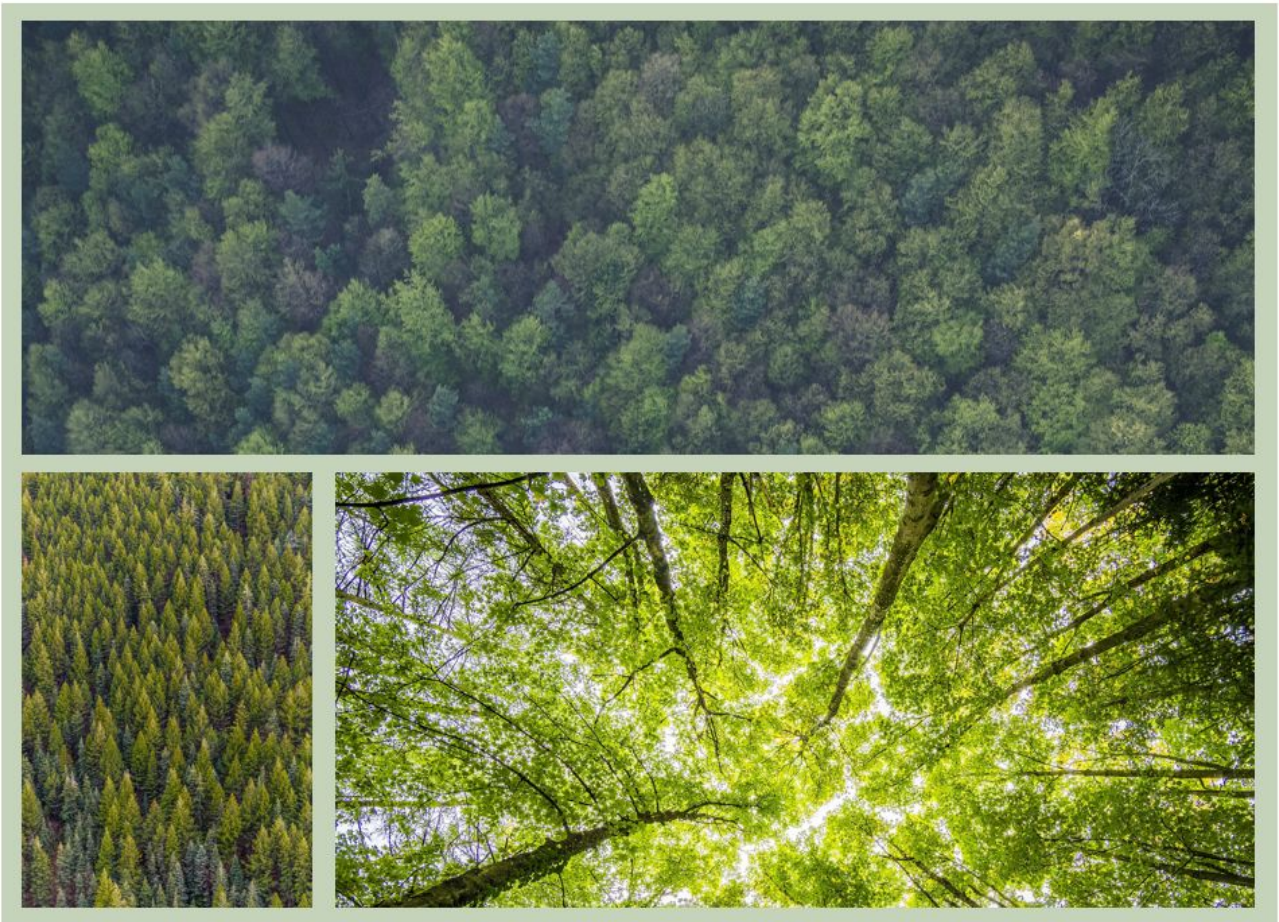
Forests and Carbon

A Guide for Buyers and Policymakers



NCX

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Executive Summary

- The 2020s are a **critical decade** for climate action. Natural climate solutions, and particularly forest-based strategies, hold tremendous potential for climate change mitigation.

- Not all forest carbon strategies are created equal. The effectiveness of various strategies can be evaluated using the **new 'RISE' framework for impact: Real, Immediate, Scalable, and Efficient**. These criteria guide the efficient deployment of money to the right acres at the right time.

- Although well-intentioned, existing forest carbon methodologies do not always achieve RISE impact. In extreme cases, landowners are paid to do what they might have done anyway. As a result, resources spent pursuing these strategies **fall short** of accomplishing meaningful change.

- **NCX's Natural Capital Exchange** addresses these shortcomings and empowers all landowners to participate in forest carbon markets. It relies on advances in remote sensing technology to drive targeted, short-term timber harvest deferrals on an annual basis. This market-based, data-driven mechanism ensures that each year dollars flow to the right acres at the right time, creating Real, Immediate, Scalable, and Efficient climate impact.

- By paying landowners to reduce annual harvests, NCX can increase the average forest carbon per acre and remove up to **1.2 billion tons of carbon** from the atmosphere this decade in just the US, and **4.3 billion tons globally**.

Introduction

Global enthusiasm for using **natural climate solutions** to fight climate change is on the rise, with research showing nature-based strategies could accomplish about a third of the emissions reductions needed to reach the Paris 2-degrees-Celsius target.[1] Forest-based solutions account for the lion's share of this total potential, leading to bold initiatives like the World Economic Forum's "One Trillion Trees" initiative.[2] Across the globe, policymakers, companies, and NGOs are rushing to find shovel-ready forest projects that can create **Real, Immediate, Scalable, and Efficient (RISE)** climate impact.

Forest carbon strategies have massive potential, but there are **several known pitfalls** that can dramatically reduce their effectiveness. Currently, the two main forest carbon strategies in the US are afforestation and the CARB (California Air Resources Board) Forest Offset Protocol—both of which are well-intentioned but suffer from structural issues which reduce their RISE impact. Afforestation, or planting trees on previously unforested land, takes decades to sequester meaningful amounts of carbon. The CARB protocol, under which over a billion dollars worth of forest carbon credits have been traded,[3] may be vulnerable to adverse selection and other issues stemming from its design.[4] Both of these strategies will be discussed in detail below.

Over the next few decades, hundreds of billions of dollars will be spent fighting climate change with the express goal of reducing future costs to society, and a significant portion will be directed to forest-based strategies. This paper lays out a framework and a solution for ensuring that money is spent wisely.

The answer? A highly targeted, short-term **harvest deferral strategy**, accessible to all landowners and underpinned by high-resolution forest data on every acre. This market-based solution ensures that each year dollars flow to the right acres at the right time to change landowner behavior and create RISE climate impact.

Selecting the most effective strategies requires understanding the economics of forest landowners, and further, how incentives can change landowner behavior. Historically, forest management has been largely driven by timber economics—harvesting and selling timber was the only way for forest owners to get paid. But we know that forests—alongside all their biodiversity, hydrological, cultural, and other benefits—also remove atmospheric carbon dioxide and sequester it in organic form. An effective mechanism for paying landowners to grow more

[1] https://www.pnas.org/content/114/44/11645
[2]https://www.weforum.org/agenda/2020/01/one-trillion-trees-world-economic-forum-launches-plan-to-help-nature-and-the-climate/
[3] https://ww3.arb.ca.gov/cc/capandtrade/offsets/offsets.htm
[4] https://haas.berkeley.edu/wp-content/uploads/WP222.pdf

carbon in their forests will **transform forest management** and significantly increase carbon removals from the atmosphere—up to an additional 4.3 billion tons globally this decade.[5]

Scope

Forestry is "the science, art, and business of creating, managing, and conserving forests and associated resources in a sustainable manner to meet desired goals, needs, and values"[6]; the complex interplay of ecology, economics, and culture of any given forest area dictates how forestry may best be practiced. This paper focuses on **forestry in the continental United States** because of its well-established forest industry, high proportion of privately owned acres, and availability of relevant data for modeling timber economics for every landowner. Unless specifically stated, all references to aggregate totals will refer to continental US totals.

Some sections of this paper contain detailed analysis of example properties. For these examples, this paper adopts **plantation forestry in the southern United States** as its simplified basis for analysis because its opportunities and constraints are relatively tractable. In this style of forestry, the trees on a given parcel are established all at the same time and, eventually, harvested all at the same time—and then the cycle begins anew.

While many of the specifics discussed here require adaptation to other contexts, the underlying principles provide guidance for forest contexts across the world.

[5]https://www.researchgate.net/publication/337224237_Global_Woody_Biomass_Harvest_Volumes_and_Forest_Area_Use_Under_Different_SSP-RCP_Scenarios
[6] https://www.eforester.org/Main/Contact_Management/Broad_Field_of_Forestry.aspx

Carbon Pools

The core principle behind forest-based climate strategies is very simple: forests reduce the amount of carbon in the atmosphere by increasing the amount of carbon in trees. Despite a proliferation of confusing terminology around "offsets" and "insets", “emission reduction”, and "removals," the key metrics of success should remain the same: over time, how much carbon is in the atmosphere and how much carbon is in forests? For the avoidance of confusion all discussion of “carbon” within this paper refers to metric tons of CO_2 equivalent ($MTCO_2e$).[7]

There is no way to make carbon "disappear" from our planet. Carbon simply moves from one pool, such as underground fossil fuel deposits, to another pool, such as the atmosphere. Therefore, the goal of forest-based climate action is to decrease the amount of carbon in the atmosphere by increasing the amount of carbon in forest biomass.

In other words, the primary outcome deserving focus is the **total landscape forest carbon**. Total landscape forest carbon is a function of both the **number of forested acres** and the **average carbon per acre** of forest:

*Total landscape forest carbon = Forested acres * Carbon per acre*

Note that while at times it may be useful to consider the carbon content of one particular property—which we will call **individual property forest carbon**—this should not be conflated with the all-important landscape measure. This delineation of the desired outcome sets the stage for evaluating the effectiveness of individual forest carbon strategies.

To give some intuition about the current state of forests within the continental US[8]:

51.4Gt = 684M acres * 75.2 $MTCO_2e$ per acre

Note that this paper treats the harvesting of timber as a transfer of carbon from the forest to the atmosphere, even if some of the biomass is turned into "durable wood products" like dimensional lumber for buildings. Why? A full lifecycle analysis reveals that more carbon is emitted in the processing of these materials than is stored in the materials themselves. When one accounts for the emissions from harvesting, transportation, milling, and transport to a job site, building with wood is not carbon negative.[9] [10] While building with wood does have a much

[7] https://www.yaleclimateconnections.org/2009/01/common-climate-misconceptions-co-equivalence/
[8] https://apps.fs.usda.gov/Evalidator/evalidator.jsp (Forest carbon pool 1: live aboveground)
[9] https://www.pnas.org/content/115/14/3663
[10] https://www.dogwoodalliance.org/wp-content/uploads/2019/09/Climate-Impacts-of-Industrial-Forest-Practices-in-NC-web.pdf

smaller carbon footprint than building with metal or concrete, these downstream substitution effects do not constitute part of our rubric for assessing forest carbon strategy impact. Actions taken in the forest—and their impact on total landscape forest carbon—are where we draw the boundaries of analysis.

The ‘RISE’ Framework

Forest management resembles the ancient board game of Go. The set of possible moves is relatively small and those moves are relatively simple, but the arrangement of those moves in space and time creates a very complex set of outcomes. And unlike a Go board, which doesn't change if you walk away, forests continue to grow and change constantly.

Readers versed in forestry will know that, across the globe, the set of optimal practices (or even the set of *possible* practices) varies widely. Decisions about regeneration and harvesting must be adapted to the local ecological and economic context.

As noted above, we have adopted United States plantation forestry as our simplified basis for analysis. In a stylized model of plantation management, a forest landowner can make two key “moves” to increase their individual property forest carbon:

1) **Increase the area planted with trees.** Increasing the planted area will increase the number of forested acres, clearly, but it will also reduce the average carbon per acre: since the trees are small, a newly planted acre contains a tiny fraction of the carbon content of the average acre. The net effect is a small increase in individual property forest carbon.

2) **Increase average forest carbon per acre by deferring timber harvest.** The longer trees are allowed to grow, or equivalently, the less harvesting activity is undertaken, the more carbon will be stored in each acre of forest. The net effect is an increase in individual property forest carbon.

The “moves” seem simple. So why is it so complicated to design strategies to reliably increase total *landscape* forest carbon?

As this paper will proceed to explore, it is **surprisingly complicated** to draw a clear line between the actions taken on a single acre and the effect on the overall landscape. There are millions of individual forest owners with a complex set of economic, ecological, and personal motivations. The actions taken by one owner on a single acre can change the ecological and economic dynamics on nearby acres owned by others. And of course, each individual acre of forest is unique and changes naturally over time. Accounting for future uncertainty—economic, ecological, and personal—is especially challenging when thinking about the decades- or centuries-long lifespans of trees.

Faced with a bewildering amount of complexity, how can we evaluate strategies that may increase the total landscape forest carbon on the planet? The RISE framework suggests four key questions that must be asked of any would-be forest carbon strategy:

- **Real:** does the strategy induce a real change in landowner behavior and result in more total landscape forest carbon?
- **Immediate:** does the strategy create near-term impact or is it in the distant future?
- **Scalable:** how many billion tons of carbon can this strategy remove from the atmosphere this decade?
- **Efficient:** what is the price per ton of carbon shifted from the atmosphere to the forest?

Two notes here. First, the RISE mnemonic also lists the criteria in rough order of importance. If a strategy's impact isn't Real, there is no point in evaluating its Efficiency!

Secondly, note also that instead of featuring in the RISE mnemonic directly, the crucial concepts of **permanence**, **additionality**, and **leakage** play central roles in our discussion of the Real and Immediate criteria. In other words, this framework aligns with the classical view of these concepts' importance.

In the following sections, we'll elaborate on the RISE framework and assess how various forest carbon strategies perform against its criteria. But first, a word on the basic types of strategies that will be discussed.

Two main types of forest carbon strategy

Each of the forest management "moves" described above corresponds to a generic type of forest carbon strategy.

Increasing the area planted with trees is the basic idea of **afforestation, reforestation,** and **reduced deforestation** strategies. This paper adopts afforestation strategies as the "representative" of this type as we move through the RISE framework.

Afforestation / reforestation	Establishing forest cover on land that was not previously forested
Reduced deforestation	Preventing forested area from being cleared of trees and converted to another land use

On the other hand, **increasing average forest carbon per acre** is the basic idea of **improved forest management (IFM)** strategies.[11] This paper makes the distinction between **coarse long-term IFM** strategies, such as the CARB protocol, and **targeted short-term IFM** strategies.

Coarse long-term IFM	Paying landowners with existing forest carbon levels above regional averages to retain or increase those levels for 100 years
Targeted short-term IFM	Paying landowners to increase forest carbon per acre by deferring harvest activity (forecast algorithmically for each individual property) for 1 year

Having established the connection between the two available “moves” and the two basic “types” of forest carbon strategy, we can proceed to assess them using the RISE framework.

[11]IFM strategies are also sometimes referred to as “extended rotation age” strategies.

R: REAL

What do we mean by Real?

Even in the absence of a concerted forest-based climate policy, the total landscape forest carbon in the United States has been increasing by about 446 million tons per year.[12] In fact, US forest growth has exceeded total harvests and mortality since at least 1976.[13]

A forest carbon strategy can be deemed **Real** if it increases total landscape forest carbon relative to what would have happened in the absence of the strategy. This is the first and most fundamental test of a potential strategy. We must determine that it demonstrably changed an individual landowner's behavior on that particular property, and also that the change was not cancelled out by resultant changes on other properties across the landscape.

The property level: "Additionality"

Simply paying landowners to maintain their "business as usual" (BAU) does not create a 'Real' climate impact. The goal of an effective forest carbon strategy is to create "additional" forest carbon on the landscape above and beyond BAU. This is a concept known as "**additionality**."

The clarity of BAU varies widely depending on the type of forest carbon strategy. For example, in the context of an afforestation strategy, the presumptive BAU is very clear—BAU is that the land is not and will not be covered in forest without intervention.

BAU in IFM strategies

BAU in the context of IFM strategies is more complicated and requires an understanding of forest economics. While the nuances of forest economics certainly vary across regions and types of forestry, the core principles can be understood by considering a plantation context.

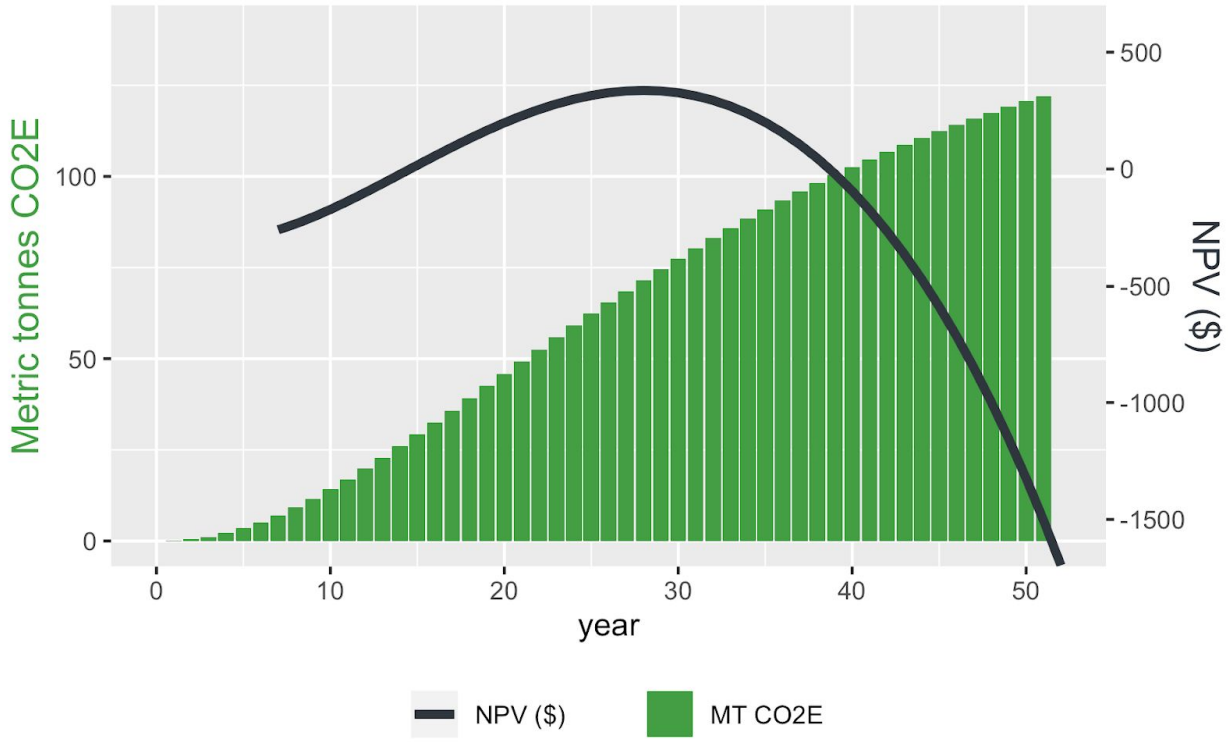
Similar to crops like corn, trees in a plantation setting are planted, grown, and harvested. Unlike corn, however, the growing period (or the "**rotation age**") for trees is measured in years rather than months.

