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To:

Christopher Kirkpatrick, Secretary of the Commission, Commodity Futures Trading
Commission

Date: February 16, 2024

Reference: 88 FR 89410, Comments on "Commission Guidance Regarding the Listing of Voluntary Carbon Credit Derivative Contracts"

Dear Secretary of the Commission,

We offer the following comments on your draft Commission guidance regarding the listing of voluntary carbon credit (VCC) derivative contracts:

1. We wholeheartedly support the Commission's aim to enhance the underlying integrity and standardization of VCCs, as well as to support the development of a financial system that expedites the flow of capital to entities that remove and indefinitely sequester atmospheric carbon. Any plausible strategy for addressing climate change must include both mitigating the amount of GHG emitted by human activities, and removing prior GHG emissions from the atmosphere. Even with the most optimistic mitigation forecasts, some carbon emissions from essential chemical processes and agriculture will still occur. Therefore, carbon removals must be a key part of the solution. Corporations, nonprofits, and government entities with net-zero emissions targets, and with limited options for removing GHG themselves, need to contract with organizations that have more efficient carbon-sequestration processes and technologies (i.e., carbon offsets).
2. Effective and competitive markets for the purchase and sale of carbon offsets should, as in traditional commodity and financial markets, help finance entities that have a comparative advantage in capturing the most GHG at the least cost. Current markets for carbon trading, however, function poorly, enabling the trading of offsets that do not perform as promised.
3. [Recent media investigations](#) suggest that over 90% of products transacted on offset markets are "phantom credits," removing very little GHG from the atmosphere. We recognize that the measurement for GHG extraction is challenging, and there are risks associated with carbon-removal projects with long horizons to actual delivery of captured carbon. Furthermore, legal structure is lacking to discipline the purchase and sale of carbon offsets. These

weaknesses in the accountability infrastructure of offset markets contribute to moral hazard problems. Without robust protocols for monitoring offsets and in the absence of proper accounting mechanisms, market-based approaches to reducing atmospheric GHG will continue to be vulnerable to misrepresentation and fraud.

4. We support the Commission's proposals to advance transparency and market integrity. Its proposed guidance is necessary but not yet sufficient to achieve transparency and integrity objectives. Our comments recommend how to develop a more comprehensive regulatory regime for supporting well-functioning carbon markets. The thrust of our arguments are as follows:
 - a. Global reductions in emissions will require a substantial, market-driven effort to *remove* large quantities of GHGs from the atmosphere. This is the necessary and vital role for valid carbon removal offsets.
 - b. The current market-based efforts in this space, through voluntary carbon credits, are rife with fraud and misrepresentation that advance benefits of unscrupulous players, and promote misleading and dangerous corporate greenwashing. The danger arises from corporate complacency that their purchases are reducing atmospheric GHG, thereby diverting attention and resources from activities that actually remove current carbon from the atmosphere.
 - c. The CFTC is uniquely placed to prevent abuses in this market and to set the standard for the trading of legitimate carbon offsets within the United States and globally.
 - d. The CFTC's role should go well beyond its initially proposed VCC guidance. Reducing atmospheric carbon at the needed scale requires not small fixes on the margin but the creation of a sound bedrock of accounting and governance institutions upon which a large, legitimate market for decarbonization can thrive. The CFTC needs to replicate the role performed by the SEC in the mid-1930s, when it established from the ashes of the Great Crash of 1929 the foundational principles for accounting and auditing – what we today recognize as GAAP and GAAS.
 - e. We outline below our recommendations for the foundational accounting principles for a market that trades carbon offsets. We stand ready, as expert academics and concerned citizens, to assist in developing these foundational principles.
5. In what follows, we offer comments on the accounting foundations for carbon offsets, defining what can and cannot be counted as an offset and what may or may not be traded. We also comment on the basic accounting guidelines that will provide the foundation for a well-functioning market that accelerates innovation and deployment of improved offsetting technologies, leading to atmospheric decarbonization. These comments are based on the August 2023 HBR article, "[Accounting for Carbon Offsets](#)", co-authored by three of us.
6. Carbon offsets trading currently involves certificates that point to sequestered carbon in specific projects. The certificates are issued by one of several private registries, acting as a transfer agent in securities markets. The certificates, however, do not convey ownership of any captured carbon. Rather, they represent the holder's entitlement to account for some of the carbon (to be) captured, as underwritten by the registry. The certificate buyer has no direct

relationship with the offset projects and cannot monitor any actual carbon capture and sequestration. Certificates, subsequent to purchase, are “retired” by the buyer, who claims to have permanently removed the carbon quantity printed on the certificates from the atmosphere (for its net-zero calculation and disclosure).

