



CLIMATE
ACTION
RESERVE

Long Term Management of Forest Carbon Projects

June 18, 2019

Introduction to long-term requirements

- Permanence
- Environmental safeguards
- Monitoring, reporting, and verification

- **Sarah Wescott, Climate Action Reserve**

How to consider risk over the life of the project

- Market considerations
- Reversals and early termination
- Invalidation
- EHS violations

- **Erika Anderson, Anderson Law Firm**

Considerations for ongoing project management

- Inventory management
- Verification considerations
- Future market opportunities

- **Jim Clark, NCRM**
- **Christie Pollet-Young, SCS Global Services**
- **John Battaglia, BGC Environmental Brokerage Services**

Closing

- Future policy considerations
- Q&A

- **Sarah Wescott, Climate Action Reserve**

Introduction to Long-term Requirements for Forest Carbon Projects

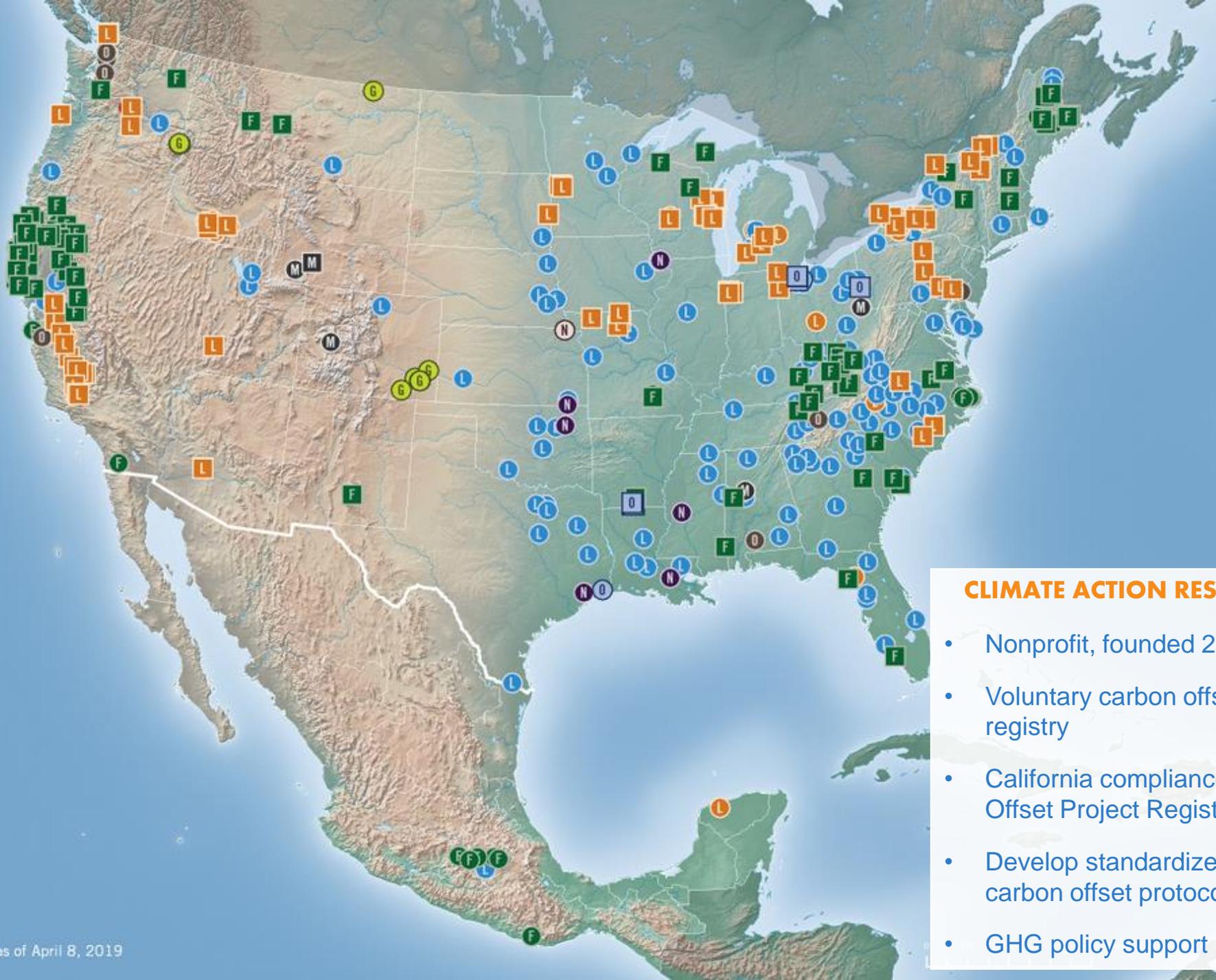




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- F Forest (ARB)
- L Livestock (ARB)
- M Mine Methane (ARB)
- O Ozone Depleting Substances (ARB)
- D Composting
- F Forest
- G Grassland
- L Landfill
- L Livestock
- M Mine Methane
- N Nitric Acid Plants
- N Nitrogen Management
- D Organic Waste Digestion
- O Ozone Depleting Substances

Listed, Registered, Transitioned, & Completed Projects as of April 8, 2019



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- Nonprofit, founded 2001
- Voluntary carbon offset registry
- California compliance Offset Project Registry
- Develop standardized carbon offset protocols
- GHG policy support

Carbon Market Types

	Voluntary Market	Compliance Market
Participants	Any individual, business, nonprofit, municipality, or utility voluntarily reducing emissions	Large emitters and utilities required to reduce emissions by law (California, Quebec, EU)
Standard	Climate Action Reserve protocols, other carbon registries	CA Air Resources Board (CARB) approved protocols
Project Types	18 project types	6 project types; only Forest, MMC, ODS, Livestock used to date
Credit Prices	50¢ - \$50 , depending on project type, location, buyer needs, co-benefits, etc.	\$13-\$15 , tracking close to current allowance prices
Costs	Lower than compliance, due to fewer review hurdles Variable; includes: project feasibility study, installation, on-going monitoring & reporting, verification, marketing and credit sales	Higher than voluntary, to comply with additional regulatory reviews Variable; includes: project feasibility study, installation, on-going monitoring & reporting, verification, marketing and credit sales
Risks	<ul style="list-style-type: none"> • Finding buyers • Price uncertainty over time 	<ul style="list-style-type: none"> • Limited timeline for regulation • Credit delays • Invalidation
Buyers	  	  

Ensuring Offset Quality



- GHG accounting is conservative, comprehensive, and scientifically credible

Real

A circular icon containing a bar chart with four bars of decreasing height and a downward-pointing arrow.

- GHG reductions would not have occurred in the absence of the carbon market

Additional

A circular icon containing a plus sign (+).

- GHG reductions or removals persist for at least 100 years, accounting for any reversals

Permanent

A circular icon containing a stack of four rectangular blocks.

- Methods are replicable
- Third-party verification occurs prior to credit issuance

Verifiable

A circular icon containing a checkmark.

- No other parties may reasonably claim ownership of GHG reductions

No Double Counting

A circular icon containing a gavel.

