Guidance Document for the Compliance Offset Protocol U.S. Forest Projects, June 25, 2015

In California's Greenhouse Gas (GHG) Cap-and-Trade Program, covered entities may use ARB offset credits to fulfill up to 8 percent of their compliance obligation. Offset credits are tradable compliance instruments that represent verified GHG emission reductions or removal enhancements made in sectors and sources not covered by the Cap-and-Trade Program.

ARB has developed this guidance document specific to forest projects using ARB's Compliance Offset Protocol U.S. Forest Projects, June 25, 2015. This guidance further describes the requirements in the Compliance Offset Protocol.

The Cap-and-Trade Regulation (Regulation), which appears at sections 95801 to 96022 of Title 17, California Code of Regulations, and the offset protocols incorporated therein, are a set of rules that establish the compliance offset program and the methods for quantifying GHG emission reductions and enhanced sequestration.

Disclaimer: ARB staff has prepared this document to describe the regulatory requirements in a user-friendly format. **Unlike the Regulation and offset protocols, this guidance document does not have the force of law.** It is not intended to and cannot establish new mandatory requirements beyond those that are already in the Regulation, and it does not supplant, replace, or amend any of the legal requirements of the Regulation or protocols. Conversely, this document's omission or truncation of regulatory requirements does not relieve operators of their legal obligation to fully comply with all requirements of the Regulation and the Offset Protocols and is not intended as a substitute for reading the Regulation and protocols.

ARB makes every effort to keep its documents up to date. However, ARB does not guarantee the accuracy of this document and shall not be responsible for any errors or omission in content. ARB reserves the right to make changes without notice.

Conformance with protocols and the Regulation requirements is the responsibility of the Offset Project Operator, Authorized Project Designee, and Verification Body, as applicable. ARB cannot guarantee that offset projects using this document will pass verification.

Additional resources, instructions, and reference documents can be found at the ARB 2015 Forest Protocol Resources website (http://www.arb.ca.gov/cc/capandtrade/protocols/usforest/usforestprojects_2015.htm).

Guidance Document for the June 25, 2015, Compliance Offset Protocol U.S. Forest Projects

Introduction

In response to Board direction at the June 25, 2015, Board hearing ARB staff has developed this guidance document to provide clarification of the regulatory language and aid in implementation of the U.S. Forest Projects Compliance Offset Protocol (Forest Protocol) adopted at the same Board hearing. This document is organized by chapters, and subchapters as found in the Forest Protocol. For example, if there is a question about a definition in subchapter 1.2 of the Forest Protocol, any guidance on the issue would be found in subchapter 1.2 of this document. Chapters and subchapters where ARB staff are not providing additional guidance are intentionally omitted from this document. This document, along with additional resources, instructions, and reference documents can be found at the 2015 Forest Protocol Resources website at: http://www.arb.ca.gov/cc/capandtrade/protocols/usforest/usforestprojects_2015.htm.

Chapter 1. Purpose and Definition

1.2 Definitions

Clearcut

Definition: Subchapter 1.2(a)(16)

"Clearcutting" means a regeneration method involving the removal of a stand in one harvest. Regeneration after harvesting shall be obtained by direct seeding, planting, sprouting, or by natural seed fall. When practical, clearcuts shall be irregularly shaped and variable in size to mimic natural patterns and features found in landscapes.

Further Clarification:

This definition was taken directly from the 2015 California Forest Practice Rules (CFPR) Article 3 Sections 913.1, 933.1, 953.1 "Regeneration Methods Used in Evenaged Management."

Clearcutting is an even-aged regeneration harvest that removes all or most trees in a stand in one harvest, with the objective of establishing a new cohort of trees. In adding this definition, there is no intent to impose additional rules or change the definition of silvicultural methods. The California Forest Practice Rules were selected as the appropriate standard because one of the goals of the offsets program is to encourage the adoption of California's rigorous standards by other locations. Additionally, selecting a single standard creates a level playing field for all projects and simplifies verification by only having a single national standard rather than multiple regional standards.

Clearcut unit shape should be irregular and variable *when practical*, as not all situations will allow for highly variable shapes. Verification of adherence to this statement is subjective, and verifiers are encouraged not to expect application of variable shapes in all instances but to verify project developers' efforts to vary shape *when practical.*

Projects are required to conform to all local, state and federal laws and regulations. Verification should confirm conformance with any additional even-aged management requirements in the California Forest Practice Rules in order to satisfy the state conformance requirement for project located in California, and confirm conformance with any applicable standards for projects located in other states.