For any acre of forest, the **economically optimal rotation age** can be determined by considering the costs of planting, tree growth rates, prices paid for various timber products, harvesting costs, transportation costs to the mill, and the landowner's financial discount rate. Combining all of these factors together results in a graph that shows how a particular

[12] https://www.everycrsreport.com/reports/R46313.html#_Toc39668492
[13] https://www.fia.fs.fed.us/library/brochures/docs/2012/ForestFacts_1952-2012_English.pdf

landowner's net present value (NPV) of owning the forest changes as the rotation age increases. Landowners harvest when NPV[14] is maximized.

Figure 1: Net present value and total tons CO_2e



NPV approximates a bell-shaped curve. Generally, value increases as long as the value of harvestable timber increases faster than the discount rate, then reverses as the biological growth rate of the trees slows.

This graph has several implications for IFM strategies:

- By definition, landowners should not need to be paid to manage their forests to an economically optimal rotation age—in the absence of any external payments, they will choose to do so anyway. As a corollary, any payments aimed at preventing landowners from managing to a shorter, economically sub-optimal rotation age would be redundant and not result in *additional* sequestration.

[14] Actually the economically optimal harvest date is when the NPV of harvesting and re-planting in perpetuity is maximized. This concept is called the land expectation value (LEV). But the concept is the same.

- Conversely, landowners must be paid to extend the rotation age of their forest past the economically optimal point. In the absence of additional payments, the NPV of their forest declines. But for a large enough payment, the landowner might change their behavior and choose to defer harvest for some period of time.
- Deferring harvest by a few years is "cheap" because the NPV curve is relatively flat near the economic optimum. However, the further a rotation is extended, the more expensive it becomes to compensate the landowner as NPV drops significantly.

Determining optimal rotation age from an NPV curve is trivial, but the construction of an NPV curve requires detailed data about every acre of a forest as well as other economic variables. However, this level of detail is absolutely necessary to develop a realistic, landowner-specific model of BAU harvest behavior.

Why does this matter?

Recall that BAU is critical to additionality, and additionality is required for Real impact at the property level.

Without a realistic BAU assessment, strategies run the risk of adverse selection,[15] where payments are made to landowners to behave in ways that they might have behaved already. In extreme cases, landowners could get paid for forest carbon that would have been sequestered on their property whether they were paid or not.

Far from being an abstract concern, coarse BAU assessment has led to serious challenges for the real-world California Air Resources Board (CARB) Forest Offset Protocol.

The CARB protocol rules classify each acre of forest into one of several regional categories like "Central California Coast Redwood/Douglas-fir Mixed Conifer" or "Florida Coastal Plains Central Highlands Oak-Hickory." Each of these categories has a "common practice" baseline regional average level of carbon per acre associated with it, and forest properties with average carbon levels above this baseline can enroll in the program. Landowners receive upfront payment for existing carbon above the baseline, and are required to manage their forest over time in a way that maintains or increases forest carbon levels even further above the baseline. This "common practice" approach was adopted in response to the difficulty of setting a baseline for each individual property,[16] which was more challenging at the time of CARB protocol design given data and computational limitations.

But historical limitations aside, the result is that if some landowners have already chosen, or would choose in the future, to manage above that baseline level or increase carbon levels for

[15] https://www.sandiegouniontribune.com/news/environment/sd-me-carbon-credits-20180917-story.html
[16] https://www.pacificforest.org/wp-content/uploads/2019/08/tuttle-protocol-white-paper-20190823.pdf

any reason (e.g. because they lack access to local timber markets), then they are eligible to receive payments that are not in fact necessary to maintain or increase the forest carbon on their properties. This adverse selection threatens to significantly reduce the additionality of the CARB protocol, and is a persistent problem for coarse long-term IFM strategies.

The landscape level: "Leakage"

Even if a strategy accomplishes real change on a particular property, that change may be counterbalanced and canceled out by changes in forests elsewhere. For example, if the level of harvest activity is restricted on one property, that activity may **simply shift to a different property nearby**, resulting in no net change in harvest activity across the landscape.

This phenomenon is called **"leakage"**, because the harvesting activity is “leaking” from the restricted project area onto surrounding forests. When it occurs, leakage reduces the impact of forest carbon strategies because it prevents well-intentioned individual landowner behavior changes—even changes that might increase *individual property* forest carbon—from increasing *total landscape* forest carbon. An effective forest carbon strategy will therefore be designed first to **minimize** potential leakage, and second, to **account for** unavoidable leakage and deduct that amount from the stated program impact. In IFM projects, we are concerned with two types of leakage: leakage within a landowner’s property, and leakage in the wider market.

Leakage within an owner’s property

Defined

The first type of leakage happens within the land owned or managed by any participating landowner, and is often called “activity-shifting leakage.” This type of leakage would occur if a project participant shifted harvesting activity around within their property in response to participating in the project, such that a reduction in harvesting on the enrolled portion of their property was cancelled out by an increase elsewhere on their land.

Minimized

By definition, this type of leakage could only occur if a participant had a portion—but not all—of their landholdings enrolled in the project. Therefore, activity-shifting leakage can be effectively eliminated using an **eligibility condition**: to participate in the project, participants must enroll all of their owned or managed property.

Accounted for

Under this project design, since a participant's entire property is measured and monitored, the risk of this type of leakage is effectively reduced to zero. This system represents a meaningful improvement over programs that allow landowners to pick and choose which of their acres to enroll.

Leakage outside of project participant's property

Defined

Leakage that occurs beyond the extent of the participants' properties is called "market leakage." Market leakage happens when the reduction of timber harvest in one place due to program activities shifts the equilibrium of supply and demand, increasing the pressure for timber harvests elsewhere. This increased harvest elsewhere may partially or fully cancel out the program's intended impact.

Minimized

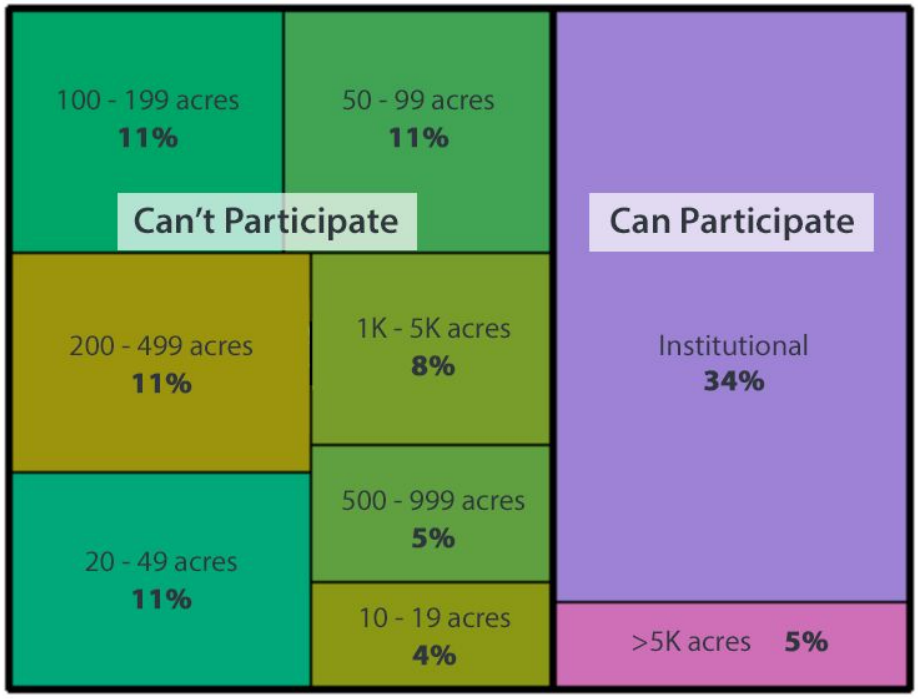
One way to minimize market leakage is to make participation in carbon programs as accessible as possible; market leakage will almost certainly occur when not all forested acres can participate. When only one subset of landowners can receive payments to reduce timber harvests, harvests that would have taken place on their properties may readily "leak" onto adjacent properties that are excluded from the program.

The CARB protocol is particularly susceptible to this issue because of its relatively high transaction costs. These costs are not an intended feature of the protocol, but rather a side effect of its setup, verification, and monitoring requirements. Only landowners with approximately 5,000+ acres can profitably participate, meaning that most of the acres on the landscape (66% of privately owned forests[17]) are effectively excluded from participation. This may create significant potential for leakage, above and beyond the extent to which it is already acknowledged and addressed in the protocol through an ex post facto credit deduction.[18]

Market leakage is minimized when every landowner and every acre of forest have both access to and the right incentives for participating in carbon programs.

[17] https://apps.fs.usda.gov/nwos/NWOS_results.jsp (Area of private forests)
[18]https://gspp.berkeley.edu/assets/uploads/research/pdf/Policy_Brief-US_Forest_Projects-Leakage-Haya_2.pdf

Figure 2: Proportion of private forest acreage by landowner size and ability to participate in CARB



Accounted for

Though it may be minimized, market leakage cannot be fully eliminated. Therefore the effect must be accurately quantified and deducted from the declared impact of a carbon project.

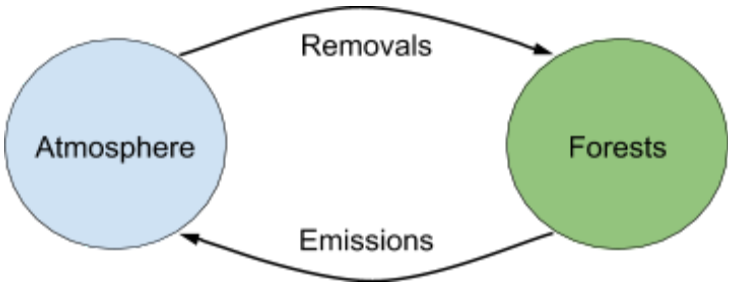
Market leakage can be accurately quantified under an economic framework that considers the specific interplay between supply and demand in timber markets. This analysis rests on well-established forest economics parameterized with empirical data on the form of supply and demand. Using these factors, one can calculate the change in timber market equilibrium resulting from project activities, thereby deriving the "leaked" quantity of timber harvests. This quantity is then deducted from the project's total carbon removals. For more details, please refer to NCX's forthcoming technical memo on leakage assessment.

Once activity-shifting leakage and market leakage have both been fully accounted for, we can be assured that the carbon impact claimed by the project is indeed additional.

"Emissions Reductions" vs. "Removals"

The goal of forest carbon strategies is to increase the amount of carbon in forests and thereby decrease the amount of carbon in the atmosphere. There are two flows which change the sizes of these two “pools”:

- **Removals**: when trees grow, they remove carbon from the atmosphere and store it in woody biomass.
- **Emissions**: when trees decay or burn, they emit carbon directly into the atmosphere. Even when trees are harvested and milled, the carbon eventually returns to the atmosphere as the end product (e.g. paper or wood) rots. Deferring a timber harvest reduces emissions. (See the ‘Carbon Pools’ section above for more discussion of this concept.)



In theory, there is **no difference** in the climate impact between *real* removals and *real* emissions reductions. Both change the amount of carbon stored in the forest carbon "pool." A ton of carbon removed from the atmosphere for one year has identical climate impact to one ton of emissions deferred for one year.[19]

In practice, some carbon buyers have expressed a preference for carbon removals (for example, through afforestation projects) rather than deferred emissions (through IFM projects). In part, this reflects the pragmatic concern that existing coarse long-term IFM projects suffer from serious issues with additionality—there has been little "real" change in behavior, and therefore little change in the amount of atmospheric carbon.

A forest carbon strategy with a more targeted assessment of BAU gives forest carbon buyers confidence that their purchase is creating real change on the landscape.

[19] For more on ton-year accounting, see the 'E: Efficiency' section

Takeaways: Forest carbon strategies and the ‘Real’ criterion

Requirements	● Strong additionality through targeted BAU assessment ● Low leakage through wide participation

Strategy	Adherence to Real criterion
Afforestation	● Strong. Clear additionality, leakage unlikely to occur.
Coarse long-term IFM	● Moderate. Some difficulty with additionality and leakage, due to coarse baselining and high enrollment costs.
Targeted short-term IFM	● Strong. Clear additionality and non-leakage, if harvest predictions are accurate and participation costs are low.

I: IMMEDIATE

What do we mean by Immediate?

A forest carbon strategy can be deemed **Immediate** if its climate impact accrues with very little delay after implementation.

The IPCC and others have made it clear that dramatic action needs to be taken by 2030 to avoid the worst consequences of climate change.[20] Sometimes lost in this dialogue, however, is the difference between “action” and “impact”; in many cases, the impact of a climate strategy lags far behind its implementation.

Immediacy in forest carbon strategies

To assess forest carbon strategies with regard to immediacy, it will be helpful to recall the two basic “moves” a forest landowner can make in pursuit of increasing total landscape forest carbon, and the associated types of strategies:

1) Increase the number of forested acres (afforestation)
2) Increase average forest carbon per acre (IFM)

Increasing forested acres

For all its virtues, afforestation—planting trees in areas that were not previously forested—leads to **minimal present-day carbon sequestration.**[21] Though growth rates vary across species and potential planting sites, in all cases saplings take many years to begin accumulating meaningful amounts of carbon. Many of the costs, such as the financial costs of establishing trees and the opportunity cost of alternative land use, are paid upfront or front-loaded, but it takes decades to reap the climate benefits.[22]

This is not to conclude that afforestation does not belong in a portfolio of forest carbon strategies, just that one must be clear-eyed about its effective time horizons. The use of ton-year accounting, which is introduced in detail below in the ‘E: Efficiency’ section, will provide a quantitative framework for evaluating climate impact per dollar.

[20] https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf
[21] https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg3-chapter9-1.pdf
[22] https://fas.org/sgp/crs/misc/R40562.pdf

Increasing average forest carbon per acre

All IFM strategies pay landowners to change their forest management practices over some period of time. The **term length** of these agreements has a direct bearing on the Immediacy of the climate impact. Will the impact of the forest carbon strategy occur during this critical decade, or will it be diluted across decades in the distant future?

Coarse long-term IFM strategies have term lengths that stretch many decades into the future. For example, the CARB protocol has a 100-year term. This means that present-day resources are paying for a stream of benefits spread all across those 100 years. While at first glance it may seem that a decades-long contract is the best way, or perhaps even the only way, to achieve long-lived impact, this presumption is not correct. The 100-year approach unfortunately creates both **less flexibility** and the potential for **capital inefficiency** .

In contrast, targeted short-term IFM strategies create Immediate climate impact by **deferring the imminent harvest** of mature trees for one year—climate impact occurs in the same year payments are made. These mature trees not only contain a large amount of biomass, but they also remove more carbon from the atmosphere as they continue to grow for an additional year. This type of strategy offers **greater capital efficiency** and **preserves flexibility** while still offering “durable” or “**permanent**” climate impact. Capital efficiency is discussed further in the ‘E: Efficiency’ section; flexibility and permanence are addressed here.

Flexibility

Because we know that climate change is a long-term challenge, one might think long-term contracts would be a natural fit.

On the contrary, long-term contracts have the significant downside of ceding the option to change course or adapt in the future. Indeed, uncertainty about future technologies, economic conditions, and even our society's shifting values should actually lead us to **prefer flexible solutions that can adapt over time**. Would you like to be bound today by the terms of a contract signed by your great-grandparents in 1920—a contract written with the scientific understanding and social context of the time?

Afforestation and coarse long-term IFM strategies are inherently inflexible. By construction, each of them commits to a specific course of action for decades, whether that’s incurring the high cost of planting or purchasing a 100-year contract.

The problem with this inflexibility is that it is potentially extremely inefficient. There is no way of knowing today whether these projects will prove to be cost-effective over the next decade, let

alone their entire lifetimes. It seems likely, in fact, that cheaper alternative carbon sequestration technologies will eventually emerge.

In contrast, a targeted short-term IFM strategy **preserves flexibility by reallocating payments** each year to the cheapest carbon on the landscape. It is the most efficient and "optimal" solution.[23] At the conclusion of a one-year contract term, a property could re-enroll to receive payments if the economics were still favorable, or alternatively, payments could flow to a different property altogether and "shift" the carbon across space. And if non-forest-based carbon strategies, such as direct air capture, prove to be more efficient, then short-term harvest deferrals allow the sequestration burden to be nimbly shifted to another carbon pool entirely. Neither of these reallocations (across properties nor across carbon pools) are possible with other forest carbon strategies.