Time Commitment of a Forest Project

- 25 years (minimum) for CARB compliance projects
- 100 years (minimum) for CAR voluntary projects

Crediting Period



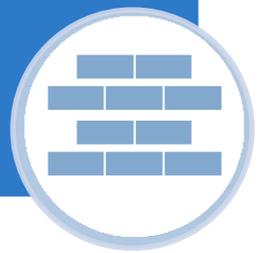
- 100 years of MRV after the last credit is issued

Monitoring Period



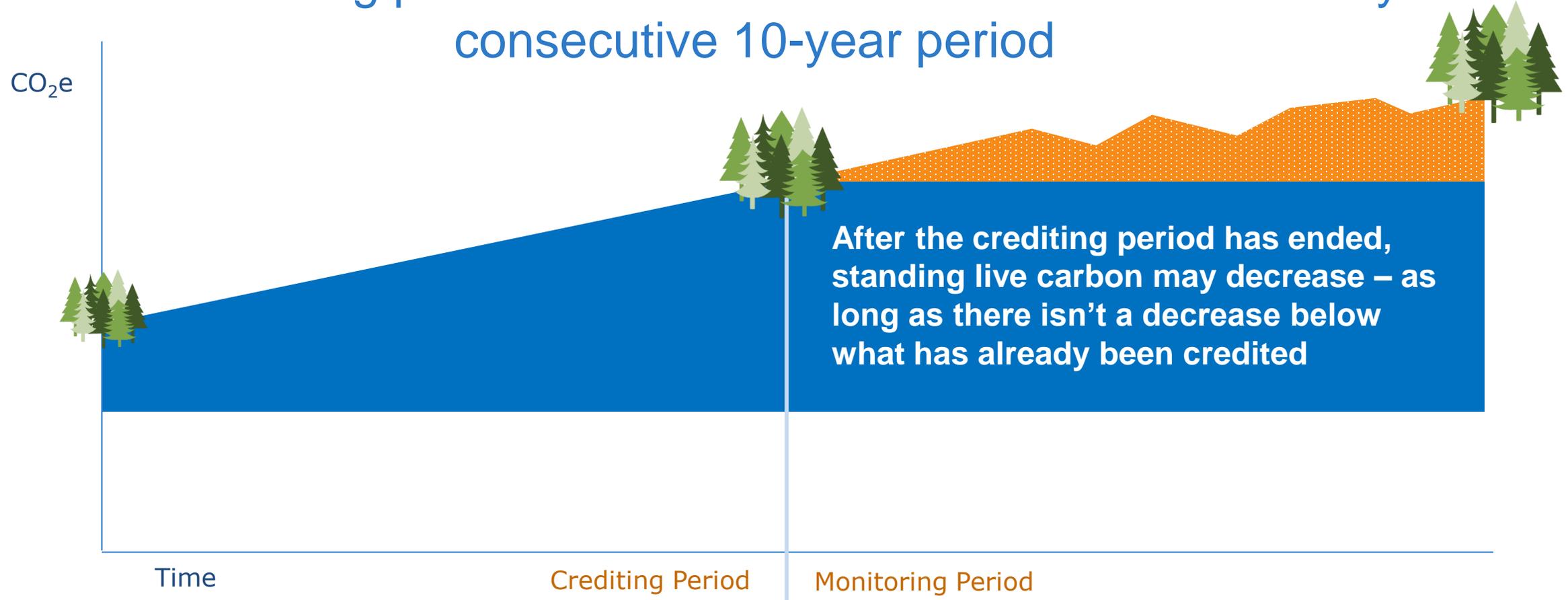
- GHG reductions or removals persist for at least 100 years, accounting for any reversals

Permanent



Maintenance of Carbon Stocks

Onsite standing live carbon must be maintained or increased during the crediting period – there can be no decreases over any consecutive 10-year period



What happens if the carbon stocks aren't maintained for 100 years?



Unavoidable Reversals

Natural disturbances (insects, disease, wildfire)
Compensated for with the Buffer Account



Avoidable Reversals

Intentional disturbances (overharvesting, inaccurate growth modeling)
Compensated for by the Forest Owner

Natural forest management requirements must be maintained through the project life for the project to remain eligible:

- Native species (95% minimum)
- Species diversity
- Deadwood retention
- No broadcast fertilization
- No more than 40% of project area can be in age classes less than 20 years
- Even-aged management limited to stands of no more than 40 acres

It's important to consider how to communicate these requirements to any potential future landowners, if the property is to be transacted

SFI, FSC, or Tree Farm certification:

- Avoid lapse in certification by having a new certificate in place if the project changes hands, or be prepared to move to one of the other sustainable harvesting options

state-approved long-term management plan:

- If the project changes hands, consider whether the management plan runs with the land, or if the new owner will need to move to one of the other sustainable harvesting options

CITSS account access

- If management changes, has the PAR/AAR on the CITSS account been updated?
- If the project changes hands, does the new owner have a CITSS account? If not, have they started the process for opening a CITSS account?

Reserve software access

- If the project changes hands, does the new owner have a Reserve APX account? If not, have they started the process for opening a Reserve account?

Offset Project Data Reports



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State of California
California Environmental Protection Agency
California Air Resources Board
U.S. FOREST OFFSET PROJECT DATA REPORT
INITIAL REPORTING PERIOD - IMPROVED FOREST MANAGEMENT

U.S. FOREST OFFSET PROJECT DATA REPORT INITIAL REPORTING PERIOD - IMPROVED FOREST MANAGEMENT			
OPDR	Date Report Received:	OPR Tracking Number:	Date Report Reviewed:
			OPR Staff Use Only
Submitting the project's first Offset Project Data Report must submit the information requested in both Initial Reporting and Annual Reporting forms to the appropriate Offset Project Registry. For every reporting year thereafter, submit only the information requested in the Annual Reporting form.			
ENTITY SUBMITTING REPORT			
Report being submitted by the Offset Project Operator (OPO) or by the Authorized Project Designee			<input type="checkbox"/> OPO
or by the person completing this form should be an OPO/APD employee.			<input type="checkbox"/> APD
Entity Name:	Date Report Completed:	Date Report Submitted:	
Entity Address:	Phone Number:	Email Address:	
OFFSET PROJECT INFORMATION			
Offset Project Name:	OPR Project ID#:	ARB Project ID# (if known):	
Offset Project Commencement Date:	First Reporting Period Start Date:	First Reporting Period End Date:	
Provide an explanation and justification for the commencement date. Specify the action(s) that identify the offset project commencement date.			
Optional: Provide the nearest town/city to the Project Area:			
PART III. OPO/APD INFORMATION			
OPO			
OPO Name:	OPO's CITSS ID#:		
OPO Address:	City:	State:	Zip:
Contact Person:	Phone Number:	Email Address:	
APD (if applicable)			
APD Name:			<input type="checkbox"/> No APD/Not Applicable
APD Address:	City:	State:	Zip:
Contact Person:	Phone Number:	Email Address:	
PART IV. LAND OWNERSHIP			
A. Is the Offset Project Operator (OPO) the owner in fee for the Project Area? Further documentation is required for all projects. Submit as attachment labeled "Attachment A." See Part X of this OPDR document for more information. If "no," explain how the entity identified as the OPO has the right to undertake and list the project.			
			<input type="checkbox"/> Yes <input type="checkbox"/> No

What information is required to be submitted in the OPDR?

When is the OPDR deadline?

