

RESPONSE TO PEER REVIEW COMMENTS

An Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on U.S. Timberlands was developed by Finite Carbon Corporation and submitted to the American Carbon Registry (ACR) for approval through ACR’s public consultation and scientific peer review process.

The methodology was first reviewed internally by Winrock for consistency with ACR requirements. It was posted for public comment in July 2010 and a second revision prepared in response to public comments. Public comments and responses are documented elsewhere.

The revised methodology was then submitted to three anonymous scientific peer reviewers, experts in the field of forest carbon methodologies and improved forest management in the United States. The reviewers’ comments are summarized below, organized by section of the methodology, along with Finite Carbon’s responses to each comment.

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General

	First review	Response	Second review	Response
1	<p>As written, the methodology is specific to U.S. private forests in ownerships of 1,000 acres or more. It may be intended to parallel other ACR methodologies with more international application or methodologies that could be used on other U.S. forest lands. If so, it would be useful to provide that context in the Scope and Definitions.</p> <p>One of the peer reviewers feels that the methodology should be made applicable to any country situation. This would require many changes and may or may not be what the developers or ACR desire. That comment is included here: "I would like to insist in the idea of proposing to make the methodology more general. Instead of having in the methodologies the parameters and conditions of the US timber market, proponent could make more general listing the parameters and conditions that a timber market must have to make this methodology more</p>	<p>The methodology is limited to the US because many of the terms and definitions are specific to US forestlands. Changing the scope would require significant changes to the fundamental structure of the methodology. Therefore, the methodology developer has chosen to limit the scope to lands within the US.</p>	<p>This is acceptable.</p> <p>The challenge is not to this methodology, but to the ACR. Upon accepting this methodology, ACR will still need to approve methodologies for projects in the US that do not meet these criteria (of which there should be many) as well as international projects. That is totally acceptable, but ACR needs to be alert to the potential for projects to do "methodology shopping" if too many variants are approved.</p>	<p>OK</p>

	First review	Response	Second review	Response
	broaden. The US timber market will then be included in the methodology, without limiting the possibility to projects in other countries.” There is not agreement with this position within the review team.			

Applicability Conditions (A2)

	First review	Response	Second review	Response
1	The “no leakage from activity shifting on other lands controlled by the project proponent” clause can be achieved by requiring that all forest lands owned or under the management control of the project owner be included in the project accounting boundary. If only a portion of the forestland under a single management control is contained in an IFM project, it becomes more difficult to verify that resources are not being diverted as a way of maximizing project benefits. One of the reviewers feels that this clause should be removed from applicability conditions and made part of the leakage	Section D6 of the methodology describes the mechanisms to assess whether activity shifting on non-project lands is occurring. Non-project lands are not subject to the same intense verification criteria which project lands must meet. Doing so would substantially increase costs where other mechanisms within the methodology can produce equally reliable results. By having this as an applicability criterion, the requirement becomes a contract provision that adds further assurances to the prevention of activity shifting due to project implementation.	Activity shifting can occur on other ownerships outside the control of project proponents. D6 seems to focus on monitoring activity shifting on owned or controlled lands, but not on other lands. Is this seen to be market leakage, or should there be a methodology to assess the potential for activity shifting on non-associated landowners whose general actions can be monitored by available public data? We believe D6 should be revised to make it clear what the developer intends in terms of activity shifting onto other ownerships.	Section D6 addresses potential activity shifting leakage to entity owned or controlled lands and does not address activity shifting onto other ownerships. Language in D6 has been modified to help clarify this point. Potential market leakage onto lands not owned or controlled by the project entity is identified as a potential emission source in section A3 and is further addressed and quantified in section D7. Clarifying language has been inserted in section D7.

