# Forest Carbon Credits

## A Guidebook To Selling Your Credits On The Carbon Market

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## Table of Contents





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## Introduction

Valuing carbon stocks within forestland has become a promising new method of incentivizing conservation efforts around the world. In 2016, 10 million MtCO2e (Metric tons of carbon dioxide equivalent) were transacted in the carbon market within the United States alone for an estimated $28 million[1]. Given that there are 11.5 million square miles of forest in the US the potential growth of this market is vast[2]. Valuing carbon in forest management can provide a means of drawing attention to the importance of preserving carbon stocks in order to mitigate climate change and encourage landowners to save their forestland for future generations.

Since 2012, when the California Air Resources Board began administering requirements for large greenhouse gas emitters to stay under emission limits or purchase allowances to exceed them (cap and trade), the United States has become a leader in carbon offset transactions. However, a voluntary market has also arisen as individuals, companies and organizations have sought means of offsetting their carbon emissions, in order to help contribute to a sustainable global environment. Landowners who take action to conserve the carbon in forested lands can now generate a profitable income for refraining from clear-cutting, or reforesting formerly cleared land, because such actions prevent emissions. To take advantage of the opportunity one must navigate the world of carbon registries and protocols. This guide was produced to introduce the

[1] Hamrick, K., Gallant, M. (2017) “Unlocking Potential: State of the Voluntary Carbon Markets 2017” Forest Trends’ Ecosystem Marketplace. Retrieved from https://www.cbd.int/financial/2017docs/carbonmarket2017.pdf

[2] National Association of State Foresters (2000) *Forest Ownership*. USDA Forest Service. Retrieved from https://stateforesters.org/current-issues/timber/forest-ownership



novice to this new market and provide helpful information concerning how to participate in it, to accelerate the use of carbon credits for forest conservation.

The guide is intended for municipalities seeking to protect a parcel of forest land from development, private landowners, land trusts, conservation organizations or others interested in gaining revenue from forest conservation. It lays out the opportunities available for entering the market, providing a step by step guide for individual registries and protocol. Because many carbon markets work on a global scale that is not compatible for U.S landowners, this guidebook focuses on systems that provide the most lucrative and viable options for domestic landowners.

Note that in order to receive credits, you will need a professional forestry management plan. This guide does not focus on creating a management plan, but on the steps you can take to generate additional revenue for conservation, once you have such a plan.

## A Comparison of Voluntary and Mandatory Systems

There are two ways to sell your credits.

The voluntary offset market includes a wide variety of programs, entities, standards and protocols. Buyers in the voluntary market generally are businesses, NGOs and individuals providing the opportunity to offset emissions to fulfill personal or corporate social responsibility agendas and/or market and social pressures.

Offsets generated through voluntary markets are known as Verified or Voluntary Emissions Reductions (VERs). Unlike mandatory compliance markets, VER offsets have the advantage of lower transaction costs. The standards and protocols within voluntary markets differ significantly in their goals and the services provided. Additionally, there are other institutions, standards, and criteria that provide a mix of services for designing, screening, certifying or registering offsets, such as the Green-e Climate Program, which certifies carbon offset retailers and ensures that their marketing claims are truthful.

Mandatory systems (sometimes called compliance markets) require regulated emission sources, by national, regional or provincial law, to achieve compliance with greenhouse gas emission reduction requirements. The Regional Greenhouse Gas Initiative (RGGI) established by ten Northeast states went into effect in 2009, the first cap-and-trade emission trading scheme to reduce carbon dioxide (CO2) emissions from the power sector. Currently the California Air Resource Board (CARB) cap-and-trade program is the only regulatory agency that enforces a mandatory system. Offsets serve as an alternative compliance mechanism to allowances or direct emissions reductions. For instance, a coal plant may decide to meet its pollution cap by purchasing forestry credits from a state CO2 allowance auction rather than reducing its



emissions. An allowance auction often utilizes an online platform where CO2 allowances can be purchased by the winning qualified bidders.

The forestry sector of the carbon market is unique due to the variety of methodologies used and criteria applied in each market. The markets have important differences that this guide seeks to cover, so that you can choose the one that best suits the forestry you want to do or are doing.

# Developing Your Project

## Choosing An Offset Project Type

When enrolling in a carbon registry, it's best to begin by choosing the project type you plan to pursue. Each of the project types follows a specific protocol for registration and accreditation. Identify the conservation methodology that will be most compatible with your forestland and long-term plans. There are generally three forest offset project types you can choose from:

| **Eligible Project Types** | |
|---|---|
| Afforestation, Reforestation, and Revegetation (ARR) | Projects that increase carbon sequestration by establishing, increasing or restoring vegetative cover (forest or non forest) through the planting, sowing or human-assisted natural regeneration of woody vegetation. Eligible ARR projects may include timber harvesting in their management plan.<br>* The project area shall not be cleared of native ecosystems within the 10 year period prior to the project start date |
| Improved Forest Management (IFM) | 1. Reduced Impact Logging (RIL)<br>○ Projects that reduce net GHG emissions by switching from conventional logging to RIL during timber harvesting.<br>2. Logged to Protected Forest (LtPF)<br>○ Projects that reduce net GHG emissions by converting logged forests to protected forests.<br>3. Extended Rotation Age / Cutting Cycle (ERA)<br>○ Projects that reduce net GHG emissions of evenly aged managed forests by extending the rotation age or cutting cycle and increasing carbon stocks.<br>4. Low-Productive to High-Productive Forest (LtHP) |



| | |
|---|---|
| | ○ Projects that increase carbon sequestration by converting low-productivity forests to high-productivity forests. This is done by improving the stocking density of the forest and/ or introducing other tree species with higher growth rates. |
| Reduced Emissions From Deforestation and Degradation (REDD) | Activities that are designed to stop planned (designated and sanctioned) deforestation or unplanned (unsanctioned) deforestation and/or degradation.<br>* Avoided planned degradation is classified as IFM. |



