THE NEXT GENERATION CARBON-FREE ELECTRICITY PROCUREMENT

ACTIVATION GUIDE

CEBI
Clean Energy Buyers Institute

TABLE OF CONTENTS

03 AUTHORS

04 EXECUTIVE SUMMARY

06 INTRODUCTION

09 UNDERSTANDING THE ENERGY CUSTOMER-IDENTIFIED OBJECTIVES FOR NEXT GENERATION PROCUREMENT

19 GUIDANCE TO THE VOLUNTARY CFE MARKET SYSTEM AND IMPLEMENTATION PATHWAYS AVAILABLE TO MARKET SYSTEM STAKEHOLDERS

34 CONCLUSION AND NEXT STEPS

About the Next Generation Carbon-Free Electricity Procurement Activation Guide

Produced by the Clean Energy Buyers Institute (CEBI), a 501(c)(3) research and education nonprofit charity that tackles complex issues in clean energy markets.

This Guide was made possible through funding from Breakthrough Energy and by CEBI's NextGen Activator community of energy customers, solution providers, and market system stakeholders.

AUTHORS & ACKNOWLEDGEMENTS

Authors

Lead CEBI Author: Doug Miller
CEBI Contributors: Misti Groves, Bryn Baker, Priya Barua, Kyla Aiuto, Leigh Yeatts

Acknowledgements

Thank you to CEBI's NextGen Activator community and the individuals from the 100+ following organizations who participated in our Q1-Q3 2022 workshop series and contributed their invaluable perspectives to inform this Guide:

3Degrees, 7Eleven, AES Corporation, Association of Issuing Bodies (AIB), Amazon, Atlas Renewable Energy, Bloom Energy, Broad Reach Power, California Independent System Operator (CAISO), CCA Group LLC, CDP, Ceres, Clean Air Task Force, ClearTrace, Climate Positive Consulting, Clorox, Concordia, Corning, Center for Resource Solutions (CRS), cQuant.io, DWS, eBay, EcoHZ, Edison Energy, EKOenergy, ElectricityMaps, Energix, EnergyTag, Enosi, Equinix, Etsy, Eurelectric, First Solar, FlexiDAO, Fluence Energy, General Electric (GE), General Motors (GM), Google, Green Strategies, IGC, Intertape Polymer Group, Ion Group, I-REC Standard Foundation, Iron Mountain, Itron, Jacobs, Level Ten Energy, Lockheed Martin, Long Duration Energy Storage (LDES) Council, Mars, McDonald's, Meta, Micron Technology, Microsoft, Midcontinent Independent System Operator (MISO), M-RETS, Netflix, Northbridge, NYSERDA, Ontario Ministry of Energy, PJM, Powerledger, Qcells, Ralph Lauren Corporation, RE100, RE-Source Platform, REsurety, Rich Products Corporation, RECS International, Rivian, RMI, S&P Global, Schneider Electric, Sustainable Energy for All (SEforALL), Sensei.ai, Singularity, Solarpack, Stack Infrastructure, Starbucks, Sustainability Roundtable, Tellus Markets, The Climate Group, Treasury Wine Estates, University of California-Davis, Unicorn, U.S. Defense Logistics Agency, U.S. Department of Energy, U.S. Environmental Protection Agency, U.S. General Services Administration,

VF Corporation, Walt Disney, Watt Carbon, WattTime, Worldenergy, World Business Council for Sustainable Development (WBCSD), World Kinect Energy Services, World Resources Institute (WRI), WSP, Zumo, and more.

CEBI would also like to acknowledge directly various individuals who provided their valuable time and perspectives that informed this Guide:

Simone Accornero (FlexiDAO), Faraz Ahmad (Amazon), Avi Allison (Microsoft), Roger Ballentine (Green Strategies), Jared Braslawsky (I-REC Standard Foundation), Andrea Coon (WECC), Hallie Cramer (Google), James Critchfield (U.S. EPA Green Power Partnership), Killian Daly (EnergyTag), Chris Davis (Amazon), Patrick Falwell (Green Strategies), Neil Fisher (Northbridge Group), Ben Gerber (M-RETS), Savannah Goodman (Google), Maya Kelty (3Degrees), Filip Kral (Unicorn), Holly Lahd (Meta), Megan Lorenzen (Salesforce), Sarah Penndorf (Google), Liesbeth Switten (AIB), Laura Vendetta (3Degrees), Katrien Verwimp (AIB).

This Guide does not necessarily reflect the opinions of the individuals or organizations listed above.

EXECUTIVE SUMMARY

The global voluntary carbon-free electricity (CFE) market system is a powerful force that drives investments in CFE generation resources and accelerates grid decarbonization. This complex, multi-stakeholder system provides market infrastructure that enables energy customers of all stripes to procure CFE to accelerate the deployment of CFE as well as achieve and report verifiable progress toward their CFE procurement goals.

Customers[1] power the CFE market system through a relatively straightforward arrangement that generates revenues for CFE resources that scale and deploy investments in grid decarbonization and complement policymaker action.

They procure CFE by procuring a subset of the carbon-free megawatt-hours (MWh) delivered to the grid—giving them ownership rights over these carbon-free MWh through their receipt of the associated energy attribute certificates (EACs), whether delivered through bundled or unbundled contracts—so they can substantiate and report progress toward their CFE procurement goals in line with industry best practices and legal requirements.

Next generation procurement provides an opportunity for energy customers to send powerful, targeted market signals to optimize CFE resource investments as they seek to advance and accelerate the systemic decarbonization of the power grid and complement policymaker action. The challenge customers face is that the current voluntary market system neither cultivates the full menu of CFE procurement options nor provides the incentives necessary to empower customers to play an even more powerful role in reaching a future state where the grid is carbon-free every hour of every day of the year everywhere. Energy market system stakeholders must implement updates that collectively evolve the voluntary market system and activate the next generation of procurement markets to enable systemic grid decarbonization.

The **Next Generation Carbon-Free Electricity Procurement Activation Guide** provides a customer-oriented, market system stakeholder-specific roadmap for the specific updates that EAC issuing bodies and registries, data providers, customer leadership programs, and greenhouse gas (GHG) accounting standards bodies must make to activate new CFE procurement solutions. The eight customer-identified objectives for next generation procurement include the ability to:

1. Procure any demand-side, complementary resource and/or carbon-free electricity resource
2. Match energy consumption with local carbon-free electricity procurement on a 24/7 basis
3. Procure carbon-free electricity at the most carbon-intensive times of day
4. Procure carbon-free electricity in the most carbon-intensive locations
5. Procure carbon-free electricity to cover electricity use across value chains
6. Apply over-procurement of carbon-free electricity from certain regions to places without procurement options
7. Motivate systemic grid decarbonization beyond the organization's operations
8. Deliver social and community benefits that promote further decarbonization of the grid

[1] The voluntary CFE market system includes the system of energy attribute certificates (EACs), underlying data, customer leadership programs, and greenhouse gas accounting frameworks that together provide the infrastructure for CFE markets where customers and solution providers make transactions. A diverse group of market system stakeholders operate and maintain this infrastructure to support the functioning and expansion of voluntary CFE markets.

4 KEY UPDATES, STAKEHOLDERS, AND PRINCIPLES

Market system stakeholders must implement four key updates to expand the menu of CFE procurement options and enable solution providers to offer new solutions that address customer's next generation objectives:

1. **Enriched EACs** that capture new attributes
2. **Greater access to more granular and consistent data** for these enriched EACs
3. **Updates to existing and new customer leadership programs**
4. **Updated GHG accounting** clarifying how to account for next generation procurement

The Next Generation Carbon-Free Electricity Procurement Activation Guide offers detailed specifications about critical updates and the implementation pathways available specifically to EAC issuing bodies and registries, data providers, customer leadership programs, and GHG accounting standards bodies to activate solutions addressing all eight customer-identified next generation procurement objectives. It also offers four principles for the voluntary CFE market updates that enable expansion of customer choice and access to solutions that optimize the decarbonization impact of CFE procurement decisions, while concurrently maintaining entry points for new and more customers to play their part in scaling CFE.

The insights included in the **Next Generation Carbon-Free Electricity Procurement Activation Guide** were distilled from 10 workshops led by the Clean Energy Buyers Institute (CEBI) in 2022 and represent the conclusion of the first phase in the Next Generation Carbon-Free Procurement Initiative. This resource provides a foundation for continued engagement with the 100+ energy customers, solution providers, and market system stakeholders that together comprise the NextGen Activator community and other market actors to collaborate on solutions that support implementation of the specified updates.