	First review	Response	Second review	Response
	assessment. This is not agreed on the peer review team, as this criterion can clearly be a contract provision that prevents internal activity shifting.			
2	Given that soil carbon is excluded and not counted as a carbon pool in offset calculations (section A3) an applicability condition in section A2 should be that soils within the project area be mineral soils, and not be organic soils.	Soil carbon has been excluded because projects in the US are highly unlikely to occur on soils with significant risk for soil carbon losses due to project activities. Peat or highly organic soils have this possibility, but projects are not likely to occur on these types of soils. Furthermore, forest soil carbon sampling techniques and monitoring of forest carbon project activities are not well enough defined to include the pool especially because baseline and project activities are expected to impact soils in a similar fashion.	We believe the argument that projects are unlikely to occur on organic soils is unpersuasive. A requirement that this methodology is limited to non-organic soils seems to be warranted.	The methodology does not limit the applicability to non-organic soils (non-histosols) because project activities are not expected to impact soil carbon more than baseline scenarios. In fact, even though reliable methods for quantify long-term effects of forest management activities on soil carbon are not readily available, project activities that sequester more carbon relative to baseline scenarios are more likely to also avoid emissions in soil carbon pools relative to the baseline. Therefore, considering changes in the pool to be de minimis is conservative and will tend to under-estimate emission reductions.

Pools and Sources (A3)

	First review	Response	Second review	Response
1	<p>Dead wood is listed as an optional carbon pool for accounting. We suggest that the dead wood be inventoried and if the dead wood carbon stock is less than some moderate threshold amount (the threshold amount could be set somewhere in the range of 5-20 metric tons of carbon per hectare) coarse woody debris need not be monitored. With a moderate threshold it is a conservative assumption that the stock cannot decline too much, if the starting stock is below the threshold. Alternatively, some other rule could be inserted to determine if stand age or disturbance history make it likely that the baseline carbon stock in woody debris might be high, and require monitoring of the pool if the stock in the pool may decline significantly.</p> <p>Requiring counting of woody debris in some circumstances fulfills the ACR Forest Project</p>	<p>The methodology developer agrees that older mature stands not previously managed may have significant carbon in the standing dead pool that could be impacted due to project implementation. While it is unlikely project proponents would conduct harvesting activities in old, unmanaged stands, the standing dead pool is now required to be included for unmanaged stands. A definition of unmanaged stands has also been included.</p>	<p>Agree with the response</p>	<p>OK</p>

	First review	Response	Second review	Response
	Standard requirement that counts be complete except for <i>de minimis</i> emissions.			
2	Including CH ₄ emissions creates a difficult data estimate (amount of biomass consumed) and a very wide range of potential emissions depending on fuel moisture, flame characteristics, and other variables that are difficult to estimate outside a laboratory. This appears to greatly complicate both baseline and project accounting with what is likely to be a <i>de minimis</i> impact.	Increases in biomass burning can result in significant GHG emissions due to project implementation. Default emission factors are provided and can be used when combustion efficiency cannot be estimated.	Is not there also a chance that there will be decreases in biomass burning?	Project activities may increase or decrease biomass burning. The methodology quantifies <i>changes</i> in emissions by accounting for burning in both scenarios.

Methodology Summary (A4)

	First review	Response	Second review	Response
1	This list feels more like a project planning and management checklist than a methodology summary. Steps 8 and 9 are clearly procedural, not methodological.	The methodology developer agrees with the comment and has removed the section.	Accept the response	OK

Project Eligibility (B1)

	First review	Response	Second review	Response
1	The statement “Projects must also meet all other requirements of the GHG Program” sounds like the methodology is written to apply to any GHG program. This contrasts with B3, which says “In accordance with the American Carbon Registry’s ...” This is an example where the draft could be more closely tied to the ACR and not have to repeat ACR Standard requirements.	Section B1 has been changed to state “Projects must also meet all other requirements of the American Carbon Registry”.	Accept the response	OK

Project Temporal Boundary (B3)