B. Optional: List all Forest Owners. This includes owners in fee as well as third parties with existing property interests within the Project Area that affect the trees and standing timber located in the Project Area (e.g. mineral rights, timber rights, easements, rights of way, leases, etc.).
C. Does the offset project occur on public or private lands? If the project occurs on public lands, proceed to questions C1 and C2. Otherwise, skip to question D. Further documentation is required if project occurs on public lands. Submit copies of documentation demonstrating explicit approval of the project's management activities and baseline, as well as the public vetting process used; attachment should be labeled "Attachment B." See Part X of this document for more information.
1. Describe the public process that was used to evaluate the forest management activities and policy decisions concerning the offset project.
2. Describe the explicit approval process used by the public entity to initiate and maintain this offset project including the offset project's management activities and baseline.
D. Does the project employ a Qualified Conservation Easement (QCE)? If employing a QCE, proceed to questions D1, D2, and D3. Otherwise, skip to question E. Supporting documentation for a QCE is required. Submit as attachment labeled "Attachment C." See Part X of this document for more information.
1. Date that the QCE was recorded.
2. Optional: Is the project located in a state that requires third-party beneficiaries to sign the easement (i.e., to "accept and record that acceptance"), such as Arizona, Pennsylvania, or West Virginia?
3. Provide the terms within the easement that affect forest management.
E. Does the offset project occur on any of the following categories of land? (check all that apply)
<input type="checkbox"/> Land that is owned by, or subject to, an ownership of possessory interest of a Tribe
<input type="checkbox"/> Land that is "Indian lands" of a Tribe as defined by 25 U.S.C. 581(a)(1)
<input type="checkbox"/> Land that is owned by any person, entity, or Tribe, within the external borders of such Indian lands
<input type="checkbox"/> None of the above
If "none of the above," skip to Part V. Otherwise, proceed to Optional questions E1 and E2. Further documentation is required for projects occurring on land listed in the first three categories. Submit supporting documents as attachments labeled "Attachment D." See Part X of this document for more information.
1. Optional: Does a limited waiver of sovereign immunity between ARB and the governing body of the Tribe exist?
2. Optional: Provide a description of land ownership within the Project Area.
PART V. OFFSET PROJECT AREA
Maps depicting specific elements of the Project Area are required for all projects. Submit supporting documentation as attachments labeled "Attachment E." See Part X of this document for more information.
Latitude of Offset Project Location: Longitude of Offset Project Location: Project Area
A. Identify the assessment area (or assessment areas, if project crosses more than one) that affect the Project Area and list the acreage of project lands within each assessment area.
B. Identify and describe the governing jurisdiction(s) applicable to the Project Area.
C. Describe how the Project Area was determined.
D. Describe the existing land cover, and land use of the Project Area.
E. Describe the forest vegetation types within the Project Area boundary.
F. Describe the site classes within the Project Area boundary.

Where can you find ARB's OPDR forms?

Who is the professional forester providing oversight on development of the form?

When is verification required?

Who are the verifiers?

Who can you work with?
(assessing COI)

How long do you have to complete the verification process?

What information do you need to provide to your verifiers?

How much will it cost?

Who's Involved?

Project Management

Offset Project Operator
(landowner)

Authorized Project Designee
or Technical Consultant
(project developer)

Forester

Inventory crew

Verification & Credit Issuance

Verification body

Offset Project Registry

CA Air Resources Board

Selling Credits

Retailers

Wholesalers

Brokers

Exchanges

Why worry about the long-term management of forest projects?

- Forest projects have long crediting periods, and even longer periods of required monitoring, reporting, and verification (MRV)
 - This helps ensure offset integrity, but can lead to challenges in land management

How can landowners minimize risk of unintentionally violating program rules, and avoid problems with the project?

What happens if the property is sold to a new owner? What considerations should be made to keep the transition seamless?

How should landowners plan their inventory and verification schedules to maximize success?

Where can landowners find new buyers for their credits once existing contracts end?

Thanks! Questions?



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FOREST CARBON OFFSETS RISK MANAGEMENT

ERIKA ANDERSON
ANDERSON LAW FIRM
ERIKA@BUSINESSLAW4GOOD.COM
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Goal

- Making the decision of what to do next
 - New projects
 - Existing projects
- Understand project risks and responsibilities
 - During issuance
 - During project life
- Framework for understanding opportunities and allocating risks
- Two main topics
 - Market drivers
 - Areas of concern (when contracting for the next 100 years...)

Cap-and-trade basics

- Who has to comply (“covered entities”)?
- A covered entity must retire “compliance instruments” equal to its emissions
 - Allowances
 - Allocation
 - » Ratchets down over time
 - Auction
 - » Floor price, adjusted for inflation
 - Exchange traded
 - Offsets
 - Traded OTC
 - Discounted from allowance price due to risks
 - Supply is subject to many factors
 - Subject to usage limitations

Offset supply/demand

- Supply
 - Issued but not yet used
 - Existing project tails
 - New projects
 - New offset types (e.g., international sector based, newly approved offset protocols, reforestation projects coming online)
- Demand
 - Price-to-risk
 - Transaction costs
 - Usage limitations
 - Annual cap
 - Starting in 2021, 50% must have direct in-state environmental benefits

Offset Usage Limits

Compliance Period (CP)	Emissions Year	Offset Limit (applies to Emissions Year)	Compliance Obligation	
			Year Due	Amount Due
3 rd	2020	8%	2021	100% of 2020, remaining 2018 & 2019
4 th	2021	4%	2022	30% of 2021
	2022	4%	2023	30% of 2022
	2023	4%	2024	100% of 2023 remaining 2021 & 2022
5 th	2024	4%	2025	30% of 2024
	2025	4%	2026	30% of 2025
	2026	6%	2027	100% of 2026 remaining 2024 & 2025

Source: California Air Resources Board

DEBs

- Refers to the reduction or avoidance of emissions of any air pollutant in the state or the reduction or avoidance of any pollutant that could have an adverse impact on waters of the state
- Projects located within California provide DEBs
- Projects outside California may submit evidence (e.g., scientific or government reports; data). Must show:
 - Reduction/avoidance of air pollutant *not* included in protocol calculations, or
 - Avoidance of pollutant that could have adverse impact on waters of the State
- New projects must submit information
- Existing out-of-state projects may submit information by December 31, 2021 to be recognized as providing DEBs

Points to ponder

- Will offset markets get oversupplied after 2020?
- Will markets treat out-of-state offsets differently?
 - When will this price signal start to be felt?
 - Is there a point at which existing forest project “tails” overwhelm the out-of-state market?
- How does this impact
 - Decision to do a project?
 - Decisions about when to stop issuing and begin monitoring?

Areas for consideration (generally ... and when contracting for the next 100 years)

- Reversal
- Early project termination
- Restrictions on sale/use
- Land transactions
- Environmental, health and safety violations
- Invalidation

Reversal (carbon loss)

- Unintentional reversal
 - Acts of God (fire, pests, etc.)
 - Buffer
 - Possible early project termination, new project permitted
- Intentional
 - Negligence, gross negligence, willful intent
 - Forest owner(s) must replace offsets equal to reduction
 - Possible early termination, no new project
- Early Project Termination
 - Forest owner(s) must replace up to 140% of all issued offsets (IFM)

Early project termination

- Automatic termination
 - Reversal reduces carbon below baseline
 - OPO chooses not to report data and undergo verification at required intervals
 - Title transfers and new owner does not take on carbon commitments
- Voluntary termination
 - May be voluntarily terminated prior to the end of project life as long as the required quantities of offsets are retired
- For any termination other than unintentional reversal, forest owner(s) must replace
 - One offset for all offsets issued
 - For IFM, during first 50 years, all offsets issued times a multiplier that starts at 1.4 and goes to 1 at 50 years
- General rule: No new projects permitted on land (except for unintentional reversal)

Reversal worry points

- Anyone can cause a reversal
- What is negligence?
- All forest owners ultimately responsible for all forest project commitments.
- The definition of forest owner is incredibly broad
 - Owner of **any interest in the real property** involved in a forest offset project
 - “Interest in the real property” includes land owners, primary holders of conservation easements, timber right holders, and subsurface mineral rights holders

Restrictions on use during project life

- Commitment is to maintain carbon
- Harvesting is permitted as long as it does not deplete carbon
- If carbon is depleted, it is a reversal and offsets must be replaced to CARB
- Other activities are permitted as long as they do not decrease carbon
- Consider, however:
 - Does harvesting increase the risk of EHS violation?
 - If multiple parties are involved in harvesting, how will risks of invalidation, failure to issue, or reversal be allocated and/or enforced?