## Registering Your Carbon Credits

The registration of carbon credits is carried out by independent organizations, called registries. The registries undertake a formal validation of your offset project so that the project may then be issued carbon credits and be listed on a voluntary or compliance market. In the following, we will present to you the five most commonly used registries: Verra, The American Carbon Registry, The Climate Action Reserve, Clean Development Mechanism and Gold Standard[3]. Apart from Gold Standard, each of these registries offer all three forest offset project types (ARR, IFM, REDD). Typically, registries charge a fee on the order of several tens of cents on each credit traded through their registry.

The validation process of each of these registries follows a certain protocol. There are differences between the voluntary protocols developed by the different registries for similar project types. Some protocols have more stringent or expensive standards than others (for example, in the basic eligibility requirements or the way the baseline is constructed). Therefore, for a given tract of land and management regime, a project might be completely infeasible under Verra's improved forest management protocol, but might issue enough credits to be worthwhile under The American Carbon Registry improved forest management protocol.

You can hire a project developer to help you with the registration process. 3Degrees and the Spatial Informatics Group are two of many available contractors.

[3] Hamrick, K., Gallant, M. (2017) "Unlocking Potential: State of the Voluntary Carbon Markets 2017" Forest Trends' Ecosystem Marketplace. Retrieved from https://www.cbd.int/financial/2017docs/carbonmarket2017.pdf



**Verra (formerly Verified Carbon Standard)**

The non-profit Verra is a registry that ensures the credibility of emission reduction projects. Once projects have been certified against the Program's rigorous set of rules and requirements, project developers can be issued tradable greenhouse gas credits that we call Verified Carbon Units (VCUs). Those VCUs can then be sold on the open market and retired by individuals and companies as a means to offset their own emissions. Over time, this flexibility channels financing to clean, innovative businesses and technologies. The Verra Program is the world's most widely used voluntary greenhouse gas program.
(See Verra's AFOLU Requirements)

Permanence: A minimum commitment of 20 years with the option of renewing up to four times for a total of 100 years. Based on a project's risk assessment, a percent of credits will be set aside as a buffer in case of reversal.

Aggregated Projects: Verra allows the combination of multiple projects into a single project. Their process is similar to the UN Clean Development Mechanism program, however it has its own requirements. See how to start a Verra grouped project here.

Additional Resources:
"Develop a Project" Guidelines
http://database.verra.org/develop-project
All Program Documents
http://database.verra.org/program-documents
Agriculture, Forestry and Other Land Use (AFOLU) Requirements
http://database.verra.org/sites/vcs.benfredaconsulting.com/files/AFOLU_Requirements_v3.6.pdf



**Registering Your Project With Verra (formerly Verified Carbon Standard)**

I. Select A Methodology
   - Now that you have an understanding of forest offset methodologies, choose a Verra Sector 14 methodology (Agriculture Forestry and Other Land Use) that is representative of your project. For example, if you plan to extend your forest's cutting cycle, your methodology will be "Improved Forest Management through Extension of Rotation Age" (ID VM0003).
   - You must then have your methodology accepted by the VCSA. Guidelines for getting your methodology approved by the VCSA can be found here.
   - See VCS Project Types in Section 4.2

II. List Your Project On the Verra Project Pipeline
   - The Project Pipeline is the section of the Verra Project Database where forthcoming projects must be listed to begin the validation process. Once projects pass through the "pipeline" they are considered validated, fully registered and able to issue credits. See guidelines for listing your project on the Project Pipeline here.

III. Create a Project Description
   - A project Description (PD) describes all the details of the project and project activity, including location, start date, project crediting period and ownership of the emission reductions. The PD also estimates additionality and emission reductions, identifies the most plausible baseline emissions scenario, and sets out the data and parameters that will be monitored over the course of the project. The PD should be submitted using the Verra supplied template.

IV. Find a Validation/Verification Body (VVB)
   - Once your project is listed on the Pipeline, find a VVB to validate your project description. A VVB is a a third-party certification body, often an environmental consulting firm, that has been approved to provide verification services to the participants of Verra. You can find Verra certified VVB's here.

V. Verify Your Emissions Reductions
   - Your will also be responsible for conducting a Monitoring Report using the Verra supplied template. A Monitoring Report measures greenhouse gas emission reductions or removals during the project's crediting period. There may be multiple monitoring periods during the crediting period. The Monitoring Report should be submitted to your VVB for verification.

