February 16, 2024

Via Electronic Submission

Mr. Christopher Kirkpatrick
Secretary of the Commission
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street, NW
Washington, D.C. 20581

Re: Commission Guidance Regarding the Listing of Voluntary Carbon Credit Derivative Contracts; Request for Comment (RIN 3038–AF40)

Dear Mr. Kirkpatrick:

Intercontinental Exchange Inc., on behalf of itself and its subsidiaries (collectively "ICE"), appreciates the opportunity to comment on the Commodity Futures Trading Commission's ("CFTC" or "Commission") proposed guidance ("Guidance" or "Proposal") regarding the listing for trading of voluntary carbon credit ("VCC") derivative contracts.[1]

ICE operates regulated marketplaces for the listing, trading and clearing of a broad array of derivatives contracts and financial instruments, such as commodities, interest rates, foreign exchange and equities as well as corporate and exchange-traded funds, or ETFs. We operate multiple trading venues, including 13 regulated exchanges and six clearing houses, which are strategically positioned in major market centers around the world, including the U.S., U.K., European Union, or EU, Canada, Asia Pacific and the Middle East.

ICE's Key Observations and Recommendations on the Proposal

ICE welcomes the CFTC's focus on carbon markets and supports the Commission's goals to foster responsible innovation, growth and integrity in the environmental derivatives markets, including the emerging VCC derivatives markets. Voluntary carbon markets ("VCMs") and related VCC derivative contracts are integral in helping the global economy manage risks associated with the clean energy transition and reducing greenhouse gas emissions. As the operator of CFTC-regulated exchanges and clearing houses, ICE understands the important role that these entities play in promoting the integrity of derivatives markets. ICE is however concerned that several aspects of the proposed Guidance could impede the development of an exchange-traded market for VCC derivatives and leave VCCs to continue trading in the over-the-counter market without the benefits of a centralized, transparent market.

ICE's key observations and recommendations are as follows:

- The proposed Guidance is a departure from the Commission's principles-based approach to regulation and requires Designated Contract Markets ("DCMs") to make specific evaluations and verifications about the details of a VCC before listing

[1] Commission Guidance Regarding the Listing of Voluntary Carbon Credit Derivative Contracts; Request for Comment, 88 FR 89410 (Dec. 27, 2023).

derivatives contracts, undertakings that DCMs do not have the expertise or resources to perform. For this reason, ICE takes the view that the Proposal would not advance the standardization of VCC derivative contracts in a manner that 'fosters transparency and liquidity, accurate pricing, and market integrity' because DCMs are unlikely to list contracts on VCCs if the CFTC expects DCMs to verify the assessments made by credit programs, credit developers, registries and validation and verification bodies ("VVBs"). As a result, VCCs will continue to trade in the over-the-counter market or move to foreign jurisdictions and thus will discourage liquidity in exchange-traded VCC derivatives.

- ICE recommends that the CFTC permit DCMs to reasonably rely on assurances by a credit program or registry that meets international standards established by an independent body. For example, ICE supports the Commission's recognition of the existing futures frameworks for the development of international standards for crediting programs, such as the Compliance Offsets Program which is part of the California Air Resources Board (CARB), the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) administered by the International Civil Aviation Organization (ICAO) and the Integrity Council for the Voluntary Carbon Market's (ICVCM) Core Carbon Principles (CCP). By permitting DCMs to reasonably rely on a credit program's adherence to international standards, the Commission would follow existing industry best practices, including indices using the financial market benchmark principles established by International Organization of Securities Commissions (IOSCO) to outline their suitability and compliance as an index, or Oil Price Reporting Agencies using IOSCO's Principles for Oil Price Reporting Agencies to highlight their policies and procedures are consistent with Price Reporting Agency ("PRA") Principles.[2]

- Though not within the CFTC's remit, ICE supports registries being subject to industry standard operating principles and believes IOSCO could be well placed to develop such principles, leveraging the approach it took with the PRA Principles. An obligation on registries to publish an annual audit report evidencing their adherence with IOSCO Principles could promote a commitment to high operational standards.