Restrictions on transfer during project life

- Land may be transferred in whole or in part, however subsequent owners must assume all carbon responsibilities, otherwise early project termination.
 - Responsibility lies with the new owner(s)
 - How should obligations/risks be priced into a sale?
- Issues if multiple forest owners
 - All owners liable for project
 - CARB does not require agreements between owners
 - If one owner leaves project, project terminates
 - How will responsibility for “bad acts” be allocated/enforced?
 - How do you deal with judgment-proof co-owners?

EHS violation

The offset project activity and implementation of the offset project was not in accordance with all local, state, or national environmental and health and safety laws and regulations during the Reporting Period.

- What rules apply?
- What constitutes a violation?

If EHS violation, no offsets **issued** for time period in which the project is out of compliance

If offsets are issued, can be cause for invalidation (revocation)

Can create liability if you are contractually obligated to operate in compliance with all laws or have a firm obligation to deliver.

Guidance

- Activities
 - All project activities within the project area that directly affect carbon stocks must be in compliance with all requirements that have a bearing on the integrity of the generated offsets
 - Includes: site preparation, planting, harvesting, and monitoring
 - Excludes: transportation of logs to mills, mill operations, and landfiling
- Violation
 - Project activities were subject to enforcement action by a regulatory oversight body, but ***whether such enforcement action has occurred is not the only consideration ARB may use in determining whether a project is out of regulatory compliance***
 - The date on which the violation is considered to begin is the date on which the non-compliant activity began
 - Any actual or alleged violations may be investigated by verifier
 - Includes pleas of no contest
 - Offset will be invalidated for the entire period of non-compliance
 - End date is when the oversight body says project is back in compliance. May include time for payment of fines, etc.
- Invalidation investigations
 - Clean Harbors
 - Bos Dairy

Invalidation

Material Misstatement: >5% overstatement

EHS Violation: Failure to comply with all relevant environmental, health and safety laws (EHS laws)

Double Dipping: Offsets issued for same GHG reduction under another program

Invalidation period:

- Up to 8 years from date of issuance
- May be reduced to 3 years
- No invalidation once period has passed
- Buyer liability rule, but OPO must replace any invalidated offsets that have been retired from buffer account

Dealing with invalidation

- Buyer liability rule, however
 - Contract/tort (negligence or fraud)
 - In certain circumstances, OPO must replace
- Reduce invalidation period from 8 to 3 years
- Differential pricing for products
 - CCO(8), CCO(3), Golden CCO
- Credit wrap (investors)
- Insurance
- Contractual allocation of invalidation risk
 - ERPA: as between seller and buyer
 - Project development and other contracts

Industry standards

- Offset sales contracts
 - “Market” damages – pay or replace
 - If seller (OPO) wears invalidation, exposes OPO to market changes for up to 8 years
 - If market goes down, OPO profits
 - Replacement price < sales price
 - If market goes up, OPO loses
 - Replacement price > sales price
 - May also have indemnification obligation
- Development/service contracts
 - Consider who might make the mistake that leads to invalidation
 - Forest owner
 - OPO
 - APD
 - Limitations of liability
 - Indemnification
 - What type of mistake?
 - Innocent mistake v. negligence v. gross negligence
 - Errors and Omissions policies

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Long Term Management of Forest Projects

Climate Action Reserve

June 18, 2019

Jim Clark
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North Coast
Resource
Management



Technical Project Management Needs

North Coast
Resource
Management



Topics

1. Inventory Management and Reporting
 - Inventory Design
 - Inventory Costs
 - Data Management
 - Re-Inventory and Verification Cycles
 - Data Retention
2. Streamlined Approach Following Non-Renewal of Crediting Period
 - Longer Re-Inventory Timeframe
 - Potential for Technological Advancement

Inventory Design

1. Inventory design must be statistically sound and is reviewed by ARB/Reserve and the Verification Body.
 - Systematic Sample
 - Random Sample
 - Standardized Approach
2. Inventory data must be no more than 12 years old.
3. Design must be replicable by the Verification Body.
 - Monumented plots
 - Well documented inventory methodology
4. Plot measurements are taken to a high standard.
 - DBH to the nearest 1/10th inch.
 - Total height to the nearest foot.
 - Sub-sampling of tree measurements is less applicable.

Inventory Cost

1. High standard of plot measurements leads to increased costs over traditional forest inventory designs.
 - All species must be measured with the same intensity which is not typical of traditional forest inventory designs.
 - Protocol inventory confidence levels of plus or minus 5% at 90% confidence are more rigorous than industry standards.
 - Inventory must pass statistical test during verification.
2. Standardized designs can lead to reduced inventory costs.

Data Management

1. Management of inventory data must be consistently documented from the field, into the inventory database, and then into the inventory calculations.
2. Revisions to plot data must be documented from year to year.
3. Specialized data processing tools are generally required in order to calculate carbon stocks per the applicable protocol.
4. Standardized data processing tools can reduce some costs and complexities associated with data management and processing.

Re-Inventory Cycles

1. Verification cycles dictate the re-inventory cycle.
 - A 12-year remeasurement schedule may not be practical given a 6-year minimum verification schedule.
2. A continuous forest inventory can reduce the potential for issues during site visit verifications.
 - Changes in carbon stocks are captured over shorter periods of time.
 - More frequent inventory measurements capture plot-level changes which reduce the risk of the inventory failing the verification statistical test.
3. The cost of more frequent inventory must be weighed against potential increased verification costs.

Data Retention

1. All data associated with carbon stock inventory, baseline modeling, and carbon reporting must be retained for a minimum of 15 years.

Ongoing Inventory

1. The Compliance Offset Protocol allows for extended verification cycles following the non-renewal of a project's crediting period which relates to longer inventory cycles.
 - Verification cycles can be lengthened to 12 years.
2. Technological improvements may lead to lower ongoing inventory costs.
 - Remote sensing/Lidar

Thank You!

Jim Clark

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North Coast
Resource
Management



SCS global
SERVICES

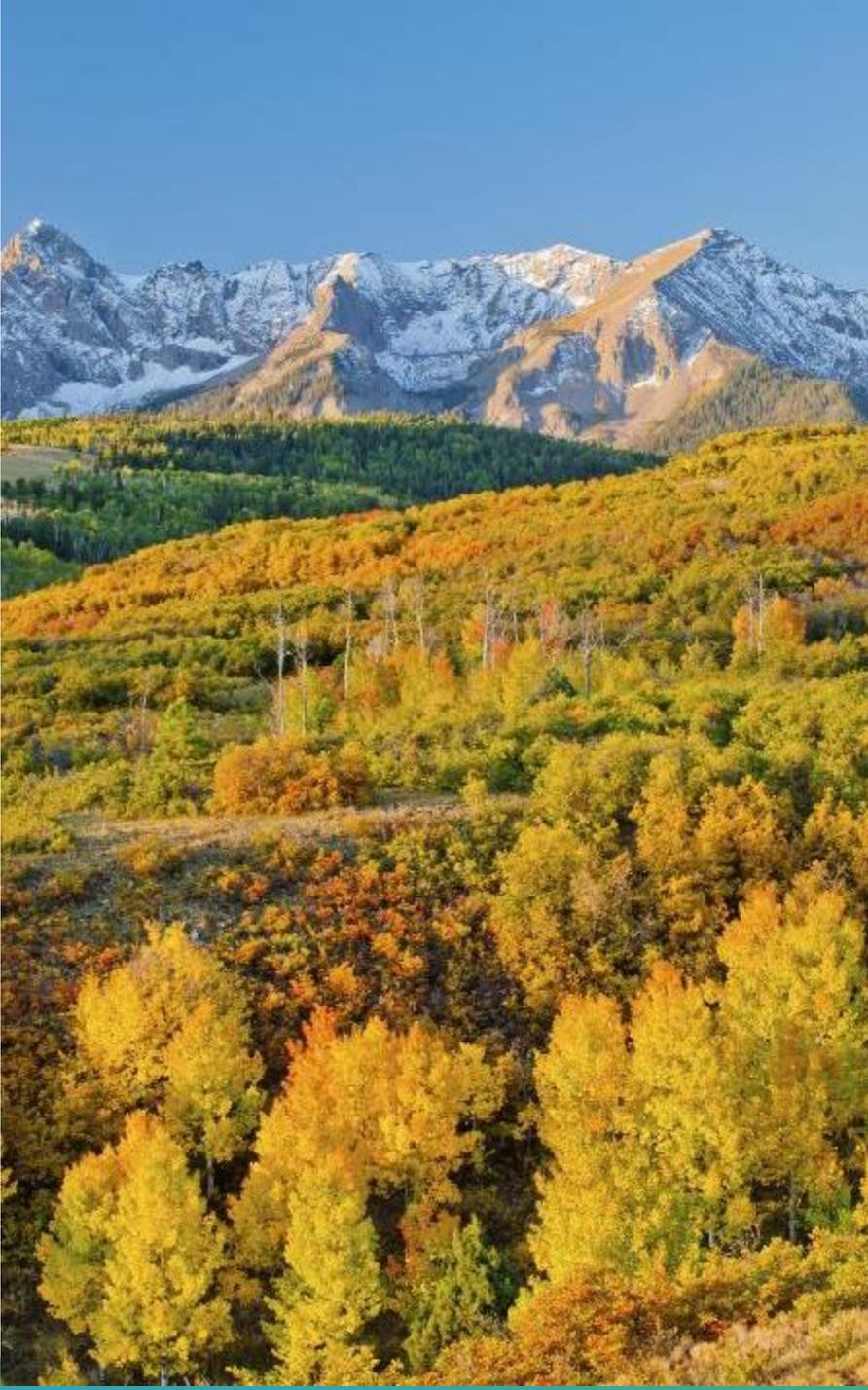
Setting the standard for sustainability™



Long-Term Management of Forest Carbon Projects

Christie Pollet-Young
Director, GHG Verification Program

18 June 2019



Presentation Overview

- Why SCS is Awesome
- Verification Process
- Verification: Cost and Timing
- Keys to Verification Success

ABOUT SCS GLOBAL SERVICES

SCS is an international leader in third-party environmental and sustainability certification and standards development.

Benefit corporation who promotes the development of a world according to the United Nations Sustainable Development Goals (SDGs)



**SCS stands for Scientific Certification Systems*

SCS' Greenhouse Gas Verification Program

- World's leading verifier of forest carbon offsets
- Verified >220 million tons of offsets
- Verified > 160 Projects
- Expertise in both the California Cap and Trade and voluntary carbon markets



GHG Standards



SCS' ARB Experience

- Not all verifications are the same
 - Experience- 44 projects
 - Expertise- 7 ARB Lead Verifiers
 - Established relationships- Since 2008
 - Reputation- Voted best VB
 - Integrity- Mission-based organization
- SCS will make your lawyer happy
 - ◆ Buyer liability- no verification decision has been overturned



Air Resources Board Verifications: 44

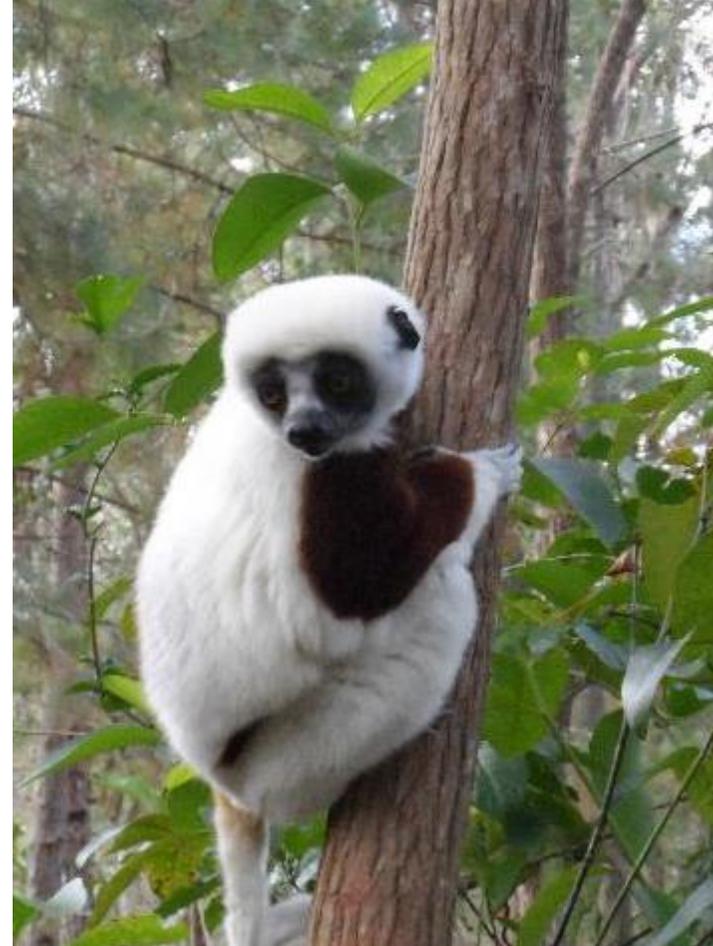
Project Name	MT CO2e Verified
Ahtna Native Alaskan IFM	14,861,093
Colville IFM	13,453,750
White Mountain Apache Tribe Forest Carbon Project Phase II	6,004,826
White Mountain Apache Tribe Forest Carbon Project	4,451,645
Mescalero Apache Tribe Improved Forest Management Project	4,417,068
Passamaquoddy Tribe IFM Project	3,824,227
Warm Springs	2,154,371
Brushy Mountain	1,648,734
Upper Hudson IFM	
Yurok Tribe/Forest Carbon Partners CKGG Improved Forest Management Project	
Trinity Timberlands University Hill Improved Forest Management Project	847,895
Bewley Ranches	823,445
Sacramento Canyon	819,634
Hollow Tree	817,984
The Forestland Group Chateaugay Woodlands IFM	801,405
Round Valley Indian Tribes Improved Forest Management Project	594,250
Lonesome Pine Improved Forest Management Project	553,371
LRCT	483,873
Buck Mountain	417,629
Willits Woods IFM	406,051

Project Name	MT CO2e Verified
Berea College Improved Forest Management Project	375,885
Lord Ellis Improved Forest Management Project	372,568
Cappell Creek Improved Forest Management Project	367,438
Crane Valley	357,203
Great Mountain Forest Improved Forest Management Project	356,710
Bishop Improved Forest Management Project	349,786
Sealaska Native Alaskan IFM	348,425
	331,816
	322,548
	299,936
	288,798
	287,077
Eddie Ranch	274,971
Glass Ranch Improved Forest Management Project	270,943
Miller Forest	246,993
Montesol IFM Project	215,440
JTO Champion Property IFM	183,858
AMC Silver Lake IFM	172,304
Mailliard Ranch	163,157
Hanes Ranch Forest Carbon Project	127,316
Congaree River	117,216
Brush Creek	88,598
Big Valley	52,124
MWF Brimstone IFM	4,861

Over 55% of ARB Forestry Assessments >125 million tonnes

Why do we need verification?