VI. Selecting a Verra Registry Operator
   - Once your Monitoring Report has been verified by a VVB, it is time to open a registry account and submit all required documents to a Verra registry operator in order to request issuance of Verified Carbon Units (VCUs). The Verified Carbon Standard works with two registry operators: APX and Markit. All project information is listed publicly when projects are registered and VCUs issued.



**American Carbon Registry (ACR)**

The American Carbon Registry is a non-profit offset project registry, overseeing both the voluntary market and the California Air Resources Board compliance market, that registers and verifies carbon offset projects. Their tradable unit are Emission Reduction Tons (ERTs). One 'ERT' represents the reduction or removal from the atmosphere equivalent to one metric ton of carbon dioxide. The majority of ERTs are bought for business offsets, including corporate pre-compliance buyers, hedge funds, carbon retailers and non-profit organizations. As the first private voluntary greenhouse gas registry in the world, it has a long history in the trade.

Eligible Project Types:

- Afforestation/ Reforestation Projects
- Improved forest management projects (IFM)
- REDD

Crediting Periods: The crediting period, the period in which a project can generate offsets, is 40 years for Afforestation/Reforestation (AR) projects, 20 years for Improved Forest Management (IFM) projects (with the exception of stop-logging projects), 10 years for stop-logging IFM projects, and 10 years for all REDD projects.

Permanence: A minimum commitment of 40 years is needed for Improved Forest Management practices and any potential loss of sequestered carbon must be first addressed by means of either a buffer pool or insurance. Risk assessment must be made following the ACR Tool for Risk Analysis and Buffer Determination, which can be found here.

Aggregated Projects: While aggregation is allowed, projects are advised against aggregating multiple forest types, or attempting a geographic region that is too large. The project proponent is required to commit to a minimum 40 year term. This creates for some flexibility between the smaller landowners as it allows for shorter agreement spans between separate parties. See ACR's Guidelines for Aggregated Projects in here (Chapter 7- Page 40).

Additional Resources:

ACR Standard (v 5.0)

https://americancarbonregistry.org/carbon-accounting/standards-methodologies/american-carbon-registry-standard/acr-standard-v5-0-february-2018.pdf

Forest Carbon Project Standard (v 2.1)

https://americancarbonregistry.org/carbon-accounting/old/carbon-accounting/ACR%20Forest%20Carbon%20Project%20Standard%20v2.1.pdf

Projects Report

https://acr2.apx.com/myModule/rpt/myrpt.asp?r=111



**Registering Your Project With The American Carbon Registry**

I. Select A Methodology
   - The methodology you choose should make sense with the type of land you possess and what you plan on doing with it. While ACR has their own methodologies listed, they also accept methodologies approved under the Clean Development Mechanism (CDM), as well as those from other GHG programs as long as they've been approved by ACR through a peer-review process. Requirements for eligibility should be examined by individual methodology.

II. Project Specifications
   - State all parties involved.
   - Provide proof of land claim.
   - Specify the project's physical boundary providing appropriate GPS coordinates.
   - Describe any background information, description of project activity, and objectives of projects.
   - Have a mitigation plan for any foreseeable negative community impacts of project.
   - List how the project plans on improving GHG removal with estimates of removal enhancements per year.

III. Quantify Baseline And GHG
   - ACR recommends a quality of data that is within ±10% of the mean at 90% confidence. If this level of precision can not be met, the reportable amount should be the mean minus the lower bound of the 90% confidence interval. This may impact revenue.
   - Calculate baseline for the project land. This should be the likely emissions or removal from the forest according to "business as usual".
   - Project proponent must select or establish the criteria used for selecting and quantifying the GHG source, sink, or pool. Methodologies dictate which types of sinks or sources are included.

IV. Monitor Additionality and Impact
   - Project must either exceed an approved performance standard or pass a three-pronged test to demonstrate that the project is exceeding common practices and progress is now limited by at least one of three implementation barriers: financial, technological, and institutional.
   - Projects must have a net positive impact on the community and any negative environmental or community impacts must be disclosed.

V. Publication
   - All paperwork turned into the registry will be published on ACR's website along with credits produced for tracking purposes.



**Climate Action Reserve (CAR)**

CAR is a carbon registry that operates for the voluntary carbon market. It also serves as an eligible Offset Project Registry for California's cap-and-trade program. It operates as a verification system for carbon standards of offset projects, oversees third-party verification bodies, issues carbon credits generated from offsets projects and tracks the transaction of credits. The body was established in 2001 by the state of California to help issue voluntary carbon credits. It's ties to the California Air Resource Board makes the registry favorable for North American projects. CAR will currently verify the following methodologies: Afforestation/ Reforestation (AR), Improved Forest Management (IFM), and REDD.

Aggregated Projects: Aggregation of projects is allowed through CAR. Only projects of less than 5,000 acres may enroll in an aggregate. Each participant in the aggregate registers independently and holds a seperate account on the Reserve software system. Whilst aggregation is permitted, there are no aggregation projects listed as of 2018. Further information on aggregate projects can be found within CAR's "Guidelines for Aggregating Forest Projects".

Crediting Period: Crediting period lengths depend on the project methodology. For most non-sequestration projects, there is a 10-year crediting period that may be renewed one time for a maximum of two 10-year periods, or 20 years total. For sequestration projects, the crediting period may be up to 100 years.