Countable Tree

Definition: Subchapter 1.2(a)(20)

"Countable Tree" means a tree that must be in place at least two growing seasons and must be live and healthy.

Further Clarification:

This definition was adapted from the California Forest Practice Rules. Any tree that meets the definition in subchapter 1.2(a) (20) can be used to meet stocking, regardless of commercial status. The additional requirements found in the California Forest Practice Rules are not relevant to meeting the stocking requirements for purposes of the protocol; however, projects in California may have to meet the additional requirements to meet the regulatory conformance requirements of the Forest Protocol and Regulation.

Natural regeneration must be at least 2 growing seasons old, and planted seedlings must have been planted onsite at least 2 growing seasons ago, regardless of age. The growing season is a commonly understood timeframe from spring to summer with optimum climate for tree growth.

Trees must be alive at the time of the survey, based on professional opinion. Trees must also be healthy, based on regionally or professionally accepted standards, or local or state regulations. Characteristics to consider may include crown ratio, crown condition, foliage color, foliage retention, and symptoms of disease or other stress. OPOs must clearly define what criteria and standards will be used to define "countable" trees. Verifiers are not required to implement the same criteria and standards developed by the OPO when verifying stocking; however, verifiers must ensure that the criteria and standards used by the OPO to assess stocking are reasonable, appropriate, and in compliance with the protocols. If the verifier uses their own criteria and standards, the verifier must clarify what those are and how they were determined.

Even-aged Management

Definition: Subchapter 1.2(a)(22)

"Even-Aged Management" means a silvicultural system that includes clearcutting, seed tree, and shelterwood regeneration methods. Any harvest activity that does not meet the stocking requirements of subchapter 3.1(a)(4)(D) is also considered even-aged management, unless a state agency with jurisdiction over the project area identifies the practice as uneven-aged management. By convention, the spread of ages does not differ by more than 20 percent of the intended rotation.

Further clarification:

Even-aged management may include separate treatments. It is not the intent of the even-aged management limitations to restrict even-aged harvests that are stocked according to subchapter 3.1(a)(4)(D) immediately following harvest, e.g. seed tree removal or shelterwood removal steps. Rather, these limitations are intended for even-aged *regeneration* harvests. A regeneration harvest is the harvest step that is intended to regenerate the stand with a new cohort of young seedlings, either naturally or artificially. Clearcut, seed tree seed step and shelterwood seed step are the harvests associated with even-aged management that are specifically intended to promote establishment of a new cohort.

The statement regarding spread of ages describes (in general) an even-aged stand, the establishment of which would be the objective of even-aged management. However, this is not a prerequisite for even-aged management, nor is it a post-harvest requirement. Verifiers are encouraged to defer to the judgement of the professional forester in identifying even-aged management. Some harvests not considered even-aged management may result in post-harvest conditions that fall below the stocking requirements of subchapter 3.1(a)(4)(D), e.g. variable retention harvest or rehabilitation silviculture. If the state agency with jurisdiction over the project area identifies the practice as anything besides even-aged management, even-aged management requirements will not apply.

Spread of ages example: Intended rotation length is 100 years, 20 percent of this is 20 years, difference between the youngest and oldest tree should not be greater than 20 years. So if the oldest tree is 40 years, youngest tree should be at least 20 years old.

Logical Management Unit

Definition: Subchapter 1.2(a)(31)

"Logical Management Unit" or "LMU" means all land that the forest owner(s) and its affiliate(s) either own in fee or hold timber rights on and that are within the same

assessment area(s) where the project is located. An LMU may be further defined by its unique biological, geographical, and/or geological attributes, delimited by watershed boundaries and/or elevational zones, and/or unique road networks, and/or an area that has experienced natural disturbance such as wildfire or windstorm, and/or areas designated as High Conservation Value Forest (HCVF) by a state agency with jurisdiction over the project area or as identified by the forest owner's Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI), or Tree Farm certification.