- Ensure integrity of environmental claims
- Ensure integrity of the carbon market
- Provide independence
- Reduce risk and liability



Verification Milestones

- Contracting/Scheduling
- NOVS/COI Submittal and Approval
- Kick-off Meeting
- Desk Review (& Findings Issuance)
- Site Visit (& Findings Issuance)
 - ◆ Office Meeting
 - ◆ Sequential Sampling
- Quantitative and Modeling Review
- Verification Report and Statement
- OPR and ARB Review → Credit issuance



*Note: verifiers **cannot consult** for the same project they verify (limited to generic advice and outlining of deficiencies)*

Conflict of Interest- High

Within the last 5 years, a verification team member received payment from the OPO, APD or Technical Consultant

- Development of forest management plan or timber harvest plan
- Cruising
- Appraisal
- Promoting or selling offsets
- And so much more in Section 95979!



Conflict of Interest- Scenario 1

Sam cruised timber/marked trees for Happy Trees (OPO) in September 2015 for 1.5 days for a fee of \$1500. They have not worked for Happy Trees since.

Can Sam conduct sequential sampling cruising for Grumpy Verifiers Inc. for a Happy Trees project?

No. Sam received payment from the OPO (Happy Trees) within the past 5 years.

The (small) value is irrelevant.

Conflict of Interest- Scenario 2

Alex worked for Database Gurus until Thanksgiving 2014 but then wants to join Grumpy Verifiers Inc. as an auditor for a Happy Trees (OPO) carbon project where Database Gurus is the technical consultant.

Can Alex be on the team?

No, Alex received payment from the technical consultant (Database Gurus) within the past 5 years.

Conflict of Interest- Scenario 3

Leslie was a cruiser for a Happy Trees carbon project for RP 1 with Grumpy Verifiers Inc. but then became a lead verifier for Persnickety Verifiers Inc. and would like to conduct the full verification for RP2 (an invalidation audit to convert RP1 CCO8s to CCO3).

Can Leslie be a member of the RP2 team?

No, the verification team, not just the verification body, for a full verification must be completely new. Otherwise, you are evaluating your own work.

Verification Steps

Desk Review

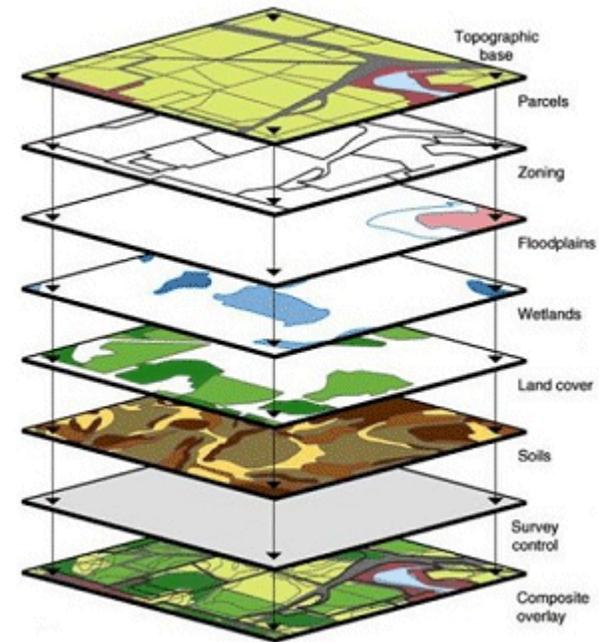
- Review project documentation
- Identify fatal flaws
- Develop the audit plan for the site visit
- Green light the site visit
- Select sample plots
- Discuss safety and access
- Issuance of findings



Verification Steps

Site Visit

- ◆ Office Meeting
 - Discussion of ownership, management activities
 - Interview relevant personnel
 - Prepare for site reconnaissance



Verification Steps

Site Visit

- “Sequential Sampling” - inventory plots selected for re-measurement
- Compare described inventory methodologies to field observations
- Site reconnaissance
- Review of project boundaries
- Interviews with local representatives
- Issuance of site visit findings

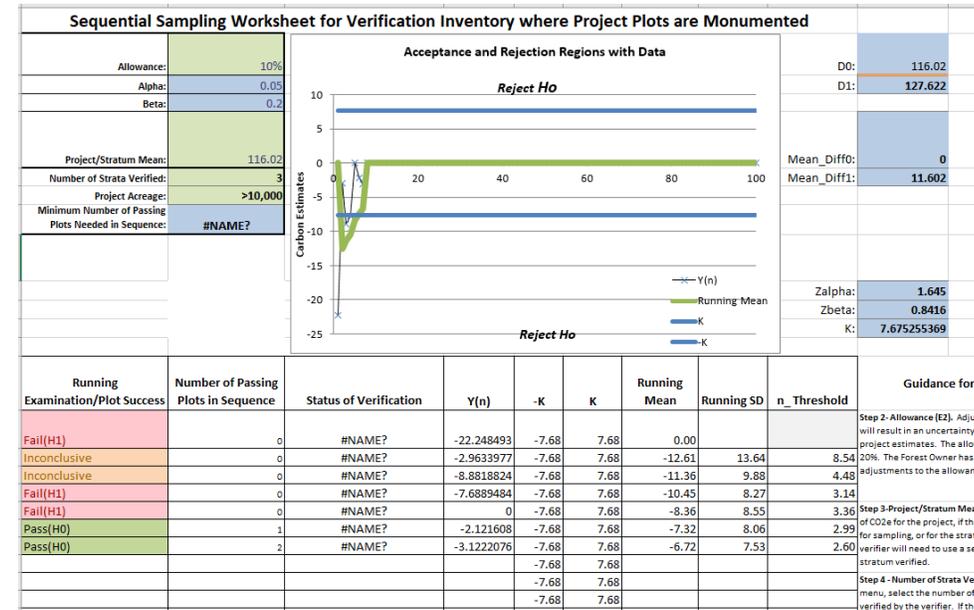


Verification Steps

Quantitative and Modeling Review

Confirming the accuracy of GHG assertions

- Baseline quantification
- Review of the
 - Growth & yield model
 - Carbon quantification
 - Geospatial database
- Issuance of findings



Verification Steps

Post-Site Visit Activities

- Environmental, health and safety checks
- Ownership checks
- Review and closing of findings
- Iterative communication with project team about milestones



Verification Steps

Offset Verification Report and Offset Verification Statement

- Development of project documentation and extensive audit trail for OPR and ARB review package
- Evidence for conformance with verification criteria
- Facilitates rapid OPR and ARB review



How Long Does Verification Take?

Checking the Checklist

Variables

- Quality and completeness of OPDR and supporting evidence
- Time Spent by Project Developer Responding to Findings
- Staff Availability (Both project and verifier personnel)
- Time Spent by OPR/ARB Reviewing Project



How Much Does Verification Cost?

Estimating Auditor Days

- Previous Experience of Project Developer
- Accessibility, Size, Location, and Spatial Distribution of Project
- Quantification Process and Approach
- Major Changes in Project Design or Management
- Silviculture
- Number of Strata
- Average Number of Trees per Plot, and Number of Plots Which Can Be Remeasured per Day



Carbon verification is not based on \$/acre multiplier

Verification Cycle

Full Verification

- At least every 6 years
 - ◆ Annual reports during intervening years
- Requires change of verification body AND team
- Site visit and sequential sampling
- CCO8s → CCO3s

Cost: 45-100K

Less-Intensives

- No change to VB, inventory methodology, confidence deduction, reversal risk rating

Cost: 5-14K/Reporting Period



Keys to Verification Success

- High Technical Quality
 - ◆ Experience
 - ◆ Complete OPDR & supporting data (spreadsheets, databases, workflow documentation, etc.)
 - ◆ Clear, efficient quantification approach
- Developing and maintaining a forest Inventory of the high quality needed for carbon projects
 - ◆ Avoiding the inclusion of old inventories not designed for carbon
- Budgeting adequately for verification (time, personnel, and money)
 - ◆ From contracting to responding to findings



Keys to Verification Success

- Integrity
 - ◆ Objective of developing a durable and correct project
- Working closely with your verifier, OPR and ARB
 - ◆ Seeking guidance early
 - ◆ Clear and open communication





Thank you!