INTRODUCTION

Voluntary carbon-free electricity (CFE) procurement is responsible for substantial CFE resource investments across the globe. Globally, customers voluntarily procured a total of **over 1 billion megawatt-hours (MWh) of CFE in 2020** through energy attribute certificates (EACs) in CFE markets in the U.S., Europe, and emerging international markets. Looking at a subset of CFE voluntary procurement in the U.S., commercial and industrial energy customer-led procurement of wind, solar, and battery storage since 2014 amounts to **52 gigawatts (GW) of new CFE capacity**—representing 37% of U.S. CFE capacity additions during this timeframe.

There is an opportunity to leverage the demand power of energy customers and to maximize the impact of voluntary CFE procurement to achieve systemic grid decarbonization. The question at present then becomes this: what changes to the current voluntary market system are necessary to motivate and enable energy customers to go further with their CFE procurement while cultivating a global community of new customers that can further scale CFE demand?

The voluntary CFE market system provides infrastructure that enables companies to engage in CFE markets to meet and substantiate their CFE procurement goals. Energy customers complement policymaker action through voluntary procurement by increasing the investment appeal of CFE resources and by hastening the quantity of CFE projects being deployed. The collective action led by a substantial, fast-growing energy customer community has mitigated critical financial barriers to grid decarbonization by making CFE resource investments more profitable than they would have been otherwise, resulting in an acceleration of CFE project deployment.

In order to reach a future point where all energy customers across the globe have access to clean energy at all times, we need more diverse and granular CFE investments in more places. For example, adding more solar in places like California and Spain and more wind in places like Texas and the Netherlands will not result in a power grid that is fully decarbonized at all times on all days. Additional investments in more diverse geographic locations are necessary to fill CFE generation gaps that are not covered through demand-side flexibility and load shifting in order to meet the time-sensitive realities of electricity demand fully with CFE resources and displace carbon-polluting resources.

The **Clean Energy Buyers Institute (CEBI)** launched the **Next Generation Carbon-Free Electricity Procurement (NextGen) Initiative** to identify the voluntary market changes necessary and activate a broader suite of carbon-free electricity procurement options that enable customers to optimize the decarbonization impact and achieve their objectives for next generation procurement. The aim of the NextGen Initiative is to create a larger menu of robust, standardized, and recognized CFE procurement offerings and to evolve the current voluntary market system to make these new offerings available for energy customers.

Through the NextGen Initiative, CEBI is taking a systematic approach to characterize the functional requirements and associated backlog of updates needed to activate next generation procurement options, which requires understanding the requirements of different CFE market users and stakeholders. CEBI's use of an agile solution development approach commonly used in software product development led to an initial mapping of needs, specifications, and

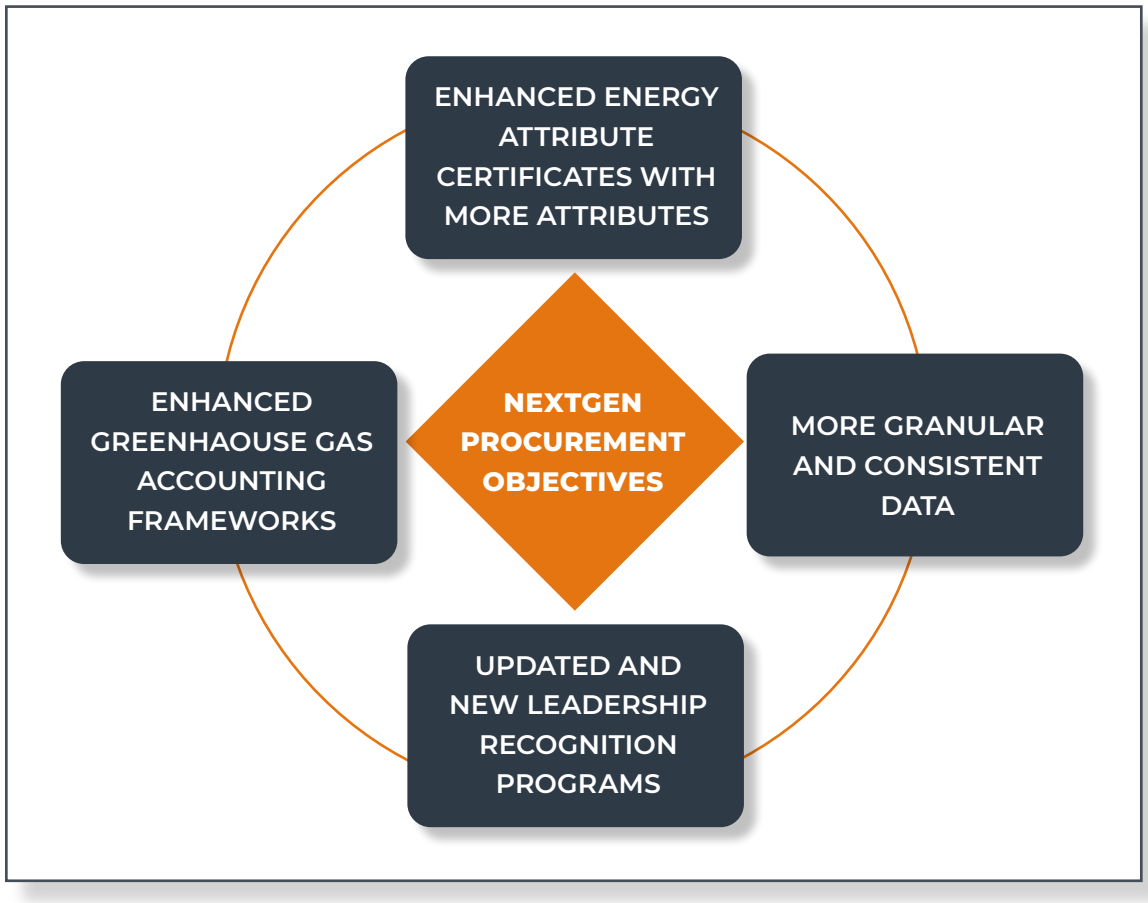
implementation pathways oriented around meeting the needs of two core CFE market user types—customers and current CFE market system stakeholders—as well as important considerations for customer solution providers.

The NextGen Initiative is defining the requirements, developing guidance, and forging collaborations with its diverse, global NextGen Activator community of 100+ organizations to bring about the updates needed to the current voluntary system to introduce new options and customer incentives. CEBI's NextGen Activator community includes customers, solution providers, and market system stakeholders.

Figure 1 below summarizes the NextGen Initiative's theory of change and the four overall types of evolutions needed to the current voluntary market system to bring about new market infrastructure that activates next generation procurement options for customers.

In 2022, the NextGen Initiative convened over 10 workshops and roundtable discussions as well as dozens of individual conversations with its NextGen Activator community of 100+ energy customers, solution providers, and market system stakeholders who contributed their time, ideas, and ongoing feedback to inform the evolutions needed to the current market system to activate new CFE solutions for customers. During the

FIGURE 1:
The Four Types of Market Evolutions Needed to Activate Next Generation Procurement Options



first year of this journey, the NextGen Initiative has clarified needs, opportunities, challenges, and implementation pathways on the following critical questions from the perspective of those who participate and have a stake in continuing to enhance voluntary CFE markets:

1. What are energy customers' next generation procurement objectives to advance systemic grid decarbonization?
2. What updates need to take place in the current voluntary CFE market system to activate solutions that enable customers to achieve next generation procurement objectives?
3. How can we support the stakeholders that oversee the voluntary CFE market system with implementing these updates to activate next generation procurement options for more customers?

The outcome of the NextGen Initiative's first year of work includes this Next Generation Carbon-Free Electricity Procurement Activation Guide. This Guide details the shortlist of eight customer-identified objectives for next generation procurement, specifies the core principles for updates to the current voluntary CFE market, and clarifies the specific updates needed to the current system of energy attributes, underlying data, customer leadership programs, and greenhouse gas (GHG) accounting frameworks to activate new CFE solutions for customers to achieve these objectives. The NextGen Initiative also proposes assigned roles and responsibilities to different CFE market system stakeholders—namely, energy attribute certificate (EAC) issuing bodies and registries, data providers, customer leadership programs, and GHG accounting standards bodies—to enable the updates necessary to activate next generation CFE procurement solutions for customers.