Further Clarification:

An LMU does not necessarily have to include all land that the forest owner(s) and its affiliate(s) either own in fee or hold timber rights on and that are within the same assessment area(s) where the project is located if it can be demonstrated that a subset of the ownership may be further defined by one or more of the following criteria which are provided in the LMU definition in subchapter 1.2 of the Protocol. The LMU must be at least as large as the offset project area, and only one LMU can contain the offset project area. Some examples of how these criteria may be interpreted are described in greater detail below to assist in implementation of subchapter 5.2.1; however, this list should not be considered exhaustive:

- Biological: may include different forest types, size classes and densities.
- Geographical: may include contiguous management units such that non-contiguous areas are excluded, for example riparian forest along the edges of streams vs. upland forest.
- Geological: may include different soil types or significant soil characteristics such as substantial differences in productivity, root barriers (hardpan) or water tables.
- Watershed boundaries: may be delineated using the drainage basins of specific waterbodies or previously defined and established watershed boundaries such as USGS hydrologic units or state watershed boundaries.
- Elevational zones: may be delineated using topographical maps, contour lines, digital elevation models, LiDAR, etc. In areas where aspect significantly affects vegetation then the elevational zones may also vary by aspect.
- Unique road networks: may include roads that provide access to particular areas of an ownership for certain management purposes or functions.
- Management goals or planning unit delineation.
- Areas that have experienced natural disturbance may be delineated using state or local maps (such as fire perimeter maps), on-the-ground mapping, or historic remote sensing data.
- High Conservation Value Forest (HCVF) which may include, for example: 1) areas covered by conservation easements that were funded and/or held by a

state agency with jurisdiction over the project area, 2) areas that are similar to or representative of areas that have been described in a state agency report, study or regulation as having important ecological characteristics or functions such as wildlife habitat or water provisioning, or 3) areas that have been described as having high conservation value in the management plan approved as part of FSC, SFI or Tree Farm certification.

Chapter 3. Eligibility

3.1 General Eligibility Requirements

Native Species Criteria

Subchapter 3.1(a)(1) & Table 3.1

Project consists of at least 95% native species based on the sum of carbon in the standing live tree carbon stocks. The assessment must be conducted using estimates of stems per acre for reforestation projects and basal area per acre for improved forest management and avoided conversion projects.

Further Clarification:

The 95% native species criteria will be assessed using the methods described in the protocol. Native species composition will be assessed at initial and all subsequent verifications from inventory data and will use estimates of stems per acre for reforestation projects and basal area per acre for improved forest management and avoided conversion projects.

Sustainable Long-Term Harvesting Practices

Subchapter 3.1(a)(2)(C)(3)

The forest owner(s) must employ uneven-aged silvicultural practices (if harvesting occurs) on all of the forest owner's landholdings within the assessment area containing the project and maintain canopy cover averaging at least 40 percent across all of the forest owner's landholdings within the assessment area containing the project as measured on contiguous 20 acre areas within the forest owner's landholdings found in any of these assessment areas, including land within and outside of the project area (areas impacted by significant disturbance may be excluded from this test)

Further Clarification:

These requirements are applicable to projects as of the project commencement date and are not intended to require a retrospective analysis of management practices on the project area.

Harvest Unit Size for Even-aged Management

Subchapter 3.1(a)(4)(A)

Even-aged harvest units must not exceed 40 acres in total area.

Further Clarification:

The harvest unit size limitation is intended for even-aged regeneration harvest units. Units that are not harvested using an even-aged regeneration harvest are not subject to this size limitation, but must comply with all other applicable laws and regulations.

Buffer Area for Even-aged Management

Subchapter 3.1(A)(4)(B)

Even-aged harvest units shall be separated by an area that is at least as large as the area being harvested or 20 acres, whichever is less, and shall be separated by at least 300 ft. in all directions.

Further Clarification:

This definition applies to even-aged regeneration harvests, such that "even-aged *regeneration* harvest units shall be separated by an area that is at least as large as the area being harvested or 20 acres, whichever is less…"

The phrase "separated by an area" can be interpreted as "separated by a logical logging unit," but must meet the size requirements. An even-aged regeneration harvest unit shall not have another even-aged regeneration unit to be harvested present within 300 feet in any direction. This is the minimum distance between even-aged regeneration harvest units. A logical logging unit at least as large as the harvest unit or 20 acres, whichever is less, must separate even-aged regeneration harvests that occur simultaneously (i.e., in the same year or under the same Timber Harvesting Plan). This logical logging unit does not need to be the exact same shape as the harvest unit.