7. The buyer of a certificate claims credit for projects that reduce carbon in the atmosphere, enabling it to cancel the same quantity of carbon it has emitted from its business activities. Many certificates, however, do not represent actual removals of carbon from the atmosphere. Even for those that do represent actual removals, no verification is performed about the permanence of removals nor are impairments recognized when previously captured carbon is subsequently released into the atmosphere.
8. A well-functioning marketplace depends on clear definitions and measures of what is being traded. We support the Commission’s goal to develop standards for derivatives with an underlying VCC that are real, additional, permanent, and verifiable. Each contract should represent unique metric tons of GHG emissions removed from the atmosphere. We propose five principles to underpin markets for the removal and storage of GHG emissions. The first two offer a standardization of what counts as an offset, and what may or may not be traded. The remaining three principles, relevant for the Commission’s proposed quantification, permanence, and reversal risk dimensions, set out basic accounting guidelines for offsets.
9. Principle 1 states that **only offsets that remove carbon from the atmosphere may be used to reduce an organization’s reported emissions**. A valid offset to a given quantity of emissions that an organization is responsible for must remove an equivalent quantity of GHG already in the atmosphere and sequester it for at least as long as the underlying emissions are expected to remain in the atmosphere. These are known as ‘removal offsets’. However, current standards for carbon offsets do not distinguish between actions taken to remove existing GHGs from the atmosphere (removal offsets) from ‘avoidance offsets’, which are promises to avoid releasing additional or prospective GHGs into the atmosphere. Principle 1 does not allow recognition of prospective emissions reductions as current offsets. This furthers the proposed commodity characteristics on transparency and additionality: the goal is to remove carbon from the atmosphere.
10. Put differently: avoidance activities are not offsets. While there is a continuum of avoidance activities, with some more egregiously unverifiable than others, all avoidance activities, by definition, do not involve the removal of existing molecules of CO₂ (or other GHGs) from the atmosphere. Avoidance activities, when they do in fact occur, will result in lower emissions (and therefore lower E-liabilities), but to recognize those activities as a credit that negates one’s responsibility from current emissions is a form of dangerous double counting that encourages further atmospheric pollution today. Consider, for example, the avoidance activity from sustaining an existing forest that would otherwise be felled. Saving the forest is a good and noble deed, and from an accounting perspective, it is akin to preventing an asset from being impaired. Importantly, though, the emissions embedded in that forest have already “done their job” in sequestering atmospheric carbon. Recounting those embedded emissions

once again toward future pollution, just because of the act of saving the forest, is wrongheaded. This would be akin to a company that has prevented an asset impairment from then claiming that the impairment avoided should be credited as an additional profit, which of course is absurd. The impairment avoided means profits are already higher than they would be (had the impairment been recognized) – asking for a second credit of that amount toward reported profit is simply a bizarre form of double-counting.

11. Principle 2 states that **companies should be able to buy or sell valid removal offsets**. This encourages firms to treat carbon removals like any other purchased good or service: companies acquire offsets from those able to provide them at a lower cost. Principle 2 enables entities with a comparative advantage in capturing and sequestering carbon to access funding for these beneficial activities. Carbon-offset trading in well-functioning markets promotes gainful exchanges and increases the supply of capital for the most efficient offset producers.
12. Principle 3 states that **rights to carbon removals should be recognized, as an asset and be tradeable as a removal offset, when the timing and the magnitude of the offsets are both reasonably estimable and probable**. This principle identifies when an offset producer may recognize and trade captured carbon. We offer a hypothetical case. Imagine that a landowner plants a new forest to sell the carbon that the forest will remove and sequester to a buyer seeking to offset its emissions. We assume that the forest requires 10 years of growth before it begins to remove carbon in significant quantities. For the next 20 years, the forest absorbs carbon at a predictable rate. After 30 years, the fully grown trees capture no new carbon, but they continue to sequester previously captured carbon for 20 more years before decaying and releasing the carbon. The landowner, as the producer of the removals, owns the rights to the carbon capture.
13. Applying standard financial accounting principles to this case, the landowner can capitalize such rights as an offset based on both the measurability of how much and when the carbon will be captured and the likelihood that it will be captured. In accounting terminology, these criteria are known as “reasonably estimable and probable”, where “probable” means at least 50% likelihood but may also be defined (in regulations) as 90% or higher. Our landowner estimates the tons of carbon capturable (the offset quantity) based on average annual growth of like tree species during years 11 through 30. Of course, disease, pests, wildfires, and illegal deforestation may reduce the quantity or duration of capture, and unexpectedly favorable weather conditions may increase the carbon captured per year and the duration of the forest’s productive life. This relates to the Commission’s proposed commodity characteristics on permanence and risk of reversal. Landowners wishing to book and sell legitimate carbon offsets must demonstrate that their estimates are well-founded and that risks will be well-managed.
14. Even if an offset meets standards on measurability and likelihood, we must guard against the risk that the sale of the offset fundamentally changes the magnitude and duration of the carbon capture. The separation of an asset (rights to carbon capture) from the originator creates an “alienability risk” when the asset is sold. Alienability risk occurs in our forest

example after the landowner has sold the forest's future carbon offsets. The landowner no longer has an incentive to maintain the forest's long-term capabilities for capturing and sequestering carbon. The probable and estimable criteria can be met only when no reasonable expectation exists that the offset will be impaired as a consequence of its sale. This provision can be satisfied through standard performance contracts.

15. Principle 4 states that **a company can “net” a quantity of offsets against its direct or purchased emissions only when that quantity of GHG has been removed from the atmosphere and indefinitely sequestered.** We can draw parallels here to financial accounting standards on revenue recognition: a company may recognize revenue from a sale only when it is both realizable and earned. A selling company “realizes” revenue when it receives cash, a cash-equivalent asset (such as a marketable security), or a highly likely commitment to pay cash in the future (an accounts receivable). The company “earns” the revenue when it delivers its product or service.
16. The landowner in our example meets the realizable criterion when the capture of carbon has become both estimable and probable. That could be in year 0 for a high-quality landowner or somewhat later for a less reputable or less capable one. Regardless of when the realizable criterion is satisfied, the landowner does not start to “earn” the carbon offset until year 10, when it can verifiably demonstrate that nontrivial quantities of carbon are being captured by the forest. However, if the forest manager sells the offset asset before the 10th year, the purchasing entity must keep the E-asset unchanged on its books until year 10, when the earned criterion is met upon receipt of an audited report from the forest manager about the quantity of carbon that has been captured. At that time, the offset buyer could proportionately draw down the offset asset, up to the “earned” amount, to reduce (or “net”) its direct or purchased emissions.
17. Principle 3 also requires that the captured GHG be sequestered “indefinitely”, which due to the duration of emissions liabilities, raises a particularly challenging aspect of netting. [NASA estimates](#) that man-made carbon emissions persist in the atmosphere for at least 300 years, and possibly more than 1,000 years, a time-horizon, far greater than for any other commercial contract. Principle 4's netting criterion requires that the duration of an earned removal offset equal or exceed the duration of the emitted GHG, leading to our use of the term “indefinite” in the principle. “Indefinite” does not mean “infinite”; it means that the sequestration has no definite end, based on technology, legal restrictions, or regulatory oversight.
18. Our illustrative forest offset project, which holds carbon for at most 40 years from first “earning” it, is unable, on its own, to extinguish emitted GHG, with its much longer lifetime in the atmosphere. Netting requires, therefore, assurance that the offset owner has the financial capacity to repeat the process so that the carbon can remain sequestered over multiple forest-generation cycles, which could involve placing very long-duration funds in an endowment- or pension-fund-type structure. This problem is not shared by all approaches to creating carbon offsets. Carbon capture through subterranean mineralization, for example, does sequester the carbon indefinitely without requiring multiple reinvestment cycles.