Fee Structure: The Climate Action Reserve provides a fee structure available here. These fees are applied during the registration process. It is important to consider these costs before pursuing verification. Forests under 1500 acres are unlikely to recover start-up costs and should consider an alternative standard.

Additional Resources:

CAR 2017 Verification Program Manual

http://www.climateactionreserve.org/wp-content/uploads/2017/02/2017-Verification-Program-Manual.pdf

CAR 2015 Program Manual

http://www.climateactionreserve.org/wp-content/uploads/2015/08/Climate_Action_Reserve_Program_Manual_090115.pdf



**Registering Your Project With The Climate Action Reserve**

I. Choose a Verification Body (VB)
   - CAR will review your VB and affirm that they meet all accreditation requirements. CAR defined VB's as "an ISO-accredited organization that has been approved by the Reserve to perform GHG verification activities for specific project protocols".
   - In this case, a VB will be contracted to verify the projects greenhouse gas emissions reductions or removals. It will also negotiate contract terms (as determined by CAR).
   - Verification Body requirements can be reviewed here.

II. Verification Body Submits NOVA/COI Form
   - NOVA/COI (Notification of Verification Activities and Conflict of Interest) forms must be submitted to the Reserve specifying the relationship with the project developer, so as to identify potential conflicts of interest, and includes the scope of proposed verification activities.
   - The NOVA/COI form can be found here.

III. CAR reviews NOVA/COI Form
   - If your NOVA/COI is determined satisfactory, CAR will send back approval to progress with project development through your selected verification body.

IV. Verification Body conducts a verification of your project
   - Your selected VB will evaluate a project's ongoing eligibility and the greenhouse gas emissions reductions or removals that occur. This evaluation will be reported to CAR.
   - The VB will also develop a risk-based verification plan which will account for unseen reductions in carbon stock or your forest's sequestration rates.

V. Verification Body shares "List of Findings"
   - Your selected VB will send a confidential list of findings from the verification process which can be reviewed before being submitted to the Reserve.

VI. Submit all documents to CAR
   - These include the List of Findings, the Verification Report and Verification Statement

VII. Registration
   - Once your project is registered with CAR, you will be issued Climate Reserve Tonnes (CRTs) based on the amount of greenhouse gas reduction or removal your project will contribute to.
   - CRTs are equal to one metric ton of carbon dioxide reduced or sequestered.



**Clean Development Mechanism (CDM)**

CDM is a mechanism introduced under the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC). which allows emission-reduction projects in developing countries (the non-Annex I Parties) to earn certified emission reduction (CER) credits. The CDM allows public and private entities from the industrialized countries (the Annex I Parties) to finance emission reduction activities in the developing countries . The Annex I Parties, or the entities authorized by them, can purchase certified emission reductions and utilize these for meeting the emission reduction commitments of the Parties under the Kyoto Protocol. In the process, the developing countries get access to finance from the developed countries for steering their economic development on a less carbon intensive path while strengthening the elements of sustainability in their economic development.

Aggregated Projects: Several afforestation and reforestation project activities may be aggregated for the purpose of validation, although the size of the aggregate must remain within the limit of 16,000 tCO2 per year. An overall monitoring plan may be proposed for an aggregate of project activities. Project activities attract reduced registration fee and share of proceeds to cover administrative expenses.

Additional resources:

Since this guide is intended primarily for forestry projects within the U.S, for non-Annex I parties that wish to partake in CDM please refer to:

What is the CDM

Afforestation and Reforestation Projects under the Clean Development Mechanism



## Gold Standard

The Gold Standard was formed (by who/is it worth saying? Authorized by World Bank... etc?) in response to the Paris Agreement and in order to achieve the UN Sustainable Development Goals (SDGs). It acts as both a carbon credit registry, and as a voluntary market. To be labeled as a "Gold Standard" project, the project's emissions reductions must be quantified and certified through Gold Standard methods or one of their approved third-party Validation/Verification Bodies (VBBs). Once a project has been certified, the proponent will be responsible for creating a project profile that will explain the emissions reductions method to potential funders on the market. The Gold Standard typically caters to funders seeking to offset personal emissions, and is widely used as an international market. While there are currently no North American projects listed, there are over 1400 projects listed in 80 different countries.

All projects seeking for Gold Standard Certification shall conform to the Gold Standard Requirement.

**Note: Currently, Gold Standard only allows afforestation projects. In the future they aim to add improved forest management as a project option.**

**Benefits of Gold Standard Certification for Various Stakeholders** (As outlined by the 2018 Gold Standard website)

Investors funding "green" or development based projects

- National, regional and city governments, impact investors, and traditional investors can use the standard to:
    - Reduce the risk of investments in forestry projects due to high levels of stakeholder engagement and financial, social and environmental safeguards.
    - Maximize return on investments as Gold Standard Projects have been shown to deliver between $21 and $177 in additional values towards the Sustainable Development Goals for every ton of $CO_2$ mitigated.
    - Generate accurate, credible impact data through robust quantification methodologies and third-party verification of results.
    - Develop innovative financing structures such as impacts, bonds and green bonds.