Adjacency Requirements for Even-aged Management

Subchapter 3.1(a)(4)(C)

Within ownership boundaries, no area contiguous to an even-aged harvest unit may be harvested using an even-aged harvest method unless the average of the dominant and codominant trees on an acceptably stocked prior even-aged harvest unit is at least five feet tall, or at least five years of age from the time of establishment on the site, either by the planting or by natural regeneration. If these standards are to be met with trees that were present at the time of the harvest, there shall be an interval of not less than five

years following the completion of operations before adjacent even-aged management may occur.

Further Clarification:

These adjacency requirements apply to even-aged regeneration harvests on land within the project area and within the OPO's ownership. It does not apply to neighboring lands not owned by the OPO.

The requirement that an interval of not less than 5 years must pass after the completion of operations when trees that were present at the time of the harvest are to be used to meet stocking standards applies to even-aged regeneration harvests only. Harvests using a method besides an even-aged regeneration method are not required to comply with these adjacency requirements.

For projects in California in the Coast District, this requirement does not impose additional requirements. The California Forest Practice Rules allow adjacent even-aged regeneration harvests to occur if the prior even-aged regeneration harvest has the dominant and codominant trees averaging 5 years of age or average at least 5 feet tall and 3 years of age from time of establishment on the site. Either condition conforms to the protocol requirement of 5 feet tall or 5 years of age since time of establishment on the site.

Determining Stocking

Subchapter 3.1(a)(4)(D)

An area on which even-aged timber operations have taken place shall be classified as acceptably stocked if either of the standards set forth in (1) or (2) below are met:

1. An area contains an average point count of 150 per acre that meets the requirements of subchapter 8.1(b)(2)(E) to be computed as follows:
    a. Each countable tree which is not more than 4 inches DBH counts 1 point;
    b. Each countable tree over 4 inches and not more than 12 inches DBH counts 3 points; and
    c. Each countable tree over 12 inches DBH counts as 6 points.
2. The average residual basal area measured in stems 1 inch or larger in diameter is at least 50 square feet per acre.

Subchapter 8.1(b)(2)(E)

The following procedure shall be used to determine if point count stocking standards have been met allowing for harvest of adjacent plots:

1. There shall be at least one plot per acre, with a minimum of 20 plots, for each harvest unit area sampled.
2. Plots shall be placed on the area being sampled in a uniform grid. The grid shall be considered uniform if the distance between lines does not exceed by two and one half times the distance between plots on the lines.
3. Roads and landings that will not be regenerated, meadows, wet areas, rocky areas, and areas not normally bearing timber shall not be used as plot centers for sampling purposes. Stream protection zones may be excluded from the sample where stocking cannot be achieved due to legal restrictions on regenerating the zone. A random right/left offset from the plot center may be used. Alternatively the plot may be treated as an unstocked plot for purposes of determining acceptable stocking. Offsets shall be in one-half chain (33 ft., 10.06 m) intervals at a right angle to the plot line with a maximum distance of 1.5 chains.
4. For trees counted as one point each, a plot with a 9.61 foot radius is used (1/150th of an acre). If a countable tree of a value of at least one point is found in the plot, it is stocked, so recorded, and the verifier moves on to the next plot center. If no countable tree is found, the next concentric plot is measured.
5. For trees counted as three points each, a plot with a 16.65 foot radius is used (1/50th of an acre). If a countable tree of a value of at least three points is found in the plot, it is stocked, so recorded, and the verifier moves on to the next plot center. If no countable tree is found, the next larger concentric plot is measured.
6. For trees counted as six points each, a plot with a 23.55 foot radius is used (1/25th of an acre). If a countable tree of a value of at least six points is found in the plot, it is stocked. If no countable trees of the required sizes are found in the three concentric plots, the plot center is recorded as being unstocked and the verifier moves on to the next plot center.
7. No more than five unstocked plots shall be contiguous to each other. A contiguous unstocked plot is any plot within the rectangle constructed around the two adjacent plots on the same line and the three plots adjacent to them on the two nearest lines. If there are more than five unstocked plots contiguous to each other, the sample shall be assumed to be understocked except where application equation 8.1 gives a number of less than six.