"Permanence"

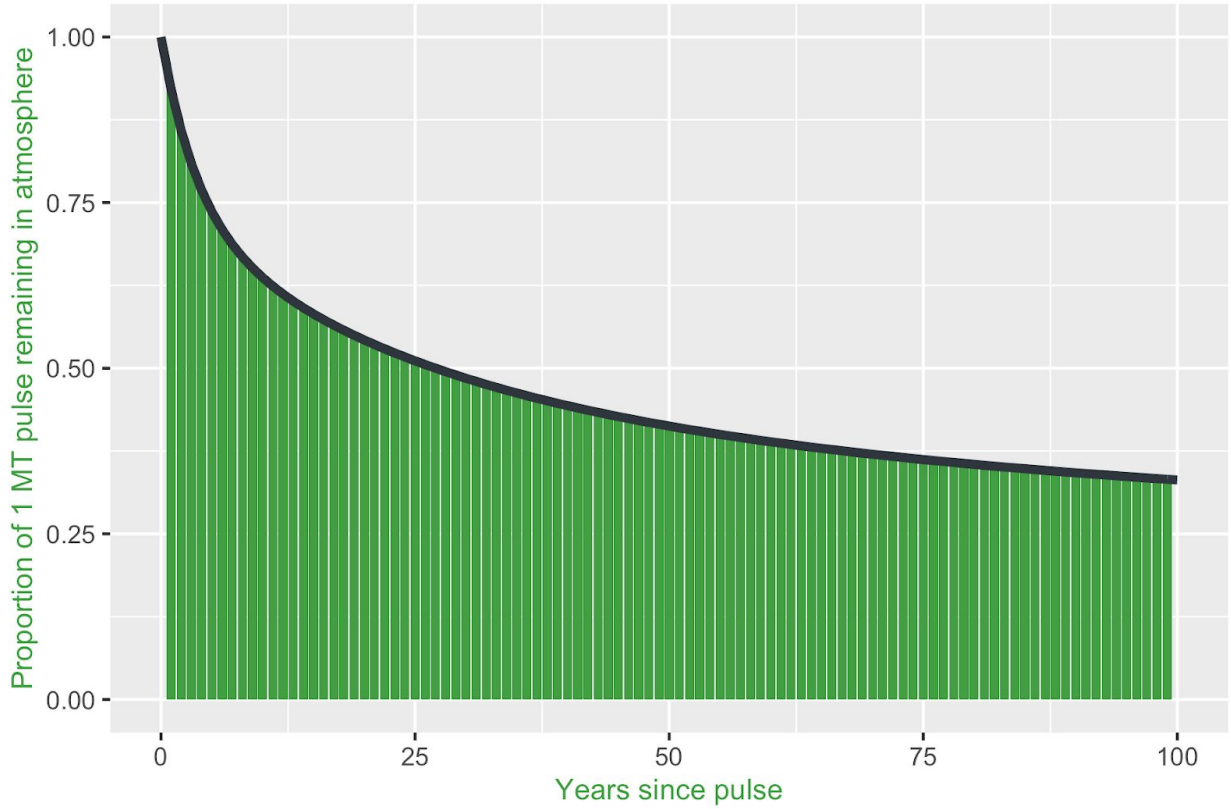
CO_2e and atmospheric residence

Greenhouse gas emissions in nearly all contexts are denominated in units of **metric tons carbon dioxide-equivalent (MT CO_2e)**.[24] One MT CO_2e is defined as the **warming impact** of one ton of emitted CO_2 in the atmosphere, over a period of 100 years, and is used as a standard to compare the climate impacts of different greenhouse gases.

When 1 ton of CO_2 is emitted into the atmosphere, it gradually moves to other carbon sinks over subsequent years through naturally occurring biogeophysical processes. These processes slowly reduce the proportion of the emitted ton of CO_2 that resides in the atmosphere year over year. Some amount of CO_2 from the initial emissions pulse persists, however, over the decades, resulting in the decreasing curve of atmospheric carbon residence depicted below.[25] Because of the long time horizon for atmospheric carbon residence, the international standard for CO_2e limits its measurement to 100 years. Therefore, in the graph below, 1 ton CO_2e is represented by the area under the curve, truncated at 100 years.

[23] https://academic.oup.com/ajae/article-abstract/85/2/448/122256
[24] For clarity, this paper uses "MT", "ton", and "tonne" interchangeably in reference to a metric tonne (1,000 kg).
[25] It is important to note that additional carbon removals sequester CO_2 in excess of these natural processes. (https://acp.copernicus.org/articles/13/2793/2013/acp-13-2793-2013.html)

Figure 3: Atmospheric degradation of 1 ton CO_2[26]



Ton-year accounting

To account for the impact of 1 ton CO_2e with greater temporal precision, we use a unit called a **ton-year**. One ton-year is defined as 1 ton of CO_2 residing in the atmosphere **for one year**. So, 1 ton CO_2e, or the area under the residence curve, can be expressed as the climate impact of the total number of tons of atmospheric carbon present over 100 years. In other words, based on the shape of this curve, 1 ton CO_2e is equal to a stream of about **48 ton-years, delivered over 100 years**.[27]

So what does this have to do with carbon removal? To completely cancel out the climate impact created by emitting 1 ton CO_2, one would need to remove and hold some magnitude of carbon, for some duration of time, to generate a climate impact equal to 1 ton CO_2e. The international community calls a unit of removal with impact equal to 1 ton CO_2e a "**permanent ton**".

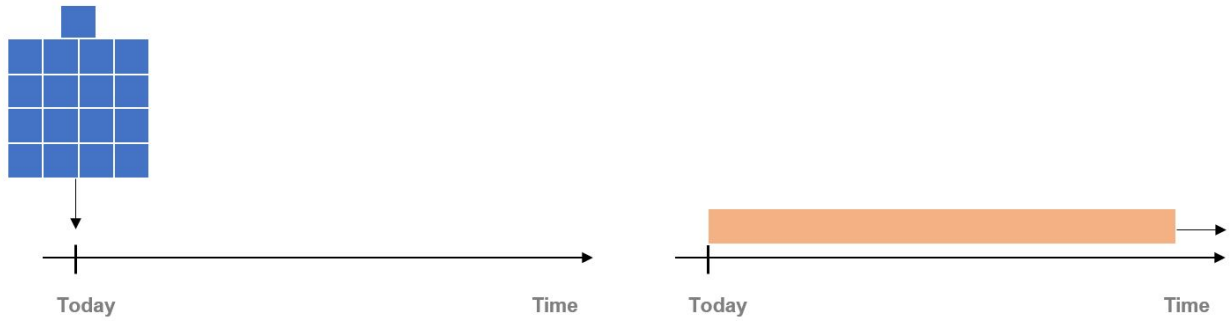
[26] Ibid
[27] https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter2-1.pdf

Present-day climate impact

To evaluate future streams of climate impact, economists "generally advocate that we discount benefits in the future relative to costs incurred today."[28] Abating the emission of 1 ton CO_2e today implies a future benefit that we can convert to present-day value by applying a discount rate. As Nobel Prize-winning climate economist William Nordhaus writes, there exist "temporal trade-offs … between the costs of emissions reductions today and the societal value of reduced damages in the future. So a full appreciation of the economics of climate change cannot proceed without dealing with discounting."[29] Research on the subject demonstrates significant consensus around using a discount rate of 3.3% for carbon, which is consistent with both the social cost of carbon and the international standard for CO_2e.[30]

Applying a 3.3% discount rate, we find that **1 ton of CO_2e, or 48 ton-years over 100 years, is equal to 17 ton-years today**. Mathematically, removing 17 ton-years from the atmosphere today achieves the same impact as 1 ton CO_2e. So, removing and storing 17 tons CO_2 for one year, this year, has an equivalent climate impact to removing 1 ton CO_2e, or 1 "permanent ton".

Figure 4: Purchase of ton-years at equivalence ratio



Applying a 3.3% discount rate makes it possible to store greater magnitudes of carbon over shorter time periods, while retaining equivalence to tons of CO_2e. One significant advantage of the ton-year approach is that it makes it possible to implement a "payment on delivery" system for carbon removals. In the hypothetical discussed above, climate impact equal to 1 ton CO_2e is fully delivered at the end of one year, with no potential for future reversals (e.g. from wildfires).

[28] The Climate Casino, William Nordhaus (2013).
[29] Ibid.
[30] For greater detail on the derivation of 3.3% as a discount rate consistent with the IPCC's standard for CO_2e, please consult our forthcoming technical bulletin on permanence, discounting, and GWP, as well as Mallapragada and Mignone (2020) (https://esd.copernicus.org/articles/9/1013/2018/) and Sarofim and Giordano (2018) (https://link.springer.com/article/10.1007/s10584-019-02486-7)

This means that there is no need for future liability, which is otherwise difficult to contract and confirm. Payment on delivery is one of the benefits that makes ton-years a critical advance in carbon accounting.

In summary, a targeted short-term IFM strategy not only **offers equivalence to "permanent tons" of impact**, but does so with **greater flexibility** in terms of storage and with greater **assurance against reversals**.

Takeaways: Forest carbon strategies and the 'Immediate' criterion

Requirements	● Little delay between action and impact ● Climate impact during this critical decade ● Flexibility to adapt to changing circumstances ● Attainment of "permanent" impact

Strategy	Adherence to Immediate criterion
Afforestation	● Poor. Newly established trees take years or decades to accumulate significant carbon.
Coarse long-term IFM	● Poor. Impact is spread over years or decades. 100 year "lock in" limits adaptability to changing circumstances.
Targeted short-term IFM	● Strong. Impact occurs in the same year as implementation. Short term frame allows flexible reallocation of spending over space and time.

S: SCALABLE

What do we mean by Scalable?

A forest carbon strategy can be deemed **Scalable** if it can be feasibly expanded to a magnitude where it has a material impact on global climate change mitigation.

Even if a strategy can create a Real and Immediate impact, its usefulness will be limited if it cannot grow to significant scale. Given that US carbon emissions exceed 6.5 billion tons a year, [31] strategies that can result in gigaton-magnitude carbon sequestration over the next decade deserve the most attention.

Scalability in forest carbon strategies

A cursory look at summary statistics suggests American forests are large enough to have gigaton-scale potential:

Forested acres, continental US	684 million[32]
Total landscape forest carbon	51.4 billion tons CO_2e[33]
Annual forest growth (gross)	1.3 billion tons CO_2e[34]
Annual forest harvests (drain)	508 million tons CO_2e[35]

But what about specific forest carbon strategies? Once again, we can turn to the two stylized "moves" to understand the potential scalability of various strategies:

1) Increase the number of forested acres (afforestation)
2) Increase average forest carbon per acre (IFM)

[31] https://cfpub.epa.gov/ghgdata/inventoryexplorer/
[32]https://apps.fs.usda.gov/Evalidator/evalidator.jsp
[33] https://apps.fs.usda.gov/Evalidator/evalidator.jsp (Forest Carbon Pool 1, live above ground)
[34] https://apps.fs.usda.gov/Evalidator/evalidator.jsp (Average annual gross growth of aboveground biomass of trees)
[35] https://apps.fs.usda.gov/Evalidator/evalidator.jsp (Average annual harvest removals of aboveground biomass of trees)

Increasing forested acres

Ecologically speaking, there are approximately 490 million acres of unforested land in the US that are suitable for planting trees.[36] Only a small fraction of this area is actually *available* for planting, however, with the vast majority being used for other purposes, such as agriculture.[37] In most cases, the cost of purchasing the land or otherwise securing the right to plant trees would be prohibitive.[38] The economics of this strategy are assessed more in the 'E: Efficiency' section below.

Even if we set aside this potentially high cost, newly planted trees store very little carbon and take decades to grow to maturity. If 100 million non-forested acres were somehow planted today, perhaps only 0.5Gt would be removed from the atmosphere over the next decade.[39]

Increasing average forest carbon per acre

If all US timber harvests were completely deferred for the next decade, two forest carbon impacts would be realized. First, the deferred harvests themselves:

~500 million tons per year for 10 years = 5 billion tons of carbon

And second, growth. Since those forests were left to grow, they could remove an additional 1 billion tons of carbon.

Combined, that would result in a total of **6 billion tons (gigatons) of additional carbon** in the forest and out of the atmosphere.

Of course, forest products are used in all manner of essential consumer and industrial products, so there is no case in which harvests are halted completely. Thus **6 gigatons represents a conceptual upper bound** on sequestration under such a strategy, and the realized impact will be considerably less.

Existing coarse long-term forest carbon strategies are not equipped to realize the conceptually large potential impact. Historically, most forest carbon strategies have been structured around boutique individual projects. The high setup costs for these projects limits their scalability. For example, a typical CARB protocol project may take two years and $200K to set up. The

[36] https://www.fs.fed.us/pnw/pubs/pnw_gtr888.pdf
[37] https://fas.org/sgp/crs/misc/R40562.pdf
[38] Ibid
[39] Ibid

100-year term on these projects is also unacceptable for many landowners,[40] preventing even more from participating.

As covered in the 'R: Real' section above, ultimately these structural issues **effectively exclude small landowners**[41] (defined here as anyone owning fewer than 5,000 acres) from participating in today's carbon markets. This is hugely problematic in the US, where small landowners in aggregate own over 200 million acres of forest.[42]

Small landowners must be included in a forest carbon strategy to achieve truly Scalable impact. When they are, the strategy will stand its best chance of achieving gigaton-level impact this decade. This will only be possible if setup costs are minimized and contract terms are much shorter than 100 years.

Takeaways: Forest carbon strategies and the 'Scalable' criterion

Requirements	● Gigaton-level impact in the US ○ Ecological capacity ○ Low barriers to participation for all landowners

Strategy	Adherence to Scalable criterion
Afforestation	● Moderate. Implementation scale limited by available land; impact scale limited by slow tree growth.
Coarse long-term IFM	● Moderate. High transaction costs and long commitment periods prevent many landowners (especially small ones) from participating.
Targeted short-term IFM	● Strong. Open to all landowners as long as transaction costs are kept low.

[40] https://link.springer.com/article/10.1186/s40663-019-0 175-1
[41] https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0201967
[42] https://www.fs.fed.us/nrs/pubs/jrnl/2016/nrs_2016_butler_001.pdf

E: EFFICIENT

What do we mean by Efficient?

A forest carbon strategy can be deemed **Efficient** if it maximizes present climate benefit per dollar of present cost.

To compare forest carbon strategies against each other in this section, we will use the establishment of plantation pine on marginal agricultural land in Mississippi as a stylized example.
We'll also introduce discount rates to the discussion. This temporal analysis will lead naturally to (and require) the concept of a **"ton-year"**, which is defined as one metric ton (MT) of carbon dioxide-equivalent sequestered for a time period of 1 year. Critically, since a ton-year today is more valuable than a ton-year tomorrow, we will use the US EPA's "social cost of carbon" discount rate of 5% to bring all carbon sequestration from each strategy into present-day terms.[43] In doing so, we implicitly incorporate the prior discussion of timing under the 'I: Immediate' section. Efficiency considers both timing and cost.

Efficiency across forest carbon strategies

One final time, let's recall the two stylized "moves" to assess the potential efficiency of various strategies:

1) Increase the number of forested acres (afforestation)
2) Increase average forest carbon per acre (IFM)

Increasing forested acres

Assessing afforestation requires several assumptions about the example Mississippi acre.

Land like this could be rented today for about $34 per acre per year.[44] Biologically, it is fairly generous to assume that a "typical" plantation pine rotation could be grown on this land. Establishing such an acre with pine costs about $275, and then ongoing management costs

[43] https://www.wri.org/publication/time-value-carbon-and-carbon-storage
[44] The USDA Conservation Reserve Program (CRP) rents this type of land from landowners for various conservation purposes. The 2020 annual rental rate in Greene County, MS, is $34 per acre per year. For more information see https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/ and https://www.ngfa.org/newsletter/usda-releases-crp-rental-rates-grants-higher-rates-to-121-counties/

about $5 per year.[45] Assuming a standard yield table and timber prices,[46] and a landowner discount rate of 5%,[47] the optimal rotation age is 27 years. Therefore the present value of all costs is about $850.[48]

The below table displays the amount of carbon sequestered on this acre each year, the discounted (i.e. present-day) ton-years from that sequestration, and the cumulative present-day ton-years.

Table 1: Present-day ton-years generated by afforestation

Year	Carbon ton-years generated in this year, from existing trees	Carbon ton-years generated in this year, from new growth	Total carbon ton-years generated in this year	Total, discounted to today at 3.3%	Cumulative discounted (present-day) ton-years
1	0.0	0.1	0.1	0.1	0.1
2	0.1	0.4	0.5	0.4	0.5
3	0.5	0.7	1.1	1.1	1.6
...					
26	62.3	3.2	65.5	29.1	398.3
27	65.5	3.1	68.6	29.5	427.8

**Note: columns may not sum due to rounding*

Thus for this stylized acre, the results are:

- Present cost of afforestation = about $850
- Present benefit in ton-years = about 430
- Cost/ton-year: **about $2**

The exact results for a particular acre will of course depend on the establishment cost assumptions, the biological growth rate of the trees, and the discount rates used, but in all

[45] http://www.afoa.org/PDF/n180312a.pdf
[46] TimberMart-South Q1 2020
[47] https://home.kpmg/content/dam/kpmg/us/pdf/2017/10/2017-timberland-investor-sentiment-survey-2017-brochure-final.pdf
[48] This entire analysis is conducted on an inflation-adjusted basis.

cases the long time horizon for carbon accumulation will lead to a relatively high present cost per present ton-year.

Increasing average forest carbon per acre

For a CARB protocol project, a present cost-benefit analysis can be completed similar to the one for afforestation above.

The present cost of 1 ton of carbon through a 100-year CARB contract is approximately $15.[49]

To determine the present benefit denominated in ton-years, an assumption must be made about the timing of the avoided future reduction in carbon stored on the property. Let's assume it would have taken place in 20 years.[50] Therefore, buying 1 credit today is buying a stream of carbon ton-years, 1 per year for 80 years, beginning in 20 years. Discounting this stream of ton-years to present terms equates to about 8.5 ton-years.

Thus for this stylized credit purchase, the results are:

- Present cost of the credit = about $15
- Present benefit in ton-years = about 8.5
- Cost/ton-year: **about $1.77**

This coarse long-term IFM strategy is therefore similarly efficient as afforestation.

But what about a targeted short-term IFM strategy? How much does a ton-year cost in this case?

The Real section above explained how optimal rotation age in a plantation system is determined by maximizing landowner NPV, which incorporated a landowner discount rate. By the same rationale, a landowner should be willing to defer a timber harvest if they are compensated for the time value of waiting 1 year, taking into account any extra timber growth and any extra costs they incur.

Furthermore, recall that the NPV curve is relatively flat near the optimal rotation age. Extending a timber rotation by a year or two only results in a minor decrease in NPV for the landowner.

[49] Recall from above that under the CARB methodology landowners are contracted and (potentially) paid for two things: first, they are paid upfront for ensuring against any reductions in average forest carbon on the property; and second, they are paid over time for any increases in average forest carbon on the property. Since the upfront payments likely represent the majority of project value in most cases, the "avoided future reduction" mechanism of the credit will be the subject of analysis here.

[50] This avoided future reduction could take place at any point during the 100-year contract term, or not at all. Assuming it would have taken place in 20 years is, if anything, fairly generous.

This means that the compensation required to change landowner behavior is relatively low at this point. In fact, extending the rotation age by one year creates the lowest cost additional carbon on the landscape.