	First review	Response	Second review	Response
1	It is so easy for a project proponent to say that GHG mitigation was “seriously considered” that the requirement is essentially meaningless. Proponents should provide a signed assertion to that effect, and documentation could be in project plans, annual work plans, etc. Few management changes require official or legal	It is difficult to define all documents that would demonstrate serious consideration. Eventually all landowners will be required to sign a legal contract with either the ACR or the project proponent to engage in a registered project. It is felt that these contracts in and of themselves serve to demonstrate serious consideration and meet the methodology	Accept the response if the contract is worded such that the landowner assures that GHG mitigation was “seriously considered” in establishing the new management regime.	For forest projects with a Start Date after November 1, 1997, the ACR Forest Carbon Project Standard does not require any explicit documentation of GHG mitigation as an original project objective. This methodology only allows projects after 11/1/97 to be eligible. Additionally, the

	First review	Response	Second review	Response
	documents, and most owners aren't incorporated.	requirement of legal documentation.		methodology developer stands by the belief that contracts in and of themselves serve to demonstrate serious consideration and meet the methodology requirement of legal documentation. The developer does not wish to add further requirements to the methodology regarding forms or types of documentation that can be defined as legal documentation.

Additionality (B4)

	First review	Response	Second review	Response
1	<p>This section essentially reprints the ACR Standard without giving guidance on methods to apply ACR's 3-pronged test.</p> <p>We believe that assuming that all landowners manage to maximize NPV is not an expression of common practice, and therefore the proposed baseline approach may not meet ACR's second additionality test.</p>	<p>The 3-pronged additionality test within the ACR Forest Carbon Project Standard (FCPS) has been established as a robust method for demonstrating additionality and the methodology relies on the language in the FCPS to assess additionality.</p> <p>The common practice test is designed to test whether <i>project activities</i> exceed common practices within a particular</p>	<p>It is not persuasive as to why there could not be more guidance given as to how to analyze and apply these tests. This is a very important part of the methodology, but look at the difference between the specifics provided in B4 (none) and the specifics provided in C3.</p>	<p>ACR does not require methodologies to mandate application of a particular additionality tool.</p> <p>Methodologies must require the Project Proponent to address ACR additionality test and the submitted GHG Project Plan must present a credible demonstration, acceptable to ACR and the verifier, that the project</p>

	First review	Response	Second review	Response
	A much more reliable indicator of common practice is provided by regional FIA data for private owners. The use of the COLE carbon calculator to provide a level of carbon stocks for similar forest types in the region would be a better approach.	<p>region. This ensures project activities are not simply common practice and are additional to the baseline scenario if the other tests also confirm additionality.</p> <p>The FIA data may not be sufficient to assess common practice of similar landowners managing similar forest types, as required by the ACR additionality test, because the data set is not specific to ownership type, size, or objectives. The project proponent must describe common practice and demonstrate that project activities exceed that threshold.</p>		passes these tests. The methodology developer has chosen not create or require the use of a particular additionality tool. The methodology does require the project proponent to address the ACR 3-pronged additionality test as required by the ACR Standard v2.0 February 2010.

Permanence (B5)

	First review	Response	Second review	Response
1	The draft methodology requires a project life of at least 40 years. This is consistent with the ACR Forest Project Standard. However, given that stored carbon could be emitted at the end of the project life, with no compensation other than the fact that credits remaining in the buffer at the end of the project	The methodology must be consistent with the ACR FCPS which uses the 40-year threshold. It is not within the scope of methodology development to address this issue.	OK – this is an issue for ACR to resolve	OK

	First review	Response	Second review	Response
	life are retired, this provision could open ACR to criticism.			