Equation 8.1. Contiguous Understocked Plot Analysis

$$\frac{CUP \times SA}{NPS} - \frac{SIP \times 0.5 \times SA}{NPS} < 6$$

Where,

CUP	=	Number of contiguous unstocked plots
SA	=	Acres in sample area
SIP	=	Number of stocked intermediate plots. An intermediate plot is a plot placed halfway between two unstocked plots in the sample.
NPS	=	Number of plots in sample, excluding intermediate plots.

8. If less than 55% of the plots are stocked, it is assumed that the area being sampled is understocked. If the OPO/APD or verifier still believes the area to be stocked, another sample may be run. The second sample shall be laid out in the same manner as the first sample with the additional plots lying halfway between the initial plot lines. For statistical analysis, the two samples shall be combined and analyzed together.

Further Clarification:

These stocking requirements are intended to clarify the definition of an "acceptably stocked prior even-aged harvest unit" as required in subchapter 3.1(a)(4)(C) when considering adjacent even-aged regeneration harvests. These requirements are intended to apply to even-aged regeneration harvests only. Even-aged regeneration harvest units are not required to meet these stocking standards unless harvesting an adjacent area using an even-aged regeneration method is considered, but must comply with all other applicable local, state, and federal laws and regulations.

Verifiers may use professional judgment when determining adequate stocking and are not automatically required to use the sampling procedures in subchapter 8.1(b)(2)(E). The California Forest Practice Rules allow for the determination of adequate stocking using the concepts of the "least stocked area" (defined as 40 acres) and "obviously stocked". Verifiers may also consider documentation from the California Department of Forestry and Fire Protection (CalFire) or any other similar local, state, or federal program indicating the minimum stocking standards in the protocol have been met. In the event of uncertainty or disagreement regarding the sufficiency of stocking, a sampling procedure is then used.

<u>Least stocked area</u>

During site verification, the verifier may use professional judgement in determining a "least stocked area" of the total area being assessed for stocking. If the verifier conducts an onsite ocular inspection of the area and agrees that in their professional judgment the area has met the stocking requirements, then that unit may be used to

determine total stocking requirements for purposes of even-aged adjacency under the Forest Protocol. To ensure that the stocking method (point count, basal area, combination) has not been altered over time by growth or mortality, the least stocked unit should not generally be more than 10 years old unless demonstrated that no substantial changes have occurred.

Obviously stocked

During site verification, the verifier may determine based on professional judgment that a unit is "obviously stocked". If the verifier conducts an onsite ocular inspection of the area and agrees that a unit is "obviously stocked" then that unit may be considered stocked for purposes of even-age adjacency requirements under the Forest Protocol. If that unit was also the agreed to be "least stocked unit" then even-aged adjacency has been demonstrated.

Sampling procedure

If the verifier cannot determine with reasonable assurance using one of the ocular inspections above or using documentation from a relevant forestry agency that the stocking standards have been met, then the verifier must sample plots to confirm the determination by the OPO/APD. Again, the verifier must use professional judgement in selecting the number of plots to sample. There is no requirement that every plot be sampled. Consistent with the application in the Forest Practice Rules, the OPO/APD should install the stocking sample pursuant to the procedures outlined in subchapter 8.1(b)(2)(E). The criteria for a countable tree are the same as those identified in this guidance document under the definition of "countable tree". A plot can be counted as stocked if either plot count or basal area meet the requirements of subchapter 3.1(a)(4)(D).

If the plot has the minimum basal area equal to or greater than required under subchapter 3.1(a)(4)(D)(2), the plot shall be counted as stocked. The protocol does not provide a prescriptive method for determining average residual basal area per acre; however, the methods identified in Article 5 of the California Forest Practice Rules could be used to determine acceptable stocking based on average residual basal area. These methods can even be used outside of California because they represent a reasonable method to comply with the average basal are requirements. If the California Forest Practice Rules are followed for residual basal area to meet stocking requirements, one basal area factor shall be selected and used on all plots on a sampling area.

The verifier should perform data checks on the sample to confirm with reasonable assurance that the point count standard and/or the residual basal area standard

described in subchapter 3.1(a)(4)(D)(1) and subchapter 3.1(a)(4)(D)(2), respectively, of the Protocol have been met.