The table below shows the effect of deferring a timber harvest for one year on the example pine plantation in Mississippi.

Table 2: Carbon ton-years and timber economics for 1 year harvest deferral

Age	Carbon ton-years generated in this year, from existing trees	Carbon ton-years generated in this year, from new growth	Total carbon ton-years generated in this year	Timber value	Manage-ment cost	NPV of harvest
27 (BAU)				$1,635		$1,635
28 (1 year deferral)	68.6	3.0	71.6	$1,707	$5	$1,621

We see that in this example, the landowner would need to be paid 1,635 — 1,621 = about $14 per acre to defer the timber harvest.

Bringing all costs and benefits to the present, the results on a per-acre basis are:

- Present cost to defer harvest = about $14
- Present benefit in ton-years = about 72
- Cost/ton-year: **about $0.20**

On a present cost-benefit basis, a targeted short-term IFM strategy has the potential to be an **order of magnitude more efficient** than the alternatives.

Takeaways: Forest carbon strategies and the 'Efficient' criterion

Requirements	● Low present cost to present benefit ● Finds lowest cost carbon on landscape

Strategy	Adherence to Efficient criterion
Afforestation	● Poor. High up-front costs plus heavily discounted future benefits due to time lag.
Coarse long-term IFM	● Poor. 100-year term allocates present-day dollars to heavily discounted future impacts.
Targeted short-term IFM	● Strong. Efficient allocation of present-day dollars to present-day impacts. Short term allows targeting of lowest-cost time periods in timber rotations.

NCX: The Natural Capital Exchange

The case is clear: a coherent forest carbon strategy must be Real, Immediate, Scalable, and Efficient. The sections above have explained what these principles mean and used them to assess various forest carbon strategies:

Strategy	Real	Immediate	Scalable	Efficient
Afforestation	Strong	Poor	Moderate	Poor
Coarse long-term IFM	Moderate	Poor	Moderate	Poor
Targeted short-term IFM	Strong	Strong	Strong	Strong

The RISE framework suggests the need for a targeted short-term IFM strategy.

NCX is that strategy.

What is NCX?

NCX is a remote sensing-enabled marketplace linking buyers and sellers of forest carbon, in which landowners in the US are paid to defer timber harvests for 1 year.

NCX is Real

Requirements	• Strong additionality through targeted BAU assessment • Low leakage through wide participation

NCX capitalizes on **recent technological advances** that have made it possible to estimate the sizes and species of trees on every acre of forest, every year.[51] This not only enables an assessment of the amount of carbon on every forested acre, but also makes it possible to construct an NPV curve and develop a model of landowner timber harvest behavior. This allows for much better BAU assessment. The methods used by NCX for these harvest behavior

[51] www.ncx.com/basemap

predictions are empirically estimated following peer-reviewed methods.[52] Ultimately, the clearest validation of BAU prediction accuracy will come from landowners' willingness to participate in the market.

At the end of the one year contract term, the landowner receives credit for the amount of harvest reduction relative to their individualized BAU scenario.

Wide participation, and thus reduced potential for leakage, is ensured by opening the program to landowners of any size.

NCX is Immediate

Requirements	● Little delay between action and impact ● Climate impact during this critical decade ● Flexibility to adapt to changing circumstances ● Attainment of durable impact

When a buyer purchases an NCX forest carbon credit, they are buying immediate change on the landscape. Landowners are paid, and credits are issued, only upon verification of harvest deferral at the end of the one year term. Participants in NCX demonstrably contribute to the urgent need for action by 2030.

Short contract terms allow all market participants to flexibly adjust to changing conditions over time.

NCX is Scalable

Requirements	● Gigaton-level impact in the US ○ Ecological capacity ○ Low barriers to participation for all landowners

NCX radically **democratizes access to forest carbon markets** through low transaction costs, no minimum acreage size, and short contract terms. By massively expanding the ability of all landowners—both large and small—to participate in carbon markets, NCX can mobilize the 684 million acres of US forests to achieve gigaton-level impact.

[52] Atmadja, Stibniati S., and Erin O. Sills. "Forest management and landowners' discount rates in the Southern United States." *Post-Faustmann forest resource economics*. Springer, Dordrecht, 2013. 91-123.

That's why NCX's use of satellite imagery, cloud computing, and algorithmic estimation is so crucial. It dramatically reduces implementation costs.

NCX is Efficient

Requirements	• Low present cost to present benefit • Finds lowest cost carbon on landscape

NCX achieves efficiency in two ways that other carbon strategies cannot claim.

First, by paying to defer harvest activity when trees are still growing vigorously, NCX ensures the cost of a carbon "ton-year" is as low as possible. This efficiency is part and parcel of the deferred harvest methodology itself.

Second, the price of an NCX carbon credit will be set by an **annual auction**, which matches supply and demand at the lowest possible price. As economic conditions change and the ecological landscape evolves over time, payments will annually readjust and flow to the new lowest-cost acres.

Why NCX, why now

This is a critical decade for the climate. Forests can play an important role in combating climate change, but existing forest-based strategies fail to achieve RISE climate impact. This paper has introduced the RISE framework to help carbon buyers and policymakers evaluate forest-based climate strategies in the context of the existing timber industry and current forest management practices.

Natural Capital Exchange is the strategy that performs best against the RISE framework. It relies on advances in remote sensing technology to drive targeted, short-term timber harvest deferrals on an annual basis. This market-based, data-driven mechanism ensures that each year dollars flow to the right acres at the right time to create a Real, Immediate, Scalable, and Efficient climate impact.

For more information, visit ncx.com.

FAQs for Sellers

v 1.5 Updated 9/14/2021

Terms

- "**Carbon**" refers to atmospheric carbon dioxide (CO_2) or its equivalent stored in living tree biomass.
- "**BAU harvesting**" refers to the business-as-usual case of a landowner's annual harvest activity, in which no payments are made to defer harvest activity, and no harvesting activity is deferred.

Section 1: The NCX Market

Overview

1. **Who runs the Natural Capital Exchange (NCX)?**

   NCX administers the Natural Capital Exchange.

2. **Who buys these carbon credits?**

   Voluntary buyers of carbon removal credits include technology, transportation, consumer goods, and energy companies, many of whom have publicly made net-zero or other carbon commitments.

3. **What is the time commitment for NCX?**

   Participating in NCX requires an initial commitment of one year. Participants may choose to continue participation in subsequent years under new agreements.

Eligibility

4. **Who is eligible?**

   All timberland and woodland owners across the contiguous US with the right to harvest timber on their property are eligible to participate by requesting an assessment.

5. **How many acres do I need to own in order to participate?**

   There is no acreage minimum to participate in NCX. However, a landowner will need to have at least 5 Harvest Deferral Credits' worth of carbon to be able to submit bids to participate in a given NCX cycle. For reference, a property as small as 20 acres with mature timber could satisfy the minimum requirement.

6. **Does my property need to be SFI or FSC certified in order to participate?**

   No, certification of this type is not required for NCX.

7. **Do I need to enroll my entire property?**

   Yes. In order to ensure the validity of NCX carbon credits, a seller will need to enroll in the program all of the property they own or manage that is in NCX-eligible areas.

   Put differently, an eligible project participant is all acreage in the NCX market states ultimately owned by a single individual, family, company, Fund, LP, or other set of beneficial owners.

   The acreage in an eligible project participant often (but not always) further shares these characteristics:

   - Represented effectively as a single counterparty in negotiations with mills and other timber buyers
   - Reported internally or externally (e.g. to investors) as a single "property" or "aggregation"
   - The highest level to which property budgets and management plans are "rolled up"
   - Harvest decisions on the acreage are not typically made in tandem with, nor impact, harvest decisions elsewhere

   Importantly, NCX recognizes that for tax, legal, transactional, and operational reasons, legal ownership of timberland may be structured such that an eligible project participant *does not* match a single legal entity. NCX reserves the right to exclude any participants that it has reason to believe do not match the definition of an eligible project participant.

8. **My property has forests of different ages. Do I need to enroll portions of the property individually based on their age?**

   No. The NCX program treats all of your stands as a single participating property.

9. **Is it okay if my property crosses state lines?**

   Yes, this is permitted. You may enroll a property that crosses state lines. Your carbon will be assessed in the same manner as that of a property that is contained to one single state.

10. **If a landowner is the sole member of two different LLCs, do they both need to be enrolled in NCX for that person to be eligible to participate?**

    Yes. The requirement for NCX participants to enroll all property under their ownership and management is designed to reduce the potential for internal “activity-shifting leakage”. Please review the Leakage section below for more information.

11. **Do I have to own my property outright in order to participate?**

    To sign the NCX Seller Agreement, you will need to be the legal owner of the land or a valid legal representative of the owner(s). Property held in common by a family or several individuals is therefore eligible for the program, as long as the person who signs the agreement is a valid legal representative.

12. **Can I participate if my property is already under a carbon or conservation easement?**

    At this time, no, this property would not qualify for NCX. NCX pays for the deferral of predicted harvesting activity on your property. If your property is under an easement that already restricts harvesting activity, then the NCX framework will not apply. See the NCX Seller Agreement for detailed restrictions on participation. If only a portion of your property is under a carbon or conservation easement, you should exclude that portion when submitting property holdings and notify the NCX team so that appropriate measures can be taken to record this omission.

    Landowners who are unsure if their conservation easement was accurately assessed in the Eligibility Report that is generated for their property should contact NCX to ensure the accurate representation of eligible acres.

13. **Why does the display imagery of my property look out-of-date on ncx.com?**

    NCX uses a combination of recent remotely sensed data and field measurements to assess the carbon on your property, ensuring that our carbon estimates are up to date. In contrast, the higher-resolution imagery on ncx.com is sourced from the company Mapbox and provided solely to facilitate the drawing of property boundaries. In some cases, Mapbox imagery will be less recent than the imagery sources NCX uses to calculate

eligible carbon. If this is causing you to have difficulty creating your property boundaries, please email landowners@ncx.com.

Bidding and Pricing

14. How do I place a bid to sell my carbon?

Bid forms and submission details are part of the NCX Seller Agreement. Participating landowners will be asked to declare the harvest volume they would be willing to defer and the prices at which they would be willing to do so.

15. How does a bid turn into a binding agreement?

By submitting a bid using the NCX Seller Agreement, the seller is making an irrevocable offer to sell carbon; they agree to go under legal contract for any volume of their bid that is accepted. NCX may accept all, part, or none of the volume bid by the landowner, depending on factors such as price, location of the seller, and other factors. See the NCX Seller Agreement for detail.

16. Who is allowed to sign the NCX Seller Agreement?

The NCX Seller Agreement binds the landowner to a set of commitments and obligations, and makes claims on their behalf. Therefore, anybody who intends to sign the agreement on behalf of the Seller and deliver on its obligations (for example, an advisor or a consulting forester) is highly recommended to confirm with legal counsel that they have the legal authority to do so. Generally speaking, this authority should extend to the ability to deliver on the specific obligations of the agreement, to take the actions/inactions therein, and to make the representations (or claims) therein.

17. What prices can I expect to be paid?

By completing a bid in the NCX Seller Agreement, landowners choose the prices at which they are willing to supply carbon to the market. Economic guidance is available on the landowner platform.

18. Are there fees for participation in NCX?

Sellers will not be charged any out-of-pocket fees. Measurement costs are borne by NCX.

19. How will revenue from the sale of Harvest Deferral Credits be taxed?

NCX's understanding is that NCX payments will be treated as income for tax purposes.

Program Terms

20. Will NCX be visiting my property?

Maybe. Few participants will have cruises conducted on their properties, but by submitting a bid and signing the NCX Seller Agreement, you are granting NCX and its affiliates the right to access the property for program purposes. These visits are coordinated and paid for by NCX, and will not be undertaken without providing notice to the landowner in advance.

21. What will you do with my data?

NCX collects information about you and property only to the extent it's needed to administer the NCX program. Data provided by NCX participants, including their property boundaries, will not be shared with third parties except for in aggregated and/or anonymized for legitimate purposes of academic research, program certification, or the like. See the NCX Seller Agreement for more information.

22. How will NCX confirm I own the property enrolled?

At the start of each Performance Period, a subset of landowners with accepted bids will be selected to provide proof of property ownership. Please review the NCX Seller Agreement for acceptable forms of documentation.

23. Are there any penalties for noncompliance?

Yes. As a starting point, payments are only made to sellers for the quantity of carbon they successfully deliver. Generally, failure to deliver the agreed amount of carbon may result in diminished payments to landowners for the credits that are delivered, and also in sanctions such as a prohibition on participating in future NCX cycles. See the NCX Seller Agreement for details.

24. Does the contract automatically renew every year?

No. Landowners will need to re-enroll after the end of the 1-year harvest deferral period if they are interested in doing so. This is permissible and encouraged; landowners will be asked to confirm their property information is still accurate and then will submit their request for an updated eligible carbon assessment.

25. What happens if a portion or all of the land under agreement changes ownership during the year?

In short, it depends. While the NCX Seller Agreement does not constitute a legal encumbrance on the property, and therefore does not strictly “run with the land”, it can be assigned in whole or in part to the new property owner. The original seller does retain delivery obligations under the Agreement, and a process is specified for apportioning those obligations among the parties. See the NCX Seller Agreement for more details.

26. Does NCX dictate which acres to cut, how to cut them, or where to allocate harvests?

No, accounting is done in aggregate over an entire participating property. Allocation of harvests are completely at the discretion of the landowner, as long as property-level deferral commitments are met.

27. How does NCX address timber maintenance, such as thinning and controlled burns?

The NCX program makes no prescriptions about specific management practices; it solely obligates the seller to retain a certain amount of standing timber on the property. So while a landowner is free to engage in thinning or controlled burns on the property, these factors should be considered when submitting a bid.

28. How does NCX make money from NCX?

NCX charges a fee to buyers so that this program remains free for landowners. While NCX is not currently sharing the specifics of fee structures, a large majority of the price paid for carbon is flowing through to landowners. The buyers that engage with NCX have a strong desire to ensure this remains a key aspect of the program, and NCX will continue to evolve the program to maintain this structure.

Section 2: Program Accounting

Creditable Carbon

29. How are carbon credits created in this program?

This program pays landowners to increase carbon stocks on their property by deferring BAU (or business-as-usual) harvest activity. This creates carbon removal credits, which in the NCX Seller Agreement are called “Harvest Deferral Credits.”

Creditable carbon removals are calculated based on starting carbon stocks, the BAU likelihood of harvest for those stocks in their market context, and the ending stocks (or, how much harvesting actually happened).

Using a conversion factor that has to do with the "time preference" for carbon and how it acts in the atmosphere, we measure the impact of 1-year NCX credits in terms of the standard "permanent tons" metric often employed by other programs.

30. How are initial carbon stocks measured?

NCX Basemap is the basis for initial estimates of carbon stocks. Basemap uses the USFS FIA dataset in combination with remotely sensed data to produce a high resolution, up-to-date map of forest inventory for the continental US. These inventory data are used to assess the carbon stock on every acre, on every parcel, for every landowner.

Carbon stock values on participating properties are also measured with field measurements in a design unbiased (model-assisted) plot design at the beginning and conclusion of the year term.

31. I just clearcut a portion of my property last month. How will this affect my eligible carbon assessment?

The NCX landowner platform will display the most recent imagery date for Basemap inventory estimates for the cycle in which you are considering participating. If you have conducted a significant amount of harvest since that date, you should account for this if and when you decide to bid Harvest Deferral Credits.

32. How does NCX assess the harvest likelihood and BAU on my property?

To generate your business-as-usual (BAU) amount of harvesting activity, NCX uses a predictive algorithm. Inputs to the algorithm include the sizes and species of trees on your property (as estimated by NCX's Basemap), your location and proximity to markets, terrain and operability, and the size of your parcels, among other factors. This algorithm is run over the subset of your acreage that is eligible for this NCX cycle.

Whether or not you harvest timber from the property every year, you can think of the BAU as a reflection of the "risk" that harvesting would occur under typical circumstances.

33. How can I know that NCX correctly assesses my BAU?

Both your Eligibility Report and the NCX Seller Agreement contain information intended to help you understand your BAU in relation to your property. Your NCX BAU will not always

precisely align with your management plan for the property. If you have concerns about the BAU that NCX has provided, feel free to reach out to us at landowners@ncx.com.

34. NCX has given me information for my property as a whole. Can you provide that information broken down into stands, parcels, or some other granular unit?

Your property's performance in NCX is assessed at the summary level (i.e. treating the property as a whole), which is why your BAU is also provided at the summary level. NCX does not currently provide this information for sub-sections of your property, such as parcels or stands.

35. How does this methodology account for biological growth?

NCX pays landowners for the amount of harvests they defer, not for the exact amount of biological growth that takes place during the program period. Annual growth varies from year to year and is beyond the control of the landowner. Therefore, biological growth is netted out of the performance period carbon volume. This is accomplished by repeated measures on the initial plot locations visited at the beginning and end of the year term on participating landowner properties. NCX's technology does not endeavor to measure the biological growth on a given property.

36. How do I translate merchantable tons of timber to Harvest Deferral Credits?

Since all trees store carbon, Harvest Deferral Credits are simply units that express the carbon content of the trees instead of, for example, their weight (like green tons). NCX estimates that 1 Harvest Deferral Credit represents the standing carbon that is stored in approximately 25 tons of softwood/pine timber.

37. Does NCX give credit for new tree plantings?

Not at this time. Currently, NCX participants are only credited for retaining the forest carbon on their landscape that they committed to under the NCX Seller Agreement.

38. Does NCX give credit for other measures of forest health besides carbon?

Not at this time. Currently, NCX participants are only credited for retaining the forest carbon on their landscape that they committed to under the NCX Seller Agreement.

39. How does this methodology account for natural disturbances that may occur (e.g. tornados, hurricanes)?

Landowners only receive credit for standing forest carbon at the end of the term. If natural disturbances reduce standing carbon amounts, the landowners will receive a reduced

payment or no payment. However, punitive provisions (such as prohibitions on future participation) are waived. See the NCX Seller Agreement for further details.

Certification / Verification

40. Will this be third-party verified?

Yes, in two ways. First, ground measurements and their protocol will be verified by an independent third party. Second, the process used to produce estimates of carbon stocking will also be independently verified.

41. Will this methodology be certified by a standards body?

Yes. This methodology is undergoing review by major carbon credit standards bodies, and has completed the first step of having the methodology concept formally approved. Development of full technical documentation, scientific review, and public comment will follow in 2022.

