

# ENERGY ATTRIBUTE CERTIFICATES: THE CURRENCY OF VOLUNTARY MARKETS AND GRID DECARBONIZATION

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With a goal of accelerating grid decarbonization, a growing number of energy customers are voluntarily spending **billions of dollars** and allocating significant staff resources annually to procure carbon-free electricity (CFE). The voluntary CFE market system provides the transactional infrastructure and incentives that enable customers to procure CFE, driving the deployment of additional new CFE on the grid. Following completed transactions, customers receive an energy attribute certificate (EAC). This is the only standardized global instrument that exists in the global market, verifying use of and conveying ownership for CFE procurement.

**EACs are the currency of grid decarbonization because they create a product that energy customers can buy to both achieve their organizational clean energy goals and help deploy more CFE resources to the grid, driving systemic grid decarbonization.**

**AN EAC IS** a market-based, tradable instrument, equal to one megawatt-hour (MWh) of verified CFE generation.

**AN EAC PROVIDES** information about a given MWh of CFE generation and conveys ownership rights to a customer for the CFE attributes associated with that procured MWh.

**EACS ARE ESSENTIAL BECAUSE** they solve the problem around how to tag, trade, and assign ownership to the megawatt-hours of carbon-free electricity deployed to the grid.

By setting ambitious voluntary targets and procuring clean energy in voluntary markets, customers increase CFE resource revenues and stimulate greater deployment of grid decarbonization investments.

In 2020, **customers procured over 1 billion EACs globally** and **generated over \$9 billion in additional value** to CFE resources. Since 2014, commercial and industrial customer-led procurement of wind, solar, and battery storage **has amounted to 58 gigawatts (GW) of new CFE capacity** in the United States—representing 37% of U.S. CFE capacity additions. In the 55+ developing countries issuing I-RECs, issuance of I-RECs **grew by 124%** in 2021 compared to 2020 levels, and by July 2022, that number was greater than the whole of those issued in 2021.

**Customers' procurement complements policy action** in decarbonizing the grid by providing a critical additional revenue stream for CFE resources and sending market signals that help **reduce investment risks and improve investment terms.**

Customers procure CFE and drive CFE resource investments through a diverse array of EAC offerings, including unbundled EACs—the most widely available and procured product because they have the least contractual and financial complexity—and bundled options like power purchase agreements.

CEBI interviewed market participants to capture real-world examples about why EACs activate CFE resources investments and the fundamental role of

market-based accounting. Key findings include:

**NO OTHER OPTION:** One customer stated that in some local markets, purchasing unbundled EACs is the only option, because no CFE program offerings are available through local utilities. Another customer shared that unbundled EACs are the only option in many countries.

**UNCLAIMED OR LOST REVENUE:** A customer noted that without unbundled EACs, CFE resource revenue would be left on the table after the completion of a PPA. Also, a PPA typically covers the first 15 years of a CFE project's 25-year lifetime, and clean energy and the associated EACs typically become available for purchase the remaining 10 years. If demand for unbundled EACs was drastically reduced, this project revenue opportunity would be lost.

**CREDIT RATING CONSTRAINTS:** Customers often have different CFE procurement options available to them based on their organization's credit ratings. While large corporations may have strong, investment-grade-credit ratings to contract and pursue PPAs without posting substantial credit support, one customer noted that smaller organizations with weaker credit scores often are not able to contract for a PPA and can only purchase unbundled EACs.

**INCENTIVES TO PROCURE CFE:** Many customers noted that the ability to apply EACs to reduce their Scope 2 emissions through market-based

accounting represents the dominant business case driver to procure CFE. Without this market-based accounting incentive, customers and solution providers had concerns about significant reductions in voluntary procurement.

Regardless of the specific EAC product type, CFE procurement increases revenues for CFE resources—enhancing the financial investment case for these projects when compared with non-CFE resources. The additional revenue that EAC sales generate allows CFE resource developers to reinvest revenue in new projects, reduces investment risks, and creates a larger pool of money that expands capital availability for more investments. This cycle has a snowball effect, enlarging the clean energy ecosystem and increasing political will.

**EACs can be enhanced to optimize the decarbonization impact of voluntary CFE procurement and expand the menu of CFE procurement options available to customers.**

By adding five new types of attributes to EACs—hourly timestamps, average grid carbon intensity stamp, tags for storage-related resources and events, tags for all CFE resources, and tags for social and community credentials—customers will gain access to consistent, comparable next generation procurement solutions. This information will enable them to send more targeted, powerful market signals for deploying CFE resource investments in the most carbon-intensive places and times.

## **ACADEMIC RESEARCHERS AND NONPROFIT ORGANIZATIONS PLAY A CRUCIAL ROLE IN MOTIVATING CUSTOMERS TO PARTICIPATE IN VOLUNTARY CFE PROCUREMENT.**

<b>ACADEMIC RESEARCHERS CAN HELP BY:</b>	<b>NONPROFITS CAN HELP BY:</b>
<ul style="list-style-type: none"><li>• Offering strong quantitative analyses on the historical, financial, social, and political impact of customers' CFE procurement</li><li>• Analyzing the specific locations and times where CFE procurement can have the greatest financial, social, and political impact on optimal decarbonization</li><li>• Analyzing the implications of eliminating CFE procurement options</li></ul>	<ul style="list-style-type: none"><li>• Urging EAC registries and regulators to introduce new attributes and data requirements for EACs</li><li>• Encouraging the GHG Protocol to <b>enhance and expand</b> the use of EACs and market-based accounting in the revisions process <b>survey open now until February 28, 2023, for the GHG Protocol's Scope 2 Guidance</b></li><li>• Developing new programs that motivate customers to set and achieve next generation CFE goals and recognize leadership</li><li>• Developing new third-party certifications for social, community, and environmental credentials that link to resulting EACs</li></ul>