- The Proposal requires DCMs to duplicate processes that already safeguard the quality and integrity of VCCs. Each crediting program outlines the requirements to comply with their programs, resulting in large amounts of data, information and documents which are continuously updated during the life cycle of a project. Registries make this information publicly available. This publicly disclosed information allows buyers and sellers of VCCs to understand how a project developer has verified its project and how related VCCs meet the criteria set forth by the crediting program. Importantly, existing independent bodies including government agencies are already involved in the independent assessment of VCCs.

- In response to the Commission's question, foreign boards of trade ("FBOTs") should not be subject to the Guidance (if adopted by the Commission), as the FBOT framework contemplates that contract terms would be subject to the FBOT's home country regulation, rather than regulation by the Commission.

[2] Iosco Principles for Oil Price Reporting Agencies, Final Report, October 2012, https://www.iosco.org/library/pubdocs/pdf/IOSCOPD391.pdf

Role of Environmental Markets

A fundamental issue contributing to climate change is the assumption that the Earth's atmospheric carbon budget is infinite. Organizations that pay for their carbon emissions because they are mandated by a government, or of their own volition, crystalize a financial liability for their physical emissions and by paying to offset their financial liability they address the root cause of climate change.

Overall, environmental markets help internalize the costs and benefits associated with environmental externalities by incorporating them into economic decision-making. By creating financial incentives for conservation, pollution reduction, and sustainable resource management, these markets play a crucial role in promoting environmentally sustainable practices and achieving broader environmental goals. Like any other market, environmental markets allow for the efficient allocation of scarce resources through buyers and sellers voluntarily transacting with each other. Today, the only noteworthy liquid carbon markets have developed because governments mandated covered entities pay for their carbon emissions which creates demand for carbon assets, including carbon allowances and carbon credits.

While derivative markets themselves do not directly assess the quality of carbon credits, they can indirectly contribute to market efficiency and transparency which supports the integrity of carbon credit transactions. The price signal of carbon credit derivatives conveys the view of market participants on the quality and integrity of the underlying carbon credits.

Among other users, corporates subject to carbon cap-and-trade programs and renewable fuel standards use environmental markets to meet their compliance obligations and manage price risk. In addition, a growing number of corporates are being encouraged by non-government stakeholders such as investors and consumers to make net zero commitments. Corporates can meet these commitments and reduce their gross emissions liability by investing in green attributes, such as renewable energy certificates ("REC") and pay for or offset their residual emissions by acquiring and retiring carbon credits. Therefore, corporates are expected to increasingly utilize environmental markets, including carbon credits, to comply with their commitments to stakeholders and manage the associated price risk.

Additionally, the use of the word "voluntary" to describe carbon credits issued by independent standards setters is a misnomer because it suggests the absence of a commitment by a company paying for its pollution of its own volition. Moreover, it creates an outlier to the labelling of nearly all other markets, which are voluntary exchanges of ownership rights but are not labelled as voluntary. Instead of considering the motivation of participants (particularly buyers) in the carbon credit market, the focus should be on the role that carbon credits play relative to other products offered on environmental markets, ranging from carbon emission allowances and carbon intensity products to carbon credits and Environmental Attribute Certificates (EAC).[3]

Other beneficiaries of environmental markets are policymakers who rely on price signals from these markets to gauge the effectiveness of their environmental and climate policies - such as driving investment in renewables and the use of less-carbon-intensive fuels. Similarly, asset owners and managers can use the price signals from the markets and indices to help assess climate transition risk in their portfolios and then access these markets to manage risk and allocate capital to benefit from energy transition opportunities.

[3] See Annex I - classification scheme for environmental market products (source ICE).

ICE Environmental Markets

ICE supports regulatory initiatives designed to improve the transparency and liquidity of environmental markets in general and the evolving project-based carbon credit markets in particular. These markets are a key tool for participants to address climate change and facilitate the transition to cleaner and more sustainable energy sources. ICE shares the CFTC's goals of advancing the discussion around sound and efficient exchange-traded carbon credit markets.