19. Principle 5 states that **an offset asset can be impaired or accreted based on new information about the quantity and duration of actual carbon sequestration**. This principle recognizes the risk of an offset asset's value fluctuating over its lifetime. In the illustrative forest example, impairment risks generally rise over time as increasing quantities of sequestered tree carbon become subject to fire, disease, pestilence, mismanagement, or other forms of catastrophic loss, in addition to the risk that the actual amount of carbon captured will fall short of expectations. The potential for impairments provides an incentive for companies to purchase from reliable offset producers, those that consistently deliver on the expected quantity and duration of sequestered carbon. Other long-lived assets are subject to such risks, and standard financial accounting criteria, used to recognize and measure impairments of property, plant, and equipment can be applied to carbon offset assets.
20. Unlike other tangible assets, however, some carbon assets may become more valuable than originally expected, such as when the forest grows larger and faster than anticipated, enabling it to capture and store more carbon than that specified in the initial, traded, contract. Principle 5 allows for such accretions based on new information about the carbon offset asset. For Principle 5 to function in practice, all offset contracts will need periodic audits to determine whether an impairment or an accretion has occurred and to attest to the magnitude of any change.
21. The five principles have important implications for how to manage and monitor the vast terrestrial biospheres, such as those in Brazil, Canada, Congo, and Russia, where much of the world's current forest offsets are stored and remain vulnerable to plunder. They should also promote dynamic and efficient markets to support the production and trading of new carbon-removal offsets.
22. The principles presented here extend the E- (or environmental) liability method of carbon accounting, described in the 2021 HBR article "[Accounting for Climate Change](#)", which enables organizations to measure and manage the cradle-to-gate GHG emissions incurred in their outputs. The conceptual framework for this system is simple and analogous to how companies' cost and inventory accounting systems function today. Our approach is materially different from the GHG Protocol's current approach, which is not conducive to serving as a taxable basis because of its arbitrary multiple-counting of the same emissions and its unauditability. In our system, each company allocates its direct ("Scope 1" in the GHG Protocol's terminology) and purchased (upstream) emissions to its products and services. These allocations rely on the specifics of the firm's production process as well as the carbon balances of all production inputs as reported by the firm's suppliers. This should be based on primary supplier-specific emissions data, not industry averages, therefore giving companies and their customers an accurate picture of the emissions from their specific supply chain.
23. With this system, whenever a company sells and delivers a product or service to a customer, the customer acquires not only the product/service itself but also "responsibility" (or the E-liabilities) for all the GHG emitted, from cradle to gate, by all the extraction, transportation,

and operating processes used to generate that product or service. The GHG information embedded in every company's products is automatically transferred from stage-to-stage of the supply chain. Every company is thus accountable for its direct emissions, which are measured once and only once, when and where they occur, as well as the cumulative sum of all upstream direct emissions embedded in its purchased products and services. The company debits its E-liabilities when the emissions in its products and services are transferred down a supply chain, similar to standard inventory accounting. Companies can easily produce a standardized company-level report of their complete cradle-to-gate carbon footprint by aggregating the product-level emissions information, a process exactly analogous to how they produce an inventory report for their financial statements.

24. Since publication, the November 2021 paper has been recognized with the 2021 HBR-McKinsey Award as the journal's outstanding 2021 publication "for its practical and ground-breaking management thinking." Two of us co-founded the [E-liability Institute](#) to drive the E-liability method into practice. The Institute has initiated pilot projects with several major organizations that have already demonstrated the feasibility and benefits of the E-liability approach. In June 2023, we convened in London and online over 100 carbon measurement professionals from dozens of companies worldwide, who are exploring this bottom-up method to directly measure the embedded emissions in their supply chains. [Early results](#) from pilot adoptions suggest that the improved emissions accuracy from using the approach motivates accountable managers to embrace decarbonized alternatives in product design, production, and procurement, supporting the kinds of outcomes the Commission seeks for the financial system and economy. Promisingly, accounting software providers are already developing solutions for such an approach to work at scale. We are happy to share relevant learnings from the pilots with you or even to initiate joint pilots if necessary.
25. The principles outlined in this comment letter for fungible, accurately measured, and verified carbon offset extend the E-liability system by specifying the properties of offsets that enable them to be recognized as "E-assets" on organizations' environmental balance sheets. Rights to carbon removals can be recognized as an E-asset and tradeable as a removal offset when the timing and magnitude of the offsets are both reasonably estimable and probable. A company can net a given quantity of E-assets against its E-liabilities account when that quantity of GHG has been actually removed from the atmosphere and indefinitely sequestered. 'Avoidance offsets' are capitalized in the form of reduced liabilities of the balance sheet, rather than as tradeable offsets. Together, E-assets and E-liabilities provide market mechanisms to drive decarbonization: the basic accounting tools for organizations and governments to measure and manage their performance toward decarbonization targets, including net-zero goals. The E-ledgers on which they are recorded provide a fully auditable vehicle for stewarding an organization's environmental claims, mitigating the greenwashing that has plagued corporate reporting in this space.
26. With sound accounting principles in place, robust market practices and institutions for carbon-offset trading can develop, as they have for other products. And with well-functioning markets, the invisible hand of competition can accelerate innovation and deployment of

improved carbon removal technologies, leading to atmospheric decarbonization. In many ways, the practices and institutions that support a functioning market in offsets resemble those that have evolved to serve other successful markets. These include:

- a. **Accounting and reporting:** At present, reporting systems for carbon emissions and offsets are inconsistent and idiosyncratic. Many companies today calculate emissions by selectively applying GHG Protocol rules to some activities (such as purchasing electricity) but not others (such as employee travel) and then buying offsets that they immediately retire to achieve their self-declared net-zero targets. A new market system, based on our principles, would have companies managing an E-balance sheet containing purchased and generated E-liabilities along with offset assets. A firm would qualify as net zero for a given reporting year only if its closing E-liability balance at the end of that year had been matched by nettable E-assets.

Sellers of offsets would also maintain E-balance sheets and financial balance sheets. From their perspective, the sale of an unearned offset - say, a newly planted tree - would lower the quantity of their E-assets and create a financial liability, listed as deferred revenue, to cover the cost of caring for the tree and protecting it against impairment. The deferred revenue would be recognized as “earned” only when the tree started to remove carbon.

- b. **Auditing:** The current approach to carbon reporting, based on selective disclosures of emissions and the accelerated use of offsets, is generally unaudited. In the few instances where companies voluntarily purchase assurance services, these are usually “limited in scope”, with the auditor’s opinion carefully phrased in highly hedged language that states, in effect, that the company’s claimed net-zero position is not obviously false. In contrast, our system of E-balance sheets, operating in parallel with financial balance sheets, can be fully audited to provide a “true and fair” representation of an entity’s carbon emissions and carbon-removal offsets. This meets the underlying spirit of the Commission’s proposal around third-party validation and verification.
- c. **Offset portfolio management:** Given that many E-assets will be nettable only gradually and well after purchase, buyers will need to consider the mismatch between E-assets and E-liabilities in structuring funding for the purchase of offsets as well as take into account the variations in impairment risk across offsets. They should attempt to build a diversified portfolio of removal offsets that vary in terms of impairment risk, duration, and technology. Meanwhile, E-asset providers, such as our hypothetical forest manager, will have to consider the capital implications of selling long-lived E-assets. Comparisons can be drawn with private equity fund management. However, unlike these funds, a forest offset manager has a much longer time horizon than 10 years, given the obligation to capture and store carbon indefinitely. One possibility is for contracts that commission producers to provide fixed amounts of carbon removal over shorter durations at lower costs, with the expectation that buyers would be the ones to recapitalize the E-asset by investing in new forests to replace degraded ones.

- d. **Governance:** The long duration of offset production and delivery gives rise to significant counterparty risks for buyers. Financial incentives can help mitigate them, but independent bodies for regulating and enforcing offset performance will also be needed. In the offset context, existing registries might convert from their current passive role as transactional intermediaries into something like exchange authorities. **This is why the Commission's leadership is critical.**

Registries can help to mitigate the risks set out above that are associated with carbon removal projects. First, while current registries often require that offset project managers confirm that they have the capacity to replace or refund the value of offsets should things go wrong, this falls short. Certificate buyers have already retired their certificates and taken credit for the captured carbon immediately after purchase; they have neither an incentive to demand the replacement of any carbon lost through impairment nor a legal claim related to a retired certificate. Secondly, some registries hold back a quantity of certificates that could have been sold but that now, like an insurance company's reserves, remain available to substitute for unrealized or impaired projects. However, often registries lack transparency in their operations, independent evaluation of claims-paying ability, regulatory oversight, and the ability to raise additional capital. **We are supportive of the Commission's work to add rigor to registries, and we recommend that the Commission substantially expand the scope of such work.**

27. With this background, we recommend that the Commission consider our comments on how to create functioning carbon offset markets generally, as well as our responses to the specific consultation questions (annexed to this letter).

Please do not hesitate to contact us if you have questions or seek any clarifications on this letter. We remain at your service.

Yours sincerely,

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Annex One: Responses to specific questions on the Commission's proposed guidance

General

1. In addition to the VCC commodity characteristics identified in this proposed guidance, are there other characteristics informing the integrity of carbon credits that are relevant to the listing of VCC derivative contracts? Are there VCC commodity characteristics identified in this proposed guidance that are not relevant to the listing of VCC derivative contracts, and if so, why not?

- A well-functioning marketplace depends on clear definitions and measures of what is being traded. We support the Commission's goal to develop standards for derivatives with an underlying VCC that are real, additional, permanent, and verifiable. Each contract should represent unique metric tons of GHG emissions removed from the atmosphere. We propose five principles to underpin markets for the removal and storage of GHG emissions. The first two offer a standardization of what counts as an offset, and what may or may not be traded. The remaining three principles, relevant for the Commission's proposed quantification, permanence, and reversal risk dimensions, set out basic accounting guidelines for offsets.
- Principle 1 states that **only offsets that remove carbon from the atmosphere may be used to reduce an organization's reported emissions**. A valid offset to a given quantity of emissions that an organization is responsible for must remove an equivalent quantity of GHG already in the atmosphere and sequester it for at least as long as the underlying emissions are expected to remain in the atmosphere. These are known as 'removal offsets'. However, current standards for carbon offsets do not distinguish between actions taken to remove existing GHGs from the atmosphere (removal offsets) from avoidance offsets, which are promises to avoid releasing additional or prospective GHGs into the atmosphere. Principle 1 does not allow recognition of prospective emissions reductions as current offsets. This furthers the proposed commodity characteristics: the goal is to remove carbon from the atmosphere.
- Principle 2 states that **companies should be able to buy or sell valid removal offsets**. This encourages firms to treat carbon removals like any other purchased good or service: companies acquire offsets from those able to provide them at a lower cost. Principle 2 enables entities with a comparative advantage in capturing and sequestering carbon to access funding for these beneficial activities. Carbon-offset trading in well-functioning markets promotes gainful exchanges and increases the supply of capital for the most efficient offset producers.
- Principle 3 states that **rights to carbon removals should be recognized, as an asset and be tradeable as a removal offset, when the timing and the magnitude of the offsets are both reasonably estimable and probable**. This principle identifies when an offset producer may recognize and trade captured carbon. We offer a hypothetical case. Imagine that a landowner plants a new forest to sell the carbon that the forest will remove and sequester to a buyer seeking to offset its emissions. We assume that the forest requires 10 years of growth before it begins to remove carbon in significant quantities. For the next 20 years, the forest absorbs carbon at a predictable rate. After 30 years, the fully grown trees capture no new carbon, but they continue to sequester previously captured carbon for 20 more years before

decaying and releasing the carbon. The landowner, as the producer of the removals, owns the rights to the carbon capture.

- Applying standard financial accounting principles to this case, the landowner can capitalize such rights as an offset based on both the measurability of how much and when the carbon will be captured and the likelihood that it will be captured. In accounting terminology, these criteria are known as “reasonably estimable and probable”, where “probable” means at least 50% likelihood but may also be defined (in regulations) as 90% or higher. Our landowner estimates the tons of carbon capturable (the offset quantity) based on average annual growth of like tree species during years 11 through 30. Of course, disease, pests, wildfires, and illegal deforestation may reduce the quantity or duration of capture, and unexpectedly favorable weather conditions may increase the carbon captured per year and the duration of the forest’s productive life. This relates to the Commission’s proposed commodity characteristics on permanence and risk of reversal. Landowners wishing to book and sell legitimate carbon offsets must demonstrate that their estimates are well-founded and that risks will be well-managed.
- Even if an offset meets standards on measurability and likelihood, we must guard against the risk that the sale of the offset fundamentally changes the magnitude and duration of the carbon capture. The separation of an asset (rights to carbon capture) from the originator creates an “alienability risk” when the asset is sold. Alienability risk occurs in our forest example after the landowner has sold the forest’s future carbon offsets. The landowner no longer has an incentive to maintain the forest’s long-term capabilities for capturing and sequestering carbon. The probable and estimable criteria can be met only when no reasonable expectation exists that the offset will be impaired as a consequence of its sale. This provision can be satisfied through standard performance contracts.
- Principle 4 states that **a company only “net” a quantity of offsets against its direct or purchased emissions only when that quantity of GHG has been removed from the atmosphere and indefinitely sequestered**. We can draw parallels here to financial accounting standards on revenue recognition: a company may recognize revenue from a sale only when it is both realizable and earned. A selling company “realizes” revenue when it receives cash, a cash-equivalent asset (such as a marketable security), or a highly likely commitment to pay cash in the future (an accounts receivable). The company “earns” the revenue when it delivers its product or service.
- The landowner in our example meets the realizable criterion when the capture of carbon has become both estimable and probable. That could be in year 0 for a high-quality landowner or somewhat later for a less reputable or less capable one. Regardless of when the realizable criterion is satisfied, the landowner does not start to “earn” the carbon offset until year 10, when it can verifiably demonstrate that nontrivial quantities of carbon are being captured by the forest. However, if the forest manager sells the offset asset before the 10th year, the purchasing entity must keep the E-asset unchanged on its books until year 10, when the earned criterion is met upon receipt of an audited report from the forest manager about the quantity of carbon that has been captured. At that time, the offset buyer could proportionately draw down the offset asset, up to the “earned” amount, to reduce (or “net”) its direct or purchased emissions.