42. What are the major differences between this and the California ARB (CARB) forest carbon methodology?

The most significant differences pertain to the length of the contract and the transaction costs of participation.

- CARB methodology requires 100 year contractual terms; this methodology operates with a 1 year term.
- CARB methodology requires participants to assess their carbon stock and baseline at significant cost and to submit the measurements for subjective review; this methodology produces objective measurements using remote sensing at no cost to participants.

Section 3: Methodology

Additionality

43. How does this methodology ensure that carbon removals and credits are “additional”?

“Additional carbon”, also called “creditable carbon”, is carbon stored in excess of the BAU (business-as-usual) case.

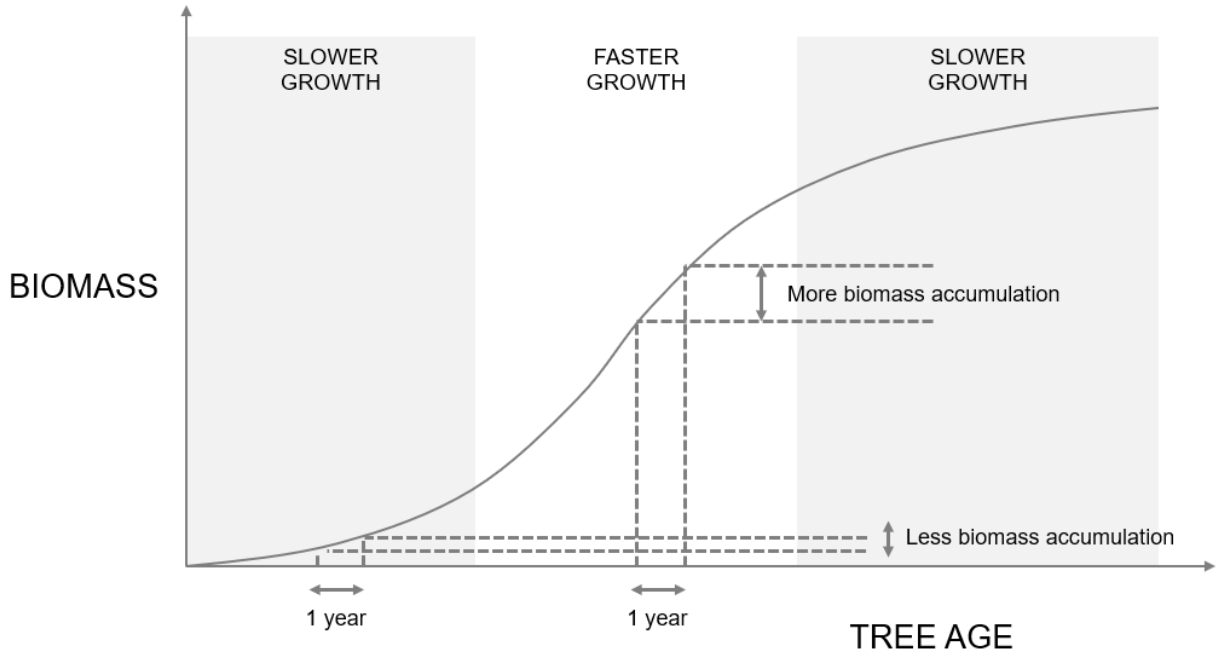
Additionality depends on an accurate assessment of BAU. Each year, NCX produces estimates of carbon stocking and the BAU harvesting regime for each landowner, and uses that information to make offers for the subsequent 1-year term. Sellers are paid for the carbon that they deliver above their BAU.

In a more general sense, increasing the average age of forests across the landscape increases the overall amount of carbon stored in forests. Annual reduction in harvest volume, which is what NCX achieves, results in an increase in the average forest age. By increasing the average age of forests across the landscape, the amount of carbon stored in forest biomass increases correspondingly.

44. If you are paying to extend the lifespan (i.e. rotation age) of stands that would have been replanted after being harvested anyway, how does that create additional carbon on the landscape?

Payments through this market extend the amount of time trees spend in a high-growth stage of their biological lifecycle.

The accumulation of biomass, and therefore carbon, in trees follows an s-shaped or sigmoidal curve. Carbon accumulation is relatively slow in the first few years of tree growth, accelerates to a higher rate in the middle years, and then slows down again in later years. When considering extractive timber value, most optimal harvest ages fall in these middle years, during the most productive period of tree growth. Therefore, one year of extension at this point in the trees' life cycle accounts for both more carbon held on the acre and more carbon accumulated in growth over the year term. By extending rotations, and thus the average forest age, more carbon is held on the landscape in aggregate.



45. Some portion of harvested tree volume is turned into products (e.g. solid wood products for construction) that stores carbon for a long time anyway. Does that count as creditable carbon under this methodology?

No. This methodology focuses on incentivizing landowners to store additional carbon in living forest biomass. Wood products certainly can store carbon for periods of time, but at this time it is beyond the scope of this methodology to measure and account for that carbon storage.

Permanence

46. What is the standard of "permanence" for carbon sequestration and how does this methodology meet it?

Permanence is an important part of most carbon sequestration projects. Fundamentally, it is a way of making sure that carbon removals fully account for the damages associated with greenhouse gas emissions. "Permanence" in carbon programs usually means a requirement that a unit of carbon removals will not be emitted again before some time horizon—often 100 years. As a result, the impact of carbon programs is often measured in terms of "permanent tons" of removal, or one ton of carbon removed for 100 years.

The real intention of the permanence requirement is, however, to generate an adequate quantity of climate impact—not simply to meet a set time horizon. Importantly, the same

climate impact of one “permanent ton” can be fully achieved through the removal and storage of a larger amount of carbon over a shorter duration. We can therefore establish equivalence of impact between 1-year removals of CO_2 in NCX, and the standard metric of 100-year “permanent” tons.

This formulation of permanence has been formally approved by mainstream certifiers along with our methodology concept, and will be elaborated with input from climate scientists, economists, NGOs, and other stakeholders as the NCX methodology is fully certified. .

Leakage

47. What is “leakage” in carbon markets and how does this methodology account for it?

There are two primary types of leakage that must be addressed in forest carbon methodologies—internal “activity-shifting” leakage and landscape-level “market leakage”.

Activity-shifting leakage is internal to an individual landowner’s property. If payments were made to a landowner to defer harvest on a particular stand, and they instead shifted their harvest activity to a similar stand that they had not enrolled, that would constitute leakage because the impact would have been nullified by the “leaked” harvest activity. To prevent this effect, a landowner must enroll all of their legally owned acreage in the program annually (see FAQ on this topic above, and see the NCX Seller Agreement for more detail). Landowners receive payment for total deferral of harvest regardless of where on their ownership it occurs.

The second type of leakage occurs outside of participants’ property, called market leakage. Market leakage happens when the reduction of timber harvest on one property increases the pressure for timber harvests elsewhere. This increased harvest elsewhere may partially or fully cancel out the program’s intended impact.

One way to minimize market leakage is to make participation in carbon programs as accessible as possible. When only one subset of landowners can receive payments to reduce timber harvests, harvests that would have taken place on their properties may readily "leak" onto adjacent properties that are excluded from the program.To minimize this type of leakage, this methodology has dramatically expanded the range of landowners that can participate in the market.

Though it may be minimized, market leakage cannot be fully eliminated. Therefore, NCX quantifies and deducts the leakage effect from carbon projects’ declared impact. We quantify market leakage by combining well-established forest economics with empirical data on supply and demand in timber markets. Using these factors, we calculate the

changes in timber markets resulting from project activities and derive the “leaked” quantity of harvests. This quantity is then deducted from a project’s total carbon removals.

48. Will this market increase the cost of wood to the mill?

In the short run this market may increase the cost of fiber for mills. Carbon buyers represent another source of demand for the same supply of timber volume. This increased competition for the same supply may cause prices to rise.

However, in the long term, by increasing the age of forests on the landscape, this market may increase the supply of timber such that the price of fiber actually goes down. The long-term economics will depend on many factors, including the price elasticities of supply and demand.

NATURAL CAPITAL EXCHANGE (NCX)

HARVEST DEFERRAL BID AND PARTICIPATION AGREEMENT

HOW TO READ THIS AGREEMENT

Thanks for your interest in selling harvest deferral credits on the Natural Capital Exchange. Before reading this Agreement in detail, potential sellers may find it useful to take the following steps:

- Review the introductory paragraph and Tables 1 through 4 on the next several pages. They contain the key figures and terms of the Agreement.
- For the following key provisions, refer to the relevant sections of Exhibit A, the Terms and Conditions:

Land sales or change of control	Section 3.1.B, Section 9.2
Natural disturbance (fire, windthrow, etc.)	Sections 3.1.C and 8.1
Property access	Sections 3.1.D and 3.2.B
Documentation requirements	Section 3.1.E
Ownership/control requirements	Section 4.1, Section 4.3.A
Requirement to submit all owned/managed land	Section 4.1.B
Privacy	Sections 3.1.G and Section 9.4
Payment terms and failure to deliver	Section 3.2.C, Article 5, Sections 8.1 and 8.2, Exhibit C
Results review process	Section 3.2.B
Lack of property encumbrance	Section 4.2.A

- **Refer to Exhibits B and C for some examples of how this Agreement can be completed, and how Seller performance will be assessed.**

This "How To Read" section (continued on Page 2) is provided for the Seller's information only. It forms no part of the Agreement and does not otherwise modify or affect the terms and conditions of the Agreement.

HOW TO SUBMIT A HARVEST DEFERRAL BID

To submit a Harvest Deferral Bid, Sellers must take the following steps:

- Review the Agreement in its entirety, including all the Exhibits, and discuss it with your expert advisors, as appropriate.

- Complete the offer details in Table 3, and then sign and submit your Harvest Deferral Bid. If the signatory on this agreement is not the Seller or one of Seller's corporate Officers or Directors, then the signer's Title should be "Authorized Representative of [*name of Seller*]". In that case, NCX recommends that the person signing the Bid confirm with legal counsel that he/she has the legal authority to sign and deliver it on behalf of Seller.

- Wait for a response from NCX. You will receive a response in all cases; if your bid is accepted, NCX will return an executed contract to you and provide further information regarding next steps.

This "How To Submit" section is provided for the Seller's information only. It forms no part of the Agreement and does not otherwise modify or affect the terms and conditions of the Agreement.

AGREEMENT

_____ ("**Seller**") offers to sell to Natural Capital Exchange Inc., a Delaware corporation ("**NCX**"), Harvest Deferral Credits ("**Deferral Credits**") in the quantities and at the prices specified by Seller in Table 3 below. Seller's bid ("**Harvest Deferral Bid**") is subject to the "Terms and Conditions of Seller NCX Participation" attached hereto as Exhibit A. Collectively, Seller's Harvest Deferral Bid, upon and subject to NCX's acceptance in an Accepted Bid, and Exhibits A through D attached hereto, constitute the "**Agreement**"). Capitalized terms used herein but not defined shall have the meanings given in Exhibit A.

TABLE 1: GENERAL TERMS AND CONDITIONS

Seller Offer	By submitting this executed Harvest Deferral Bid, Seller acknowledges and agrees: ● Seller is making an ***irrevocable offer*** to sell Deferral Credits to NCX pursuant to the terms and conditions of this Agreement. ● NCX may in its sole discretion accept less than the entire quantity of Deferral Credits that Seller offers. ● Seller has reviewed the terms and conditions of this Agreement, including those set forth in Exhibit A, and agrees to be bound by such terms and conditions. ***NCX encourages Seller to consult with its own legal counsel regarding the terms and conditions of this Agreement.***
NCX Acceptance	**NCX Acceptance** occurs only if NCX, in its sole discretion, accepts this Harvest Deferral Bid, in whole or in part, by: (a) completing the necessary information in Table 4 below, (b) countersigning this Harvest Deferral Bid, and (c) delivering the fully-executed Harvest Deferral Bid to Seller (such fully-executed Harvest Deferral Bid, the "**Accepted Bid**"). If NCX accepts this Harvest Deferral Bid, the Accepted Price will be equal to or greater than the relevant price specified by Seller in Table 3.
Notification Deadline	NCX will notify Seller (by email to the address(es) indicated below) as to whether NCX has accepted any or all of the Deferral Credits offered in the Harvest Deferral Bid. If Seller's offer has been accepted, NCX shall complete and return the information in Table 4 below to specify the quantity of Deferral Credits that it agrees to purchase. If NCX has not provided Seller with an Accepted Bid by ninety (90) days after the date that Seller submits this Harvest Deferral Bid to NCX, this Harvest Deferral Bid shall be deemed void.
Performance Period	The **Performance Period** shall be a one (1) year period, beginning on the date set forth in the Accepted Bid, which start date shall not be more than ninety (90) days after the date of the Accepted Bid.
NCX Contact Information	Email: landowners@ncx.com Address: 2443 Fillmore Street #380-1418, San Francisco CA 94115

TABLE 2: INFORMATION PROVIDED BY NCX TO FACILITATE BID

Seller Identifying Information	Legal entity name, if applicable: _____ First name of Seller or of Seller contact, as relevant: _____ Last name of Seller or of Seller contact, as relevant: _____ Email address: _____ Phone number: _____
Bid Deadline	Seller's Harvest Deferral Bid must be received by NCX no later than _____.
Assessment Area	Exhibit D to this Agreement identifies the property comprising the Assessment Area.
Maximum Harvest Deferral	Based on Seller's information provided to NCX, Seller may offer up to a maximum of _____ Harvest Deferral Credits from the Eligible Assessment Area during the Performance Period (the "**Maximum Harvest Deferral**"). The quantity of Harvest Deferral Credits stated here supersedes any prior or alternative estimate or calculation for the Eligible Assessment Area and Performance Period. For additional information, see Seller's Eligibility Report previously provided by NCX.

TABLE 3: INFORMATION TO BE COMPLETED BY SELLER WITH ITS BID

Offer Requirements

To complete the offer below, Seller must comply with the following requirements:

- Seller may complete **one (1) or more rows**
- **Whole numbers** only (i.e. no decimals)
- Minimum offer is the **greater of**:
  - **5** Deferral Credits; or
  - If the Maximum Harvest Deferral specified in Table 2 is less than 10,000 Deferral Credits, **20% of the Maximum Harvest Deferral**; or
  - If the Maximum Harvest Deferral specified in Table 2 is greater than or equal to 10,000 Deferral Credits but less than 100,000 Deferral Credits, **10% of the Maximum Harvest Deferral**; or
  - If the Maximum Harvest Deferral specified in Table 2 is greater than or equal to 100,000 Deferral Credits, **5% of the Maximum Harvest Deferral**
- Quantities must be **non-decreasing** down the column below
- The maximum quantity offered per row in this Table 3 **must not exceed the Maximum Harvest Deferral** specified in Table 2

Irrevocable Offer

Seller hereby irrevocably offers to sell Harvest Deferral Credits derived from the Eligible Assessment Area during the Performance Period in the following quantities, to be paid for at the following prices.

Seller acknowledges that NCX may accept some or all of this bid amount, i.e. NCX **may accept the quantity offered in any one row** in this Table 3, at a price equal to or greater than the price specified in that same row. Quantities across rows **will not be added together**.

Price ($/Deferral Credit)	Quantity of Deferral Credits offered (total)	Checkbox indicates NCX Acceptance
$1	_____ Deferral Credits	□
$2	_____ Deferral Credits	□
$3	_____ Deferral Credits	□
$4	_____ Deferral Credits	□
$5	_____ Deferral Credits	□
$6	_____ Deferral Credits	□
$7	_____ Deferral Credits	□
$8	_____ Deferral Credits	□
$9	_____ Deferral Credits	□
$10	_____ Deferral Credits	□
$11	_____ Deferral Credits	□
$12	_____ Deferral Credits	□
$13	_____ Deferral Credits	□
$14	_____ Deferral Credits	□

	$15	_____ Deferral Credits	□
	$16	_____ Deferral Credits	□
	$17	_____ Deferral Credits	□
	$18	_____ Deferral Credits	□
	$19	_____ Deferral Credits	□
	$20	_____ Deferral Credits	□
	$21	_____ Deferral Credits	□
	$22	_____ Deferral Credits	□
	$23	_____ Deferral Credits	□
	$24	_____ Deferral Credits	□
	$25	_____ Deferral Credits	□
	$26	_____ Deferral Credits	□
	$27	_____ Deferral Credits	□
	$28	_____ Deferral Credits	□
	$29	_____ Deferral Credits	□
	$30	_____ Deferral Credits	□
Note	This bid ***will not be valid*** if the maximum quantity of Deferral Credits offered above exceeds the Maximum Harvest Deferral specified in Table 2.		
Example Bids	For reference, hypothetical examples of Harvest Deferral Bids are presented in Exhibit B.		

TABLE 4: INFORMATION TO BE COMPLETED BY NCX UPON ACCEPTANCE

NCX Acceptance (Also indicated by a ***checkbox*** in Table 3)	Accepted Deferrals (Deferral Credits)	_____
	Accepted Price ($ / Deferral Credit)	$_____
	Total contract value	$_____
Start Date of Performance Period	_____	
End Date of Performance Period	_____	

Seller and NCX (collectively, the "**Parties**" and each a "**Party**") agree to the terms of this Agreement, including the Terms and Conditions of Seller NCX Participation set forth in Exhibit A, and each Party represents that the person signing this Agreement for such Party is duly authorized to do so on behalf of such Party.

Seller	**Natural Capital Exchange Inc.**
Signed:_____ By*:_____ Title*:_____	Signed:_____ By: Zack Parisa Title: CEO
Date:	Date:

**Note: please see Page i for a note about signing on behalf of Sellers.*

EXHIBIT A

TERMS AND CONDITIONS OF SELLER NCX PARTICIPATION

WHEREAS, Seller and NCX desire, through this Agreement, to defer a certain amount of timber harvest within the Eligible Assessment Area in order to remove greenhouse gases from Earth's atmosphere, as represented through the creation of Harvest Deferral Credits;

WHEREAS, NCX provided Seller with an estimate of the quantity of Harvest Deferral Credits that Seller may offer for sale during the Performance Period based on an assessment of the harvestable timber on its property;

WHEREAS, Seller, in its Harvest Deferral Bid, offered to defer the harvest of a certain amount of harvestable timber for one year on property it controls;

WHEREAS, NCX, in its Accepted Bid, agreed (in whole or in part) to pay Seller for retaining such timber;

WHEREAS, the Agreement, consisting of the Harvest Deferral Bid, as modified by the Accepted Bid, forms a binding contract between Seller and NCX that incorporates and is subject to the terms of this Exhibit A and Exhibits B through D; and

WHEREAS, Seller desires to sell to NCX, and NCX desires to purchase from Seller, the rights to make environmental claims about the greenhouse gases removed from the atmosphere under this Agreement in order to create Harvest Deferral Credits;

NOW THEREFORE, in consideration of the mutual covenants and obligations set forth herein, the Parties agree as follows:

ARTICLE 1
DEFINITIONS

Note: Exhibit B contains hypothetical examples and illustrations of many of these Definitions.