ICE is proud of its energy and environmental markets that play a leading role in facilitating the pathway to a net zero economy. Nearly 95% of all globally traded environmental futures and options trade on ICE exchanges. Over 115 billion tonnes of carbon allowances have traded on ICE since we acquired the Climate Exchange in 2010. In 2021, a record 18 billion tonnes of carbon allowances traded, representing a notional value of $1 trillion. In 2022 and 2023, 13.5 billion tonnes and $1 trillion of carbon allowances per annum have traded.

ICE's environmental markets and related services include:

- ICE's carbon allowance markets cover the five largest cap-and-trade markets in the world (EU ETS, UK ETS, California cap and trade, Regional Greenhouse Gas Initiative (RGGI) cap and trade and Washington State cap-and-invest schemes).
- ICE's REC markets value renewable electricity generation. Over 350 million renewable energy certificates have traded on our markets since 2010.
- Our carbon credit markets value carbon reduction from reduction and removal projects. Over 6 billion tonnes of these project-based credits have traded on our markets.
- Our nature-based carbon credits futures contracts value carbon sequestration and storage. In addition, the CORSIA Eligible Emissions Units (2024-2026) futures contract allows market participants to manage their exposure to VCCs which have been approved by the International Civil Aviation Organization (ICAO) Council and supports the mitigation of the environmental impact of international aviation during the first compliance period.
- ICE's renewable identification number ("RIN"), renewable volume obligation ("RVO") and low carbon fuel standard ("LCFS") markets value emission reductions in the transportation sector. Over 5 billion RINs have traded on our platforms.
- The ICE Carbon Reference Entity Data Service (ICE CRED) operated by ICE Benchmark Administration Limited (IBA) allocates an ICE Carbon Reference identifier (ICE CREF) across every project and project vintage issued by a registry, which reduces operational risk and cost across the trading lifecycle and promotes greater scalability in carbon credit trading operations.

Specific Comments to the Proposed VCC Guidance

Although the Proposal purports not to modify or supersede existing statutory or regulatory requirements or existing guidance, ICE is concerned that the proposed guidance would have the effect of doing so. In particular, the Proposal identifies: (i) specific economic attributes required to be incorporated into the terms and conditions of each VCC futures contract; and (ii) specific criteria to be evaluated by DCMs that are listing derivatives on VCCs.[4] ICE believes these criteria go beyond what is contemplated under the DCM core principles and related regulations and guidance and impose new responsibilities on DCMs.

[4] ICE notes that DCMs may not be able to meaningfully assess the proposed criteria.

A. The proposed Guidance exceeds current Commission guidance in Appendix C regarding specific terms and conditions.

The Commodity Exchange Act ("CEA") and Commission regulations do not generally specify required terms of contracts that may be listed by a DCM. Rather, the DCM must comply with the principles-based standards set forth in the CEA and Part 38 of the Commission's regulations in developing and listing new contracts. Most relevant is Core Principle 3, which requires a DCM to only list contracts that are not "readily susceptible to manipulation."[5] To provide guidance for this core principle, the CFTC adopted Appendix C to Part 38 ("Appendix C"). Appendix C outlines the required terms and conditions for physically delivered and cash settled futures contracts and the required documentation for a DCM to demonstrate that the contract is not readily subject to manipulation. Appendix C is drafted broadly and does not address a specific underlying asset class. While Appendix C does provide examples of potential terms and conditions, it does not mandate a set of criteria or attributes for any particular asset class. Under the existing framework, DCMs can develop futures contract terms and conditions which are appropriately designed to the characteristics of the underlying asset and take into account relevant factors including the cash market for that asset, the deliverable supply of the asset, the manner and locations in which delivery can be made and the risk management needs of market participants. ICE believes this principles-based approach has served the CFTC, DCMs and the derivatives markets well and is equally applicable to VCMs and VCC derivatives without need for significant modification or prescriptive requirements.