Corporates seeking credible claims for their sustainability initiatives

- Gold Standard projects are the perfect option for companies looking to invest in a reliable and credible sustainability initiative. What makes Gold Standard projects so attractive, is the fact that projects are developed with the guidance of industry experts and NGOs. As a result, companies can be confident that the project they invest in is verified by third parties and follows best practise principles. Additionally, the positive environmental and development impacts Gold Standard projects have can be clearly communicated to stakeholders.



Developers of Climate and Development Projects

- The robust nature and civil society endorsement of the standard can make projects more attractive to investors because they are positioned to maximize the impact profile of an investment and effectively manage any risks along the way. Investors are looking for strong, low-risk projects that can quantify positive environmental and social impact. Companies are increasingly aligning their sustainability strategies to the Sustainable Development Goals and are looking for credible ways to report on their contributions.
- The possibility to credibly quantify and certify SDG impacts makes Gold Standard projects more attractive to a wide range of funders, including buyers of carbon credits, but also those with commitments to impacts like health, gender, biodiversity, and more.

National and Sub-National Governments that want to ensure climate action benefits their own constituents

- By demonstrating that climate action also contributes to local development priorities, governments that host Gold Standard projects can gain local stakeholder support for their climate commitments. By providing a range of improvements in quality of life – from access to clean energy and water, reduced air pollution, improved transport, less waste, and cost savings – efforts to meet the Paris Agreement can actually be popular with constituents.



## Initial And Periodic Costs

Depending on the size of the project (and parcel), initial costs can easily reach $70,000 to $100,000, with periodic costs exceeding $50,000 every 5-10 years. While these expenses are significant, the initial costs in many cases are covered by a carbon broker or buyer in exchange for a share of the credits generated from the project.[4]

| | |
|---|---|
| Developing a forest management plan in consultation of a forester | $1,000-5,000 |
| Initial forest carbon inventory ($/acre) | $10-15 per acre |
| Forest analysis to conduct baseline modeling and project documentation | $50,000-100,000 |
| Third-party verification body ($/acre) | $15,000-25,000 |
| Carbon standard registration fees | Dependant on carbon standard |
| Annual monitoring reports in the years there is no third-party verification report conducted | Paid for by the project developer |
| Periodic third-party re-verification costs | Dependant on third-party |

[4] Beane, J. (2012) *Selling Forest Carbon: A practical guide to developing forest carbon offsets for Northeast forest owners*. Manomet Center for Conservation Sciences. Online at: https://www.manomet.org/sites/default/files/publications_and_tools/Selling%20Forest%20Carbon_Final%20September%202012.pdf



## Selling Your Credits On The Mandatory Market

Selling on the mandatory market can have some advantages over selling on the voluntary market (see *What Revenue Can You Expect From Your Project?*), but it is completely up to you to decide if you want to do it. If you aim to sell your credits on the mandatory market, you need to undertake some steps in addition to registering your carbon credits on the voluntary market with one of the above described registries. In the following we discuss the compliance market in California (California Air Resource Board) and the Regional Greenhouse Gas Initiative in the Northeast as possible options.

### California Air Resource Board (CARB)

California is the only US state to have established a mandatory system. In November 2013, the Air Resources Board issued the first carbon credits under its cap-and-trade Forest Offset Protocol. These credits protect forests through better management while offering forest property owners revenue, and helping businesses reduce carbon dioxide emissions under California's greenhouse gas emissions reductions program. Its goal is to reduce the levels of carbon dioxide in the atmosphere back to 1990 levels by 2020. To be eligible for use in the California Cap-and-Trade Program, the above mentioned Registry Offset Credits (ROCs) must be converted to ARB Offset Credits (ARBOCs). ARB Offset Credits represent verified greenhouse gas emission reductions or removal enhancements achieved under ARB's Compliance Offset Protocols.
Make sure you get in contact with the California Air Resource Board early on and follow the steps described below. You have to register with CARB in their Compliance Instrument Tracking System Service (CITSS) before a project is allowed to list .

Eligible Project Types

- Reforestation projects
- Improved forest management projects (IFM)
- Avoided conversion projects

CARB Approved Offset Project Registries (OPRs)

- American Carbon Registry
- Climate Action Reserve
- Verra (formerly Verified Carbon Standard)

Permanence: A project registered with CARB agrees to a required 100 year commitment with annual monitoring a re-verification every 6 years. Based on a project's risk assessment, a percent of credits will be set aside as a buffer in case of reversal.

Additional Resources:
Guidance for Verifying Forest Carbon Inventories
https://www.arb.ca.gov/cc/capandtrade/protocols/usforest/resources/verifying-forest-carbon-invent.pdf



Request for Project Guidance

https://www.arb.ca.gov/cc/capandtrade/protocols/usforest/resources/guidance-req-final2012-12-05.pdf

**Registering Your Project With The California Air Resource Board**

I. Register With An Offset Project Operator (OPO) or Authorized Project Designee (APD)
   - Determine the geographic supersection within which the Project Area is located by reviewing the supersection map.
   - Consult the Assessment Area Data File (updated with values for Alaska)
   - to identify the Assessment Area that best corresponds to the project and calculate the baseline.
   - Estimate Volume and Biomass and, for projects that include harvesting, estimate carbon stored in harvested wood products.
   - Fill out an Application for Listing. The eligible project types applications can be found here.