"**Accepted Bid**" is defined in Table 1 of the Harvest Deferral Bid.

"**Accepted Deferrals**" means the quantity of Deferral Credits that Seller agrees to create pursuant to the Accepted Bid by retaining more timber in the Eligible Assessment Area during the Performance Period than it would under business-as-usual conditions as determined by NCX.

"**Accepted Price**" means the price per Deferral Credit ($/Deferral Credit) that NCX agrees to pay Seller for a specific amount of Deferral Credits, as identified by NCX in Table 4.

"**Actual Deferrals**" means the quantity of deferrals actually achieved due to retention of timber in the Eligible Assessment Area at the end of the Performance Period, as compared with the Accepted Deferrals. Actual Deferrals would equal the Maximum Harvest Deferral if no disturbance (intentional nor unintentional) occurs within the Eligible Assessment Area during the Performance Period, and would decline from that maximum to reflect the actual amount of timber no longer remaining (whether by harvest or other destruction).

"**Approved Methodologies**" means those credible and recognized greenhouse gas reduction verification methodologies specified by NCX as applicable to this Agreement.

"**Assessment Area**" means timberland satisfying one of the following two conditions: it is either (i) all timberland property within the contiguous United States that is owned by a particular owner or set of beneficial owners; or (ii) all timberland property within the contiguous United States over which a single property manager has been given legal managing authority on behalf of a particular owner or set of beneficial owners. The Assessment Area for Seller under this Agreement is specified in Exhibit D.

"**Bid Deadline**" is the date set forth in Table 2.

"**Business Day**" means a day on which Federal Reserve member banks are open for business. A Business Day begins at 8:00 a.m. and ends at 5:00 p.m. Pacific Prevailing Time.

"**Credited Deferrals**" means the quantity of Deferral Credits counted toward Seller's obligations under the Accepted Bid, for which NCX will incur an obligation to pay Seller, as determined in Section 3.2.A.

"**Default**" and "**Defaulting Party**" are defined in Article 8.

"**Deferral Credit**" or "**Harvest Deferral Credit**" means a credit, denominated in whole numbers only, as determined by NCX in its sole discretion based on the Seller's Eligible Assessment Area, which represents the deferral of harvest of a certain amount of timber in the Eligible Assessment Area during the Performance Period.

"**Eligible Assessment Area**" means that portion of the Assessment Area meeting the eligibility criteria for inclusion in NCX, as determined by NCX in its sole discretion.

"**Harvest Deferral Bid**" means the "NCX Harvest Deferral Bid and Participation Agreement" to which these terms and conditions are attached as Exhibit A, which constitutes Seller's irrevocable offer to defer a certain amount of timber harvest pursuant to the NCX program in the Eligible Assessment Area during the Performance Period in the quantities and at the prices specified by Seller in Table 3. Seller's submission of a Harvest Deferral Bid to NCX shall not constitute an agreement between the Parties unless and until NCX provides the Accepted Bid.

"**Interest Rate**" is equal to the Prime lending rate published under the heading "Money Rates" in the Wall Street Journal on the date of calculation.

"**Maximum Harvest Deferral**" means the maximum quantity of Deferral Credits that Seller may offer to sell during the applicable Performance Period, as specified by NCX in Table 2.

"**MCC**" means a major carbon certifier selected by NCX in its sole discretion from among the carbon accounting standards approved by the International Carbon Reduction and Offset Alliance ("**ICROA**").

"**MCC Registry**" means that certain registry of carbon credits and/or offsets maintained by the MCC.

"**NCX**" means the Natural Capital Exchange program developed and maintained by NCX.

"**NCX Carbon Credit**" means a credit issued by and held in the NCX Registry representing the right of an NCX account holder in whose account the credit is recorded to claim the environmental benefit equivalent to the permanent removal of one (1) metric ton of carbon dioxide-equivalent from the atmosphere (and all benefits resulting from that removal) as a result of the retention of timber. An NCX Carbon Credit may or may not correspond to a credit issued or held under the registry of an MCC, and will be identified accordingly in the NCX Registry.

"**NCX Registry**" means the platform used to record and maintain records of all NCX Carbon Credits and the information of all NCX Account holders under NCX.

"Offer Period" is defined in Section 2.2.C.

"**Performance Period**" means the one (1) year period, beginning on the date set forth in the Accepted Bid, which start date shall not be more than ninety (90) days after the date of the Accepted Bid.

"**Seller**" means the entity identified as such in the Accepted Bid.

ARTICLE 2
CONDITIONS OF SELLER'S PARTICIPATION IN NCX

2.1 Effectiveness and Term

This Agreement shall become effective if and when NCX provides Seller with an Accepted Bid. The Agreement shall remain in force and effect until the earlier of the date when: (a) both Parties have satisfied all their obligations and liabilities under this Agreement, (b) either Party provides written notice of termination of this Agreement, or (c) three (3) years after NCX provides Seller with an Accepted Bid; provided that, pursuant to Section 9.10, any obligations or liabilities which accrue under this Agreement prior to termination shall survive termination until satisfied or otherwise discharged.

2.2 Harvest Deferral Bid

A. Seller acknowledgments. By submitting a Harvest Deferral Bid to NCX, Seller acknowledges and agrees that NCX has performed the following calculations on Seller's behalf: (a) an analysis of the Assessment Area, as set forth in Exhibit D, including a determination of the Eligible Assessment Area; and (b) a determination of the quantity of the Maximum Harvest Deferral in the Eligible Assessment Area during the Performance Period, as set forth in Table 2. Any information with respect to these metrics is for Seller's information only and has no legal effect, with the exception of information specified in an Accepted Bid that has effect as provided in this Agreement.

B. Quantities and prices offered. Seller may submit only one Harvest Deferral Bid for each Performance Period. The Harvest Deferral Bid must offer a whole number of Deferral Credits no less than 5 and not exceeding Seller's Maximum Harvest Deferral.

C. Timing. Seller may submit its Harvest Deferral Bid at any time prior to the Bid Deadline. NCX shall have up to ninety (90) days after receipt of the Harvest Deferral Bid (the "**Offer Period**") within which to accept the offer or any portion thereof. Seller agrees that if NCX accepts part of a Harvest Deferral Bid but the Offer Period has not ended, the Harvest Deferral Bid shall remain an open offer with respect to any unaccepted Deferral Credits, and NCX shall remain free to accept all or any portion of the offered but previously-unaccepted Deferral Credits until the end of the Offer Period.

2.3 NCX Acceptance or Rejection

A. NCX discretion. NCX may in an Accepted Bid, in its sole discretion, accept all or any portion(s) of the Deferral Credits offered in Seller's Harvest Deferral Bid. NCX may, in its sole discretion, elect not to accept any of the Deferral Credits offered in Seller's Harvest Deferral Bid. For the Parties' reference, Exhibit B provides a hypothetical example of Harvest Deferral Bids and Accepted Bids.

B. Modifications to Harvest Deferral Bid. If NCX determines that Seller's Harvest Deferral Bid is incomplete or contains any material error(s), NCX may, in its sole discretion, notify Seller and allow Seller to submit a corrected Harvest Deferral Bid. Notwithstanding any error, omission, or subsequent correction in a Harvest Deferral Bid, NCX may accept the original Harvest Deferral Bid with respect to any or all of the offered Deferral Credits unaffected by the correction.

C. Accepted Bid. NCX Acceptance of the Harvest Deferral Bid (in whole or in part) may be accomplished only by an Accepted Bid. Upon NCX Acceptance, the terms of this Agreement, subject to and including the Accepted Bid, shall be mutually binding and enforceable by each Party against the other.

2.4 No Recording of Agreement

Neither Party shall, nor shall it cause or permit any affiliate, representative, agent, contractor, or other third party acting on its behalf to, file or record this Agreement or any notice or memorandum of this Agreement or its terms in the public records of any jurisdiction. Any failure to comply with this section by filing or recording or attempting to file or record this Agreement or any notice or memorandum of its terms shall be a material breach of this Agreement and shall not operate to bind either Party or otherwise bind or affect title to the Assessment Area or any other real property. The breaching Party shall immediately take steps to remove such filing or recording from the public record.

ARTICLE 3
OBLIGATIONS UPON AN ACCEPTED BID

3.1 Seller's Obligations

Upon NCX Acceptance, Seller agrees to take the following actions:

A. Retention of timber to achieve Deferral Credits. Seller shall take commercially reasonable steps to ensure that sufficient timber remains within the Eligible Assessment Area at the end of the Performance Period to achieve Deferral Credits equal to the Accepted Deferrals.

B. Effect of change in ownership or control. There shall be no change to either Party's rights or obligations under this Agreement as a result of any additional real property outside the Assessment Area coming under Seller's ownership or control during the Performance Period. If, at any time during the Performance Period, any portion of the real property in the Assessment Area is no longer under Seller's ownership or control (as applicable) for any reason, then:

1. None of Seller's obligations under this Agreement are required to, or shall, become obligations on the successor in interest to such real property unless NCX consents in writing to the assignment and the successor agrees in writing to assume such obligations pursuant to this section and Section 9.2.

2. Seller may submit a written request for NCX approval to assign all or part of Seller's rights and obligations under this Agreement to the successor in interest. Seller's request must provide sufficient spatial information for NCX to identify which portions of the property in the Assessment Area are no longer under Seller's ownership or control (as applicable). Seller's request must be provided to NCX no later than (a) twenty (20) Business Days after the change of control occurs, or (b) the last day of the Performance Period.

3. In response to such written request, NCX shall apportion the Maximum Harvest Deferral between the portion of the Assessment Area remaining under Seller's ownership or control (as applicable) and the land not so remaining. For avoidance of doubt, the sum of the Maximum Harvest Deferrals in any new Agreement(s) that is (are) signed as a result of assignment under this section shall equal the Maximum Harvest Deferral from this Agreement.

4. The Accepted Deferrals shall not change, regardless of any assignment pursuant to the preceding paragraphs. For avoidance of doubt, the sum of the Accepted Deferrals in any new Agreement(s) that is (are) signed as a result of assignment under this section shall equal the Accepted Deferrals from this Agreement.

For the Parties' reference, Exhibit B includes a hypothetical example of change of ownership or control.

C. Effect of failure to retain sufficient timber. If, for any reason, whether or not within Seller's anticipation or control, Seller does not retain sufficient standing timber in the Eligible Assessment Area to achieve the Accepted Deferrals during the Performance Period, NCX's payment obligation under this Agreement shall be reduced as stated in Section 3.2.C. For avoidance of doubt, natural disturbance (such as fire or windthrow) and other timber losses not reasonably within the Seller's control are considered the same as intentional harvesting activity for the purposes of this Section, but not for the purposes of determining Default under Section 8.1. See Section 8.1 for further information regarding Default.

D. Grant of access. Seller grants NCX and its affiliates, representatives, agents, and contractors, including third-party verifiers engaged on NCX's behalf and potential buyers of NCX Carbon Credits, a revocable license beginning on the date that NCX provides the Accepted Bid to Seller and lasting until the date one hundred and twenty (120) days after the Performance Period ends, to, upon reasonable notice to Seller, access any part of the Assessment Area to conduct investigations and measurements reasonably related to evaluating Deferral Credits or Seller's performance pursuant to this Agreement. In connection with this grant of access, Seller shall facilitate access to the Assessment Area by responding with reasonable promptness to communications on the matter and by providing pertinent information such as access codes, gate locations, and the like. NCX shall ensure that all third parties that access Seller's property pursuant to this grant of access have sufficient insurance coverage. NCX shall indemnify, defend, and hold Seller harmless from and against any and all liabilities, damages, costs, or expenses resulting from a claim, suit or proceeding which relate to the access granted under this Section 3.1.D, *except* to the extent that such claim, suit or proceeding results from the gross negligence or willful misconduct of Seller. If Seller revokes the license or interferes with access at any time prior to NCX's payment under Section 3.2, NCX may reduce or eliminate the Credited Deferrals and the amount of any payment due to Seller by an amount reasonably reflecting the uncertainty in Actual Deferrals resulting from the lack of access.

E. Evidence of ownership or control. Within fifteen (15) Business Days of any request from NCX, Seller shall deliver to NCX in electronic format evidence of Seller's ownership or control of the land and/or timber in the Assessment Area, as relevant and as defined in Section 4.1. This evidence shall be in the form of a recent (i) title insurance report, (ii) date down endorsement to an existing title policy or title report as to vesting, (iii) attorney's title opinion as to vesting, (iv) update to such a title opinion, (v) copy of the most recent deed, (vi) copy of the county tax assessor's property record card, or (vii) other evidence of ownership or control commonly relied on by buyers in the area, any of which must be acceptable to NCX in its reasonable, good faith determination. Any such evidence that covers other real property in addition to the land and/or timber in the Assessment Area shall be acceptable for purposes of this paragraph.

F. Support of MCC certification. Seller shall take commercially reasonable actions requested by NCX and provide any and all requested information necessary to support NCX's efforts to achieve MCC certification of the Deferral Credits and NCX Carbon Credits resulting from this Agreement; provided, however, that Seller's efforts in this respect shall be at no out of pocket cost to Seller, and also provided that NCX's obligation to pay Seller for Credited Deferrals shall not be dependent upon NCX's efforts or ability to achieve such MCC certification.

G. Use and disclosure of information. Seller consents to NCX's storage, use, and disclosure of information relating to the Assessment Area and all activities in furtherance of this Agreement to the extent needed to support issuance of the NCX Carbon Credits, certification of the NCX Carbon Credits by an MCC, or marketing of NCX Carbon Credits to prospective buyers.

H. Consideration of timber harvest solicitation. As a means of validating that the Maximum Harvest Deferral represents merchantable timber that may actually be harvested during the Performance Period, Seller agrees to give good faith consideration to solicitations for timber harvest on Seller's property, up to the Maximum Harvest Deferral quantity in amount, and arranged by NCX and its affiliates. For avoidance of doubt, the intention of this provision

is to ensure that the Seller only offers Deferral Credits in connection with timber that the Seller would otherwise actually consider harvesting during the Performance Period.

3.2 NCX Obligations

A. Determination of Actual Deferrals and Credited Deferrals. Within sixty (60) days after the end of the Performance Period, NCX shall use remote sensing and analysis and/or field measurement to determine Seller's Actual Deferrals, the resulting Credited Deferrals, and the amount to be paid to Seller under Section 3.2.C. If the Actual Deferrals are less than or equal to zero, the Credited Deferrals shall be zero. If the Actual Deferrals are greater than zero, the Credited Deferrals shall be the lesser of (i) the Actual Deferrals, or (ii) 110% of the Accepted Deferrals. The methods and data used for these determinations shall be consistent in all material respects with those used to determine Seller's Maximum Harvest Deferral. NCX shall notify Seller of the results of these determinations.

B. Review of determination. If Seller believes the Actual Deferrals should be adjusted, then:

1. Seller shall, within fourteen (14) days after receiving notice of its Actual Deferrals, communicate to NCX the reasons for the proposed adjustment, along with any supporting information.

2. NCX shall promptly review any such information provided by Seller, and shall correspond with Seller as necessary to seek further information or clarification.

3. If after such correspondence either Party deems it necessary or appropriate, NCX shall engage consulting foresters or other third-party experts to visit and inspect relevant areas of the Assessment Area. By proposing an adjustment under this Section 3.2.B, Seller automatically extends the grant of access provided under Section 3.1.D up to the earlier of the completion of this review process or the date one (1) year after the Performance Period ends.

4. NCX shall review any third party's findings in good faith when considering whether to make adjustments. In all cases, NCX shall provide Seller with an explanation for its agreement or disagreement with the Seller's proposed adjustment or any portion thereof; if NCX agrees to some or all of the Seller's proposed adjustment, NCX shall promptly prepare a new written statement of the Actual Deferrals and Credited Deferrals and provide it to Seller.

5. NCX shall also provide to Seller an allocation of any third-party costs incurred under this Section, reflecting the degree to which NCX agreed with the proposed adjustment: a greater degree of agreement shall result in a lower allocation to Seller, and a lesser degree of agreement shall result in a higher allocation to Seller. To the extent Seller is allocated any portion of the third-party cost, NCX shall subtract such amount from the payments, if any, owed to Seller. If costs allocated to Seller exceed any payment owed to Seller by NCX, NCX shall issue an invoice to Seller for the excess, payable to NCX within thirty (30) days after receipt.

C. Payment to Seller. NCX shall pay Seller for all Credited Deferrals in an amount calculated as follows:

1. If the Credited Deferrals are between 95% and 110% of the Accepted Deferrals, NCX's payment obligation shall be the Accepted Price multiplied by the Credited Deferrals.

2. If the Credited Deferrals are less than 95% of the Accepted Deferrals, NCX's payment obligation shall be the Accepted Price multiplied by the Accepted Deferrals multiplied by an adjustment factor. The adjustment factor shall be equal to 95% reduced by 2% for each whole percentage point by which the Credited Deferrals is less than 95% of the Accepted Deferrals, but in no event shall the payment obligation be less than zero.

3. For example, if the Credited Deferrals are 94% of the Accepted Deferrals, the payment amount shall be 93% of the total contract value indicated in Table 4 of the Accepted Bid; if the Credited Deferrals are 90% of the Accepted Deferrals, the payment amount shall be 85% of the total contract value, and so on.

For the Parties' reference, Exhibit B contains a set of hypothetical examples of payments to sellers, and Exhibit C contains a graphical depiction of payment terms.

D. Creation of NCX Carbon Credits. After finalizing the Actual and Credited Deferrals and making payment to Seller, NCX intends to create NCX Carbon Credits in its own NCX Account in an amount that correlates to the Credited Deferrals. Each NCX Carbon Credit shall identify the Seller and the Performance Period. For the avoidance of doubt, NCX's obligation to pay Seller for Credited Deferrals shall not be dependent upon NCX's creation of NCX Carbon Credits.