Identification of Baseline (C1)

	First review	Response	Second review	Response
1	<p>This methodology is based on the concept of financial additionality, which many have found to be open to serious problems and manipulations. If the project baseline is the harvesting scenario that would maximize NPV of perpetual wood products harvests, several questions arise, such as:</p> <ul style="list-style-type: none"> NPV is totally driven by the validity of the costs and prices that are assumed, as well as the discount rate and the length of the analysis. It is very easy to make errors in cost and price assumptions that have huge effect on outcomes. By its nature, NPV is maximized when costs are minimized, avoided or delayed and revenues are 	<p>Assumptions about costs and prices must follow the conservativeness approach and be feasible over the crediting period. Project proponents will need to carefully choose the variables and will be scrutinized by the verification body to be sure they have appropriately chosen reasonable inputs in the NPV calculation.</p> <p>The selection of an appropriate discount rate can potentially have the greatest impact on the NPV output, therefore a conservative discount rate of 6% has been given within the methodology. This discount rate is based on an industry survey conducted by J.D. Sewall Co. in Timberland Report, VOL. 8, NO. 3 3rd Quarter 2006 for industrial timberland owner's actual rates, documentation of common practice by appraisers found in the Brookfield Q4, 2009 report, and</p>	<p>Agree with the first paragraph – Does this mean that the 6% choice may need to be re-visited in the future?</p> <p>This methodology, as limited by the developer in this version, is acceptable for testing at this time. It is not appropriate for all forest management systems, and that has been recognized.</p> <p>We agree that 6% is an appropriate starting point for the methodology, but should project developers be required to demonstrate that this is an appropriate value for the project conditions at hand and, if not, propose a new value for approval by ACR?</p> <p>It will remain to be seen whether the projects approved under this method pass the tests of conservatism and scientific base.</p>	<p>Due to the significant effect discount rates can have on NPV calculation, a rate of 6% was chosen for the methodology to provide a conservative rate for all project proponents to use for the baseline calculation. The first paragraph is not intended to imply the 6% rate needs to be re-visited, but states the other input values must be carefully chosen. Those selected numbers will need to be evaluated during the process of renewing the crediting period.</p>

	First review	Response	Second review	Response
	<p>enhanced or hastened. At a 6% discount rate, revenues are virtually worthless after 20 years. This will have the effect of moving harvests to the near term wherever possible, thus driving near-term carbon stocks down and giving windfall carbon to the project.</p> <ul style="list-style-type: none"> • There is a difference between modeling for maximum NPV of a harvest strategy that would produce “perpetual wood products” and modeling for maximum NPV of a harvest strategy over a 20-year baseline period. The modeling should be for at least project length. 	<p>direct testimonial about common discount rates used by the industry.</p> <p>The calculation of the baseline harvesting scenario is done for a perpetual series of wood product harvest and is more conservative than simply modeling NPV over shorter periods. This is consistent with the well understood Soil Expectation Value (SEV) calculation that has been used for several decades by foresters to determine optimal rotation ages. This approach will also define a baseline that ensures appropriate stocking levels are maintained through time and maximizes long-term economic productive of timberlands rather than a more aggressive liquidation scenario that would predict accelerated harvesting in the earlier years of the project.</p>		
2	<p>What about management units that are currently not being managed for maximum NPV? It is common for U.S. landowners to have other priorities and objectives for their forest. What if a move from current management toward management for</p>	<p>The methodology applies applicability criteria designed to conservatively exclude small non-industrial landowners who do not often manage lands with consideration of optimal economic benefit. The smaller landowners often have other priorities and objectives such as recreation or</p>	<p>OK – see above comment</p>	<p>OK</p>

	First review	Response	Second review	Response
	<p>maximum NPV would result in increased carbon stocks or reduced emissions? It appears such a change would not produce ERTs under this methodology, although there would be atmospheric benefits and the landowner might experience costs or the loss of other benefits they appreciate.</p>	<p>aesthetics not consistent with the baseline assumptions.</p> <p>If a change in harvest scheduling results in increased carbon stocking, then the methodology may produce ERTs under this scenario.</p>		
3	<p>This is the weakest part of the methodology, as has already been discussed. For example, we have just been through a slump in the housing market that caused wood prices to go down significantly for most grades, and virtually eliminated market opportunity for many landowners as mills simply quit buying stumpage until their markets improved. Such wide variations are difficult, if not impossible, to model accurately, and the selection of cost and price data drives the NPV result. While NPV may be one way to illustrate the existence of a financial barrier, it is not an appropriate tool for baseline</p>	<p>See response to comment #1 in this section regarding prices as it relates to estimated stumpage prices. It is felt that a baseline that assumes a rational landowner with an established timber harvesting program will seek to maximize their economic benefit through management activities is the most plausible baseline in the absence of a forest carbon project. Additional requirements to demonstrate an existing and on-going timber harvest program, with documentation, have been added to the methodology applicability requirements in A2 and B1.</p>	<p>OK see review comments on #1.</p>	<p>OK</p>