This Guide represents the completion of the first stage of work on the NextGen Initiative as it explains what solutions customers need to achieve their next generation procurement objectives and how to make these solutions available for customers with greater consistency, comparability, and verifiability.

ENERGY CUSTOMER-IDENTIFIED OBJECTIVES FOR NEXT GENERATION PROCUREMENT

The voluntary carbon-free electricity(CFE) market system provides global the rules and accounting infrastructure that creates markets for energy customers to procure CFE. This infrastructure enables and motivates energy customers to allocate resources to set CFE targets, creates markets where they can procure CFE through diverse offerings, report their claims to show progress toward their procurement goals, and communicate the resulting positive impact of their procurement. The impact of this system: customers' CFE procurement increases CFE resource revenues and reduces investment risks—accelerating the quantity and speed of CFE deployment to decarbonize the grid.

At its core, the current voluntary CFE market system incentivizes energy customers to procure CFE—primarily wind and solar—equal to their annual electricity consumption to achieve 100% CFE procurement goals and to procure CFE, where possible, from the same national grid as their consumption. This market system design enables customers to move CFE investments forward and substantiate the resulting CFE procurement claims they want to make to their respective customers, shareholders, and stakeholders. In other words, the system requires customers to verify their CFE procurement through energy attribute certificate (EAC) ownership to avoid risks of double-counting and double-claiming ownership over a given carbon-free megawatt-hours (MWh).

The incentives embedded in the current voluntary CFE market system motivate customers to procure only wind and solar in select geographic markets, resulting in market saturation of these technologies and insufficient deployment of CFE resources that together deliver systemic grid decarbonization. In other words, CFE procurement has a diminishing impact in moving more carbon-polluting resources offline in select grids and/or times of day in grids that are already low-carbon or carbon-free.

There is an opportunity to update this system to expand the menu of CFE procurement options for customers so they can send more targeted and differentiated market signals that accelerate and expand needed investments in a broader portfolio of CFE to advance systemic grid decarbonization. There is also an opportunity to better motivate new and existing customers to pursue next generation procurement options while maintaining current offerings to further optimize impacts and drive more investments in grid. decarbonization.

The **NextGen Initiative** has engaged with diverse energy customers through surveys and workshops to develop a shortlist of their top objectives for next generation procurement. Through this process, energy customers identified eight main objectives for next generation procurement where they are willing to dedicate their attention and resources. In parallel, emerging research was reviewed, such as the work of **Princeton University's Zero-Carbon Energy Systems Research and Optimization Laboratory**, to ensure that customers' diverse next generation procurement objectives align with the market signals necessary to drive investments in systemic grid decarbonization.

Energy customers want solutions that enable them to:

1. **Procure any demand-side, complementary resource and/or carbon-free electricity resource**
2. **Match energy consumption with local carbon-free electricity procurement on a 24/7 basis**
3. **Procure carbon-free electricity at the most carbon-intensive times of day**
4. **Procure carbon-free electricity in the most carbon-intensive locations**
5. **Procure carbon-free electricity to cover electricity use across value chains**
6. **Apply over-procurement of carbon-free electricity from certain regions to places without procurement options**
7. **Motivate systemic grid decarbonization beyond the organization's operations**
8. **Deliver social and community benefits that promote further decarbonization of the grid**

These eight next generation objectives represent the nexus of the procurement options that customers want and the systemic investments the grid needs to decarbonize. Over two-thirds of energy customers surveyed stated they would strongly consider standardized procurement solutions meeting any of these objectives if suitable solutions were made available and if they had clearer incentives to procure the solutions.

These objectives also serve as the anchor for CEBI's NextGen Initiative and clarifying the evolutions needed in the current voluntary CFE market. This Guide evaluates the market system updates necessary to enable solutions for all eight customer-identified objectives, but does not rank or prioritize them. CEBI expects that solution providers will incorporate solutions that address a combination of these objectives into their next generation offerings for customers.

There are also different types of customer solution offerings—such as, 24/7 CFE procurement solutions that match CFE procurement with customer load curves and other procurement solutions that enable customers to procure CFE at the most carbon-intensive times of day and/or locations—that solution providers (i.e., utilities, retailers, and service providers) can develop that may address one or multiple next generation objectives. The more solutions available that capture one or more of the identified next generation procurement objectives, the more compelling that solution offering will be for customers. As more customers select solutions from a broader suite of next generation CFE, the strong aggregated market signals will drive resource investment decisions that over time will benefit all energy customers through systemic grid decarbonization.

The following figures dive into the details about the rationale, potential impact, updates needed to the current voluntary CFE market system infrastructure, and new solution opportunities associated with each of these next generation procurement objectives to inform the development of new solutions. Solution providers can and should consider addressing as many of these objectives as possible in their next generation offerings.

Customer-Identified Objective #1:
Procure any complementary or carbon-free electricity resource

DEFINITION: Customers want procurement solutions that are technology neutral, solve the variability of various CFE resources, and help drive investments in complementary resources for systemic grid decarbonization.

- Demand-side flexibility options like long- and short-duration storage, demand response, and efficiency energy
- Firm, dispatchable carbon-free electricity resources like geothermal, nuclear, run of river hydro, and non-renewable CFE resources

POTENTIAL CUSTOMER SOLUTION OFFERINGS: Once enabled through market system updates, solution providers should consider offering new CFE portfolio solutions as well as offerings that include support for investments in complementary resources. This may integrate with 24/7 procurement matching solutions.

EXPECTED MARKET SIGNAL: Increased revenues for a wider diversity of CFE generation resources, including storage, to unlock more investments in these resources.

EXPECTED IMPACT-RELATED BENEFITS AND CLAIMS: Customers would gain the ability to substantiate their procurement, attribute ownership claims, and financial support for investments in complementary resources and firm CFE resources. This means they could claim they are procuring any/all CFE and driving investments in more systemic grid decarbonization.

MARKET SYSTEM UPDATES NEEDED TO ACTIVATE SOLUTIONS: New EAC attributes (tags for all complementary and CFE resource types); updated or new customer leadership programs; clarity on greenhouse gas accounting and accounting for emissions impact; better availability of time and location-specific data to enable more targeted action.

Customer-Identified Objective #2:
Match energy consumption with local carbon-free electricity procurement on a 24/7 basis

DEFINITION: Customers want solutions that give them the ability to match their CFE procurement with their electricity consumption load curve across all hours of the day and days of the year, at all locations.

POTENTIAL CUSTOMER SOLUTION OFFERINGS: Once enabled through market system updates, solution providers should offer customers solutions that make it as easy as possible to both capture customers' load curves and deliver evidence of granular hourly matching in sync with EnergyTag's Granular Certificate (GC) Scheme Standard for harmonizing hourly EACs with monthly EACs in registry and issuing body's systems. In addition, supplier-offered 24/7 procurement matching solutions can address this need.

EXPECTED MARKET SIGNAL: Increased revenues for CFE resources at specific times of day based on time of electricity use, which can help drive investment decisions for more CFE resources that best meet time-specific requirements.

EXPECTED IMPACT-RELATED BENEFITS AND CLAIMS: Customers would gain the ability to substantiate their procurement, attribute ownership claims, and financial support for investments in local, time-sensitive CFE resources. This means they could claim they are creating greater demand for needed CFE resources at specific times of day in the regions where they operate.

MARKET SYSTEM UPDATES NEEDED TO ACTIVATE SOLUTIONS: New EAC attributes (hourly or sub-hourly timestamp); updated or new customer leadership programs; clarity on greenhouse gas accounting and accounting for emissions impact; better availability of time and location-specific data to enable more targeted action.

Customer-Identified Objective #3:
Procure carbon-free electricity at the most carbon-intensive times of day

DEFINITION: Customers want solutions that give them the ability to procure CFE at the times of day when the grid has the greatest carbon intensity based on a standardized average grid intensity metric.

POTENTIAL CUSTOMER SOLUTION OFFERINGS: Once enabled through market system updates, solution providers should offer customers solutions that make it easy for them to procure CFE during the times of day where the grid is the most carbon-intensive as well as understand how to report and communicate how their CFE procurement sends market signals to deploy CFE during the most carbon-intensive times of day. Solution providers may also want to consider pairing load-shifting solutions with a solution for procuring CFE at the most carbon-intensive times of day.