By contrast, before listing a contract based on a VCC, the Proposal would require a DCM to engage in an unprecedented level of oversight of the underlying VCCs themselves, the process for reviewing and certifying the underlying VCCs and the cash market for VCCs. Although ICE recognizes that there is currently no regulatory or other governmental body establishing standards for the underlying VCCs themselves (unlike certain standards that may be imposed by government authorities for agricultural, energy or environmental compliance products), DCMs are not in a position to perform these obligations. Imposing these requirements would thus disincentivize DCMs from listing VCC-based contracts which runs counter to the goal of improving transparency and liquidity in VCC markets.

Moreover, ICE is not aware of other classes of futures contracts for which the CFTC has taken such an approach, even in contexts where there is no regulation of the underlying cash market. For example, the CFTC published an Advisory for the listing of Virtual Currency Derivative Products,[6] which focused on surveillance, reporting, risk management and consultation with market participants rather than requiring the DCM to supervise the terms and conditions of the underlying cash instrument.

B. DCMs are not well-positioned to assess the identified VCC attributes and quality standards.

In the Proposal, the CFTC identifies several attributes of underlying VCCs that a DCM should address in the terms and conditions of VCC derivatives contracts. While ICE agrees that many of these attributes are relevant to the quality and other characteristics of the VCC, we do not believe such attributes should be expressly required to be evaluated by the DCM as part of the contract terms and conditions as proposed in the Guidance. Such an approach would inappropriately suggest that the DCM is responsible for such attributes and would require a

[5] 17 C.F.R. 38.200.
[6] CFTC Staff Advisory No. 18-14, May 21, 2018 at https://www.cftc.gov/sites/default/files/idc/groups/public/%40lrlettergeneral/documents/letter/2018-05/18-14_0.pdf.

level of involvement of the DCM in reviewing and validating such attributes that is beyond that required by the DCM for other contracts under the Appendix C standards.

The CFTC's primary goal when considering a new DCM contract is whether it is susceptible to manipulation in light of the standards in Appendix C. While it is important for market participants to have sufficient information to make an informed decision about the quality of the VCCs that may underlie a DCM contract, ICE believes that such information is best created by the crediting program and reviewed in the context of other information published by the program. While a DCM can refer to such information in its contract terms and conditions, ICE does not believe a DCM can provide an independent review of such information.

Further, we note that the Proposal's approach of including such detailed information in the contact terms and conditions would be inconsistent with the practice for many futures contracts which settle to third-party indexes or prices series published by third-party PRAs. In most instances, attributes such as index methodology and the governance procedures of the index provider are not incorporated into the terms and conditions of the futures contract. Instead, only the named index and index provider are identified. This practice has worked well and we believe that the Commission should apply this practice for VCC derivatives.

i. Transparency

The life cycle of a VCC consists of four stages: project development, validation & verification, registration & issuance, and retirement. Actors important to this life cycle include project developers, third-party auditors and carbon registries. Each crediting program sets forth detailed requirements and processes that these actors must follow to evidence their compliance with the program, resulting in a large suite of data, information and documents that is continuously updated during the life cycle of a project. Registries thus serve as the cornerstone for the implementation of the crediting programs and are used by them to make this suite of information publicly available.

This information allows buyers and sellers of VCCs to understand how a project developer has validated that its project and related VCCs meet the criteria set forth by the crediting program. Over the last few years, new services (e.g. rating agencies) have been developed that allow market participants and corporates to navigate the vast amount of information available and support decision making in respect of VCCs.

Moreover, ICE agrees with the Commission that the relevant crediting program for eligible VCCs should be identified in the terms and conditions of the futures contract. A futures contract will have to identify clearly what is and is not deliverable under it. However, as explained above, details as to the operation or robustness of the underlying crediting program and the specific types of projects or activities for which it issues credits, are made publicly available by the crediting programs on their websites and through their registries.