Chapter 5. Quantifying GHG Emission Reductions and GHG Removal Enhancements – Quantification Methodology

5.2 Improved Forest Management Projects

Assessing Stocking within an LMU

Subchapter 5.2.1(d)(3) & (4)

3. If sufficient inventory data for LMU lands exist to quantify above-ground standing live tree carbon stocks for the entire LMU, then equation 5.7 must be used to calculate WCS; and
4. If sufficient inventory data is not available for the LMU, a stratified vegetation-type analysis must be used to calculate WCS.

Further Clarification:

"Sufficient inventory data," for purposes of this subchapter, can be interpreted as data which is representative of the majority of the LMU (outside the project area, as the project inventory would represent vegetation within the project area), and would, based on professional judgement, result in more accurate estimates of carbon stocks per acre than a stratified vegetation-type analysis. The same ARB-approved volume and biomass equations used to quantify above-ground standing live tree carbon stocks in the project area must be used, thus, the data must contain the necessary measurements for use with these equations. Previous forest inventories can, in general, be used to quantify above-ground standing live tree carbon stocks for the entire LMU if they are compatible with the volume/biomass equations and if they are representative of the LMU based on professional judgement. The OPO may wish to clarify why their pre-existing data is sufficient for these purposes.

Vegetation Classes for Stratification

Subchapter 5.2.1(d)(4) & Table 5.2

Forest Vegetation Description	Average Diameter (Breast Height)	Average Canopy Cover	Carbon Rating
Brush	0"	NA	0
Regeneration	3"	NA	0.5
Pole-sized trees	6" - 12"	< 33%	2
Pole-sized trees	6" - 12"	33% - 66%	4
Pole-sized trees	6" - 12"	>66%	6
Small Sawlogs	12" - 20"	< 33%	4
Small Sawlogs	12" - 20"	33% - 66%	8
Small Sawlogs	12" - 20"	>66%	12
Large Sawlogs	20" - 36"	< 33%	8
Large Sawlogs	20" - 36"	33% - 66%	16
Large Sawlogs	20" - 36"	>66%	24
Very Large Trees	>36"	< 33%	16
Very Large Trees	>36"	33% - 66%	32
Very Large Trees	>36"	>66%	48

Further Clarification:

The Carbon Rating for each vegetation class expresses the amount of carbon per acre relative to the other vegetation classes. It is not intended to express the specific amount of carbon per acre for each vegetation class. In equation 5.9, the calculation of the stratified carbon weighting factor (SWF) results in a unit-less factor, to be used in

equation 5.8. As such, the specific quantity of carbon in each vegetation class is not necessary for calculating the SWF; the relative quantity of carbon in each vegetation class compared to other vegetation classes is sufficient. These values are generalizations of vegetation classes that can differ greatly by project area and region, and are intended to simplify the process for calculating weighted average above-ground standing live tree carbon stocks per acre (WCS) when sufficient LMU inventory data is not available.

Determining High Stocking Reference

Subchapter 5.2.1(d)(4)

Determine the high stocking reference (HSR) for the project area. The high stocking reference is defined as 80 percent of the highest value for above-ground standing live tree carbon stocks per acre within the project area during the preceding 10-year period;

(A) To determine the high stocking reference, the Offset Project Operator or Authorized Project Designee must document changes in the project area's above-ground standing live tree carbon stocks over the preceding 10 years;

Further Clarification:

The determination of the High Stocking Reference would ideally be based on actual data (e.g., past inventories, records of past timber sales, tax records). When data is not available, other methods may need to be used to estimate historical stocking levels. The method discussed in the transition guidance document (http://www.arb.ca.gov/cc/capandtrade/protocols/usforest/transition_guidance_document.pdf) that uses iTree is one possible option.

Modeling of Baseline Onsite Carbon Stocks

Subchapter 5.2.1(e)

Model the onsite carbon stocks, keeping the carbon pools listed in subchapter 5.2.1(a) distinct, through a series of growth and harvesting scenarios over 100 years beginning with the initial carbon stocks at the time of offset project commencement.

Further Clarification:

Baseline must be modeled based on the carbon stocks at the time of project commencement, not the beginning of the reporting period. If the inventory was taken after project commencement, it must be back-cast to project commencement and included in the baseline average.

Demonstration of Financial Feasibility

Subchapter 5.2.1(e)(2)(B)(3)

Comparable species composition to the project area which may be evidenced by the following:

a. Comparable property species composition is within 20 percent of project species composition based on trees per acre;
b. Identical codominant species; or
c. Identical Forest Type as defined by the USDA Forest Inventory and Analysis Database Description and User Guide for Phase 2 (V6.0.1), Appendix D.