EXPECTED MARKET SIGNAL: Increased revenues for CFE resources at specific times of day based on when the grid is most carbon-intensive, which can help drive investment decisions for more CFE resources at those specific times.

EXPECTED IMPACT-RELATED BENEFITS AND CLAIMS: Customers would gain the ability to substantiate their procurement, attribute ownership claims, and financial support for investments in time-sensitive CFE resources based on carbon. This means they could claim they are creating greater demand for needed CFE resources at the times of day when carbon pollution is highest.

MARKET SYSTEM UPDATES NEEDED TO ACTIVATE SOLUTIONS: New EAC attributes (grid carbon intensity snapshot and hourly or sub-hourly timestamp); clarity on greenhouse gas accounting and accounting for emissions impact; better availability of time and location-specific data to enable more targeted action; updated or new customer leadership programs.

Customer-Identified Objective #4:
Procure carbon-free electricity in the most carbon-intensive locations

DEFINITION: Customers want solutions that give them the ability to procure CFE in the places where the grid has the greatest carbon intensity.

POTENTIAL CUSTOMER SOLUTION OFFERINGS: Once enabled through market system updates, solution providers should offer customers solutions that make it easy for them to procure CFE from the most carbon-intensive locations as well as understand how to report and communicate how their CFE procurement sends market signals to deploy CFE in the most-carbon intensive locations.

EXPECTED MARKET SIGNAL: Increased revenues for CFE resources in specific locations based on where the grid is most carbon-intensive, which can help drive investment decisions for more CFE resources at those specific locations.

EXPECTED IMPACT-RELATED BENEFITS AND CLAIMS: Customers would gain the ability to substantiate their procurement, attribute ownership claims, and financial support for investments in CFE resources in certain locations based on carbon, where these locations may not represent the same locations where their electricity consumption occurs.

MARKET SYSTEM UPDATES NEEDED TO ACTIVATE SOLUTIONS: New EAC attributes (grid carbon intensity snapshot and hourly or sub-hourly timestamp); clarity on greenhouse gas accounting and accounting for emissions impact; better availability of time and location-specific data to enable more targeted action; updated or new customer leadership recognition programs.

Customer-Identified Objective #5:
Procure carbon-free electricity to cover electricity use across value chains

DEFINITION: Customers want solutions that give them the ability to procure and allocate CFE on behalf of the electricity use of their value chain partners, from upstream suppliers to downstream customers, and communicate this CFE procurement to their partners.

POTENTIAL CUSTOMER SOLUTION OFFERINGS: Once enabled through market system updates, solution providers should offer customers solutions that make it easy for them to facilitate procurement of CFE (based on measured or estimated electricity use of value chain partners), allocate EACs to value chain partners in a transparent way, and communicate the benefits to these partners.

EXPECTED MARKET SIGNAL: Increased overall demand for CFE, potentially in a transformative way, where this increased volume in CFE demand by powering value chain partners' electricity use with CFE can help scale the revenues of CFE resources and scale CFE resource investments.

EXPECTED IMPACT-RELATED BENEFITS AND CLAIMS: Customers would gain the ability to substantiate their procurement, attribute ownership claims, and financial support for investments in CFE on behalf of value chain partners, where this may further increase the appeal of customers' products and services among their own downstream customers.

MARKET SYSTEM UPDATES NEEDED TO ACTIVATE SOLUTIONS: Updated or new customer leadership programs; updated impact boundaries; clarity on greenhouse gas accounting and accounting for emissions impact

Objective #5

Customer-Identified Objective #6:
Apply over-procurement of CFE from certain regions to places without procurement options

DEFINITION: Customers want solutions that give them the ability in the interim to over-procure CFE in regions where supplies are available to compensate for their current inability to procure CFE in certain geographies without readily available options where they have load, so that they can meet their global CFE procurement targets in parallel to their efforts to support local policymakers with making more CFE options available in the geographies with limited supply options.

POTENTIAL CUSTOMER SOLUTION OFFERINGS: Once enabled through market system updates, solution providers should clarify which CFE procurement options are best suited to meet a given customer's goals and needs as well as clarify how to communicate and account for the impact of this over-procurement in parallel to the customer's regulatory engagement efforts.

EXPECTED MARKET SIGNAL: Maximized overall customer CFE demand from a global perspective, even if all of their CFE procurement does not take place where a given customer physically has load, in conjunction to customers' efforts to make more CFE options available to customers in all places where they have load.

EXPECTED IMPACT-RELATED BENEFITS AND CLAIMS: Customers would gain the ability to substantiate their procurement, attribute ownership claims, and financial support for investments for over-procured CFE resources in certain markets to compensate for limited or no CFE options in other markets where they have load to reduce the company's global market-based emissions.

MARKET SYSTEM UPDATES NEEDED TO ACTIVATE SOLUTIONS: Updated impact boundaries; updated or new customer leadership programs; clarity on greenhouse gas accounting and accounting for emissions impact

Customer-Identified Objective #7:
Motivate systemic grid decarbonization beyond the organization's operations

DEFINITION: While less clearly related to new types of customer procurement options, customers want recognition for policy advocacy and similar efforts that result in decisions by utilities, grid operators, and regulators to accelerate investments in grid decarbonization that go beyond the customer's own operations and benefit all energy customers.

POTENTIAL CUSTOMER SOLUTION OFFERINGS: Once enabled through market system updates, solution providers should define opportunities for customers to engage in advocacy and similar efforts, and clarify how customers can measure, communicate, and account for any efforts resulting in new policy and regulatory outcomes that drive grid decarbonization.

EXPECTED MARKET SIGNAL: More aggressive, accelerated policy and regulatory outcomes that advance systemic grid decarbonization investments for the benefit of all energy customers and society at large by directly reducing location-based grid emissions in a given geography.

EXPECTED IMPACT-RELATED BENEFITS AND CLAIMS: Customers would gain the ability to communicate and get some form of credit—at the very least, from the perspective of customer leadership—for increasing clean energy access for all in the places where their advocacy efforts helped generate successful new policy outcomes.

MARKET SYSTEM UPDATES NEEDED TO ACTIVATE SOLUTIONS: Updated or new customer leadership programs; clarity on greenhouse gas accounting and accounting for emissions impact

Objective #7

Customer-Identified Objective #8: Deliver social and community benefits that promote further decarbonization of the grid

DEFINITION: Customers want solutions that enable them to support bringing more CFE to local communities and that have broader social and community benefits, where third party certifications standardize and verify these additional positive impacts and benefits.

POTENTIAL CUSTOMER SOLUTION OFFERINGS: Once enabled through market system updates, solution providers should offer customers solutions that make it easy for them to find CFE from resources with certifications for prioritized social or community credentials, such as methods for resource siting decisions, job numbers, community ownership, wildlife protections, and first-time electricity access for remote communities.

EXPECTED MARKET SIGNAL: Increased overall demand for CFE resources that obtain certain types of certifications that verify valued community and social credentials to attract investments in more CFE resources with those credentials.

EXPECTED IMPACT-RELATED BENEFITS AND CLAIMS: Customers would gain the ability to substantiate their procurement, attribute ownership claims, and financial support for investments for certain community and social benefits that can increase further community and political support for greater CFE investments.

MARKET SYSTEM UPDATES NEEDED TO ACTIVATE SOLUTIONS: New EAC attributes (grid carbon intensity snapshot and hourly or sub-hourly timestamp); updated or new customer leadership programs; Updated impact boundaries.

Objective #8

Objective #8

Until a new infrastructure for voluntary CFE markets with specific updates is created, the supply of next generation solutions available to customers to achieve their objectives will likely remain piecemeal, inconsistent, and underutilized. The claims customers want to make around any of these solutions may also prove challenging to verify without this new infrastructure.

The next section of this Guide details the updates needed to the current CFE voluntary market system to provide infrastructure that activates new solutions fulfilling customers' next generation procurement objectives. The next section also offers the core principles for these market updates and accompanying implementation pathways available to market system stakeholders.

GUIDANCE ON THE UPDATES NEEDED TO THE VOLUNTARY CFE MARKET SYSTEM AND IMPLEMENTATION

Energy customers want more pathways to make progress toward their carbon-free electricity (CFE) procurement goals and to optimize and communicate decarbonization impacts. To introduce new types of consistent and comparable procurement options that align with industry best practices and standards for substantiating their CFE procurement-related claims, various updates are needed first to the current voluntary CFE market system. The stakeholders that oversee the market system must implement these updates and introduce new infrastructure that supports next generation CFE procurement markets. It also requires understanding these stakeholders' mandates, priorities, customers, and available options to implement the required updates.

