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Energy Alert

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CANADIAN PROVINCES EXPAND PLANNED DEVELOPMENT OF SMALL MODULAR NUCLEAR REACTORS

On 10 August, Alberta joined an interprovincial Canadian memoranda of understanding (MOU) with New Brunswick, Ontario, and Saskatchewan to collectively support the development and deployment of small modular reactors (SMRs) to address climate change, regional energy demand, and economic development. The MOU commits the provinces to address key issues for SMR deployment such as technological readiness, regulation, financing, waste management, and public and Indigenous people engagement. Moreover, the provinces will work with all levels of government to help promote nuclear power as an important source of clean energy and promote the use and integration of SMR technology into respective provincial energy mixes.

SMRs will help support these provinces' transition from traditional high-carbon intensity energy to nuclear fission energy to support on-grid generation, on and off-grid combined heat and power for heavy industry (oil sand producers, metal mining, etc.), and off-grid power, district heating, and desalination in remote communities. SMR technology is well-suited to enhancing low-carbon energy generation in remote locations. Provincial leaders believe the growth of the SMR industry will help reinvigorate the Canadian economy in the wake of the COVID-19 pandemic.

NREL ANNOUNCES DER-OPTIMIZING SOFTWARE

On 29 July, the National Renewable Energy Laboratory (NREL) announced the availability of OptGrid, a scalable operating system that allows for real-time optimization of power flow to coordinate large numbers of DERs. DERs are small-scale units of local generation and energy-efficiency resources connected to the grid at distribution level, and they include solar panels, batteries, and electric vehicle chargers. Analogous to software that operates a household's smart devices, OptGrid helps manage the grid's increasingly distributed energy structure.

Since its commercial release, OptGrid has been licensed by grid analytics group Utilidata, which will embed OptGrid into smart meters to control DERs in homes and businesses. Utilidata plans to use OptGrid to make DERs more cost-effective for customers and to increase resilience during outages. OptGrid has been demonstrated on a California microgrid-vineyard, in a rural Colorado neighborhood, and in NREL's research laboratories.

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RESEARCHERS DEVELOP CATALYST TO EFFICIENTLY CONVERT CARBON DIOXIDE TO ETHANOL

Researchers at the U.S. Department of Energy's Argonne National Laboratory, in collaboration with Northern Illinois University, have developed a new catalyst that can effectively (and inexpensively) convert carbon dioxide and water into ethanol with very high-energy efficiency selectivity. The catalyst consists of atomically dispersed copper on a carbon-powder support. Through an electrochemical reaction, the catalyst breaks down carbon dioxide and water molecules and selectively reassembles the broken molecules into ethanol under an external electric field.

The process of converting carbon dioxide to ethanol would contribute to the circular carbon economy by enabling the reuse of carbon dioxide. Ethanol is a desirable commodity because it is an ingredient in nearly all U.S. gasoline and is used widely as an intermediate product in the chemical, pharmaceutical, and cosmetics industries. The innovative catalyst could potentially be used to convert carbon dioxide emitted from industrial processes, such as fossil fuel power plants or alcohol fermentation plants, into a valuable commodity at a reasonable cost. Furthermore, the electrochemical process could make use of intermittent renewable energy sources by taking advantage of low-cost electricity available from wind and solar generation facilities during off-peak hours.

THE WORLD'S LARGEST FLOATING PV PARK OUTSIDE OF CHINA COMES ONLINE

On 30 June, a local consortium including Energiefonds Overijssel (a provincial energy transition fund), local energy co-operative Blauwvinger Energie, and an unnamed private investor acquired shares in the world's largest floating solar project outside of China from GroenLeven, a subsidiary of BayWa r.e. Renewable Energy GmgH. The floating farm was built in seven weeks just outside of Zwolle, Netherlands, and was connected to the grid on 1 July.

Generating 27.4 MW from 72,000 panels, the facility directly provides energy for 7,200 households and businesses in the town of Zwolle. To reduce the biodiversity impact of the facility, there is only one cable to shore, and “bio-huts” were installed in and around the structure that provide shelter and food for fish and animals. The solar panels also use glass that allows some light through to the water, but this actually reduces the amount otherwise allowed through to prevent the recent growth in algae blooms and allows for gaps around the parameter of each panel.

According to consultancy DNV GL, it is expected that floating PV parks on inland waters could account for the generation of up to potentially 4 TW of capacity globally. The primarily hurdles at this point are the unchartered permitting and legal requirements due to the floatation aspect of the infrastructure.

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