E. MCC certification. NCX shall use commercially reasonable efforts to achieve certification by an MCC and tracking in the corresponding MCC Registry for all NCX Carbon Credits created pursuant to Section 3.2.

ARTICLE 4
REPRESENTATIONS AND WARRANTIES

4.1. Seller's Representations and Warranties

By submitting an executed Harvest Deferral Bid, Seller represents and warrants as follows:

A. Control. Seller has the right, without the consent of any third party (or in the case of an authorized representative of the legal owner(s), without any further permission or consent from the legal owner(s)), to (i) harvest, or defer the harvest of, the timber on all land within the Assessment Area, and (ii) sell to NCX all environmental attributes and rights to make environmental claims related to such harvest or deferred harvest as more fully described in Section 4.1.D. The person signing this Agreement on behalf of Seller has full legal capacity and authority to enter into and deliver this Agreement. Where Seller is acting as an authorized representative of the legal owner(s) of land within the Assessment Area, Seller has all consents and permission necessary to act on behalf of the legal owner(s), execute this Agreement, and perform all of the obligations under this Agreement on behalf of the legal owner(s).

B. Assessment Area. Seller's Assessment Area, as it is described in Exhibit D and used by NCX in its determination of Seller's Deferral Credits, satisfies one of the following two conditions: it is either (i) all timberland property within the contiguous United States that is owned by a particular owner or set of beneficial owners; or (ii) all timberland property within the contiguous United States over which a single property manager has been given legal managing authority on behalf of a particular owner or set of beneficial owners. All information provided by Seller to NCX related to the Assessment Area and Seller's interests therein is true and correct in all material respects.

C. No encumbrances on land. There are no encumbrances on any of the land within the Eligible Assessment Area that would impair or limit Seller's ability to harvest timber on such land other than constraints within the municipality, county, state, and/or country in which such land is located and applicable state and federal environmental law and regulations. None of the timber in the Eligible Assessment Area is subject to a contract, nor shall Seller enter into any such contract during the Performance Period, which gives any third party the right to purchase or harvest timber from the Eligible Assessment Area in quantities that would impair or restrict Seller from performing its obligations under this Agreement.

D. No encumbrance of environmental attributes. Seller holds full and exclusive legal and equitable title and rights, free and clear of all encumbrances, to any and all Deferral Credits resulting from Seller's deferral of timber

harvest during the Performance Period. Seller has not made, and will not make, any claim regarding carbon dioxide removals, environmental benefits, or any similar or related claim with respect to the deferral of timber harvest in the Eligible Assessment Area upon which Seller bases its offer of Deferral Credits. Seller has not conveyed the right or authorized any other entity, whether expressly or by implication, and whether formally or informally, to make any such environmental claim. Seller is not aware of any action, information, or circumstance that would interfere with the ability of NCX to make legitimate claims of carbon dioxide removal and other environmental benefits on the basis of Seller's deferred harvest contemplated in its Harvest Deferral Bid. To the extent that any third party ever held, or may have held, a lien against or interest in such Deferral Credits or associated right to make environmental claims, Seller has obtained a valid and binding release of such lien or interest.

E. Material accuracy. Seller is not aware of any material inaccuracy or omission in the description of the Assessment Area or Maximum Harvest Deferral provided by NCX and set forth in Table 2 and Exhibit D, and Seller will promptly notify NCX upon becoming aware of any such inaccuracy or omission.

F. Activity-shifting leakage. None of Seller or its affiliates, representatives, agents, or contractors will direct or advocate (including by or through a property manager) that any timberland property outside of the Assessment Area be managed in such a way as to intentionally modify or increase timber harvest during the Performance Period for the purpose of counteracting or otherwise offsetting Seller's commitments in this Agreement to defer timber harvest within the Assessment Area.

4.2. NCX Representations and Warranties

By providing Seller with an Accepted Bid, NCX represents and warrants as follows:

A. No encumbrance of real property. To the best of NCX's knowledge and understanding, nothing in the Agreement is intended to, or shall, constitute an encumbrance of any real property nor shall any obligations run with the land or be binding on Seller's successors or assigns. NCX shall not seek to enforce any remedy hereunder against any real property, unless and only to the extent that such remedy is available to an unsecured creditor.

B. Information provided to Seller. At the time NCX provided Seller any spatial data or information related to Seller's Deferral Credits, NCX was unaware of any material error or omission in such information. Any such information provided by NCX with respect to its determination of Deferral Credits was for Seller's information only, and any reliance by Seller on such information is at Seller's sole risk.

4.3. Mutual Representations and Warranties

Each Party (Seller by submitting an executed Harvest Deferral Bid, and NCX by providing Seller with an Accepted Bid) represents and warrants to the other as follows:

A. Authority. (i) Such Party is a person or legal entity duly formed and validly existing and in good standing under the laws of the state in which it is formed or incorporated, (ii) it has the full power and authority to execute, deliver, and perform this Agreement and to carry out the transactions contemplated hereby, (iii) its execution, delivery, and carrying out of the transactions contemplated herein have been duly authorized by all requisite entity action, and this Agreement has been duly executed and delivered by such Party and constitutes a legal, valid, and binding obligation of such Party, enforceable against it in accordance with the terms hereof, except to the extent that enforceability may be limited by bankruptcy or other similar laws generally affecting creditors' rights generally or by equitable principles, (iv) no authorization, consent, notice to, or registration or filing with any governmental authority or third party is required for the execution, delivery and performance by such Party hereof, (v) none of the execution, delivery, and performance by such Party hereof conflicts with or will result in a breach or violation of any law, contract, agreement, order, or instrument to which such Party is a party or is bound, (vi) there are no proceedings by or before any governmental authority, now pending or (to such Party's knowledge) threatened, that if adversely determined could have a material adverse effect on such Party's ability to perform its obligations

hereunder, (vii) it is acting for its own account, has made its own independent decision to enter into this Agreement and as to whether this Agreement is appropriate or proper for it based upon its own judgment, is not relying upon the advice or recommendations of the other Party in so doing, and is capable of assessing the merits of and understanding, and does understand and accept the terms, conditions, and risks of this Agreement.

B. No further representations or warranties. Neither Party makes any representation or warranty to the other beyond those expressly stated in this Article 4.

ARTICLE 5
BILLING AND PAYMENT

NCX shall pay any amount due within thirty (30) days of NCX's confirmation of the Credited Deferrals pursuant to Section 3.2. NCX shall have no obligation to pay for any purported deferrals of timber harvest by Seller exceeding the Credited Deferrals. All payments shall be made to Seller by wire transfer or in other immediately available federal funds in US Dollars. Prior to making any such payments, the Parties shall agree upon specific payment and wiring instructions.

ARTICLE 6
NOTICES

All notices, requests, demands, offers, and other communications required or permitted to be made hereunder will be in writing and delivered to the applicable email or physical address and contact person set forth in the Accepted Bid, and will be effective only if delivered: (a) in person, (b) by a nationally recognized delivery service, (c) by United States Certified Mail, or (d) by electronic mail. Notices are effective when received, except that notice by email is effective on confirmation of receipt only. Either Party may change its address or contact person for notices by giving notice of such change consistent with this Article.

ARTICLE 7
GOVERNING LAW AND DISPUTE RESOLUTION

This Agreement is governed by and construed in accordance with the laws of the State of New York without regard to its conflict of laws principles. Any claim, controversy or dispute arising under or relating to this Agreement that the Parties are unable to resolve themselves will be settled by binding arbitration in New York, New York, administered by JAMS in accordance with its then-current Comprehensive Arbitration Rules and Procedures, as modified or supplemented hereby, and judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. In the event of any suit, arbitration, or other proceeding between the Parties with respect to this Agreement or any of the transactions contemplated hereby or subject matter hereof, the prevailing Party will, in addition to such other relief as the court or arbitrator may award, be entitled to recover reasonable attorneys' fees and costs.

ARTICLE 8
EVENTS OF DEFAULT AND REMEDIES

8.1. Default

"**Default**" means, with respect to a Party (a "**Defaulting Party**"), the occurrence of any of the following:

(a) the failure to make, when due, any payment required pursuant hereto if such failure is not remedied within five (5) Business Days after written notice of such failure is provided by the non-Defaulting Party;

(b) any representation or warranty made by such Party herein is or becomes false or misleading in any material respect when made, and such Party does not cure the underlying facts so as to make such representation and warranty correct and not misleading within five (5) Business Days after written notice of such failure is provided by the non-Defaulting Party;

(c) any bankruptcy, receivership, or insolvency petition or action is filed by or against such Party; or

(d) such Party fails to perform or violates any other material covenant or obligation set forth herein if such failure or violation is not remedied within ten (10) Business Days after written notice of such failure is provided by the non-Defaulting Party.

Seller's failure to retain timber in the Eligible Assessment Area sufficient to meet the Accepted Deferrals shall not constitute a Default (although it may still result in reduced payment by NCX pursuant to Section 3.2); *provided that* (a) such failure was for reasons not reasonably within Seller's control, or (b) the Credited Deferrals are greater than 90% of Accepted Deferrals.

8.2. Remedies

In the event of a Default, the non-Defaulting Party shall have the right, but not the obligation, to terminate this Agreement by providing written notice to the Defaulting Party. If Seller is the Defaulting Party, NCX shall have the right to exclude Seller from participating in any subsequent transactions under NCX for a period of three (3) years. If NCX is the Defaulting Party, Seller shall have the right to pursue any and all remedies available under applicable law.

8.3 Limitation on Damages

In no event will either Party be liable to the other under this Agreement for any consequential, incidental (except for its reasonable costs and attorneys' fees pursuant to this Article 8), punitive, exemplary, or indirect damages in tort, contract, or otherwise.

8.4 No Recourse Against Real Property

No obligation of Seller hereunder shall be secured by or deemed to create any right or interest in real property in the Assessment Area, and no remedy shall be available to NCX if its availability or exercise would constitute an encumbrance on such real property.

8.5 No Specific Performance

Neither Party shall be liable for specific performance of any obligation under this Agreement. Each party expressly waives its right to seek or support specific performance as a remedy for any breach.

ARTICLE 9
STANDARD PROVISIONS

9.1 Additional Documents

Each Party, upon the reasonable request of the other Party, shall perform any further acts and execute and deliver such documents as may be reasonably necessary to carry out the intent and purpose of this Agreement.

9.2 Assignment

Neither Party shall assign this Agreement, in whole or in part, without the other's written consent; except that a Party may, without consent, (i) pledge, encumber, or assign this Agreement or the accounts, revenues, or proceeds hereof in connection with any financing or other financial arrangements; (ii) assign this Agreement to an affiliate if the affiliate's creditworthiness is equal to or higher than that of the assigning Party; or (iii) assign this Agreement to any person or entity succeeding to all or substantially all of the assets of the assigning Party whose creditworthiness is equal to or higher than that of the assigning Party; *provided*, however, that in each such case, any such assignee shall agree in writing to be bound by the terms and conditions of this Agreement and reasonable prior notice of such assignment shall be given to the other Party; *provided further*, that the obligations of Seller under this Agreement may not be assigned except to a person or entity that owns or controls any real property within the Assessment Area. All of the rights, benefits, liabilities, and obligations of the Parties shall inure to the benefit of and be binding upon their respective permitted successors and permitted assigns. A Party's consent to any assignment shall not constitute or imply consent to any subsequent assignment. Any assignment of rights and/or obligations under this Agreement shall be subject to the limitations and conditions as set forth in this Section 9.2.

9.3 Audit and Inspection

Seller shall maintain adequate records to assist NCX in meeting any reporting or registration requirements associated with the NCX Carbon Credits that may result from the deferred timber harvest contemplated by this Agreement. Seller shall provide such records upon reasonable notice from NCX. If any such examination reveals material inaccuracy in any statement, the Parties shall make the necessary adjustments promptly, and amounts discovered to be so due shall bear interest calculated at the Interest Rate from the date the overpayment or underpayment was made until paid.

9.4 Confidentiality

All terms of this Agreement, including price and payment terms, are confidential and neither Party may disclose such confidential information to anyone, other than (i) as may be otherwise permitted in this Agreement or agreed to in writing by the Parties; (ii) to any of such Parties' directors, officers, partners, and employees and directors, officers, and employees of affiliated companies and representatives thereof or their advisors or auditors who need to know such information and agree to treat such information confidentially; (iii) to the extent required to be disclosed by applicable law or legal process; (iv) to the extent required to be disclosed to an MCC or pursuant to an Approved Methodology or other mandatory or voluntary methodology; (v) to any actual or potential lender or lenders providing financing to a Party or any of its affiliates, to any actual or potential investor in a Party or any of its affiliates, to any other potential acquirer of any direct or indirect ownership interest in a Party or any of its affiliates, to any advisor providing professional advice to Party or any of its affiliates, or to any such actual or potential lender, investor, or acquirer who needs to know such information and agrees to treat such information confidentially; (vi) to the extent used by NCX in calculating and disclosing aggregated pricing and quantity information about NCX for any purpose whatsoever; and (vii) to the extent disclosed by NCX on an anonymized basis. Subject to the limitations set forth in this Article 9, the Parties are entitled to all remedies available at law or in equity, including specific performance, to enforce this provision; however, neither Party will be liable for any damage suffered as a result of the use or disclosure of confidential information made in accordance with the express terms and conditions of this Agreement. This provision shall survive for a period of five (5) years following the full performance or termination of this Agreement pursuant to Section 2.1.

9.5 Counterparts

A Harvest Deferral Bid and/or counter-signed Accepted Bid may be executed in multiple counterparts, signed counterparts hereof may be delivered by email or other electronic form, and all such counterparts taken together shall constitute one and the same original instrument.

9.6 Entire Agreement

This Agreement (together with any Accepted Bid hereunder) constitutes the entire agreement between the Parties concerning the subject matter hereof, and supersedes all previous communications, representations, or contracts, either written or oral, that purport to describe or embody the subject matter hereof. There are no oral understandings, terms, or conditions and neither Party has relied upon any representation, express or implied, not contained in this Agreement.

9.7 Exhibits; Conflict with Accepted Bid

The exhibits attached hereto are incorporated into this Agreement by reference. The exhibits may only be revised upon mutual agreement between the Parties unless otherwise specified in the exhibits. In the event of a conflict between the Accepted Bid and any other part of this Agreement, the terms of the Accepted Bid shall prevail.

9.8 No Third-Party Beneficiaries

There are no intended third-party beneficiaries hereof, and this Agreement should not be construed to create or confer any right or interest in or to, or to grant any remedies to, any third party as a beneficiary of this Agreement or of any duty, obligation, or undertaking established herein.

9.9 Severability

Any part hereof that is or becomes invalid, illegal, or unenforceable may be severed from the remainder hereof, and to the extent possible, the Parties will use reasonable efforts to replace any such part with provisions that preserve their original intent.

9.10 Survival Rights

This Agreement will continue in effect after termination to the extent necessary to allow either Party to fulfill or enforce its respective rights or obligations that that have accrued under this Agreement prior to such termination.

9.11 Waiver, Amendment

None of the terms or conditions of this Agreement may be amended or waived except in writing and signed by the Parties. The Parties agree that no waiver, amendment, or modification of this Agreement will be established by conduct, custom, or course of dealing. The failure of a Party to require performance of any provision of this Agreement will not limit such Party's right to seek such performance at a later time. Similarly, a Party's waiver of its rights with respect to any Default or any other matter arising in connection with this Agreement will not be considered a waiver with respect to any subsequent Default or matter.

9.12 Change in Law

If any statutes, rules, regulations, permits, or authorizations are enacted, amended, granted, or revoked which have the effect of changing the transfer and sale procedure set forth in this Agreement so that the implementation of this Agreement becomes impossible or impracticable, or otherwise revokes or eliminates the Approved Methodology, the Parties agree to negotiate in good faith to amend this Agreement to conform with such new statutes, regulations, or rules in order to maintain the original intent of the Parties under this Agreement.

9.13 Forward Contract

The Parties acknowledge and agree that this Agreement constitutes a "forward contract" within the meaning of the U.S. Bankruptcy Code, and Buyer and Seller are "forward contract merchants" within the meaning of the U.S.

Bankruptcy Code. Each Party further agrees that, for all purposes of this Agreement, each Party waives and agrees not to assert the applicability of the provisions of 11 U.S.C. § 366 in any bankruptcy proceeding wherein such Party is a debtor.

9.14 Relationship of the Parties

The relationship of the Parties under this Agreement is that of independent contractors. The Parties specifically state their intention that this Agreement is not intended to create a partnership or any other co-owned enterprise unless specifically agreed to by the Parties in a separate written instrument. Except as specifically provided herein, each Party shall continue to have the right to contract independent of the other Party with individuals and entities. Each Party shall be responsible for its own operating expenses and personnel expenses.

9.15 Indemnification and Hold Harmless

NCX agrees to indemnify, defend and hold Seller harmless from any claims of third parties related to the sale of NCX Carbon Credits, except any claims resulting from Seller's negligence, misrepresentation, or any other Seller breach of this Agreement.

EXHIBIT B

HYPOTHETICAL SELLER EXAMPLES

The Ramon Family owns a few hundred acres of timberland in Alabama, which they enroll in NCX for the 1-year period from April 1, 2021 through March 31, 2022 (the "Performance Period").

NCX assesses their property and determines that, under ordinary circumstances, some amount of harvesting activity would typically occur on the property during this 1-year period. Therefore, NCX determines that the property could generate up to 100 Deferral Credits by deferring some of the harvesting activity that would ordinarily occur. That means 100 is the Ramons' "Maximum Harvest Deferral".

The Ramon Family discusses the opportunity with their consulting forester and the local Extension forester, and then decides that they'd like to try selling some forest carbon into the NCX program. They decide to submit a bid.

Example 1

Harvest Deferral Bid

In this example, based on the conversation with their consulting forester, the Ramon Family decides that they would be willing to consider deferring all harvest activity on their property. In other words, they'd be willing to consider not doing any harvesting at all during this year. They decide they would be willing to make that commitment for a total payment of $800.