The NextGen Activator community informed the development of four core principles for these market system updates and new infrastructure for next generation CFE procurement:

01 **Principle 1:** Voluntary CFE procurement markets should expand to include technology-neutral, verifiable, outcome-focused products to offer the broadest bench of energy customers a larger menu of CFE procurement options so they have greater choice, can achieve their objectives, substantiate and report these new types of claims, and send more targeted market signals that complement policymaker action to accelerate systemic grid decarbonization across geographies.

02 **Principle 2:** Energy attribute certificate (EAC) issuing bodies and registries, data providers, customer leadership programs, and greenhouse gas accounting standards bodies can and should make updates in their respective domains to deliver enhanced market system infrastructure that together activates this broader suite of CFE procurement options for customers along with new market-based incentives that motivate customers to procure next generation products.

03 **Principle 3:** Any CFE market system update should ensure that customers retain the ability and requirement to substantiate their CFE procurement with verifiable claims through robust energy EAC issuance and tracking systems that ensure no double-counting between energy customers for Scope 2 claims and establish the credibility of their procurement claims.

04 **Principle 4:** Each market system stakeholder should only make updates relevant to their market function and not cross over into the domain of other market system stakeholders.

These four principles are important because they will help ensure that updates to the current CFE market system expand, rather than limit, customer choice and empower customers to do even more to complement policymaker action in decarbonizing the grid. These principles also balance seemingly opposing aims: enabling customers to better optimize the decarbonization impact of CFE procurement and send more targeted market signals while concurrently maintaining entry points for more new customers to play their part in supporting CFE market growth and grid decarbonization.

To operationalize these principles and bring about new market system infrastructure, the NextGen Activator community identified four specific areas of opportunity to update the current voluntary market system and activate new CFE procurement options that fulfill customers' diverse next generation procurement objectives. The four key market system updates include:

1. **New EAC attributes—hourly or sub-hourly timestamps, tags for all CFE resources, tags for complementary resources, snapshot of grid carbon intensity, and tags for social and community credentials—with underlying data** that enable customers to substantiate their procurement of next generation CFE, send more targeted market signals, and assert evidence-based claims in audits, reporting, and marketing.
2. **Expanded and accelerated access to granular and consistent data** so that EAC issuing bodies and registries can introduce new attributes to EACs, and so that customers can make more informed procurement decisions.
3. **Updated (or new) customer leadership programs** that motivate companies to set new types of goals and provide leadership recognition for verified progress toward them.
4. **Improvements to greenhouse gas accounting** that provide greater clarity for customers about how to evaluate and capture the impact of different next generation procurement options in their greenhouse gas accounting, reporting, and marketing claims.

These updates, once implemented to provide new market infrastructure, will activate the introduction of next generation CFE procurement options for customers.

Table 1 maps these four major types of market updates needed against the eight customer-identified next generation objectives to illustrate which updates help activate solutions for customers' next generation objectives.

TABLE 1:
Key CFE Market Updates Needed to Enable Customer-Identified Next Generation Procurement Options

TOP CUSTOMER-IDENTIFIED NEXT GENERATION PROCUREMENT OBJECTIVES	TOP VOLUNTARY CFE MARKET SYSTEM UPDATES NEEDED			
	NEW EAC ATTRIBUTES	UPDATED / NEW CUSTOMER LEADERSHIP PROGRAMS	EXPANDED AND ACCELERATED ACCESS TO GRANULAR DATA	CLARITY ON GREENHOUSE GAS ACCOUNTING
Procure any complementary or CFE resource	X	X	X	X
Match energy consumption with local CFE procurement on a 24/7 basis	X	X	X	X
Procure CFE at the most carbon-intensive times of day	X	X	X	X
Procure CFE in the most carbon-intensive locations	X	X	X	X
Procure CFE to cover electricity use across value chains		X	X	X
Apply over-procurement of CFE from certain regions to places without procurement options		X		X
Motivate systemic grid decarbonization beyond the organization's operations		X		X
Deliver social and community benefits that promote further decarbonization of the grid	X	X		

Consider the following specific examples to help illustrate how and why these market system updates will enable new types of procurement options:

01 EXAMPLE

CFE procurement that supports storage: For a customer that wants to drive greater investments in storage that is co-located with CFE generation as a complementary resource, there is a need to tag the charge and discharge events on an EAC with time-stamped information and proper accounting for losses so that customers can procure and observe the EAC lifecycle of a battery-stored MWh generated from CFE. For a customer that wants to support investments in grid-connected storage, there is a need for greater clarity around how to account for this support in the customer's greenhouse gas accounting.

02 EXAMPLE

CFE procurement on an hourly basis: For a customer that wants to match their CFE procurement with their electricity load curve, there is a need for EACs that provide granular hourly (or sub-hourly) timestamps and for these timestamped EACs to synchronize with EAC issuing body and registry systems. For example, non-profit EnergyTag has advanced quickly with industry stakeholders to develop the **Granular Certificate Scheme Standard and Use Case Guidelines**. The introduction of new leadership programs like the **UN 24/7 CFE Compact** will help customers set goals for 24/7 CFE procurement and recognize verified customer leadership.

03 EXAMPLE

CFE procurement based on carbon-intensive geographies and/or times: For an energy customer that wants to procure CFE in locations where and/or at times of day when the grid is most carbon intensive, EAC issuing bodies and registries should capture granular information about the carbon intensity of the grids on EACs based on the grid resource mix. Attaching this information on EACs would enable customers to search across available CFE based on this criterion and ultimately substantiate that their procurement prioritized CFE in the most carbon-intensive times and/or locations. The introduction of new leadership programs in this area would help customers set goals to optimize CFE and recognize verified customer leadership.

04 EXAMPLE

CFE procurement for value chains: For a customer like Etsy that wants to procure CFE to reduce its Scope 3 emissions by covering the electricity use associated with its suppliers and/or its customers' use of the company's products and services, there is a particular need for customer leadership programs that recognize and motivate customer allocation of EACs to value chain partners in line with recent **guidance published by the U.S. Environmental Protection Agency (EPA)**. Customers also need greater clarity as to how to capture this CFE procurement in their greenhouse gas accounting.

06 EXAMPLE

Over-procurement of CFE in certain regions to cover under-supply in other regions: For a customer that wants to over-procure CFE from certain regions to compensate for other regions where there is limited or insufficient EAC supplies (rather than not procure any CFE to cover those MWh as they engage with regulators to expand procurement options in these same regions), there is a need for greater clarity around how to conduct the greenhouse gas accounting to reflect procurement in one region to cover the MWh consumed in another region.

To introduce a compelling, consistent suite of next generation CFE procurement options that help customers achieve and substantiate progress toward their goals, there are **four key types of stakeholders** that serve market functions providing the ability to implement essential market system updates:

EAC issuing bodies and registries:

the organizations that oversee the centralized databases where EACs are issued, tracked, and canceled (or retired)

Data providers:

the organizations that provide average emissions data, marginal emissions data and residual mix data to customers and verified data to EAC issue bodies and registries so that EACs capture fact-based information to substantiate customer claims, plus organizations that integrate next generation solutions with EAC issuing bodies and registries' systems

Customer leadership recognition programs:

the organizations whose programs drive customers' CFE-related goal setting and recognize customers that demonstrate leadership in achieving the goals specified by that program

Greenhouse gas accounting standards bodies:

the organizations that design the accounting frameworks that customers use to document and report their greenhouse gas emissions as well as define the marketing claims that customers can make

Table 2 summarizes the four pillars of today's voluntary CFE market system that must evolve to activate next generation procurement options and accelerate investments in systemic grid decarbonization.

