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FLORIDA UTILITY PLANS FIRST HYDROGEN FACILITY

On 27 July, Florida Power & Light Company (FPL) proposed an innovative hydrogen pilot project in conjunction with the decision to close its coal-fired generation unit in June (discussed in The Energizer Vol. 69). The decision to open a hydrogen-powered generation facility is intended to help FPL reach its goal of producing zero emissions by 2030.

The $65 million pilot project will use a 20-megawatt electrolyzer to create a 100 percent yield of green hydrogen from solar power. “Green hydrogen”, which is distinct from “grey hydrogen” (derived from methane, coal, or oil) and “blue hydrogen” (derived from fossil fuels paired with carbon capture), will be produced by renewable energy technologies that electrolyze water to separate hydrogen atoms. The innovative use of green hydrogen may expand the use of the gas for future technologies.

In addition to replacing the generation capacity of the shuttered coal facilities in Macon, Georgia, the new hydrogen plant will replace natural gas-fired electricity generated in Okeechobee, Florida.

ELECTRON FACILITATES ENERGY TRADES IN ORKNEY ISLANDS OF SCOTLAND

Recently, Electron announced a milestone of more than 1,300 trades executed on a blockchain-based platform as part of “Project TraDER” in the Orkney Islands of Scotland. The project is funded by the U.K. Department of Business, Energy, & Industrial Strategy (BEIS) in an effort to advanced energy technology and support the islands, which are home to many renewable generation resources that often exceed demand.

Project TraDER allows for the real-time resolution of grid congestion by using local storage assets, such as batteries and electric vehicles, to capture the excess energy from renewable sources. This real-time trading aims for more efficient energy use, reducing curtailment and lowering costs for consumers.

Project TraDER is an eight-member consortium, which includes electric utilities (e.g., EDF and Scottish and Southern Electricity Networks), industry figures, research partners, and the non-governmental organization Community Energy Scotland. These participants assist communities with green energy development.

RESEARCHERS AT TULANE UNIVERSITY DEVELOP HYBRID SOLAR ENERGY CONVERTER

A team of scientists at Tulane University have developed a hybrid solar energy converter that can efficiently transform sunlight into both electric and thermal energy. Using high efficiency multi-junction solar cells, the hybrid converter is capable of more fully capturing the whole spectrum of sunlight. The converter both generates electricity from solar cells and redirects infrared rays of sunlight to a thermal receiver that converts those rays to thermal energy. The thermal energy can then be stored until needed and could be used to provide heat for a wide variety of commercial and industrial processes.

Thermal energy plays a large role in the global economy as it is used to generate a wide range of commercial and industrial products. Generating thermal energy using renewable sources, such as sunlight, could significantly reduce greenhouse gas emissions associated with commercial and industrial processes. The hybrid converter developed at Tulane demonstrated a 85.1 percent efficiency, delivered steam at up to 248 degrees Celsius, and is projected to have system levelized cost of 3 cents per kilowatt hour. The researchers are now moving towards commercial development of the new technology.

CPUC TO CREDIT DISTRIBUTED ENERGY RESOURCES FOR AVOIDED TRANSMISSION COSTS

The California Public Utilities Commission (CPUC) recently agreed to modify the methodology used in its "Avoided Cost Calculator" (ACC) that values the cost-effectiveness of distributed energy resources (DER), like solar or batteries, against traditional energy resources provided through the grid network. In April 2020, CPUC agreed to include certain avoid future transmission costs in its valuation of DER in the ACC for PG&E, one of California's three investor-owned utilities. Following strong opposition and public comments, CPUC revised its approach in its final decision to apply the methodology that incorporates the avoided future transmission costs into its ACC to all three investor-owned utilities in the state.

Because DERs are locally sited and produce (and sometimes consume) energy within the local distribution grid, the need to use the transmission grid is low or non-existent. Historically, applying transmission access charges to DERs artificially inflated the DER cost and made them less competitive. It was for this reason that a push was made to limit the application of transmission access charges to only remote generated energy that requires using a transmission grid to get energy from its generation point to its distribution point where it is used.

As a result of the CPUC's decision, California's community choice aggregators and IOUs can now get a better sense of the true costs and benefits of employing DERs relative to getting energy from remote areas that require high costs in transmission infrastructure to reach such ratepayers.

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