Using Table 3 of this Agreement, the Ramon Family submits the following bid:

TABLE 3: INFORMATION TO BE COMPLETED BY SELLER WITH ITS BID [EXAMPLE]

Offer Requirements	To complete the offer below, Seller must comply with the following requirements:
	● Seller may complete **one (1) or more rows**
	● **Whole numbers** only (i.e. no decimals)
	● Minimum offer is the **greater of**:
	  ○ **5** Deferral Credits; or
	  ○ If the Maximum Harvest Deferral specified in Table 2 is less than 10,000 Deferral Credits, **20% of the Maximum Harvest Deferral**; or
	  ○ If the Maximum Harvest Deferral specified in Table 2 is greater than or equal to 10,000 Deferral Credits but less than 100,000 Deferral Credits, **10% of the Maximum Harvest Deferral**; or
	  ○ If the Maximum Harvest Deferral specified in Table 2 is greater than or equal to 100,000 Deferral Credits, **5% of the Maximum Harvest Deferral**
	● Quantities must be **non-decreasing** down the column below
	● The maximum quantity offered per row in this Table 3 **must not exceed the Maximum Harvest Deferral** specified in Table 2

Irrevocable Offer	Seller hereby irrevocably offers to sell Harvest Deferral Credits derived from the Eligible Assessment Area during the Performance Period in the following quantities, to be paid for at the following prices. Seller acknowledges that NCX may accept some or all of this bid amount, i.e. NCX **may accept the quantity offered in any one row** in this Table 3, at a price equal to or greater than the price specified in that same row. Quantities across rows **will not be added together**.		
	Price ($/Deferral Credit)	**Quantity of Deferral Credits offered (total)**	**Checkbox indicates NCX Acceptance**
	$1	Deferral Credits	☐
	$2	Deferral Credits	☐
	$3	Deferral Credits	☐
	$4	Deferral Credits	☐
	$5	Deferral Credits	☐
	$6	Deferral Credits	☐
	$7	Deferral Credits	☐
	$8	100 Deferral Credits	☐
	$9	Deferral Credits	☐
	$10	Deferral Credits	☐
	$11	Deferral Credits	☐
	$12	Deferral Credits	☐
	$13	Deferral Credits	☐
	$14	Deferral Credits	☐
	$15	Deferral Credits	☐
	$16	Deferral Credits	☐
	$17	Deferral Credits	☐
	$18	Deferral Credits	☐
	$19	Deferral Credits	☐
	$20	Deferral Credits	☐
	$21	Deferral Credits	☐
	$22	Deferral Credits	☐
	$23	Deferral Credits	☐
	$24	Deferral Credits	☐
	$25	Deferral Credits	☐
	$26	Deferral Credits	☐
	$27	Deferral Credits	☐
	$28	Deferral Credits	☐
	$29	Deferral Credits	☐
	$30	Deferral Credits	☐

By submitting the bid above, the Ramon Family is making an offer to NCX that they'd be willing to defer all timber harvest from their property for a total payment of $800, or $8 for each of their 100 potential Deferral Credits.

Bid Acceptance

NCX countersigns and returns this Agreement to the Ramon Family with an Accepted Bid, indicating that they are accepting the entire quantity that the family offered. This is indicated by an 'x' in the checkbox in Table 3:

	Etc.	_____ Deferral Credits	□
	$7	_____ Deferral Credits	□
	$8	_____100_____ Deferral Credits	**X**
	$9	_____ Deferral Credits	□
	Etc.	_____ Deferral Credits	□

In addition, NCX completes the information set forth in Table 4 as follows:

TABLE 4: INFORMATION TO BE COMPLETED BY NCX UPON ACCEPTANCE [EXAMPLE]

NCX Acceptance (Also indicated by a ***checkbox*** in Table 3)	Accepted Deferrals (Deferral Credits)	100
	Accepted Price ($ / Deferral Credit)	$8
	Total contract value	$800
Start Date of Performance Period	April 1, 2021	
End Date of Performance Period	March 31, 2022	

When NCX returns the completed Agreement to the Ramon Family, the Parties have now agreed that the "Accepted Deferrals" are 100 Deferral Credits.

Performance Period

During the period from April 1, 2021 through July 31, 2022, NCX or its affiliates may or may not access the Ramon Family property to take ground measurements. If they do, they'll use the contact information the Ramons provided to arrange the visit.

Results and Payment

At the end of the year, NCX assesses the timber standing on the Ramon Family property, and in doing so assesses whether any disturbance has occurred during the year.

As they committed, the Ramon Family did not harvest any timber during the Performance Period. However, a windstorm knocked down a few acres of their timber.

As a result, NCX determines that the Ramons delivered 97 of the 100 Deferral Credits they'd committed to; 97 is now considered their "Credited Deferrals".

Because 97/100 exceeds the 95% threshold for payment without penalty, the Ramon Family receives a payment of 97 * $8 = $776.

Summary of Commercial Terms (Example 1)

Maximum Harvest Deferral	100 Deferral Credits
Accepted Price	$8 / Deferral Credit
Accepted Deferrals	100 Deferral Credits
Total contract value	$800
Disturbance/removals amount detected	3 Deferral Credits
Actual Deferrals	97 Deferral Credits
Credited Deferrals	97 Deferral Credits
Payment due to the family	$776 ($8 * 97)

Example 2

Harvest Deferral Bid

In this second example, based on the conversation with their consulting forester, the Ramon Family decides that they would be willing to consider deferring all harvest activity on their property—but only if the price is high enough. If the price of carbon through NCX doesn't turn out to be as high as they're hoping, they'd still be willing to defer half of the harvest activity on their property for a lower price.

Using Table 3 of this Agreement, the Ramon Family submits the following bid:

TABLE 3: INFORMATION TO BE COMPLETED BY SELLER WITH ITS BID [EXAMPLE]

Offer Requirements	To complete the offer below, Seller must comply with the following requirements: ● Seller may complete **one (1) or more rows** ● **Whole numbers** only (i.e. no decimals) ● Minimum offer is the **greater of**: ○ **5** Deferral Credits; or ○ If the Maximum Harvest Deferral specified in Table 2 is less than 10,000 Deferral Credits, **20% of the Maximum Harvest Deferral**; or ○ If the Maximum Harvest Deferral specified in Table 2 is greater than or equal to 10,000 Deferral Credits but less than 100,000 Deferral Credits, **10% of the Maximum Harvest Deferral**; or ○ If the Maximum Harvest Deferral specified in Table 2 is greater than or equal to 100,000 Deferral Credits, **5% of the Maximum Harvest Deferral** ● Quantities must be **non-decreasing** down the column below ● The maximum quantity offered per row in this Table 3 **must not exceed the Maximum Harvest Deferral** specified in Table 2
Irrevocable Offer	Seller hereby irrevocably offers to sell Harvest Deferral Credits derived from the Eligible Assessment Area during the Performance Period in the following quantities, to be paid for at the following prices.

Seller acknowledges that NCX may accept some or all of this bid amount, i.e. NCX **may accept the quantity offered in any one row** in this Table 3, at a price equal to or greater than the price specified in that same row. Quantities across rows **will not be added together**.

Price ($/Deferral Credit)	Quantity of Deferral Credits offered (total)	Checkbox indicates NCX Acceptance
$1	Deferral Credits	□
$2	Deferral Credits	□
$3	Deferral Credits	□
$4	Deferral Credits	□
$5	Deferral Credits	□
$6	50 Deferral Credits	□
$7	Deferral Credits	□
$8	Deferral Credits	□
$9	Deferral Credits	□
$10	100 Deferral Credits	□
$11	Deferral Credits	□
$12	Deferral Credits	□
$13	Deferral Credits	□
$14	Deferral Credits	□
$15	Deferral Credits	□
$16	Deferral Credits	□
$17	Deferral Credits	□
$18	Deferral Credits	□
$19	Deferral Credits	□
$20	Deferral Credits	□
$21	Deferral Credits	□
$22	Deferral Credits	□
$23	Deferral Credits	□
$24	Deferral Credits	□
$25	Deferral Credits	□
$26	Deferral Credits	□
$27	Deferral Credits	□
$28	Deferral Credits	□
$29	Deferral Credits	□
$30	Deferral Credits	□

By submitting the bid above, the Ramon Family is making an offer to NCX that they'd be willing to defer half of the timber harvest on their property (50 Deferral Credits) for a total payment of $300 (50 credits * $6), or alternatively they'd be willing to defer all of the harvest for a total payment of $1,000 (100 credits * $10). They know that NCX may choose to accept all or part of their offer, and in the event that NCX only accepts part of it, they plan to go ahead and undertake some harvesting.

Bid Acceptance

NCX countersigns and returns this Agreement to the Ramon Family with an Accepted Bid, indicating that they are accepting half of the total quantity that the family offered. This is indicated by an 'x' in the checkbox in Table 3:

	Etc.	_____ Deferral Credits	□
	$5	_____ Deferral Credits	□
	$6	50 Deferral Credits	X
	$7	_____ Deferral Credits	□
	Etc.	_____ Deferral Credits	□

The market-clearing price of a Deferral Credit for landowners like the Ramon Family turns out to be $8—higher than the $6 their bid required for 50 credits. As a result, NCX completes the information set forth in Table 4 as follows:

TABLE 4: INFORMATION TO BE COMPLETED BY NCX UPON ACCEPTANCE [EXAMPLE]

NCX Acceptance (Also indicated by a ***checkbox*** in Table 3)	Accepted Deferrals (Deferral Credits)	50
	Accepted Price ($ / Deferral Credit)	$8
	Total contract value	$400
Start Date of Performance Period	April 1, 2021	
End Date of Performance Period	March 31, 2022	

When NCX returns the completed Agreement to the Ramon Family, the Parties have now agreed that the "Accepted Deferrals" are 50 Deferral Credits. The family is free to harvest up to 50 Deferral Credits worth of timber and still satisfy their obligations to NCX, barring any other unintended timber losses.

Performance Period

During the period from April 1, 2021 through July 31, 2022, NCX or its affiliates may or may not access the Ramon Family property to take ground measurements. If they do, they'll use the contact information the Ramons provided to arrange the visit.

Results and Payment

At the end of the year, NCX assesses the timber standing on the Ramon Family property, and in doing so assesses whether any disturbance has occurred during the year.

The assessment shows that 40 Deferral Credits of timber were removed from the property.

As a result, NCX determines that the Ramons' "Actual Deferrals"—the amount of predicted harvest activity they deferred—was 60 Deferral Credits (maximum of 100 minus removals of 40). This means that the Ramon Family delivered more credits than their obligation under the Agreement.

Per the terms of the Agreement, they will get credit for the extra deferrals they delivered, but only up to 110% of their Accepted Deferrals, or 55 credits. As a result, 55 credits are considered their "Credited Deferrals".

Because they met (and exceeded) their obligations, the Accepted Price is paid in full and the Ramon Family receives a payment of 55 * $8 = $440.

Summary of Commercial Terms (Example 2)

Maximum Harvest Deferral	100 Deferral Credits
Accepted Price	$8 / Deferral Credit
Accepted Deferrals	50 Deferral Credits
Total contract value	$400
Disturbance/removals amount detected	40 Deferral Credits
Actual Deferrals	60 Deferral Credits
Credited Deferrals	55 Deferral Credits
Payment due to the family	$440 ($8 * 55)

Example 3

Harvest Deferral Bid

In this example, based on the conversation with their consulting forester, the Ramon Family decides that they would be willing to consider deferring all harvest activity on their property for a total payment of $800 (similar to Example 1 above).

Their bid is the same as Example 1.

Bid Acceptance

NCX countersigns and returns this Agreement to the Ramon Family with an Accepted Bid, in the same fashion as Example 1. Here, as in Example 1, the Parties have now agreed that the "Accepted Deferrals" are 100 Deferral Credits.

Performance Period

During the period from April 1, 2021 through July 31, 2022, NCX or its affiliates may or may not access the Ramon Family property to take ground measurements. If they do, they'll use the contact information the Ramons provided to arrange the visit.

Also during the year, the Ramon Family falls on financial hardship and makes the difficult decision to quickly sell part of the family property.

The family decides they would like to try to partially assign their NCX obligations to the new landowner as part of the transaction, so they alert NCX of the pending land sale. Per Section 3.1.B of the Agreement, NCX informs the Ramons that if the agreement is partially assigned to the new landowner, the Maximum Harvest Deferral of 100 will be apportioned between the sold acres and their retained acres in the following way:

Sold acres / new landowner	10 Deferral Credits
Retained acres / Ramon Family	90 Deferral Credits

As the Seller on the Agreement, the Ramon Family now has two options. If the Agreement is not partially assigned to the new landowner, the Ramon Family is still obligated to deliver the 100 Deferral Credits; their Maximum Harvest Deferral will remain set at 100 Deferral Credits; and all acres (i.e. both sold and retained) will be used to assess their performance at the end of the Performance Period.

Alternatively, if the Agreement *is* partially assigned to the new landowner, two Agreements will take the place of the original Ramon Family Agreement, and the Maximum Harvest Deferral in those two Agreements will be set as indicated by the apportionment above. The Ramon Family will need to decide along with the new landowner what the Accepted Deferrals will be in each new Agreement, and the Accepted Deferrals will need to total up to 100.

After discussing all this with the new landowner, the new landowner is unwilling to accept assignment of the agreement. None of the family's obligations are required to transfer to the new landowner, so the existence of the NCX program doesn't complicate or prevent the land sale.

Results and Payment

At the end of the year, since no part of the NCX Agreement was assigned to the new landowner, NCX assesses the timber standing on the entire original 100 acres of the Ramon Family property, and in doing so assesses whether any disturbance has occurred during the year.

As they committed, the Ramon Family did not harvest any timber during the Performance Period. On the 10 acres that were sold, however, the new landowner decided to go ahead and harvest 10 Deferral credits' worth of timber, so it is assessed that both their Actual Deferrals and Credited Deferrals are 90.

Because 90/100 falls below the 95% threshold for payment without penalty, the Ramon Family receives a reduced price for their Deferral Credits. They delivered at the 90% level, however, so Default provisions were not triggered. They receive a payment for their delivered credits of 90 * ($8 * 85%) = $612.

Summary of Commercial Terms (Example 3)

Maximum Harvest Deferral	100 Deferral Credits
Accepted Price	$8 / Deferral Credit
Accepted Deferrals	100 Deferral Credits
Total contract value	$800
Maximum Harvest Deferral after partial land sale	100 Deferral Credits (unchanged)
Disturbance/removals amount detected	10 Deferral Credits
Actual Deferrals	90 Deferral Credits
Credited Deferrals	90 Deferral Credits
Payment due to the family	$612 ([$8 * 85%] * 90)

EXHIBIT C

ILLUSTRATION OF SELLER PERFORMANCE AND PAYMENTS

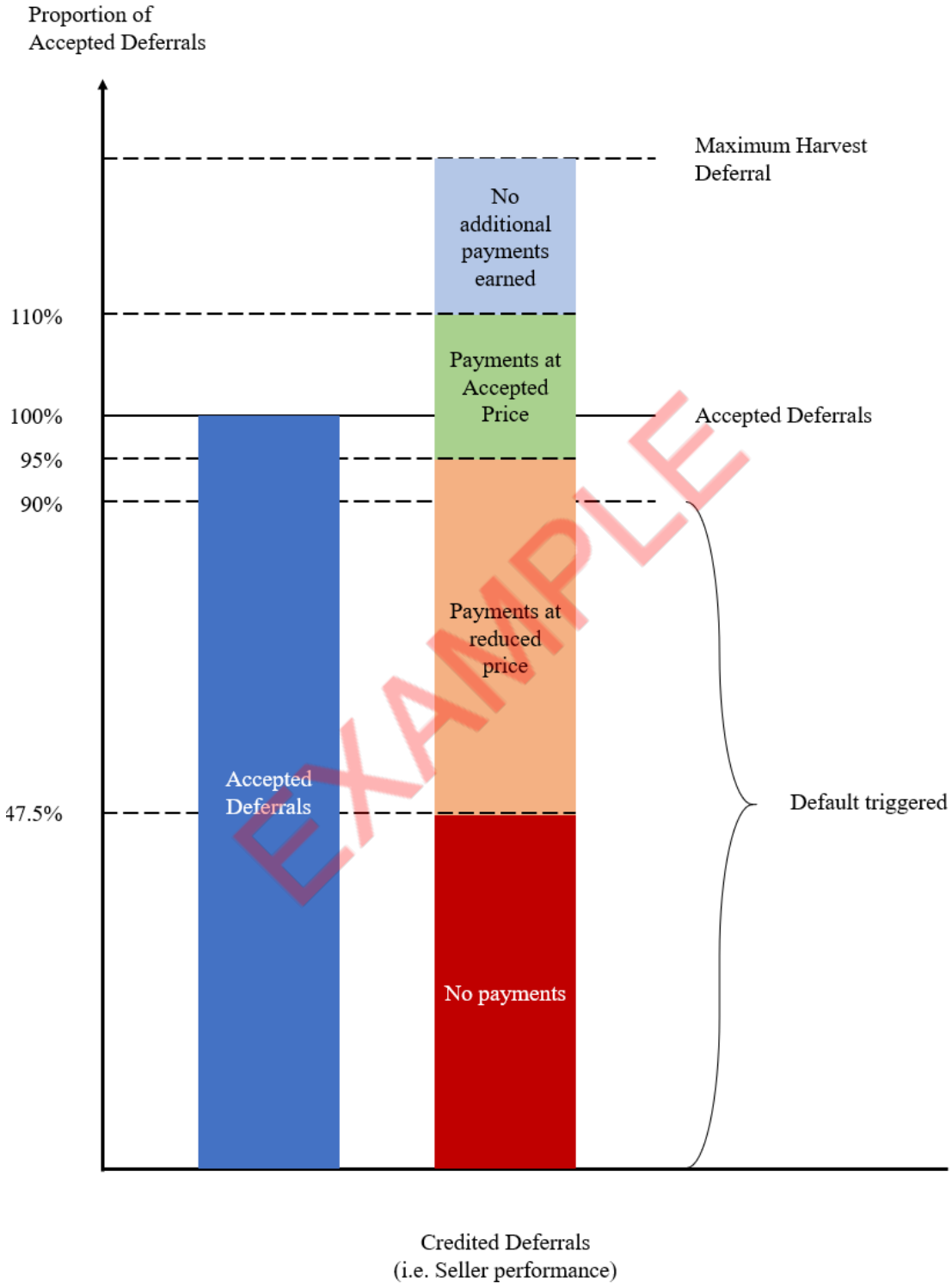


EXHIBIT D

INFORMATION ABOUT SELLER'S PROPERTY AND MAP OF ASSESSMENT AREA

Address or location of Seller's property: _____

Total acreage: _____

Property map: