Creative renewable solutions

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Alvarez: Like most customer-centric industries, renewable developers aim to construct the best product for their specific customer"s needs. The majority of renewable energy customers are either utilities or corporate entities. In general, there are four main things that renewables consider when developing green products:

Energy Price:Electricity is a commodity, and at the end of the day, consumers still want the lowest-cost electricity. Since 2011, the levelized cost of wind and solar has dropped -47% and -84%, respectively. Renewables are now cost-competitive with natural gas, and renewable developers continuously look at ways to optimize their facilities" production to further lower energy costs.

Renewable Energy Credits (RECs):RECs are a way for renewable energy developers to certify each unit of energy generated as "green" and are typically sold alongside energy to customers in a power purchase agreement (PPA). Utilities are interested in RECs to comply with state policy goals, such as renewable portfolio standards. Corporate entities are also interested in RECs and buy them as part of corporate sustainability programs to offset carbon emissions.

Energy Shape:Many customers will buy 100% of the energy and REC output of a given renewable project. However, in certain circumstances, a client may only want a portion of output or would like guaranteed power during certain hours. This is an area where renewable developers can add value and leverage market instruments to create an energy product that meets their customer"s individual needs.

Location:The location of a renewable project is of particular importance to customers. For utilities, renewable projects are ideally located near significant load areas, such as cities, to bring energy to where people need it most. For wind projects specifically, location determines whether your wind blows when electric utility demand is most significant and most valuable. For corporates, location influences power purchase agreement contract terms and structures.

Alvarez: Without a doubt, the highest growth segment in the U.S. clean energy space today is wind and solar. The EIA reported that wind and solar represented 76% of all new U.S. capacity additions in 2020 (~32 GW in total). Those renewable additions roughly represent around $45 billion in clean energy investment. The majority of that solar capacity is coming online in Texas and California, while most wind capacity is coming online in Texas and mid-western states.

At Creative Renewable Solutions (CRS), we have been investigating interconnection queues across the U.S. We can confirm that there is over 170 GW of utility-scale wind and solar in development stages just in the western interconnect alone. For reference, the western interconnect queue has slightly more renewables capacity than the current operating U.S. fleet of utility-scale wind and solar. All signs point to the wind and solar continuing to dominate future capacity additions in the U.S.

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Two emerging clean energy technologies worth tracking are energy storage and green hydrogen. As more variable renewable energy gets added to the grid, there will be a growing need for rapidly dispatch technologies to balance electricity supply and demand. Energy storage is a leading contender for this role due to its operational flexibility, commercial maturity, and rapidly declining capital costs. Wood Mackenzie forecasts that the U.S. energy storage market will grow from 1.2 GW in 2020 to over 7 GW in 2025, representing a sixfold growth.

Moving forward, the declining cost of clean energy could be a transformative opportunity for emerging markets to reap the benefits of distributed energy capabilities.

The team at Creative Renewable Solutions (CRS) is keenly aware of these challenges. We leverage our 75 years of combined experience in the renewable energy space to create an internal tool that integrates the models and datasets needed to test the economic value of different renewable and storage systems at scale. Our tool uses advances in data science to efficiently process gigabytes of operational and market data and optimize the economic dispatch of the wind, solar, and storage.

By rapidly narrowing and customizing green energy product offerings, we help our clients reduce the time and cost needed to secure a power purchase agreement. Most importantly, we leverage our commercial experience to make sure value streams are realistic and applicable to the studied projects. We have leveraged our tool to help our clients assess their projects" competitiveness, determine the value of energy and capacity services, identify potential development areas, and customize their energy market products.

Alvarez: Renewable systems in isolation have seen great cost reductions and growth in deployment. The easy projects were getting built. Value and returns, therefore, started to diminish. Many in the industry were looking at the individual pieces; less were looking at the whole picture. Full deployment at the scale needed to replace conventional baseload power (coal, etc.) - and curb climate disruption - requires the interaction of the combined renewable plants. That"s where we excel.

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Web: https://www.hollanddutchtours.nl/contact-us/
Email: energystorage2000@gmail.com
WhatsApp: 8613816583346