ICE believes that market participants, and not DCMs, are best placed to assess whether the information made available by a crediting program is sufficient and detailed in respect of the crediting program's policies and procedures and the projects or activities that it credits.

ii. Additionality, Permanence and Risk of Reversal

ICE agrees with the Commission that additionality, permanence and the risk of reversal are attributes that contribute to a high quality VCC. ICE further agrees that it is reasonable for a DCM to consider whether a crediting program can demonstrate it has

procedures in place to assess or test for additionality. Crediting Programs formulate their standards, methodologies and the related processes through a public consultation process. This process allows a wide range of stakeholders to provide their views and raise concerns about VCC quality and integrity. The public consultation process is an important part of this developing market and can help to mitigate some of the risks identified by the Commission (e.g. over-crediting). Moreover, VCCs have typically been issued following an independent validation and verification process. Finally, certain credit program operators and their methodologies have been approved under standards set by the private sector and multilateral initiatives which are also subject to open consultation (for example, CORSIA, ICVCM CCP).

However, ICE disagrees that a DCM should be required to assess a whether the crediting program's procedures are of sufficient rigor to ensure that VCCs meet these requirements. This responsibility should be borne by the crediting program operators.

iii. Robust Quantification.

ICE agrees that the methodology used by a crediting program to quantify allowances may be relevant to the VCC quality. The standards and methodologies set forth by crediting programs are subject to extensive and public consultation processes. The feedback received is used by the crediting programs to improve their standards and methodologies, thereby gaining support from developers, VVBs, corporates and other stakeholders. In that sense, the standards and methodologies represent the market consensus on how those involved in the life cycle of a VCC should take responsibility for the quality and integrity of VCCs issued under a certain standard and methodology. The proposed Guidelines would require a DCM listing a VCC derivative contract to take responsibility for assessing whether the crediting program of the underlying VCCs can demonstrate that the quantification methodology is robust, conservative, and transparent which leads to unnecessary duplication of the consultation processes.

ICE also agrees that DCMs should be responsible for making deliverable supply estimates of the underlying commodity for the delivery period specified in the contract, consistent with existing Appendix C. This information can be obtained from data made publicly available by the crediting programs. When using this information, a DCM (like any other market participant) should be able to reasonably rely on the credit program statements that a VCC which meets the eligibility criteria as part of the underlying supply of a specific derivative contract represents an emission reduction or removal of the specified amount of carbon dioxide equivalent.

iv. Governance

The Commission proposes that a DCM consider whether the crediting program for the underlying VCCs can demonstrate that it has a governance framework which effectively supports the crediting program's independence, transparency and accountability. ICE does not believe the DCM should be responsible for determining the adequacy of the crediting program's governance and instead suggests the Commission allow the DCM to rely on international organizations such as IOSCO, ICVCM and ICAO, or similar standard-setting bodies, to establish threshold standards for high-quality carbon credits which the crediting programs should adhere to and be audited against.

v. Registries Serve as Delivery Points

It is important to distinguish between the role of carbon crediting programs and registries. These two roles are often conflated because of the legacy market structure whereby every credit program operates its own registry. The physical delivery of VCCs is effectuated by transferring the VCC from the seller to the buyer in the registry operated by the crediting program.

DCMs and the Derivative Clearing Organizations ("DCOs") that clear their VCC contracts often have an active account at the registries operated by the crediting programs. These accounts can be used to facilitate intermediated delivery of VCCs between sellers and buyers. Market participants value the delivery mechanism as an important risk management function offered by DCMs and DCOs. As such, ICE believes that a DCM should seek confirmation from a crediting program utilizing a registry that it has appropriate measures in place to effectively track the issuance, transfer, and retirement of VCCs.

ICE Responses to Specific Commission Questions

Question 2.

Are there standards for VCCs recognized by private sector or multilateral initiatives that a DCM should incorporate into the terms and conditions of a VCC derivative contract, to ensure the underlying VCCs meet or exceed certain attributes expected for a high-integrity carbon credit?