Further Clarification:

The listed items are options for demonstrating comparable species composition. Any of the options may be used to demonstrate compliance.

Secondary Effects

Subchapter 5.2.6(b) & Equation 5.10

Each reporting period the Offset Project Operator or Authorized Project Designee for an improved forest management project must quantify the secondary effects associated with the project.

…

$AC_{se,n}$ = Actual amount of carbon in standing live and standing dead trees (whole tree including belowground biomass and bark) harvested by reporting period y

$BC_{se,n}$ = Estimated average baseline amount of carbon in standing live and standing dead trees (whole tree including belowground biomass and bark) that would have been harvested by reporting period y

Further Clarification:

The intent of the secondary effect calculation is to account for emissions that would occur on forestlands outside the Project Area as a result of project activities. Therefore, any tree that is downed intentionally or unintentionally as a result of actual harvesting activities on the project area or estimated by modeling the baseline scenario, including trees not sent to the mill, should be included in secondary effects calculations if it is likely that the same emissions (or practices) would occur due to harvesting on forestlands outside the Project Area that serve the same regional market for wood products.

Chapter 7. Reporting

7.1 Listing Requirements

A project wishing to list with ARB must provide the information required in subchapter 7.1. Listing forms are available on the ARB website at http://www.arb.ca.gov/cc/capandtrade/offsets/forms/forms.htm. These forms have been updated to reflect the 2015 Forest Protocols and replace the previous listing forms that were used for 2011 and 2014 Forest Protocol projects. An OPO/APD may use their own form to provide the required listing information.

Chapter 8. Verification

8.1 Verification

Verifying LMU Delineation

Subchapter 8.1(b)(1)(C)

(b) In addition to the offset project verification requirements in the Regulation, verification of Offset Project Data Reports for forest projects must include:
(1) During the initial full verification, a detailed review of:
(C) The modeling plan, assumptions, and silvicultural prescriptions applied to produce the project baseline

Further Clarification

A detailed review of the modeling plan and assumptions that are applied to produce the baseline includes verifying the delineation of the LMU. The verifier must use professional judgement in determining whether the delineation of the LMU adheres to the requirements of the Forest Protocol. As there are multiple ways in which an LMU can be delineated, the verifier must reach reasonable assurance that the OPO's chosen method of delineation is reasonable, appropriate, and implemented correctly, not necessarily that it is the same method that the verifier would have chosen to delineate the LMU. The verifier should ensure that the LMU was not arbitrarily chosen, but was delineated based on a sound and logical approach that is consistently applied. The verifier may also review the biological, geographical or other data used to delineate the LMU to ensure it is accurate and interpreted correctly.

Verifying Even-aged Management Buffer Areas

Subchapter 8.1(b)(2)(E)

Evaluate conformance with harvest unit size and buffer area requirements found in subchapter 3.1(a)(4), if applicable.

Further Clarification

The verifier must review even-aged regeneration harvest units for compliance with the adjacency and buffer requirements of the protocol. Buffer requirements only apply to even-aged regeneration harvest units until adjacency requirements (subchapter 3.1(a)(4)(C)) have been satisfied. The buffer area no longer applies and harvesting an adjacent unit using a regeneration harvest method is permissible once the adjacency requirements have been satisfied. The buffer and adjacency requirements only apply to land within the project area owned by the OPO. They do not apply to neighboring land not owned by the OPO.

Verifying Stocking

Subchapter 8.1(b)(2)(E)

Refer to the stocking section above "Determining Stocking" for verification procedures.

Further Clarification

See the "Determining Stocking" section in this document for further clarification.

Verification Statistical Analysis

Subchapter 8.1(b)(2)(E)(8)

If less than 55% of the plots are stocked, it is assumed that the area being sampled is understocked. If the OPO/APD or verifier still believes the area to be stocked, another sample may be run. The second sample shall be laid out in the same manner as the first sample with the additional plots lying halfway between the initial plot lines. For statistical analysis, the two samples shall be combined and analyzed together.

Further Clarification:

The "statistical analysis" the last phrase refers to is the calculation of what percentage of plots are stocked. For example, if the first sample results in only 50% of the plots being stocked, the second sample must have at least 60% of plots being stocked so that when combined, 55% of the plots are stocked.