	First review	Response	Second review	Response
	establishment in our view.			
4	<p>The text states that “Consideration shall be given to a reasonable range of feasible baseline assumptions for the baseline determination and the selected scenario should be plausible over a range of assumptions for the duration of the baseline application.” This statement is internally contradictory and so vague that it would make it difficult to validate. For example, it would not be possible that a single baseline could be consistent with maximizing NPV at both high and low future wood product prices. How many modeling runs must the project do to show that the baseline is robust? How varied would the inputs have to be? What may be required if this method is retained is a sensitivity analysis to demonstrate how sensitive the baseline result is to changes in input assumptions.</p>	<p>The text has been edited to clarify that it is the selected assumptions that should be plausible over the baseline period.</p>	<p>Good change</p>	<p>OK</p>

Baseline Net Reductions and Removals (C3)

	First review	Response	Second review	Response
1	Model predictions of dead wood and mortality are highly inaccurate because dead wood stocks depend on each particular stand's history of disturbance, and because growth models have difficulty predicting ingrowth of trees.	The methodology developer agrees with this comment regarding current modeling capabilities to predict dead wood dynamics. Therefore, language has been added to state that when model cannot predict dead wood changes, 50% of existing onsite dead wood must be retained during predicted baseline harvesting scenarios. It is felt that retention of 50% of the dead wood pool is a conservative estimate of the amount that would be impacted in the absence of the project.	OK	OK
2	On the definition of $\text{GHG}_{\text{BSL,E}}$, suggest either deleting the words "Increase in" or substitute "Change in."	The text has been changed to incorporate this comment.	OK	OK
3	On the definition of t . This definition must be consistent with prior crediting and the requirement on page 13 that these calculations be done annually. A better definition of t might be the year for which carbon stock change is	The text has been changed to "Year for which carbon stock change is being calculated".	OK	OK

	First review	Response	Second review	Response
	<p>being calculated, not the number of years since the beginning of the project. Alternatively, one could calculate the baseline carbon stock and baseline emissions for year t, calculate the project carbon stock and project emissions for year t, and subtract the baseline from the project counts, then find the net change from the prior year.</p>			
4	<p>Equation 8. ACR should understand the effect of this wood products accounting equation. The equation takes the cumulative amount of carbon stored in wood products over the 20 year baseline period, and divides this amount by 20 to get an average annual amount. Then this average annual amount is added to the baseline carbon stock on site each year. Given that the modeling is likely to have baseline harvest heavily weighted in the first years of the project (and thus carbon going into wood products</p>	<p>Averaging wood products smoothes baseline fluctuations and makes ERT's more conservative over the life of the project. Additionally, by requiring the use of a conservative discount rate (6%), the harvest modeling is less likely to weight the baseline harvesting scenario towards the first years of the project.</p>	<p>We don't understand how modeling average wood products makes ERT's more conservative than modeling them as they occur, but we're willing to watch this method and see how it works.</p>	<p>OK</p>

