study will focus on how a fuel cell power plant can separate and capture CO_2 from both the Husky Steam Assisted Gravity Drainage (SAGD) heavy oil thermal facility and the Scotford bitumen upgrading facility, where bitumen extracted from the oil sands is converted into synthetic crude oil. The fuel cell carbon capture solution efficiently concentrates the CO_2 from the facility's extraction process as a side reaction to fuel cell power generation and this ability to produce power while simultaneously capturing CO_2 is the critical differentiator compared to conventional capture technologies. The study will determine how a megawatt-scale FuelCell Energy power plant operating on natural gas can affordably capture up to 43 tons of CO_2 per day as well as destroy approximately 70 percent of the nitrogen oxide (NO_x) in the flue gas routed to the fuel cell from the bitumen upgraders. These upgraders convert heavy oil (bitumen) into synthetic crude oil.

Fuel cell power plants configured for carbon capture will utilize natural gas as the fuel source and process the flue gas from the natural gas-fired boiler at the heavy oil thermal facility into the fuel cell air system, where CO_2 is transferred across the fuel cell membrane for concentration in the fuel exhaust stream during power generation. This efficient CO_2 concentration is a side reaction of the standard fuel cell power generation process. In addition to partial NO_x destruction, fuel cells generate excess process water, resulting in a reduction of the overall water intensity of the host gas-fired plant. Learn more about this fuel cell carbon capture solution including a schematic that illustrates the affordable economics for ratepayers - click here

About Alberta Innovates
Alberta Innovates is an important investment in the growth and diversification of Alberta's economy. The corporation builds on provincial strengths in health, environment, energy, food, fibre and emerging technologies to produce results that contribute to the province's health, social and economic future. Alberta Innovates delivers the kind of cross-sectoral support and leadership that Alberta's world-class researchers, entrepreneurs and industry innovators need to thrive in a globally competitive research and innovation context. Services, tools, expertise, partnerships and funding from Alberta Innovates

support a broad range of research and innovation activity, from discovery to application, with the focus on accelerating commercial outcomes. Find out more at http://albertainnovates.ca

About FuelCell Energy

Direct FuelCell® power plants are generating ultra-clean, efficient and reliable power on three continents, affordably providing continuous distributed power generation to a variety of industries including utilities, commercial and municipal customers. The Company's power plants have generated billions of kilowatt hours of ultra-clean power using a wide variety of fuels including renewable biogas from wastewater treatment and food processing, as well as clean natural gas. For additional information, please visit www.fuelcellenergy.com and follow us on Twitter.

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