Energy storage research and development uruguay

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Uruguay is globally recognized for its significant achievements in renewable energy development. As the country transitions to the second stage of decarbonization of its energy matrix and looks to increase energy exports, there will be new opportunities for companies that can provide solutions related to energy generation, green hydrogen, e-fuels, electric transportation, and energy efficiency.

One of the limiting factors for electricity exports to Brazil are the number of cross-border connections, currently 570 MV from Melo and 70 MV from Rivera. The connection to Argentina has historically gone through the binational Salto Grande hydroelectric plant.

Further investments in power generation are linked to the expected increase in electricity demand and future projects related to hydrogen production. The government is strongly encouraging the production of green hydrogen and plans to make Uruguay a green hydrogen exporter. The need to upgrade Uruguay"s power grid will create opportunities in the transmission, smart grid, and battery storage sectors.

The government has a number of incentive plans in place for the use of renewable energies, in both the industry and the transportation sector. This includes tax incentives encouraging companies to invest in energy generation, energy efficiency and to transition to electric vehicles fleets. Additionally, electric vehicles, renewable-energy generators and capital equipment can be imported into Uruguay duty free. In comparison, for conventional equipment an average of 14 percent duty applies to products that are not products of Mercosur countries.

In May 2023, the GOU selected a $44 million USD project and awarded a $10 million USD grant, which will include production, distribution, and off-take of green hydrogen. The project stipulates use of 1.5+ MW capacity electrolyzers and heavy-duty fuel cell trucks and it must be in operation before 2025.

The main binational hydroelectric dam Salto Grande is going through a major renovation process that started in 2019 and will last until 2049. The first stage of modernization will be concluded by 2024 and IDB has already approved a credit line of up to $800 million to support the implementation of the strategic investment plan for the next stages of the modernization process.

Uruguay is one of the world leaders in wind power production, alongside Denmark, Ireland, and Germany with generates 31 percent of total power generation from wind. Uruguay has more than 1,525 MW of installed wind capacity. Uruguay has strong constant winds, with an average speed of the wind is 6 to 9 meters/second at the towers" maximum heights of 90 meters.

Due to incentives for the development of solar projects, private companies, such as industrial facilities, are

considering solar microgeneration. These projects complement battery storage systems, which are a way to store solar power generated during the day for later use during peak demand electricity hours when prices are high. There is a strong emphasis on own-generation and rural areas, particularly remote schools, hospitals, hotels, sports clubs, and new public buildings.

In 2021, biomass represented 41 percent of the total energy supply in Uruguay, while oil and its derivatives were responsible for 42 percent. Uruguay"s high percentage of biomass energy generation is a result of cellulose industry expansion where energy is generated from wood waste products. Biomass energy producing companies not only use electricity for their own consumption but also sell electricity to the state-owned company UTE. Biomass is also used to generate biodiesel, bioethanol, and other biofuels.

Although forestry is the main source of biomass, Uruguay has other feedstock sources available from the beef industry and edible oils. Investments in biomass generation increased considerably in 2013, reaching more than 400 MW of installed power generation and has not increased since then. According to the 2021 annual report of Uruguay"s Electricity Regulation Unit (URSEA), biomass represented 7 percent of the total amount of electric generation.

Due to its highly decarbonized energy sector with strong wind and solar capacity, Uruguay is expected to become a leading country in the region in the development of e-fuels, or synthetic fuels that are produced using renewable energy. In 2022, the country’s state-owned oil company, ANCAP, announced a $4 billion project to build a green hydrogen and e-fuels plant in the Paysand? department. The plant is expected to be operational by 2026 with the capacity to produce 100,000 tons of green hydrogen and 180,000 tons of e-gasoline per year.

Uruguay plans to use its future e-fuels to decarbonize its transportation sector as well as for exports to meet the growing demand for e-fuels around the world.

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