Selection of Verification Plots

Subchapter 8.1.1(e)(4) & (5)

(4) Plots, or clusters, must be independently selected within a strata using a random or systematic design. If the offset project is not stratified for each applicable carbon pool, the offset verifier must allocate the plots or clusters on a randomized basis;

(5) No more than 6 plots or clusters can be assigned to a stand, unless the groups of plots required for verification exceed the number of stands that exist for the offset project

Further Clarification:

The 2015 protocol maintains the same language from previous protocol versions, but rearranges it for organizational purposes. The intent of the protocol remains the same, which is to use a risk-based, efficient approach to verification activities.

Subchapter 8.1.1(c) describes how to select the strata for verification based on the verifier's evaluation of risk. Subchapter 8.1.1(d) provides for the random selection of stands within the strata selected for verification. Subchapter 8.1.1(e) describes the basis for selecting the verification plots within the selected stands/strata. Plots must be selected independently in either a random or systematic fashion. If the project is not stratified or divided into stands, plots must be randomly selected. When the strata are divided into stands, no more than 6 plots or clusters can be assigned to any individual stand, unless it is not possible to assign only 6 plots to a stand and still achieve the required minimum number of sample plots. For example, a 3,000 acre project that has 1 stratum with 2 stands in the strata has a minimum of 16 plots required for sequential sampling; in this case 1 or both of the stands may exceed 6 plots in order to achieve the 16 plot minimum.

Appendix A. Developing an Inventory of Forest Project Carbon Stocks – Quantification Methodology

Standing Dead Trees

Appendix A(g)

Estimate the carbon for the above ground portion of standing dead trees, adjusting for structural loss in standing dead trees. Apply allometric equations provided on the Forest Offset Protocol Resources section of ARB's website to estimate carbon in standing dead trees in advanced stages of decay…

Further Clarification:

ARB-approved volume and biomass equations must be used when calculating standing dead tree carbon stocks for all decay classes.

Appendix B. Modeling Carbon Stocks – Quantification Methodology

Actual Project Carbon Stock Modeling

Appendix B(j)

Projected baseline and actual carbon stocks must be portrayed in a graph depicting time (starting from offset project commencement) in the x-axis and carbon tons in the y-axis. A reference point depicting the initial above-ground standing live tree carbon stocks must be included in the graph. The graph must be supported with written characterizations that explain any annual changes in baseline carbon stocks over time. These characterizations must be consistent with the baseline analysis required in chapter 5.

Further Clarification:

The requirement to include projected actual carbon stocks is intended to demonstrate feasibility of offset projects. ARB is aware that management may change and actual carbon stocks may fluctuate from modeled scenarios. Offset Project Operators will not be held responsible for deviations from the projected actual carbon stocks. This requirement encourages project developers to consider feasibility of long-term management practices that increase carbon stocks over time when developing offset projects.

Appendix C. Estimating Carbon in Wood Products – Quantification Methodology

Wood ***D***ensity ***F****actor*

Appendix C(a)(1)(B) & Equation C.1

WDF_i = Wood density factor for species i. Obtain wood density factor from Smith et al. if the project is located in the Pacific Northwest and from the USFS Wood Handbook if project is located in other regions.

Further Clarification:

The green specific gravities found in Table 5-3b of the USFS Wood Handbook are the correct reference for all species outside the Pacific Northwest. If the species is not listed in Table 5-3b, use the species-specific wood density in the REF_SPECIES worksheet (which contains the same information as the worksheet "biomass_coefficients_for_use_with_crm_45states" also found on ARB website). Use the column "WOOD_SPGR_GREENVOL_DRYWT" (column AW in the REF_SPECIES worksheet). For species in the Pacific Northwest the values in Table 4 of Smith el al. must be used. The specific gravities are determined by forest type, with hardwoods and softwoods within each forest type using the identified specific gravities.

Appendix F. Determining a Value for Common Practice – Quantification Methodology

Common Practice Update Process

ARB intends to update common practice values on a 5 year cycle, with the next update to occur in 2020. Common practice values will be based on the most recent data, e.g. for the 2020 update, data from 2015-2019 will be used; for the 2025 update, data from 2020-2024 will be used.

Adding Assessment Areas

Addition of new assessment areas will follow ARB protocols and will require a minimum of 2 years of data on a minimum of 30 FIA plots.