TABLE 2:
The Four Infrastructural Pillars of the Voluntary Carbon-Free Electricity (CFE) Market System

CFE MARKET SYSTEM INFRASTRUCTURE PILLAR	MAIN ROLE IN THE CFE MARKET SYSTEM
Customer leadership programs, including RE100, Science-Based Targets Initiative (SBTi), Green Power Partnership, UN 24/7 CFE Compact, and others	• Incentivize energy customers to set goals aligned with the program's criteria • Create communities of customers with these shared goals to promote shared learning and community growth • Recognize customer success and leadership in a consistent, measurable, comparable, and marketable way
Energy attribute certificates (EACs), including renewable energy certificates (RECs) in the U.S., guarantees of origin (GOs) in Europe, and international renewable energy certificates (I-RECs) in African, Asian, and Latin American markets	• Create a standard tradeable instrument that customers can buy that reflects ownership over the CFE attributes of a given megawatt-hour (MWh) of CFE generation • Provide an additional revenue stream for companies' CFE generation resource owners and investors • Enable customers to substantiate their CFE procurement claims
Data for EACs and grid-supplied CFE, including static data about a CFE resource's location, type, capacity, etc. and dynamic electricity generation data	• Ensure EACs capture verified fact-based, ex-post information for customers so they can substantiate their CFE procurement claims • Enable customers to assess their GHG emissions profile
Greenhouse gas accounting standards bodies—namely the Greenhouse Gas Protocol, specifically its Corporate Standard	• Enable customers to assess their GHG footprint organization-wide • Report on the relationship between CFE procurement and emission reductions associated with electricity use • Establish the marketing claims that customers can make based on the EACs they procured and report

Key Stakeholder Type #1:
EAC Issuing Bodies and Registries

MANDATE: Provide the technical platform and interfaces whereby EACs are issued, tracked, and cancelled based on data provided by trusted data providers that deliver the needed underlying static data about each CFE generation device (i.e., facility) and dynamic data about that device's confirmed monthly CFE generation, and CFE imports and exports.

PRIORITIES: Activate CFE markets by making EACs available as a tradable accounting instrument that reflects environmental attributes of CFE, substantiates customers' CFE claims, and helps avoid double-counting and double-claiming issues. Promote CFE market integrity across the full EAC lifecycle—from EAC issuance to tracking of transactions and cancellation for final beneficiary.

THEIR CUSTOMERS: Users (or Subscribers), Regulators, Data providers

NEXT GENERATION IMPLEMENTATION UPDATES NEEDED: Introduce **five new attributes** based on **specific data types** and develop modern automated programming interfaces (APIs) that make it easier for data providers to deliver data and for users to update the status of EACs through connected digital trading platforms. Table 3 details the data types necessary for each new EAC attribute and Table 4 summarizes the notable governance and implementation rollout differences between U.S. renewable energy certificate (REC), European guarantee of origin (GO), and international renewable energy certificate (I-REC) markets.

IMPLEMENTATION PATHWAYS: EAC issuing bodies and registries need support with addressing governance, data access, and technical barriers so they can capture new EAC attributes and better serve as a platform of platforms in CFE markets. Regulatory agencies and authorities can request and approve adoption of new EAC attributes and compel data providers, such as grid operators and utilities, to deliver needed data for new EAC attributes. To motivate regulatory agencies to do this, energy customers and solution providers can and should help initiate these changes by submitting formal requests directly to EAC registries, issuing bodies, and relevant regulatory agencies. EAC issuing bodies and registries can move these updates along by developing user requirements and development backlogs to define the new needed functionality, resource requirements, timelines, etc. for implementation. Practical tools, such as template legal agreements that define API terms for data and/or solution provider platforms, may also make it easier for EAC issuing bodies and registries to expedite updates once they have internal clearance to proceed.

Stakeholder Type #1

TABLE 3:
Data Needs for New EAC Attributes to Enable Next Generation Procurement

NEW EAC ATTRIBUTES	DATA TYPES	DATA SOURCES	NEEDS FOR IMPLEMENTATION
Tags for all CFE resources Note: No major differences from existing CFE resources already receiving EACs	Verified megawatt-hour (MWh) generation data	Grid operators, utilities, and other trusted data sources that currently verify MWh generation by CFE resources	Creation of a new EAC type in certain markets to capture all CFE resources since not all CFE resources are renewable
Tags for storage (and other complementary resources)	Timestamped recharge and discharge data, plus data about whether co-located with CFE resource or drawing from grid	Grid operators, utilities, and other trusted data sources with access to quality storage meter data	Define the use and applicability of EAC tags across different scenarios to consider the electricity sources recharging the storage device, the size of the storage device, etc.
Hourly (or sub-hourly) timestamp Note: No major differences from monthly timestamp data about MWh generation from CFE resources	More granular hourly (or sub-hourly) timestamped generation data compared to currently typical data timestamped at the monthly level (in line with EnergyTag's Granular Certificate Scheme Standard)	Grid operators, utilities, and other trusted data sources that currently verify MWh generation by CFE resources	Introduce regulatory requirement for the delivery of hourly (or sub-hourly) timestamped data from data sources and potentially change the structure of an EAC, so that it captures all MWh generation during an hourly or sub-hourly period, which may require reflecting a unit less than the standard 1 MWh for EACs
Grid carbon intensity snapshot Note on usage: To be used as a new CFE decision-making criterion to enable customers to differentiate across EACs based on carbon to indicate where market signals are needed most. Unlikely to be usable for carbon offset- or avoided emissions-related claims at least until there is clearer greenhouse gas accounting guidance.	An average grid carbon intensity factor (ideally, timestamped at an hourly or sub-hourly level) that reflects the carbon intensity of the grid based on the electricity mix at the time the MWh associated with an EAC was generated, as well as potentially a marginal carbon emissions factor	Grid operators due to their ownership of the data on the electricity resource mix that can determine the carbon intensity of a grid at a particular point in time	Specify a straightforward, sufficiently robust method to provide grid carbon intensity factor on EACs and clarify how customers can use this attribute to inform decisions around optimizing the decarbonization impact of CFE procurement
Social/community benefit credentials	Certification data that verifies social or community credentials of a CFE resource	Third party certification body that verifies credentials of CFE resources and submits data to EAC issuing bodies and registries	Third parties must first define and create new certifications for various social and community benefit credentials that can be offered for use in EAC issuing body and registry systems

TABLE 4:
Summary of Governance and Implementation Factors for EAC Issuing Bodies to Implement System Updates

EAC ISSUERS	GOVERNANCE STRUCTURE	IMPLEMENTATION SCOPE	MAIN IMPEDIMENT TO IMPLEMENTATION
U.S. REC registries	Varies across the 10 U.S. REC registries	Varies across the 10 U.S. REC registries	Inconsistencies across U.S. REC registries, where registries with greater autonomy and data access can move faster
European GO issuing bodies	The European Commission (EC) in coordination with the Association of Issuing Bodies (AIB)	Following approval, updates apply across all GO issuing bodies' systems	Time-intensive approvals process, but following approvals any update has consistent EU-wide adoption
I-REC issuing bodies	The I-REC Standard Foundation in coordination with national I-REC issuers and other stakeholders	Following approval, any I-REC issuing body and Evident (the technology system for I-REC issuance and tracking) can choose to make updates following new guidance in the I-REC Standard	While I-REC markets can theoretically adopt updates the fastest, there are limitations and country-by-country variations around granular data access for new EAC attributes

Key Stakeholder Type #2:
Data Providers

MANDATE: Gather meter data, relevant electricity import and export data, and deliver verified data to EAC issuing bodies and registries to ensure that EACs provide customers fact-based, ex-post information to substantiate their CFE procurement claims.

PRIORITIES: Collect raw and manage verified data from meters and other trusted data acquisition sources to deliver stakeholders the quality data necessary to inform stakeholder decision making, underpin EAC issuance, promote reporting integrity, and other needs.

THEIR CUSTOMERS: Various stakeholders, including energy customers, EAC issuing bodies and registries.

NEXT GENERATION IMPLEMENTATION UPDATES NEEDED: Depending on the extent of smart meter rollout in a given geography, data providers typically have access to the data needed to introduce the five new attributes, but are not currently compelled to provide it to their stakeholders. By delivering these data to EAC issuing bodies and registries in a consistent way across geographic markets, they can drive the introduction of new EAC attributes for next generation procurement.

IMPLEMENTATION PATHWAYS: Data providers can volunteer to begin providing these data through their trusted data delivery access to EAC issuing bodies and registries. Alternatively, regulatory agencies can compel data providers to provide these data through policy and regulatory action.

Key Stakeholder Type #3:
Customer Leadership Programs

MANDATE: Establish the criteria that customers can use to set their goals for clean energy procurement, grid decarbonization, and emissions reductions and recognize the demonstrated leadership of customers that achieve goals based on these criteria.