II. List Your Project
   - For offset projects developed using a Compliance Offset Protocol, the first step in the process is for the OPO to list the compliance offset project with an ARB approved Offset Project Registry (OPR).
   - Once the listing information for a compliance offset project has been submitted, the OPR will review it and the offset project will be listed on the OPR's public website. The listing information provides general information about the compliance offset project.

III. Monitoring and Reporting
   - Once listed, the OPO of the compliance offset project must monitor, report, and verify the GHG emissions reductions or removal enhancements achieved by the offset project during the crediting period.

IV. Verification
   - Upon satisfying the requirements in the Regulation, and successfully completing verification, registry offset credits may be issued to the offset project by the OPR. Once the offset project has been issued registry offset credits, the OPO may request the issuance of ARB offset credits.

V. Issuance of ROCs and ARBOCs
   - After the request has been made, ARB will conduct a full review of all project documentation. If the review shows conformance with the Regulation and applicable Compliance Offset Protocol, ARB offset credits may be issued after ARB receives confirmation that the OPR has retired the corresponding registry offset credits.

VI. Publication



- After ARB offset credit issuance, information regarding the compliance offset project, including number of ARB offset credits issued by vintage and invalidation status, will be made publicly available.

**Regional Greenhouse Gas Initiative**

Founded in 2009, the Regional Greenhouse Gas Initiative (RGGI) is the first mandatory market-based program in the United States to reduce greenhouse gas emissions. RGGI is a cooperative effort among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont to cap and reduce CO2 emissions from the power sector. In addition to the mandatory program, various RGGI offset allowance projects can be established outside of the power sector including forestry or afforestation.

Eligible Project Types

- Reforestation projects
- Improved forest management projects (IFM)
- Avoided conversion projects

Permanence: A minimum commitment of 25 years. At the end of the initial 25-year allocation period, credits may be awarded for another 25 years, provided the offset sponsor has submitted a consistency application prior to the expiration of the initial allocation period, and the Department has issued a consistency determination.

Aggregated Projects: Aggregation would be reviewed as part of the application review process for an offset project, and may be allowed dependent on verification and on state-specific rules.

Note: No forestry project has ever been initiated with this program as of March 2018.

**Registering Your Project With The Regional Greenhouse Gas Initiative**

I. Find a Verification Body
   - Negotiations must be undertaken with a third-party verification body who will validate your project and undergo periodic monitoring of carbon sequestration.
   - Prior to engaging with an offset project sponsor to provide verification services, an accredited verifier must submit a pre-engagement conflict of interest (COI) disclosure filing to the appropriate regulatory agency in the state where the offset project is located.
   - Information relating to each state's verification process can be found here.

II. Register Your Project with the Appropriate RGGI State
   - Project sponsor must open a general account in RGGI COATS (CO2 allowance tracking system) and obtain an offsets project ID.



- Project sponsor must register the proposed offset project in RGGI COATS and obtain an offsets project ID code. See guidelines for getting started with RGGI COATS here.
- Project sponsor must submit a consistency application to the applicable state regulatory agency for review of eligibility. Consistency applications must include a signed verification statement from the accredited verification body. This must be submitted up to one year after the program begins.

III. Monitor and Report Carbon Sequestered.

- Once the consistency application is approved, a periodic monitoring and verification report must be submitted to state regulatory agency demonstrating carbon sequestration achieved. Monitoring and Verification Reports must include a verification report from the accredited verification body.

IV. Issuance of Carbon Credits.

- Amount of carbon credits depends on amount of carbon sequestered.

**Future of RGGI Forestry Projects**

Massachusetts has about 3 million acres of privately owned forest land, making the state a promising market for generating offsets. It is posed to be the first state to sell carbon credits through a sequestration program in Massachusetts that could potentially be sold through RGGI. A trial project is under way in Holyoke, West Springfield, and Westfield, Massachusetts. The three Western Mass cities have set aside around 1,400 acres for conservation in the Bear Hole Watershed, in what is projected to generate $1.9 million over 10 years. The money brought in from this program will be divided between the cities depending on the percentage of carbon stock each city provides.

The project is particularly promising because of the implementation of aggregation. This means that Holyoke, West Springfield, and Westfield successfully combined their forest land in order to alleviate start-up costs and generate a greater profit. Because the majority of the Northeast's private forests are parcels of less than 5,000 acres, aggregation is a popular idea for kick-starting RGGI's forestry and afforestation program. Ultimately, the future of forest carbon credits in Western Mass could be influential in kick-starting RGGI's forest and afforestation program.



## What Revenue Can You Expect From Your Project?

It can be difficult on its own to navigate the registration process, but it is also important that you consider carbon pricing in the selection of an emissions standard. Different standards will provide different markets for generating income. Finding the most advantageous financial agreement between you and different entities will depend on how your credits will be marketed. Finances for projects generally come from four different players:

I. Buyers: Those that buy offsets to meet compliance regulations or voluntary commitments to emissions reductions. Buyers may offer lower prices to those projects that hold a greater amount of risk (such as aggregate projects). Example voluntary buyers include General Motors and The Walt Disney Company.

II. Investors: Those that have interests in financial gain from funding a projects. They may expect a share of credits or share of profit once credits are sold. As an investor, they may want a say in certain project activities. Buyers may become investors in projects.