- Principle 3 also requires that the captured GHG be sequestered “indefinitely”, which due to the duration of emissions liabilities, raises a particularly challenging aspect of netting. NASA estimates that man-made carbon emissions persist in the atmosphere for at least 300 years, and possibly more than 1,000 years,¹ a time-horizon, far greater than for any other commercial contract. Principle 4’s netting criterion requires that the duration of an earned removal offset equal or exceed the duration of the emitted GHG, leading to our use of the term “indefinite” in the principle. “Indefinite” does not mean “infinite”; it means that the sequestration has no definite end, based on technology, legal restrictions, or regulatory oversight.
- Our illustrative forest offset project, which holds carbon for at most 40 years from first “earning” it, is unable, on its own, to extinguish emitted GHG, with its much longer lifetime in the atmosphere. Netting requires, therefore, assurance that the offset owner has the financial capacity to repeat the process so that the carbon can remain sequestered over multiple forest-generation cycles, which could involve placing very long-duration funds in an endowment- or pension-fund-type structure. This problem is not shared by all approaches to creating carbon offsets. Carbon capture through subterranean mineralization, for example, does sequester the carbon indefinitely, without requiring multiple reinvestment cycles.
- Principle 5 states that **an offset asset can be impaired or accreted based on new information about the quantity and duration of actual carbon sequestration**. This principle recognizes the risk of an offset asset’s value fluctuating over its lifetime. In the illustrative forest example, impairment risks generally rise over time as increasing quantities of sequestered tree carbon become subject to fire, disease, pestilence, mismanagement, or other forms of catastrophic loss, in addition to the risk that the actual amount of carbon captured will fall short of expectations. The potential for impairments provides an incentive for companies to purchase from reliable offset producers, those that consistently deliver on the expected quantity and duration of sequestered carbon. Other long-lived assets are subject to such risks, and standard financial accounting criteria, used to recognize and measure impairments of property, plant, and equipment, can be applied to carbon offset assets.
- Unlike other tangible assets, however, some carbon assets may become more valuable than originally expected, such as when the forest grows larger and faster than anticipated, enabling it to capture and store more carbon than that specified in the initial, traded, contract. Principle 5 allows for such accretions based on new information about the carbon offset asset. For Principle 5 to function in practice, all offset contracts will need periodic audits to determine whether an impairment or an accretion has occurred and to attest to the magnitude of any change.
- Turning to proposed VCC commodity characteristics that are not relevant, we do not agree that ‘additionality’ should be included. There is no parallel to additionality in centuries of financial-accounting developments, and that itself should be an indicator of its futility. What matters is the actual and indefinite removal of carbon from the atmosphere. A valid offset to a given quantity of Scope 1 emissions must remove an equivalent quantity of GHG already in the atmosphere and sequester it for at least as long as the underlying emissions are expected to remain in the atmosphere (Principle 1). Additionality as a concept is closely linked to the notion that avoidance activities can be considered offsets; however, we contend that only offsets that remove carbon from the atmosphere may be used to reduce an organization’s

¹ <https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide/>

emissions. This departs from current practice, as the GHG Protocol, the dominant global standard for carbon accounting, does not at present substantively distinguish between actions taken to remove incurred GHGs (removal offsets) and actions taken to avoid emitting prospective GHGs (avoidance offsets).

- Should projects, upon which offsets are traded, have happened without the financial incentive, we consider that owners of the carbon removal should still be entitled to capitalize on the rights to the captured emissions. We seek to encourage firms to treat carbon removals like any other purchased good or service: companies acquire them from those better able to provide them at lower cost (Principle 2). Enabling carbon-offset trading in well-functioning markets promotes these gainful exchanges and increases the supply of capital for the most efficient offset producers. However, we consider that rights to carbon removals should only be recognized as an E-asset and be tradeable as a removal offset when the offsets are both reasonably estimable and probable (Principle 3). Refer to our response to question 1 for further detail.

2. Are there standards for VCCs recognised 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?

- In our response to question 1 above, we outline the five principles that should form the standards that DCMs should incorporate into the terms and conditions of a VCC derivative contract.
- Carbon offsets that meet these principles can be recognized as “E-assets” on organization’s environmental balance sheets and tradeable as a removal offset when the timing and magnitude of the offsets are both reasonably estimable and probable. A company can net a given quantity of E-assets against its E-liabilities account when that quantity of GHG has been actually removed from the atmosphere and indefinitely sequestered. ‘Avoidance offsets’ are capitalized in the form of reduced liabilities of the balance sheet, rather than as tradeable offsets.
- Together, E-assets and E-liabilities provide market mechanisms to drive decarbonization: the basic accounting tools for organizations and governments to measure and manage their performance toward decarbonization targets, including net-zero goals. The E-ledgers on which they are recorded provide a fully auditable vehicle for stewarding an organization’s environmental claims, mitigating the greenwashing that has plagued corporate reporting in this space.

3. In addition to the criteria and factors discussed in this proposed guidance, are there particular criteria or factors that a DCM should consider in connection with monitoring the continual appropriateness of the terms and conditions of a VCC derivative contract?

- Refer to our response to question 1.

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?

- Refer to our response to question 1.

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 recognised as being relevant to submissions with respect to VCC derivative contracts made by a registered foreign board of trade under CFTC regulation 48.10?

- N/A

Transparency

6. Is there particular information that DCMs should take into account when considering, and/or addressing in a VCC derivative contract's terms and conditions, whether a crediting program is providing sufficient access to information about the projects or activities that it credits? Are there particular criteria or factors that a DCM should take into account when considering, and/or addressing in a contract's terms and conditions, whether there is sufficient transparency about credited projects or activities?

- Refer to our response to question 1.

Additionality

7. Are there particular criteria or factors that DCMs should take into account when considering, and/or addressing in a VCC derivative contract's terms and conditions, whether the procedures that a crediting program has in place to assess or test for additionality provide a reasonable assurance that GHG emission reductions or removals will be credited only if they are additional?

- N/A

8. In this proposed guidance, the Commission recognises 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 characterisation be more appropriate? For example, should additionality be recognised 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?

- We do not consider that 'additionality' should be included as a characteristic. There is no parallel to additionality in centuries of financial-accounting developments, and that itself should be an indicator of its futility. What matters is the actual and indefinite removal of carbon from the atmosphere. A valid offset to a given quantity of Scope 1 emissions must remove an equivalent quantity of GHG already in the atmosphere and sequester it for at least as long as the underlying emissions are expected to remain in the atmosphere (Principle 1). Only offsets that remove carbon from the atmosphere may be used to reduce an organization's emissions. This departs from current practice, as the GHG Protocol, the dominant global standard for carbon accounting, does not at present substantively distinguish between actions taken to

remove incurred GHGs (removal offsets) and actions taken to avoid emitting prospective GHGs (avoidance offsets).