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NORTH AMERICAN CARBON MARKETS

An Overview of Carbon Trading in North America

Climate Action Reserve – Forestry Webinar June 2019

BGC Partners, a global presence

- BGC Partners, Inc. (NASDAQ: BGCP) is a leading intermediary to the wholesale financial and commodity markets.
- BGC provides voice-assisted, electronic trade execution + advisory services to most global markets.
- History
 - Originally part of Cantor Fitzgerald (CF)
 - 2004: BGC splits off from CF, goes public (NASDAQ: BGCP)
 - 2008: BGC merges with eSpeed to become BGC Partners, Inc.
 - 2011: BGC enters the commercial real estate market with the acquisition of Newmark Knight Frank; spins Newmark off in 2018 (NASDAQ: NMRK)
 - 2017: BGC Revenues – \$3.35 billion USD
 - IG credit rating, 9,000+ employees, headquartered in London & New York, with offices in 20+ major global markets
- Markets
 - Commodities, Equities, Fixed Income, Interest Rate Swaps, FX, Various Derivatives, Structured Products, Commercial Real Estate

BGC EBS: Market Coverage

- **North American Carbon Trading Programs**
 - *Western Climate Initiative (WCI)*
 - California, Quebec
 - *Regional Greenhouse Gas Initiative (RGGI)*
 - New York, Maryland, Delaware, Massachusetts, Rhode Island, Vermont, New Hampshire, Maine, Connecticut
 - *In-process:* New Jersey and Virginia
 - *Alberta Carbon Competitiveness Incentive Regulation (CCIR)*
 - *California Low Carbon Fuel Standard (LCFS)*
 - *Oregon Clean Fuels Program (CFP)*
- **Other Environmental Markets**
 - *Voluntary carbon and renewable energy credits (RECs)*
 - *Various compliance REC programs*
 - *EPA NOx & SO2 markets*
 - *US Emission Reduction Credit (ERC) markets*
 - *Biogas/RNG*

CARBON MARKET

A Look at Prices and Market Trends

California Carbon Offsets

- Offsets or CCOs, represent verified GHG emission reductions or removal enhancements under ARBs compliance protocol

Last Updated: June 12, 2019

ARB Offset Credits Issued

Project Type	ODS	Livestock	U.S. Forest	Urban Forest	MMC	Rice Cultivation
Compliance	13,051,544	4,158,040	110,430,180	--	3,065,346	--
Early Action	6,336,710	1,695,029	13,276,494	--	2,879,684	--

Table includes all offset credits issued including offset credits placed in ARB's Forest Buffer Account, offset credits returned to an Early Action Offset Program's forest buffer pool, and offset credits subsequently invalidated.

- Unlike CCAs, **CCOs are capped at 8% of total emission compliance** and can only be purchased through the secondary market
- CC08 – 8 year invalidation period; issued by ARB
- CC03 – 3 year invalidation period; issued by ARB
- gCC0 – golden Offset; not issued by ARB
 - Seller provides either a CC08 or CC03 into buyer CITTS account
 - If CCO invalidated, Seller shall replace with an additional credit

Current Pricing as of 6/18/2019

- **CCAs:**

- V19 JUN19 Futures \$17.48/CCA (prompt)
- V19 DEC19 Futures \$17.84/CCA – Dec/Jun 4.25% carry
- V19 DEC20 Futures \$18.78/CCA – Dec/Dec 5.25% carry

- **Golden CCOs:**

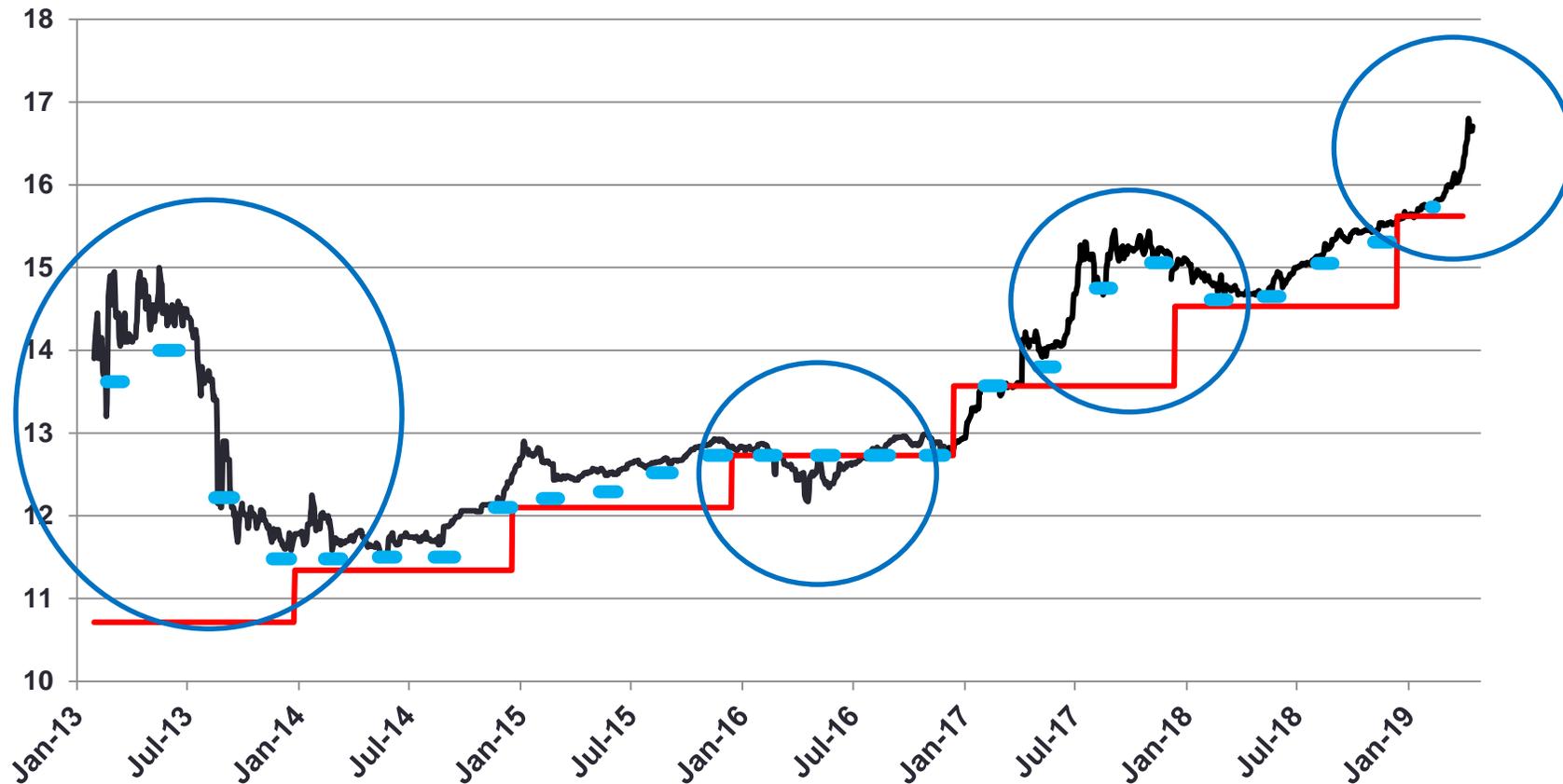
- GCCO (prompt) \$14.75/GCCO, or approx. 84% of CCA