III. Brokers: Do not buy project credits but match sellers with potential buyers in return for a percentage of the transaction value.

IV. Donors: Those that may provide complementary funding for project development (such as covering registration fees). They hold no interest in reducing carbon emissions to meet standards or commitments, but rather see the project's value to the environment and community.

The potential players and profits are largely dependant on whether the market is voluntary or compliance. Voluntary market pricing can greatly vary depending on the scale of the project and the interested buyers. This can create a risk for project developers, so it is important to consider the start-up costs affiliated with your projects.

In compliance markets, credits often sell for higher and more stable prices than those sold through voluntary markets due to high demand. Therefore, the credit prices have been more stable and easier to predict. Looking into the future, this is not necessarily the case:

*"To date CARB has been able to meet demand. In the future it becomes a bit tricky to predict. There are several factors at play. First, covered entities currently may only surrender up to 8% offsets to meet their compliance obligation. In 2021 that number goes down to 4% and in 2026 it goes up to 6%. There are further restriction on the sources of those offset. The cap also continues to decline over that timeframe so the demand may also decline. Not all entities choose to use offsets. It is also difficult to estimate the number of new projects that may participate in the offsets program, which may be somewhat dependent on the price of the offset. And we may add additional protocols, or remove current protocols in the future. "*

- Greg Mayeur, Manager Compliance Offset Program Implementation, CARB



There are many published market surveys that offer a benchmark for carbon pricing, including one published by the World Bank. For cap-and-trade programs such as the California Air Resource Board and Regional Greenhouse Gas Initiative, carbon credits are sold through auctions. Auctions allow carbon marketplaces to sell credits at a standard price to buyers seeking to offset emissions.

In auctions, credits are generally sold per ton of carbon that has been reduced or sequestered through a project. In the California marketplace, carbon credit prices typically range between $8-10 per ton. RGGI auctions see a price range from around $2-5 with the most recent auction in March, 2018 seeing a clearing price of $3.79 (Regional Greenhouse Gas Initiative past allowance prices and volumes can be found here). Prices within compliance markets are expected to rise as emissions regulations are tightened, leading to increased offsets demand. However, regulatory credits can be expensive to validate and come with risk of their own. If there is a violation, the landowner or project developer might come in direct legal confrontation with the government.

Voluntary market pricing is largely dependant on the agreement reached between the project developer and the buyer. Pricing of credits is often determined through advance negotiation. If the buyer has a greater interest in the project, then the price agreement per ton of carbon will likely be higher. As of 2014, the Verified Carbon Standard and Gold Standard saw the greatest market shares by volume, indicating a market consolidation of buyer preferences around the two certification programs. However this is largely due to their global projects (mostly within Latin America). Based off the 2016 *State of the Voluntary Carbon Markets 2017* report published by Ecosystem Marketplace, the average VCS credit price sold for $2.3. The average Gold Standard price sold for $4.6. While the Climate Action Reserve is ranked third in market share volume, it's average selling price of $3 reflects primarily United States based projects.

It's worth noting that differences in average credit prices amongst carbon markets does not reflect the price a forestry project's credits will be sold for. A credit that comes from a project such landfill methane capture, will be worth less than a credit that is produced from an improved forest management project. If one market sells more credits from low priced projects (like methane capture or wind energy) then their average credit price will obscure the average price of credits generated from a forestry project. Additionally, carbon markets that sell credits from countries outside the United States can skew the average price of a market. Markets, such as Gold Standard, sell the majority of the credits from projects in developing nations. These credits often sell at lower prices on average than credits generated domestically in the United States. Therefore, when choosing a market, it's important to recognize that the average price of a credit will not necessarily reflect the price of future forest project's credits. Generally speaking, average forest credit prices are relatively similar across protocols.



## Community Credits

There are many ways in which a business or individual can invest in carbon offsets. Carbon markets such as Gold Standard, highlight projects that are active in developing countries. This can be an attractive means of offsetting emissions for businesses looking to promote their involvement in global sustainability initiatives. But local investment in carbon forestry projects can be a more productive and beneficial way of conserving forestland in a community.

People will be more likely to offset their emissions through forest conservation, if the local community directly profits from the transactions. This could especially be the case, if the conserved forest would be opened up to the public. Local offsets would foster local engagement of residents and raise awareness for the topic of climate change. Local initiatives to offset emissions would also bring jobs to the participating communities and deliver environmental benefits to communities' residents. Forest offset projects within areas of fragmented forestland are more likely to necessitate the aggregation of two or more private land parcels. Community based initiatives to foster a cooperative environment for forest aggregation. Aggregated forest offset projects are more likely to receive the support of the community if residents reap the benefits through conservation of wildlife habitat and recreational space.

A broker that can oversee transactions between community based forest offsets projects and business entities is one method of promoting locally based investments in conservation. For example, local communities can participate in carbon offsetting by investing in a Community Carbon Marketplace (CCM). A CCM is a community based carbon exchange program that helps local governments, businesses and individuals meet their sustainability targets of becoming carbon neutral, or even carbon negative. A CCM can be executed either by purchasing Community Carbon Credits (C3s) from already established local projects, or creating the projects and selling the credits via CCM.[5] The benefit to purchasing C3S via CCM is that organizations can finance local carbon reducing projects. CCM can be thought of almost as similar to a virtual farmers market that can provide new revenue to reward sustainable business practices while also reducing carbon emissions.