PRIORITIES: Balance the credibility of a program's criteria—these will inform customers' CFE-related goal setting and resulting market signals—alongside the need to make the customer actions and proof of achievement straightforward, consistent, achievable, measurable, and marketable.

THEIR CUSTOMERS: Energy customers, governments, peer standards bodies, and non-governmental organizations (NGOs) with whom they coordinate.

NEXT GENERATION IMPLEMENTATION UPDATES NEEDED: There is an opportunity for existing leadership programs to make updates and form new programs that capture next generation procurement objectives to help create new communities of customers that set next generation goals. Table 5 summarizes the opportunities to incorporate next generation procurement into existing and potential new leadership programs. The U.S. Federal Trade Commission (FTC) should also update its Environmental Claims guidance to provide greater specificity about the distinct marketing claims that different CFE procurement strategies convey, so that it is clear to customers what marketing claims they can make based on the EACs they procured and report.

IMPLEMENTATION PATHWAYS: For existing programs to evolve, it is essential that a large, diverse group of customers (as well as solution providers, and other stakeholders) request specific updates with supporting evidence about the desired impacts along with potential performance indicators. These requests should leverage the existing technical group and advisory procedures for making program updates. It is important that any proposed new program doesn't compete with existing programs to avoid market confusion, and that it establishes credible goal-setting criteria grounded in grid decarbonization impact. New leadership programs will only scale if they make success straightforward, consistent, achievable, measurable, and marketable for customers, and if they reach a critical mass of diverse customers early to form a community.

Stakeholder Type #3

TABLE 5:
Opportunities for Updated or New Leadership Programs for Next Generation CFE Procurement

	NEXT GENERATION PROCUREMENT OBJECTIVE	OPPORTUNITIES FOR UPDATED OR NEW LEADERSHIP PROGRAMS
1	Procure any complementary or carbon-free electricity resource.	New or updated existing program that recognizes procurement that leverages complementary resources (e.g., CFE storage, efficiency energy, etc.) or makes use of any CFE (e.g., not only "renewable" resources)
2	Match energy consumption with local carbon-free electricity procurement on a 24/7 basis.	Updates to existing program to recognize verified achievement of 24/7 matching in addition to initial 24/7 commitment
3	Procure carbon-free electricity at the most carbon-intensive times of day.	New or updated existing program that recognizes verified procurement based on CFE procured at times with the highest grid-carbon-intensity OR highest avoided emissions impact
4	Procure carbon-free electricity in the most carbon-intensive locations.	New or updated existing program that recognizes verified procurement based on CFE procured in locations with the highest grid-carbon-intensity OR highest avoided emissions impact
5	Procure carbon-free electricity to cover electricity use across value chains.	New or updated existing programs that permit and recognize EAC procurement to cover certain Scope 3 categories (i.e., the electricity use across a company's value chain, both upstream and downstream)
6	Apply over-procurement of carbon-free electricity from certain regions to places without procurement options.	Updates to existing programs to broaden market boundaries and recognize the application of CFE over-procurement to compensate for CFE access limitations in different geographies
7	Motivate systemic grid decarbonization beyond the organization's operations.	New program that establishes and recognizes engagement metrics, advocacy contribution percentages, or similar toward climate and energy policy that decarbonizes the grid for all (i.e., beyond the company's own operations)
8	Deliver social and community benefits that promote further decarbonization of the grid.	New or updated existing program that establishes and recognizes various social/community benefit credentials, certifications, etc.

Key Stakeholder Type #4:
EAC Issuing Bodies and Registries

MANDATE: Establish the standardized accounting frameworks that customers use to measure, document, evaluate, and report their greenhouse gas emissions from electricity use and all other emission sources in a consistent, credible, comparable manner.

PRIORITIES: Enable companies to measure, document, evaluate, and report their greenhouse gas emission inventories so that companies can develop and disclose robust environmental audits and reports.

THEIR CUSTOMERS: Companies that disclose their greenhouse gas emissions on a voluntary and/or regulatory compliance basis.

NEXT GENERATION IMPLEMENTATION UPDATES NEEDED: Energy customers and solution providers seek greater clarity in the Greenhouse Gas Protocol (GHG Protocol) around how to account for various next generation solutions that help them achieve their next generation procurement objectives as well as the role of avoided emissions. The GHG Protocol should make targeted, incremental updates to help expand the menu of CFE procurement options for customers and activate next generation procurement. The GHG Protocol can also help activate a subset of next generation procurement options in the near-term by adding technology inclusive language and clarifying the role of Granular Certificates (GCs) in the Emission Factors hierarchy. Longer-term, larger and complicated questions about how to treat concepts like avoided emissions will be important yet require more time to define how to incorporate into greenhouse gas accounting in a verifiable, attributable way. Table 6 summarizes the current shortlist of updates to the GHG Protocol that would enable customers to understand how to account for next generation procurement and Table 7 summarizes a set of eight updates to the GHG Protocol based on their relative complexity and resulting expected adoption timeframe that would help activate next generation procurement. Any updates to the Greenhouse Gas Protocol should expand the use of market-based accounting across next generation procurement scenarios with enriched EACs to promote more CFE procurement options and enable even more customers to participate in CFE procurement markets. Moving forward, updates to the Greenhouse Gas Protocol should occur in a more agile, frequent manner that resembles software updates instead of the current extensive, multi-year process to make updates.

IMPLEMENTATION PATHWAYS: Stakeholders, including customers, should engage and inform the Greenhouse Gas Protocol during the upcoming revisions process to specify the precise updates needed to clarify how to account for next generation CFE procurement and avoided emissions with evidence-based claims. Stakeholders should also emphasize that a successful outcome of forthcoming updates to the Greenhouse Gas Protocol would include an expanded menu of CFE options to create more ways for more customers to have impact rather than removing CFE procurement options or discriminating against different customer groups. agencies to do this, energy customers and solution providers can and should help initiate these changes by submitting formal requests directly to EAC registries, issuing bodies, and relevant regulatory agencies. EAC issuing bodies and registries can move these updates along by developing user requirements and development backlogs to define the new needed functionality, resource requirements, timelines, etc. for implementation. Practical tools, such as template legal agreements that define API terms for data and/or solution provider platforms, may also make it easier for EAC issuing bodies and registries to expedite updates once they have internal clearance to proceed.

Stakeholder Type #4

TABLE 6:
Greenhouse Gas Protocol Updates Required to Enable Next Generation Procurement

	CUSTOMER-IDENTIFIED NEXT GENERATION PROCUREMENT OBJECTIVES	GHG PROTOCOL UPDATES REQUIRED
1	Procure any complementary or carbon-free electricity (CFE) resource	• GHGP recognizes EACs inclusively from all CFE technologies • GHGP provides guidance for accounting for energy storage (including from a variety of original resources), including GHGP recognition of Granular Certificates (GCs) (i.e., hourly or sub-hourly timestamped EACs)
2	Match energy consumption with local CFE procurement on a 24/7 basis	GHGP recognizes and provides clearer guidance for the use of GCs as well as granular load data and emission factors
3	Procure CFE at the most carbon-intensive times of day	GHGP recognizes and provides clearer guidance for the use of GCs as well as granular load data and emission factors
4	Procure CFE in the most carbon-intensive locations	Updated guidance around market boundaries
5	Procure CFE to cover electricity use across value chains	Develop market-based methods to allow use of EACs to apply to electricity-related emissions in Scope 3
6	Apply over-procurement of CFE from certain regions to places without procurement options	Updated guidance around market boundaries
7	Motivate systemic grid decarbonization beyond the organization's operations	Methodology to accurately account for combination of purchases and grid-supplied CFE
8	Deliver social and community benefits that promote further decarbonization of the grid	N/A

TABLE 7:
List of GHG Protocol Updates Required and Overall Timeframe and Complexity

TIMEFRAME AND COMPLEXITY	GHG PROTOCOL UPDATES
Nearest-term GHG Protocol update opportunities due to lowest complexity and investigation required	• Technology inclusive guidance that provides clear acceptance of energy attribute certificates (EACs) from any carbon-free electricity (CFE) generation and complementary resource • Recognition of Granular Certificates (GCs) (i.e., timestamped EACs) and clearer guidance for the use and potential hierarchical treatment of GCs and more granular load data and emission factors
Medium-term GHG Protocol update opportunities due to medium complexity and investigation required	• Acceptance and clarified accounting guidance on the use of EACs to cover the electricity-based emissions from upstream and downstream value chain partners • Redefined guidance on accounting for energy storage, including for storage co-located with CFE resources versus storage storing electricity from the grid • Updated guidance around market boundaries and whether to allow for CFE over-procurement in dirtier grids or in certain regions to cover limited supply options in other regions • Improved guidance to the Grid-Connected Electricity Projects substandard of the Project-Accounting Protocol, which would be one possible start at a standardized method for calculating avoided emissions • Clear methodology to accurately account for combination of purchases and grid-supplied CFE
Longest-term GHG Protocol update opportunities due to higher complexity and investigation required	• Clarity and specificity around the use of avoided emissions in GHG accounting, mainly due to the challenge of verifying and attributing avoided emissions

By taking ownership and implementing these four key CFE market updates, the four key market system stakeholders—EAC issuing bodies and registries, data providers, customer leadership programs, and greenhouse gas accounting standards bodies—can introduce new CFE market infrastructure. The impact of this collective effort: a transformation in CFE procurement markets where energy customers have an expanded CFE procurement menu at their disposal to send more powerful, targeted market signals for systemic grid decarbonization.