	First review	Response	Second review	Response
	<p>weighted to the first years of the project), this equation would defer the baseline increase in wood product carbon from early years of the project to later years, giving a lower baseline in early years, and this giving more credits in early years of the project. ACR may wish to accept this equation because it averages out temporal fluctuations in model outputs, but ACR should understand the consequences of the equation.</p>			
5	<p>Section 3.1.1, Steps 1 and 2. Instead of using inventory data to calculate merchantable biomass, and then using equations from Jenkins et al. to estimate bark, branch and top biomass, it would be more reliable to directly calculate biomass of each tree from species, height and diameter from the inventory. If the proposed methodology is kept, users must make sure that merchantable biomass</p>	<p>The methodology relies on the Component Ratio Method (CRM) now used by the Forest Service. The thought is that calculating biomass for the bole using the more robust set of developed equations for boles is more accurate than Jenkins whole tree biomass equations.</p>	<p>The peer review committee is split on this. There is the feeling that there are more robust equations available than the Jenkins equation. There is another opinion that feels that the Jenkins equations are widely accepted and, if used consistently across projects, will result in little to no variance between projects and provide technical adequacy for the program.</p>	<p>The methodology developer agrees that the Jenkins equations will provide technical adequacy for the program.</p>

	First review	Response	Second review	Response
	counts only wood, not bark that may be extracted with harvested tree boles.			
6	Section 3.1.1, Step 4. Append to the end of the step “and multiply the mean biomass per plot times the number of acres in the stratum divided by the number of plots per acre”. Alternatively, Step 3 could scale the plot biomass up to a per-acre basis and the mean biomass per acre could be multiplied by the number acres in the stratum.	For clarity, the text has been edited in response to this comment.	OK	OK
7	Section 3.1.2.1, Step 3. In addition to measuring top diameters by measuring the diameter at the break of a broken top on the ground, top diameters can be measured by measuring the angle and distance, such as with some laser inventory devices or a Relascop. Remote measurement should be allowed.	For clarity, the text has been edited in response to this comment.	OK	OK
8	Section 3.1.2.1, Step 4. These density ratios seem high for more decomposed snags, compared to numbers in	These ratios are sourced from approved VCS methodology VM0003 as adapted from the	OK, but not likely as good as U.S. research results.	OK

	First review	Response	Second review	Response
	Harmon and Sexton (1996). Please provide source measurements showing that these factors are reasonable.	UNFCCC.		
9	Section 3.1.2.2, Step 1. Suggest deleting a length requirement for the woody debris measurement transects. If the woody debris carbon stocks are very low, it may be cost effective to use shorter transects, as long as rules for handling the cumulative precision of carbon stock measurements are followed.	This distance is part of the accepted method described to sample downed wood and it is felt 100m is required to adequately characterize the lying dead pool.	OK	OK
10	Section 3.1.2.2, Step 3. The units in this equation must match: The volume per unit area should be in m^3/m^2 (not m^3) and the diameter D must be in meters (not cm) to match the original equation in Warren and Olsen.	The units have been corrected to state m^3/ha . Diameter is required to be in cm units.	OK	OK
11	Section 3.1.2.2, Step 4. It would be useful to provide default densities by decomposition class, as is done for standing dead wood.	Default values from the FIA have been included in step 2 of the procedure.	OK	OK

	First review	Response	Second review	Response
12	Section 3.1.2.2, Steps 4. Although it should be obvious, it is probably worth stating that when scaling up the area, the scaling factor must be in the same units of area as the dead wood volume per area number.	For clarity, the text has been edited in response to this comment.	OK	OK
13	Section 3.2, Step 1. This should be a more complete explanation of the steps involved. If annual harvest amounts are in volume units (e.g. MBF or cords), the harvest is divided into 4 pools – softwood sawtimber, softwood pulpwood, hardwood sawtimber, hardwood pulpwood by volume– then converted from volume to dry weight using specific gravity for the species involved. Dry weight is then converted from wood to carbon (multiply by 0.5), then to CO ₂ e (44/12), then, if the units are English, into metric (x 0.907). This figure is then ready for multiplying times the proportion found in the tables as explained in	For clarity, the text has been edited in response to this comment.	OK	OK

	First review	Response	Second review	Response
	step 2.			