[5] One Community Carbon Credit equals one tonne of $CO_2e$ reduced through a local low carbon project. Each C3 is significant by the unique tracking number applied to each one. This labeling ensures no double-counting of credits occurs and that only one C3 can be created, bought and sold once on each CCM. The project's supply, demand, quality and verifiability of the data and methods used all determine the monetary value of each C3. Each purchase of a Community Carbon Credit that a local government, business or individual makes is an investment towards supporting local economy and the creation of community resilience all while simultaneously combating the issue of climate change at a community level.



## Terms To Know

**Additionality:** The principle that only those projects that would not have happened anyway should be counted for carbon credits. In other words, it is the amount of additional carbon stock sequestered by a project would not have occured in the absence of the project. “Business as usual” reductions – i.e. those that would occur in the absence of a greenhouse gas-reduction market – should not be eligible for registration.

**Afforestation:** The establishment and growth of a forest on bare land which has not been forested in recent history.

**Aggregation:** A project type that puts together geographically and/or temporally dispersed activities that reduce emissions in a similar manner to streamline the process of qualifying and quantifying emissions offsets. In the case of forest carbon credits, multiple forest landowners combine their land into a single project.

**Auctioning:** Auctioning is a method of allocating, or distributing, allowances within a market system. Auctioning is usually utilized in compliance systems, such as the California Air Resource Board, in which businesses have to buy an increasing proportion of allowances through auctions to offset carbon emissions and motivate emissions reductions.

**Baseline Scenario:** An estimate of greenhouse gas emissions, removals, or storage associated with a baseline scenario or derived using a performance standard.

**Carbon Market:** An economic system created to enable transactions that place monetary costs that increase greenhouse gas pollution and reward the added value of carbon sequestration or reduce emissions.

**Carbon Offset:** A credit for negating or diminishing the impact of emitting a ton of carbon dioxide by paying someone else to absorb or avoid the release of a ton of CO2 elsewhere.
Personal Offsets: Carbon offsets purchased by an individual to balance carbon emissions from everyday life. For example, an individual may buy credits on the voluntary market before flying on an airplane in order to offset the pollution the flight created.
Business Offsets: Carbon offsets purchased on a voluntary or compliance market by a business to balance the environmental damage created by business functionings. For example, a California industry may buy offsets from the Air Resource Board in order to meet state greenhouse gas compliance obligations.

**Crediting Period:** The period of time during which a mitigation project can generate offsets.

**Extended Rotation Age (ERA):** A project type that includes practices that reduce net GHG emissions of evenly aged managed forests by extending the rotation age or cutting cycle and increasing carbon stocks.

**Funders:** An individual or body that buys carbon credits, therefore supporting a project that reduces or sequesters carbon emissions.



**Geographic Supersection:** The region in which your project is located. When registering land with a carbon offset program, landowners will identify their supersection to be used as a reference to assist in determining the project's Assessment Area.

**Leakage:**
Market Leakage: occurs when projects significantly reduce the production of a commodity causing a change in the supply and market demand equilibrium that results in a shift of production elsewhere to make up for the lost supply.
Activity-Shifting Leakage: occurs when the actual agent of deforestation and/or forest or wetland degradation moves to an area outside of the project boundary and continues its deforestation or degradation activities elsewhere.

**Logged to Protected Forest (LtPF):** A project type that includes practices that reduce net GHG emissions by converting logged forests to protected forests

**Low-Productive to High-Productive Forest (LtHP):** A project type that includes practices that increase carbon sequestration by converting low-productivity forests to high-productivity forests by improving the stocking density of low-productivity forests and/ or introducing other tree species with higher growth rates.

**Permanence:** The longevity of a carbon pool and the stability of its carbon stocks within its management and disturbance environment. Any net reversal in GHG reductions used to offset emissions must be fully accounted for and compensated through the achievement of additional reductions. A risk assessment may be made to set aside a buffer account in case of reversal (i.e. if some or all of the trees associated with a forest project are destroyed by fire, disease or intentional harvesting).

**Protocol**: The validation process of a registry follows a certain protocol. The protocol provides eligibility rules, methods to quantify GHG reductions, project-monitoring instructions, and procedures for reporting.

**REDD**: Reducing Emissions from Deforestation and Forest Degradation

**Reduced Impact Logging (RIL):** A project type that reduce net GHG emissions by switching from conventional logging to RIL during timber harvesting. Practices include reducing damage to other trees, Improving the selection of trees for harvesting, and improving planning or reducing the size of log landing decks, skid trails and roads.

**Registry:** An entity, such as Verra, that provides a formal validation of an offset project, so that the project may then be issued carbon credits and be listed on a voluntary or compliance market.

**Retired**: Retired credits are credits that have been removed from future transactions to represent the offsetting $CO_2$ emissions under an Emissions Trading Scheme. When a polluting body buys allowances and "retires" them by removing them from the market, it forces the body to reduce its emissions. Retiring credits holds PR value for those that retire the credits while also providing profit for the project developer.



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