- Should projects, upon which offsets are traded, have happened without the financial incentive, we consider that owners of the carbon removal should still be entitled to capitalize on the rights to the captured emissions. We seek to encourage firms to treat carbon removals like any other purchased good or service: companies acquire them from those better able to provide them at lower cost (Principle 2). Enabling carbon-offset trading in well-functioning markets promotes these gainful exchanges and increases the supply of capital for the most efficient offset producers. However, we consider that rights to carbon removals should only be recognized as an E-asset and be tradeable as a removal offset when the offsets are both reasonably estimable and probable (Principle 3). Refer to our response to question 1 for further detail.

Risk of Reversal

9. Are there particular criteria or factors that DCMs should take into account when considering, and/or addressing in a VCC derivative contract's terms and conditions, a crediting program's measures to avoid or mitigate the risk of reversal, particularly where the underlying VCC is sourced from nature-based projects or activities such as agriculture, forestry or other land use initiatives?

- The current functioning of carbon markets ignores even the most basic risks associated with carbon-removal projects (such as newly planted forests) that have long horizons to actual delivery of captured carbon and a material likelihood of impairment along the way (for example, from fire or disease). Registries attempt to mitigate such concerns in two ways:
 - First, they require that offset project managers confirm that they have the capacity to replace or refund the value of offsets should things go wrong. That mitigation device, however, has limited value. Certificate buyers have already retired their certificates and taken credit for the captured carbon immediately after purchase; they have neither an incentive to demand the replacement of any carbon lost through impairment nor a legal claim related to a retired certificate. Consequently, project managers have no incentive to maintain any capital to cover the risk of impairment to the project or failure to capture carbon. Moreover, depending on a project manager's revenue-recognition methods, buyers' claims regarding their certificates could arrive long after revenues (and profits) from selling them have been distributed to investors in the project. Finally, the complex, often cross-border processes necessary to mediate any claims would be infeasible for many registries, most of which are low-resourced nonprofits.
 - A registry's second protection method is to hold back some quantity of certificates that could have been sold but that now, like an insurance company's reserves, remain available to substitute for unrealized or impaired projects. Unlike an insurance company, however, the registry lacks transparency into its operations, independent evaluation of claims-paying ability, regulatory oversight, and the ability to raise additional capital.
- To account for the risk of reversal, our recommended approach is to apply standard financial accounting principles to the case of captured emissions. A producer may recognize and trade

captured carbon as an E-asset based on both the measurability of how much and when the carbon will be captured and the likelihood that it will be captured (Principle 3). In accounting terminology, these criteria are known as “reasonably estimable and probable”, where “probable” means at least 50% likelihood but may also be defined (in regulations) as 90% or higher. Our landowner estimates the tons of carbon capturable (the offset quantity) based on average annual growth of like tree species during years 11 through 30. Of course, disease, pests, wildfires, and illegal deforestation may reduce the quantity or duration of capture, and unexpectedly favorable weather conditions may increase the carbon captured per year and the duration of the forest’s productive life. This relates to the Commission’s proposed commodity characteristics on permanence and risk of reversal. Landowners wishing to book and sell legitimate carbon offsets must demonstrate that their estimates are well-founded and that risks will be well-managed.

- Even if an offset meets standards on measurability and likelihood, we must guard against the risk that the sale of the offset fundamentally changes the magnitude and duration of the carbon capture. The separation of an asset (rights to carbon capture) from the originator creates an “alienability risk” when the asset is sold. Some rights to an asset, such as a patent, are alienable and may be sold by a parent entity since their properties do not change under new ownership. Other intangible assets, however, such as the synergies from a highly motivated and aligned workforce, are not alienable. A firm that attempted to separately identify and sell its HR synergies as a financial asset would most likely precipitate the intangible asset’s impairment, lowering its value.
- Alienability risk occurs in the offset market, for example, after a landowner has sold the forest’s future carbon offsets. The landowner no longer has an incentive to maintain the forest’s long-term capabilities for capturing and sequestering carbon. The probable and estimable criteria thus can be met only when no reasonable expectation exists that the offset will be impaired as a consequence of its sale. This provision can be satisfied through standard performance contracts.
- Therefore, we propose that a company shall “net” a given quantity of E-assets against its E-liability account only when that quantity of GHG has been actually removed from the atmosphere and indefinitely sequestered. (Principle 4). We can draw parallels here to financial accounting standards on revenue recognition: a company may recognize revenue from a sale only when it is both realizable and earned. A selling company “realizes” revenue when it receives cash, a cash-equivalent asset (such as a marketable security), or a highly likely commitment to pay cash in the future (an accounts receivable). The company “earns” the revenue when it delivers its product or service.
- In the context of netting carbon removals (E-assets) against purchased and direct emissions (E-liabilities), it works like this. A forest owner example meets the realizable criterion when the capture of carbon has become both estimable and probable. That could be in year 0 for a high-quality forest owner or somewhat later for a less reputable or less capable one. Regardless of when the realizable criterion is satisfied, the forest owner does not start to “earn” the carbon offset until year 10, when it can verifiably demonstrate that nontrivial quantities of carbon are being captured by the forest. However, if the forest manager sells the offset asset before the 10th year, the purchasing entity must keep the E-asset unchanged on its books until year 10, when the earned criterion is met upon receipt of an audited report from

the forest manager about the quantity of carbon that has been captured. At that time, the offset buyer could proportionately draw down the offset asset, up to the “earned” amount, to reduce (or “net”) its direct or purchased emissions.