Moving forward, the NextGen Initiative will work with key market system stakeholders to implement customer-oriented market updates and empower them to pursue their respective implementation pathway to activate next generation procurement.

CONCLUSION AND NEXT STEPS

This Next Generation Carbon-Free Electricity Procurement Activation Guide provides a roadmap for the updates needed to the carbon-free electricity (CFE) market system to create new voluntary market infrastructure that activates a larger menu of procurement options for energy customers. With new infrastructure, customers will gain the ability to achieve their next generation CFE procurement goals and send more targeted market signals for systemic decarbonization. This Guide lays out the route to an evolved market system by outlining the eight customer-identified objectives for next generation CFE procurement, the four core principles, and four major types of market updates necessary to activate solutions that fulfill customers' next generation procurement objectives, and the associated implementation pathways available to four key market system stakeholders.

The Guide takes a user-centric approach with understanding the goals, requirements, challenges, and incentives of energy customers, solution providers, and market system stakeholders to offer each of these CFE market system participants actionable insights and guidance.

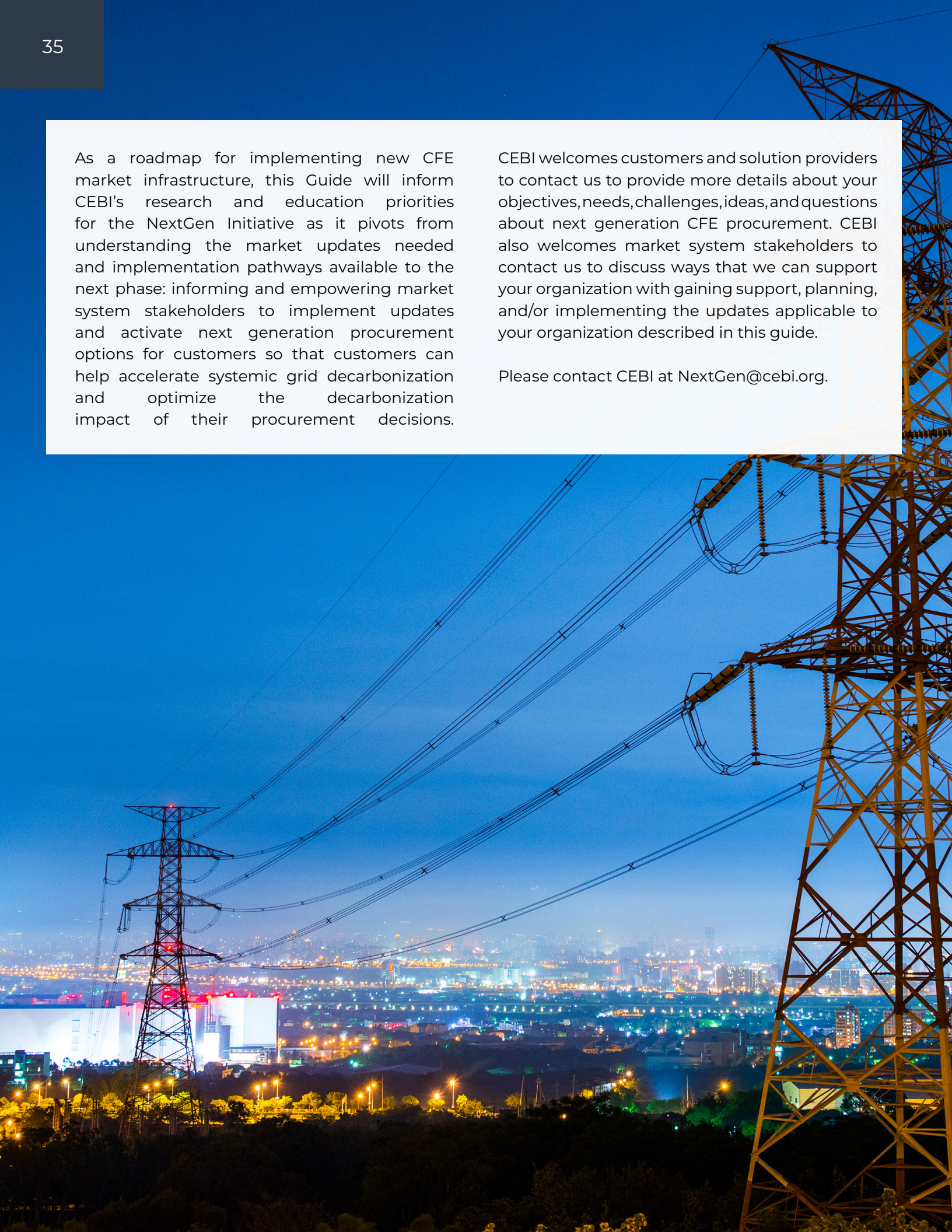
Key takeaways include:

1. **Expanded CFE procurement menu:** Customers want a broader menu of options to advance the systemic decarbonization of the electric grid to achieve their next generation procurement objectives. Solution providers should address as many of the eight customer-identified objectives as possible in their next generation CFE solution offerings and make it easy for customers to understand how these solutions help them optimize the decarbonization impact of procurement decisions.
2. **New EAC attributes:** EAC issuing bodies and registries should make five new EAC attributes available in a consistent way and modernize their APIs so that solution providers can deliver next generation solutions to customers that they can substantiate in their CFE procurement claims.
3. **More granular and consistent data access:** Data providers should deliver needed data to EAC issuing bodies and registries for these five new EAC attributes so that EAC issuing bodies and registries can capture these EAC attributes.
4. **Recognition of next generation goal setting and defined success metrics:** Existing and/or new leadership programs should offer next generation goal-setting criteria for customers to pursue, where customer success in achieving program-specific goals is straightforward, consistent, achievable, measurable, comparable, verifiable, and marketable. It is also important that regulatory bodies, like the U.S. Federal Trade Commission, provide more detailed guidance about the distinct marketing claims that customers can make based on the EACs they procured and report.
5. **Clarifications and gap-filling in greenhouse gas accounting:** Greenhouse gas accounting standards bodies should clarify how to conduct greenhouse gas accounting next generation procurement solutions to make it easier for customers to document and report the verifiable impact of their CFE procurement as well as make these updates moving forward in a more agile way akin to software updates.

As a roadmap for implementing new CFE market infrastructure, this Guide will inform CEBI's research and education priorities for the NextGen Initiative as it pivots from understanding the market updates needed and implementation pathways available to the next phase: informing and empowering market system stakeholders to implement updates and activate next generation procurement options for customers so that customers can help accelerate systemic grid decarbonization and optimize the decarbonization impact of their procurement decisions.

CEBI welcomes customers and solution providers to contact us to provide more details about your objectives, needs, challenges, ideas, and questions about next generation CFE procurement. CEBI also welcomes market system stakeholders to contact us to discuss ways that we can support your organization with gaining support, planning, and/or implementing the updates applicable to your organization described in this guide.

Please contact CEBI at NextGen@cebi.org.



Thank You!

Address
Clean Energy Buyers Institute (CEBI)
1425 K St. NW, Suite 1110, Washington, DC 20005

Phone
1.888.458.2322

Email / Web
info@cebi.org
www.cebi.org

CEBI
CLEAN ENERGY
BUYERS INSTITUTE