Monitoring Requirements for Baseline Renewal (C4)

	First review	Response	Second review	Response
1	Although the methodology developer might think this point is totally obvious, it could avoid disputes between project developers and verifiers if another bullet point is added stating that a project meets starting date requirements at its original verification, it is deemed as meeting starting date requirements at the time of baseline renewal. ACR should clarify whether the fact that a project has been operating for its initial baseline period means that the project activity is the landowner's business-as-usual practice or not.	This comment is outside the scope of methodology development. The methodology relies upon the FCPS with regard to the baseline renewal process.	OK – this is an issue for ACR	OK
2	The section reproduces the ACR Standard. Are there any methodological suggestions that can make this “re-run” somewhat more efficient and less costly than the first	This comment is outside the scope of methodology development. The methodology relies upon the FCPS with regard to the baseline renewal process.	OK – this is an issue for ACR	OK

	First review	Response	Second review	Response
	effort?			

Estimation of Baseline Uncertainty (C5)

	First review	Response	Second review	Response
1	How could a project developer show that a carbon stock estimate is “indisputably conservative” when the stock is not measured? Please explain.	Carbon stocks are required to be measured and no verifiable literature source could provide the CI of the inventory data.	OK	OK
2	How is uncertainty determined when the baseline is modeled? Is equation 15 intended to apply to the initial carbon stock, not the baseline over the life of the project?	For modeled results the project proponent must use the confidence interval of the input inventory data.	OK	OK
3	Equation 15. What is the justification for dividing each term by the sample mean of the largest measured pool (\bar{X}_z)? We are not familiar with this equation and would need an explanation of why it is valid before we would accept it. We suggest replacing this equation with uncertainty pooling Equation 63 from CDM afforestation/ reforestation methodology	The equation has been modified in response to this comment.	OK	OK

	First review	Response	Second review	Response
	AR-AM0004 Version 03, page 39. Alternatively, a standard uncertainty pooling equation from a statistics textbook could be used.			
4	Since the 90% confidence interval expressed as a percentage of the mean is a statistic designed to test the accuracy and precision of an estimate derived from sample plots, it is not appropriate as a test of the wood products number, which is developed from total volume as measured, not from a sampling procedure. Where do these numbers come from, since there is no “mean” or confidence interval involved?	The text has been edited to state that when wood products removals are actually measured and documented the CI shall be zero.	OK – there is some disagreement on this within the peer review group, but with the uncertainty based on sampling error, the zero is appropriate when full measurements are involved. Other sources of error such as table errors will be common to all projects and not be a source of difference between projects. Using federal government data and reference sources are as good as it gets right now in the U.S.	OK

Monitoring of Carbon Stocks in Selected Pools (D3)

	First review	Response	Second review	Response
1	The methodology should provide the equation for calculating the pooled confidence interval for net sequestration, across strata.	A reference footnote has been added for statistical equations to be used for stratified sampling CI calculations.	OK	OK
2	Add “Tree species” to the	Tree species has been added to	OK	OK

	First review	Response	Second review	Response
	bullet list of data parameters to be monitored.	the data parameters to be monitored.		

Estimation of Project Emission Reductions or Enhanced Removals (D5)

	First review	Response	Second review	Response
1	Equation 19 (explanation). It is still not clear why there is always an increase in GHG emissions as a result of the project. It's possible that there will be a decrease (reduce operations; quit burning, etc.).	The text has been edited to include "Change in" GHG emissions.	OK	OK
2	This says that CWD monitoring methods shall be used in the slash burning equation, if CWD carbon is counted. However, CWD is counted in Equation 18, and should not be double counted by counting it again in Equation 19.	Reductions in carbon stocks due to burning logging slash and dead wood (CWD) should be reflected in the calculation of total annual carbon stocking in equation 18. Clarifying language has been added after equations 9 and 19 for both baseline and project burning activities.	OK	OK

Monitoring of Activity Shifting Leakage (D6)

	First review	Response	Second review	Response
1	Again, this is just a more	Section A2 has been clarified to	OK – refer to comments on leakage. D6	D7 addresses potential

	First review	Response	Second review	Response
	convoluted way of requiring that an IFM project include all managed forest lands within its accounting boundary, even where part of the ownership is outside the project. This is consistent with the certification requirement (3rd bullet).	state that certification is required as an applicability requirement. See also response to peer review comment #1 under Applicability Conditions (A2).	still does not address activity shifting to nearby or other ownerships.	market leakage to other ownerships.