- We also contend that GHG must be sequestered “indefinitely”, which due to the duration of emissions liabilities, raises a particularly challenging aspect of netting. NASA estimates that man-made carbon emissions persist in the atmosphere for at least 300 years, and possibly more than 1,000 years, a time-horizon, far greater than for any other commercial contract. Principle 4’s netting criterion requires that the duration of an earned removal offset equal or exceed the duration of the emitted GHG, leading to our use of the term “indefinite” in the principle. “Indefinite” does not mean “infinite”; it means that the sequestration has no definite end, based on technology, legal restrictions, or regulatory oversight.
- Lastly, we consider that an offset asset shall be impaired or accreted based on new information about the quantity and duration of actual carbon sequestration (Principle 5). This principle recognizes the risk of an offset asset’s value fluctuating over its lifetime. In the illustrative forest example, impairment risks generally rise over time as increasing quantities of sequestered tree carbon become subject to fire, disease, pestilence, mismanagement, or other forms of catastrophic loss, in addition to the risk that the actual amount of carbon captured will fall short of expectations. The potential for impairments provides an incentive for companies to purchase from reliable offset producers, those that consistently deliver on the expected quantity and duration of sequestered carbon. Other long-lived assets are subject to such risks, and standard financial accounting criteria, used to recognize and measure impairments of property, plant, and equipment, can also be applied to carbon offset assets.
- All offset contracts will need periodic audits to determine whether an impairment or an accretion has occurred and to attest to the magnitude of any change. The potential for impairments provides an incentive for companies to purchase from reliable offset producers - those that consistently deliver on the expected quantity and duration of sequestered carbon.
- The long duration of offset production and delivery gives rise to significant counterparty risks for buyers. Financial incentives can help mitigate them, but independent bodies for regulating and enforcing offset performance will also be needed. In the offset context, existing registries might convert from their current passive role as transactional intermediaries into something like exchange authorities.

10. How should DCMs treat contracts where the underlying VCC relates to a project or activity whose underlying GHG emission reductions or removals are subject to reversal? Are there terms, conditions or other rules that a DCM should consider including in a VCC derivative contract in order to account for the risk of reversal?

- Refer to our response to question 9.

Robust Quantification

11. Are there particular criteria or factors that a DCM should take into account when considering, and/or addressing in a contract’s terms and conditions, whether a crediting program applies a quantification methodology or protocol for calculating the level of GHG

reductions or removals associated with credited projects or activities that is robust, conservative and transparent?

- N/A

Governance

12. In addition to a crediting program's decision-making, reporting, disclosure, public and stakeholder engagement, and risk management policies, are there other criteria or factors that a DCM should take into account when considering, and/or addressing in a VCC derivative contract's terms and conditions, whether the crediting program can demonstrate that it has a governance framework that effectively supports the program's transparency and accountability?

- N/A

Tracking and No Double Counting

13. In addition to the factors identified in this proposed guidance, are there other factors that should be taken into account by a DCM when considering, and/or addressing in a VCC derivative contract's terms and conditions, whether the registry operated or utilized by a crediting program has processes and procedures in place to help ensure clarity and certainty with respect to the issuance, transfer, and retirement of VCCs?

- At present, reporting systems for carbon emissions and offsets are inconsistent and idiosyncratic. Many companies today calculate emissions by selectively applying GHG Protocol rules to some activities (such as purchasing electricity) but not others (such as employee travel) and then buying offsets that they immediately retire to achieve their self-declared net-zero targets. A new market system, based on our principles, would have companies managing an E-balance sheet containing purchased and generated E-liabilities along with offset assets. A firm would qualify as net zero for a given reporting year only if its closing E-liability balance at the end of that year had been matched by nettable E-assets.
- Sellers of offsets would also maintain E-balance sheets and financial balance sheets. From their perspective, the sale of an unearned offset - say, a newly planted tree - would lower the quantity of their E-assets and create a financial liability, listed as deferred revenue, to cover the cost of caring for the tree and protecting it against impairment. The deferred revenue would be recognized as "earned" only when the tree started to remove carbon.
- Additionally, the current approach to carbon reporting, based on selective disclosures of emissions and the accelerated use of offsets, is generally unaudited. In the few instances where companies voluntarily purchase assurance services, these are usually "limited in scope", with the auditor's opinion carefully phrased in highly hedged language that states, in effect, that the company's claimed net-zero position is "not obviously false. In contrast, our system of E-balance sheets, operating in parallel with financial balance sheets, can be fully audited to provide a "true and fair" representation of an entity's carbon emissions and carbon-removal offsets. This goes beyond the Commission's proposal around third-party validation and verification.

14. Are there particular criteria or factors that a DCM should take into account when considering, and/or addressing in a VCC derivative contract's terms and conditions, whether it can be demonstrated that the registry operated or utilized by a crediting program has in place measures that provide reasonable assurance that credited emission reductions or removals are not double-counted?

- Refer to our responses to questions 1 and 13.

Inspection Provisions

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?

- N/A

Sustainable Development Benefits and Safeguards

16. Certain private sector and multilateral initiatives recognise the implementation by a crediting program of measures to help ensure that credited mitigation projects or activities meet or exceed best practices on social and environmental safeguards, as a characteristic that helps to inform the integrity of VCCs issued by the crediting program. When designing a VCC derivative contract, should a DCM consider whether a crediting program has implemented such measures?

- N/A

17. Certain private sector and multilateral initiatives recognise the implementation by a crediting program of measures to help ensure that credited mitigation projects or activities would avoid locking in levels of GHG emissions, technologies or carbon intensive practices that are incompatible with the objective of achieving net zero GHG emissions by 2050, as a characteristic that helps to inform the integrity of VCCs issued by the crediting program. When designing a VCC derivative contract, should a DCM consider whether a crediting program has implemented such measures?

- N/A