- **Project-based CCOs:**

- CCO8 (prompt) \$14.50/CCO8
- CCO3 (prompt) \$14.60/CCO3

Historical Price: Spot CCA 2013-2019 vs. Auction Clearing Price

CCA V13-19 Spot Delivery Price



CCA Market Outlook

- ✓ Broader speculative interest in CCA futures, coupled with constraints in holding limits, could lead to steepening forward price curve and higher allowance prices
- ✓ Fundamentally CCAs will remain oversupplied/long for the short-medium term, unless CA legislature intervenes to adjust the oversupply
- ✓ Wide allowance-offset spread as the market wrestles with DEBs vs non-DEBs and post 2020 offset fundamentals

	2013	2014	2015	2016	2017	2018	2019	2020
CCA FLOOR (USD)	10.71	11.34	12.10	12.73	13.57	14.53	15.62	16.71*



* 5% + 2% CPI

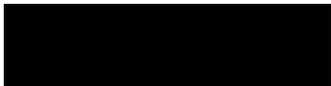
ROLE OF A BROKER

Overview

The role of a broker

- **Price discovery** and **liquidity**
- Market **color** and competitive **trade execution**
- **Knowledge** and **coverage** surrounding policy and regulation
- Ability to trade on a level of **anonymity**
- Advise on **risk management** and **trading** strategies
- **Price neutrality** (we do not carry principal positions)

BROKER FLOOR



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environmental brokerage services

California Releases 2030 Scoping Plan

On January 20th, the California Air Resources (ARB) released the 2030 Scoping Plan Update, a framework outlining how the State will meet Senate Bill (SB) 32's ambitious 40% below 1990 level carbon emissions by 2030 goal. Below, BGC Environmental Brokerage Services (EBS) provides a summary of key points and market commentary. The Scoping Plan can be downloaded here:

https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_in.pdf

Based on SB 32, the 2030 target in total GHG emissions is 260 million metric tons (MMTs) of carbon dioxide, annually. California's total 2014 emissions amounted to 441 MMTs, meaning California's proposed GHG policies are designed to yield reductions of approx. 181 MMTs in 14 years.

Key Elements of the GHG Reduction Framework

- SB 350 (passed) – requires 50% Renewable Portfolio Standard (RPS) and doubles energy efficiency by 2030.
- Low Carbon Fuel Standard (LCFS) – reduce carbon intensity of fuels 18% by 2030 (existing target is 10% by 2020).
- Mobile emissions – emission standards for light- and heavy-duty vehicles, including a goal of 4.2 million zero-emission vehicles (ZEVs)
- Post-2020 Cap-and-Trade Program – steep declining emissions cap with market linkage to Quebec and Ontario trading programs
- 20% reduction in GHG from refinery sector via direct emission reduction measures

Per the requirements of AB 197 and per recommendations from the Environmental Justice Advisory Committee (EJAC), ARB proposes direct regulation for the refining sector in California, in addition to other applicable measures such as Cap and Trade. The direct regulation measure, as described below, is intended to reduce emissions from refineries in California by 20% by 2030. The policy design achieves GHG reductions, generates reductions of other criteria pollutants on-site, and adds co-benefits to local communities. The proposed regulation requires the facilities to achieve a benchmark of the most efficient existing facility on a simple barrel basis. This means all facilities will need to achieve a standard of GHG per unit of product, i.e. barrel of oil, based on the state's most efficient refinery. There are various activities facilities can deploy to achieve this target. These include: fuel switching, boiler electrification, onsite investments in new, more efficient technology, use of lighter crude oils, or other process improvements.

As anticipated, the Scoping Plan also proposes an extension of the Cap and Trade program to 2030, albeit with some potential design changes. Below we highlight some areas, which could see alterations post-2020 before Plan adoption:


environmental brokerage services

WCI Market Daily

California Carbon Allowances Non-Exchange Cleared	BID	OFFER
V17, Spot	\$13.48	\$13.52
California Carbon Allowances (CCAs) Futures	BID	OFFER
V17 Jan 17	\$13.48	\$13.52
V17 Dec 17	\$13.73	\$13.79
California Carbon Allowances (CCAs) Futures Spreads	BID	OFFER
V17 Dec 17 / Jan 17	\$0.24	\$0.28
V17 Dec 18 / Dec 17	\$0.37	\$0.42
California Carbon Allowances (CCAs) Futures Options	BID	OFFER
V17 March 17 \$13.75 Call	\$0.12	\$0.17
V17 Dec 17 \$15.00 Call	\$0.14	\$0.22
California Carbon Offsets (Prompt)	BID	OFFER
Golden CCO	\$11.85	\$12.05
CCO (3)	\$10.75	\$11.00
CCO (8)	\$10.30	\$10.50

California Carbon Market & Pricing Update

In December, traded volume on ICE amounted to 23,831,000 CCAs with V16 Dec16 futures trading within a relatively range bound level of \$0.12. Prices remained mostly flat month over month following a late month rally. The January 2017 to December 2017 CCA spread stands at \$0.30/ton, implying a carry rate of 2.52% annualized. As we enter the new year, the Vintage 2017 January contract currently sits at \$13.00/ton and remains well below the upcoming floor clearing price of \$13.57. This price discrepancy highlights the risk that exists at the moment, with many market participants hesitant to make compliance decisions in advance of further certainty on the Chamber of Commerce lawsuit.

The California Appeals Court is scheduled for oral arguments on the lawsuit on January 24, 2017. A final decision is not expected to be released for 30-90 days post argument. Traders and obligated parties will be keeping a close eye on any clues that signal the future of the existing auction structure. It is worth mentioning that even with a supermajority in both the Assembly and the Senate, any decision that is made by the Appeals Court will likely be appealed and could face a period of continued uncertainty.

Type	Vintage	Bid / Ask (\$/tonne)	Standard
California Carbon Allowances (CCAs) ICE Cleared	2017 (Dec 17 delivery)	\$13.28/\$13.31	California Air Resources Board
California Carbon Offsets (CCO) 3		\$10.45/\$10.55	
CCO 8		\$10.15/\$10.30	
Golden CCO		\$11.45/\$11.55	

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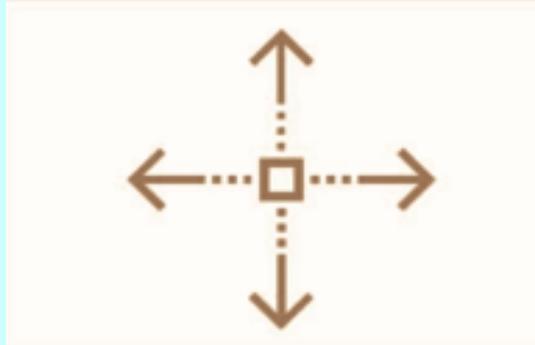
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Future Policy Considerations for Forest Projects

POLICIES



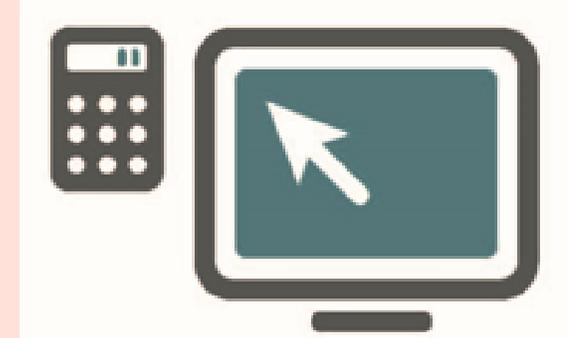
- More options to use even-aged management
- Option to revise the project area
- Introduction of computational reversals

VERIFICATION



- Allowing more time to verify reversals
- Flexible verification schedules
- Reducing measurement burden for verifiers

TOOLS



- Inventory tool
- Standardized inventory methodology
- Standardized baseline tool
- Project feasibility tool

Final Q&A



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