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Developments in Green Technology

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by Jane Bratun

GEOTHERMAL DRILLING PROGRAM SCHEDULED FOR FALL



Kirsten Marcia is the founder of DEEP and its President and CEO.

As noted on the **DEEP Earth Energy Production Corp.** (DEEP) website, geothermal energy is the only renewable power that is independent of wind and sunshine and produces continuous power made available by an energy producer (baseload). This green energy source provides zero carbon-based fuel consumption and leaves a small environmental footprint (a small surface area that does not affect bird migration). Geothermal power facilities produce heat that can supply power to greenhouses and fish farms, as well as facilitate food processing. With proper heat reservoir management, geothermal resources will run indefinitely.

DEEP, headquartered in Saskatoon, Saskatchewan, and headed by Kirsten Marcia, Director, President and CEO, plans to use existing technology to harness high-quality geothermal resources to establish a renewable baseload power supply. The company's long-term goal is to develop power facilities that develop 100 to 200 megawatts of baseload power from small, repeatable 5-10 megawatt (MW) power plants. Each 5 MW facility will power approximately 5,000 households.

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The DEEP project is located in southeastern Saskatchewan, a few miles north of the United States border, near the city of Estevan. Analysis of thousands of public well records in southern Saskatchewan revealed a vast, "pancake-like" hot sedimentary aquifer (HSA) greater than 3,000 metres deep at the base of the Williston Basin. This

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aquifer has a lateral continuity

of over hundreds of kilometres, is 100-150 metres thick, and has a measured temperature of greater than 120 degrees Celsius. The Williston Basin HSA may support a 200 MW capacity or more from about 20 plants of 5-10 MW capacity each.

DEEP has secured a Power Purchase Agreement (PPA) contract with SaskPower, which supplies electricity for over half a million Saskatchewan customers and can also connect to the grids in Manitoba, Alberta, and North Dakota. This is the first PPA issued for a geothermal power facility in Canada. According to the DEEP website, Saskatchewan has seen a 16% increase in energy demand over the past five years and SaskPower's demand for renewable power is growing.

Another primary challenge for SaskPower is meeting Federal Greenhouse Gas Emission regulations – a challenge, because its electricity generation is dominated by coal-fueled (35%) and natural gas-fueled (40%) plants. In November, 2015, SaskPower announced that the province will produce 50% of its power from renewable sources by 2030. This means tripling the percentage of renewable electricity generation capacity in Saskatchewan due to projected power growth requirements. Renewables represent 1,100 MW of SaskPower's 4,400 MW provincial capacity. By 2030, the province will require a total of 3,500 MW of renewable power generation.

GeothermEx, a Schlumberger Company [SLB-NYSE], geothermal consulting and services company, provided several drilling designs for the DEEP well. The selected acquisition process as subsurface conditions required a relocation.

With the first permitting and project planning complete, DEEP is starting the drilling and testing phase of the Bankable Feasibility Study. The successful addition of renewable baseload power will directly benefit all residents of Saskatchewan and assist SaskPower in achieving its goal of 50% renewable power generation by the year 2030.

In a related development, Kirsten Marcia has been appointed a Director at Large of the newly-formed Geothermal Canada organization. In 2017, a group of like-minded individuals felt the time was ripe to resurrect the original, scientifically oriented society with a new name and renewed vigour. As geothermal energy gains prominence in Canada, professionals, students, governments and other interested people needed a venue to discuss technical and academic aspects of the industry. On February 1, 2018, CGA was reborn as the Pan Canadian Society for Geothermal Research, Innovation, and Collaboration, colloquially known as Geothermal Canada (www.geothermalcanada.org).

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