Estimation of Emissions due to Market Leakage (D7)

	Comment	Potential response	SECOND PEER REVIEW	
1	The methodology uses VCS AFOLU leakage rates. We are aware of no data that supports these leakage rates under U.S conditions. ACR has said it endorses use of VCS AFOLU guidance, but we recommend that ACR obtain and make available justification for these leakage rates before using them in the future.	It does not appear this comment is within the scope of methodology development and relates more to the ACR Standard.	OK – not a methodology issue	OK
2	The acronyms PMP and PML should be included in Section A1.	These acronyms are not used elsewhere and it is felt the existing format simplifies the text by defining the acronyms within the section on leakage.	OK	OK

Estimation of With-Project Uncertainty (D8)

	Comment	Potential response	SECOND PEER REVIEW	
1	As noted earlier, it is not clear how a “confidence interval of the stocks of extracted timber” is derived. If the extracted stocks are fully weighed or measured, is the confidence interval zero?	See response to comment peer review comment #4 under Estimation of Baseline Uncertainty (C5).	OK	OK
2	The same comments about uncertainty as for the baseline uncertainty also apply here. Many of the IPCC uncertainties are guesses and we don’t think these should be used to calculate uncertainty.	See comments relating to baseline uncertainty (C5).	OK	OK
3	A bigger issue here is whether we address anything other than sampling uncertainty. There is also uncertainty from measurement error, biomass equation error, and factor errors. Typically we ignore uncertainties other than sampling uncertainty because we don’t know the magnitudes of these uncertainties, and because we hope the errors are unbiased.	Work by Phillips, Brown, Schroeder, and Birdsey, 2000 indicate that most of the propagated error in forest carbon estimates stem from sampling errors while measurement and regression errors are a minor component. Potential sampling error and measurement errors are addressed through verification of inventory estimates and other potential uncertainties	Agree – most other errors will be common across projects, and if the bias is conservative, the program is not compromised.	OK

	Comment	Potential response	SECOND PEER REVIEW	
		are considered to be unbiased.		

Ex-Ante Estimation Methods (E1)

	Comment	Potential response	SECOND PEER REVIEW	
1	<p>This methodology is for the U.S. and national inventory and published factors exist for the U.S. It should allow for the use of general factors (i.e. IPCC) only where appropriate published factors are not available.</p> <p>This is a question, not a recommendation of a change to the methodology. For ex-ante estimates, would it be better to make the most likely or mean estimate, instead of under predicting? Admittedly, project developers are typically way too optimistic about how many offsets they will generate, and numerous risk factors are typically excluded from ex ante offset projections. However, given that uncertainties are poorly known, one could argue that the mean estimate might be</p>	<p>IPCC estimates are widely accepted and can be considered valid under the methodology and project proponents must select data that would under estimate rather than overestimate removals.</p>	<p>We continue to think that accepted U.S. factors may be more appropriate and should be given priority over generalized international factors in this methodology.</p>	<p>The methodology allows the use of U.S. factors. If uncertainty is significant, project participants must choose data such that it tends to under-estimate, rather than over-estimate, net GHG removals by sinks.</p>

	Comment	Potential response	SECOND PEER REVIEW	
	more reliable.			
2	What is AR-ACM0001? It should be more completely referenced.	The text has been edited to provide a complete reference.	OK	OK

Calculation of ERTs (G1)

	First review	Response	Second review	Response
1	Equation 29: Delete the term “ $-C_{ACR,t-1}$ ”. Equation 28 is already annualized to year t. In the definition of ERTt, replace “at year t” with “of vintage year t that are issued to the project developer’s account upon ACR’s receipt of a valid verification report.”	The text has been edited to incorporate this observation.	OK	OK