American Carbon Registry and California Air Resources Board
US Forests Compliance Offset Protocol: Review of updates to common practice values

Barbara Bamberger, Forestry Lead Staff, ARB
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October 14, 2014
Introduction to ACR and ACR’s Role in California’s Cap & Trade Program
Jessica Orrego, ACR

Summary of QM update and Regulatory Process
Barbara Bamberger, ARB

USFS Forest Inventory and Analysis
Olaf Kuegler, Statistician, FIA

Update of common Practice Values
Barbara Bamberger, ARB

Q & A
Stewart McMorrow, ACR
Asking questions

- Either during presentation or Q&A period at end
- Type questions into ‘Chat’ box near bottom of your webinar pane or click hand icon to ask in person. Please include your name and organization.
- We will direct questions to the appropriate person during the Q&A period at the end
- We will try to answer all questions and will make our best effort to respond to any questions not addressed during the call via email

Webinar will be recorded

- Both the presentation and a link to the recording will be sent to all registered webinar participants
Introduction to ACR and ACR’s Role in California’s Cap & Trade Program
Winrock International Institute for Agricultural Development

Non-profit organization that works in the U.S. and around the world to empower the disadvantaged, increase economic opportunity, and sustain natural resources

- Formed in 1985 from three Rockefeller family organizations
- Dedicated to economic development and sound resource management in the U.S. and around the world
- Climate change and its impacts on the poor are a central concern
- Supports market mechanisms as a means to improve the environment and alleviate poverty
American Carbon Registry

- **First U.S. private voluntary GHG registry**, founded 1996
  - Over 40 million tons of emissions reductions issued
  - Joined Winrock International in 2007

- **Registry roles:**
  - Develop and approve carbon offset accounting standards & methodologies / protocols
  - Oversee independent verification by accredited entities
  - Review and register GHG emissions reduction projects, including issuance of serialized offsets
  - Transparently track transactions and retirements

- **ARB-approved** in December 2012 as Offset Project Registry (OPR) and Early Action Offset Program (EAOP) for the California cap and trade market
  - Supports ARB’s implementation of the Cap-and-Trade
  - Offset Program from ACR’s Sacramento office
Compliance offset projects must register with an ARB-approved OPR; early action offset projects must register with an ARB-approved Early Action Offset Program (EAOP).

The OPR will oversee the project listing, verification, registration and issuance of Registry Offset Credits developed using ARB-approved compliance offset protocols.

Once approved by ARB, issued Registry Offset Credits can be cancelled on the OPR and re-issued as ARB Offset Credits on the CITSS.
Why ACR?

- Technical expertise in forestry and forest protocol = quick and accurate answers, customer service oriented
- Long track record of project review, verification oversight and credit issuance
- Competitive fee structure including no issuance fees
- Open channel of communication with ARB to address questions and provide consistent interpretations
- **Seven** ACR staff have received ARB Forest Protocol accreditation
- Able to draw on Winrock forest carbon, clean energy and agriculture experts for additional technical input
Jessica Orrego
• 12 years of experience developing forest carbon offset projects, and related forestry consulting

Stewart McMorrow
• California RPF, former ARB lead verifier, 15 years experience in forestry management.

Kyle Hemes
• Experience in REDD project development, expertise in ACR registry process and ARB regulation, ROC reviews
Competitive Pricing

Account opening: $500
Annual account fee: $500
Project listing fee: $750/ compliance offset project

Offset issuance fee: Free
Offset activation fee: $0.15/offset*
Offset cancellation fee: $0.03/offset*
Offset transfer fee: $0.02/offset

* Total of $0.18/offset for issuance, activation and cancellation when ARB requests cancellation of ROCs or EAOCs
Update and Overview
Compliance Offset Protocol
U.S. Forest Projects

Regulatory Process &
Update of Common Practice Values

American Carbon Registry Webinar

October 14, 2014

California Air Resources Board
Compliance Offset Protocol
U.S. Forest Projects - Rulemaking Process

- September 2014 Rulemaking Package (Quantification Methodology)
  - 45-day public comment period began August 1, 2014
  - Board Hearing on September 18, 2014
    - Approved for adoption with modifications:
      - Common Practice update delayed until December rulemaking package
  - Revised protocol in 15-day public comment period
  - Documents may be found here: [http://www.arb.ca.gov/regact/2014/capandtrade14/capandtrade14.htm](http://www.arb.ca.gov/regact/2014/capandtrade14/capandtrade14.htm).
  - Anticipated effective date 1/1/2015
Compliance Offset Protocol
U.S. Forest Projects – Rulemaking Process

- December 2014 Rulemaking Package
  - Add regions of Alaska
  - Update Common Practice values and High/Low site classification
- 45-Day Public Comment period begins October 31, 2014
- Board Hearing on December 18 & 19, 2014
- Second Board Hearing in 2015
Which Protocol Version to Use?

- Projects Listed Prior to January 1, 2015
  - May continue to use October 2011 protocol
  - May elect to use the January 2015 protocol
- Projects Listed On/After January 1, 2015
  - Must use January 2015 protocol
- Future protocol updates
  - Existing projects may continue to use the protocol they are currently using
  - Existing projects may elect to use the latest protocol
  - New projects must always use the latest protocol
Key Updates
Anticipated Effective Date: 1/1/15

- Standardized adjustment factors for density and structural loss in the standing dead tree carbon pool
Key Updates
Anticipated Effective Date: 1/1/15

- Calculating adjustment factors for density & structural loss in the standing dead tree carbon pool
  - Applicable to all states except CA-OR-WA
  - Calculate the biomass in standing dead trees
    - central stem and bark and deduct missing or rotten portions
  - Apply density reduction factor
  - Apply bark and bole structural loss adjustment
    - results in an adjustment factor
  - Apply adjustment factor to each component using the CRM Method
  - Multiply remaining tree component estimates
    - top and limbs, stump, and belowground biomass by the component SLA by decay class per tree (Harmon 2011)
  - Multiply component estimates by .5 to convert to C
    - results in C, which must be converted to CO2e

- For CA-OR-WA use Harmon (2011)
Key Updates
Anticipated Effective Date: 1/1/15

- Volume and Biomass Equations for 45 states
  - OPO/APDs will still use the Component Ratio Method for estimating biomass

- Volume and Biomass Equations for CA-OR-WA
  - Updated regional volume models and biomass equations
Key Updates
Anticipated Effective Date: 1/1/15

[Map of the United States with various color-coded states and regions]
Key Updates
December Protocol Revisions

- Proposed Common Practice Value Updates
  - Delayed from the Quantification Methodology updates heard at September Board Hearing
  - Incorporated into the December rulemaking package
Common Practice
December Protocol Revisions

- Adopted by Board as part of the original Cap-and-Trade Regulation on October 20, 2011
- Based on 2002-2006 data
- Board directed staff to periodically review protocols and update to the latest science and data
Common Practice
December Protocol Revisions

- Steps for updating Common Practice
  - Reviewed existing data
  - Reviewed new data

- New Data Reflects:
  - Growth, harvest, fire, and any other disturbance or conversion

- Update Includes:
  - standing live trees (only)
  - private lands
  - data 2002-2012

- 5-year, 7-year or 10-year rolling average annual estimates, depending on region
USFS Forest Inventory and Analysis

Olaf Kuegler

Statistician
USFS, PNW Research Station
Portland, OR

okuegler@fs.fed.us
503-808-2028
What is FIA?

• Program created by Forest Service in 1928
• Initially an inventory of marketable timber
  • Permanent field plots established
  • Periodic data collection
    • All plots sampled within 1-3 years, reassessed every 10 years
• Now an annual inventory of *all* forested lands
  • All plots measured on a 5 to 10-year cycle
  • Nationally standardized measurement protocols
FIA is a National Program
4 Regions (“work units”)

Pacific Northwest

Interior West

Northern

Southern
History
FIA – National Inventory

• Nationally standardized measurement protocols.
• Set of *core* measurements, done everywhere with the same protocol.
• Set of *core-optional* measurements, done regionally with the same protocol.
• Some regional protocols.
• Neutral data provider.
Data

- Data can be downloaded (FIA DataMart).
- Online estimation tools are also available (FIDO, EVALIDator).
FIA Inventory Sample Design

Local Cells

Country Cell

Phase 2 –the plots

10 panels

2004
2005
2006
2007
2008

Local Cells
5 Year Cycle Example
FIA Cycle Length

• 1998 Farm Bill mandated five year cycle.
• PNW and Interior West RS are federally funded for a 10 year cycle.
• Northern and Southern RS are federally funded for a 7 year cycle. Some states pay for a 5 year cycle.
• Due to reduced funding, this may change in the future.
FIA Field Plot Design

- **Macroplot (optional)** (58.9 ft): Large trees or sampling rare events
- **Subplot (24 ft)**: Tally all trees \( \geq 5'' \) DBH, Measure understory veg.
- **Microplot (6.8 ft)**: Tally seedlings & saplings
- **Lichen Plot (optional)**: (120 ft) Diversity and abundance
- **1-hectare plot (optional)** (~180 ft): Tally very large trees
- **Transects (optional)**: Tally coarse & fine woody debris; collect ground cover data

Notes:
- Measure using 100 ft "butterfly" transect
- Tally all trees \( \geq 5'' \) DBH
- Measure understory vegetation
- Tally seedlings & saplings
- Tally very large trees
- Collect ground cover data
- Measure using 100 ft "butterfly" transect
USFS Ecosection

• Ecosections are spatial units that have similar physical and biological components.

• They were developed by the US Forest Service.
Supersection

• USFS Ecosections were combined by Climate Action Reserve (CAR) into supersections if they shared similar environmental, economic, and regulatory attributes.
• Supersections were later adopted by ARB.
Assessment Areas

• CAR combined similar FIA forest types into forest communities
• Forest communities are broken up by high site/low site class within supersections.
Estimation

- Methods follow USFS GTR SRS-80.
- Design based inference.
- All estimates are based on temporal indifference method (5-10 year averages).
- *Common practice* estimates are ratio of means estimates (per acre).
Example:
White Mountains
Mixed Hardwoods

This assessment area is comprised of
• mixed hardwoods (FIA forest type 503, 505, 515, 608, 701, 702, 703, 704, 708, 904),
• all site classes,
• within USFS ecosection M211A (White Mountains).
Example:
White Mountains
Mixed Hardwoods

- Original dates: 2002-2006
- Combined all plots between 2002 and 2006 to estimate total $CO_2$ and total acres within assessment area.
- Divided total $CO_2$ by total acres. (Ratio of means)
2002-2006

- CO$_2$: 5,127,758 tons
- Area: 101,660 acres

\[
\frac{5,127,758}{101,660} = 50.4 \text{ CO}_2 \text{ tons per acre}
\]
2008-2012

- CO$_2$: 5,015,227 tons
- Area: 102,903 acres

- $\frac{5,015,227}{102,903} = 48.7$ CO$_2$ tons per acre
Example:
White Mountains
Mixed Hardwoods

- Previous common practice: 50.4
- New common practice: 48.7
# Original and Updated Site Class Groupings

<table>
<thead>
<tr>
<th>Site Class</th>
<th>USFS Site Class Groupings</th>
<th>Original</th>
<th>New</th>
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<tbody>
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<td>1-2</td>
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<td><strong>All</strong></td>
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<td><strong>Low</strong></td>
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Change in High Site Class Common Practice Values

California Air Resources Board
Change in Low Site Class
Common Practice Values

California Air Resources Board
## Old and New Values

<table>
<thead>
<tr>
<th>Supersection</th>
<th>Assessment Area</th>
<th>Site Class</th>
<th>OLD Common Practice</th>
<th>NEW Common Practice</th>
<th>New # Plots</th>
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<td>Adirondacks &amp; Green Mountains</td>
<td>Adirondacks &amp; Green Mountains Northeast Conifers</td>
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<td>Low</td>
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<td>Adirondacks &amp; Green Mountains Northern Hardwood</td>
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<td>Blue Mountain Juniper / Pinyon Woodland</td>
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Post December Board Hearing Activities

- Public workshops
- Technical workgroups
- Return to Board mid 2015
Websites


- Written comments may be submitted on the 15-Day Modifications by 5 P.M. October 17, 2014 at: http://www.arb.ca.gov/lispub/comm/bcsubform.php?listname=capandtrade14&comm_period=1
ACR@winrock.org: Will be directed to the ACR Administrator

Technical forestry questions related to protocol or verification:

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Thank you!