ICE Response: ICE recognizes the benefits of private sector and multilateral initiatives to support and promote VCC quality. The standards developed and being developed for high-integrity VCCs include:

- ICROA which has published the Carbon Crediting Program Endorsement Procedure;
- ICAO which established CORSIA; and
- ICVCM which has published the CCPs.

These proposed criteria and procedures, among others, could provide a credible means of identifying high-integrity carbon credits and assist in developing and standardizing the evolving VCC market.

In addition, IOSCO recently published a consultation requesting feedback on the integrity and orderly functioning of the VCM. ICE suggests the Commission consider relying on the IOSCO principles or another internationally agreed to standards when developing any requirements or guidance for the listing of VCC derivative contracts on DCMs.

As noted, however, ICE does not believe it is necessary for a DCM itself to incorporate such standards for the VCC into the terms and conditions of its contracts.

Question 4.

In addition to the criteria and factors discussed in this proposed guidance, are there particular criteria or factors that a DCM should consider, which may inform its analysis of whether or not a VCC derivative contract would be readily susceptible to manipulation?

ICE Response: ICE does not believe there are additional criteria and factors to consider beyond those which are already being considered.

Question 5.

Should the VCC commodity characteristics that are identified in this proposed guidance as being relevant to the listing by a DCM of VCC derivative contracts, also be recognized as relevant to submissions with respect to VCC derivative contracts made by a foreign board of trade under CFTC regulation 48.10?

ICE Response: ICE does not believe it is necessary or appropriate for the Commission to apply any VCC guidance for DCMs, to submissions of contracts by an FBOT. Consistent with Section 4(b) of the CEA and the Part 48 regulations applicable to FBOTs, the Commission does not regulate or oversee the terms of contracts traded on FBOTs except in the narrow case of linked contracts and certain securities-related contracts. Under the Part 48 framework, the FBOT's home country regulator is tasked with primary oversight of the FBOT's contract terms, and the CFTC Rule 48.10 contract submission procedure is not designed for the substantive regulation of an FBOT's contract terms. Rather, the submission is intended to identify the terms of the contract, to provide any appropriate certifications in the context of a linked contract and to confirm that the FBOT continues to satisfy the terms of its FBOT registration. ICE is not aware of other contexts in which the Commission has provided formal substantive guidance on the permitted terms of a non-linked contract or non-securities-related contract submitted by an FBOT.

Question 8.

In this proposed guidance, the Commission recognizes VCCs as additional where they are credited for projects or activities that would not have been developed and implemented in the absence of the added monetary incentive created by the revenue from carbon credits. Is this the appropriate way to characterize additionality for purposes of this guidance, or would another characterization be more appropriate? For example, should additionality be recognized as the reduction or removal of GHG emissions resulting from projects or activities that are not already required by law, regulation, or any other legally binding mandate applicable in the project's or activity's jurisdiction?

ICE Response: ICE does not believe the Commission or DCMs are well-placed to determine when a VCC is additional or not. Instead, as discussed above, ICE believes that VCC standard setting bodies are best placed to define and apply criteria for additionality. Moreover, buyers and seller of VCCs, or derivatives on VCCs, can access information disclosed about the VCC that will describe how it defines and applies additionality.

Question 15.

Should the delivery procedures for a physically-settled VCC derivative contract describe the responsibilities of registries, crediting programs, or any other third-parties required to carry out the delivery process?

ICE Response: The delivery procedures used by the relevant DCO for the product should take account of the functions provided by the relevant registries, specify the responsibilities of parties in the delivery process and address the risks to the DCO and market participants for delivery failures, consistent with the DCO core principles. ICE does not believe it is otherwise necessary for the DCO to describe the responsibilities of registries and crediting programs

(which are generally not within the control of the DCO). Rather, the DCO needs to assess whether those responsibilities, as disclosed by the registry or other relevant third party, are sufficient for the DCO's purposes.

* * * * *

ICE appreciates the opportunity to comment on the Proposal and the engagement of the Commission and its Staff with respect to carbon markets. ICE looks forward to working with the Commission to develop ideas which promote transparency and integrity in the VCC markets while preserving long-standing exchange practices and oversight. ICE supports the Commission's goals to promote transparency and integrity in the VCC derivatives markets and respectfully requests that the Commission consider its comments in light of those goals.

Sincerely,

Elizabeth King
Global Head of Clearing & Chief Regulatory Officer
Intercontinental Exchange, Inc.

cc: Honorable Chairman Rostin Benham
Honorable Commissioner Christy Goldsmith Romero
Honorable Commissioner Kristen N. Johnson
Honorable Commissioner Summer Mersinger
Honorable Commissioner Caroline D. Pham

Annex I - Classification of Environmental Products

Mechanism	Issued Product	Example Government (G), Non-government (NG)	Utility
Cap-and-trade mechanism	Carbon emission allowances	(G) Western Climate Initiative (G) Regional Greenhouse Gas Initiative (G) Washington Cap and Invest Program (G) EU Emissions Trading System (G) UK Emissions Trading System	• Aims to reduce the quantity of carbon emissions with an ***absolute cap*** representing the total quantity of tonnes allowed to be emitted into the atmosphere ***and the only available mechanism to control the quantity of emissions.*** • The allowance (or permit) prices the negative externality of pollution, allowing polluters to pay for the utilization of the atmosphere. • Measures the supply (allowances) versus demand (emissions) of the program.
Baseline-and-credit mechanism (Carbon intensity)	Emission performance credits (or certificates)/ Carbon intensity credits (or certificates)	(G) China Emissions Trading System (G) California Low Carbon Fuel Standard (G) Alberta TIER Emission Performance Certificates	• Aims to reduce carbon intensity ***not absolute emissions***. The baseline represents the permissible level of carbon intensity and credits are issued for reductions below the baseline. • The credit prices the positive externality of reducing carbon intensity and the negative externality of pollution, allowing polluters to pay for the utilization of the atmosphere i.e. by purchasing a positive externality you pay for your negative externality. • Measures the supply and demand of emission intensity reductions.
Baseline-and-credit mechanism (Carbon reduction)	Carbon credit [reductions]	**Methodologies** Avoided Deforestation/Improved Forest Management/Energy efficiency/Renewables **Issuers** (G) California, Alberta, Australia (NG) Verra, ACR, CAR, Gold Standard	• Aims to reduce carbon emissions ***not absolute emissions***. The baseline represents a counterfactual, hypothetical scenario of what would have happened without the intervention and the credits are issued based on actual reductions below the baseline. • The credit prices the positive externality of reducing carbon emissions and the negative externality of pollution, allowing polluters to pay for the utilization of the atmosphere i.e. by purchasing a positive externality you pay for your negative externality. • Measures the supply and demand of emission reductions.
Baseline-and-credit mechanism (Carbon removals)	Carbon credits [removals]	**Methodologies** Afforestation, Reforestation and Restoration/Improved Forest Management/Direct Air Capture **Issuers** (G) California, Alberta, Australia, (NG) Verra, ACR, CAR , Puro	• Aims to increase ***carbon emission removals***. In contrast to reduction credits, removal credits are issued against a baseline of zero. • The credit prices the positive externality of removing carbon emissions and the negative externality of pollution, allowing polluters to pay for the utilization of the atmosphere i.e. by purchasing a positive externality you pay for your negative externality. • Measures the supply and demand of emission removals.

Mechanism	Issued Product	Example* Government (G), Non-government (NG)	Utility
Environmental attribute mechanism	Energy attribute credits (or certificates)	**Methodologies** Renewable electricity/renewable gas/renewable fuels **Issuers** (G) PJM RECs (G) RINs (G) EU GOOs, UK REGOs (NG) I-RECs	• Aims to increase the production of ***renewable energy*** deployment by providing extra revenue to renewable energy producers in addition to the supply of the underlying energy. • The credit prices the positive externality of the environmental attributes of renewable energy generation. • Measures the supply and demand of renewable energy.