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Review of proposed VCS LtPF methodology

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Overview: This proposed methodology needs broad reworking. A significant number of issues of both clarity and correctness were found.

In many places the author does not appear to have kept clear the differences between ex-ante estimation of emissions under the baseline scenario, ex-ante estimation of emissions under the project scenario, and ex-post estimation of emissions under the project scenario (and possibly under the baseline scenario, if a monitored baseline reference area is used).

There is also a significant error in the estimation of growth rates, which could lead to very significant over-estimation of project benefits.

Below are detailed comments. However, the author should not assume that these comments represent an exhaustive list of issues, since they are based on a rapid assessment of the proposed methodology.

1. Why are tropical forests mentioned specifically in the Executive Summary, in the first paragraph of Section 3, etc.? The methodology would appear to be equally applicable to temperate forests.
2. Applicability conditions – many of these are not applicability conditions, but are rather a summary of the process requirements of the method. Applicability conditions must specifically identify conditions which must exist for the method to be used. Bullets 3, 4 & 6 are not applicability conditions. Sub-Bullets 1 and 2 of Bullet 8 are not clearly stated as applicability conditions. As noted below, there may be other necessary applicability conditions which have not been included
3. Part 2 step 0 para 3: The reference area must be representative primarily of the permitted practices under the harvest or management plan or permit applicable to the project area, and only secondarily to common practice. Nationwide common practice examples run a significant risk of not being representative of the impacts of logging within the project area.



4. Step 1 boundaries: should read: land qualifying as forest and covered by the harvest or management plans or permits.
5. I'm not sure what the historical reference period is identified for, since it does not appear to be meaningfully used in the methodology.
6. Estimation of combustion of fossil fuels in the baseline scenario (logging) should definitely not be required, and might be better excluded since it is difficult to estimate accurately. In general it is conservative to exclude this pool, since there is a high probability that emissions will be higher under the baseline scenario than the project scenario.
7. P 13 "Stratification will also include timber harvest regimes where differences between monitoring events are expected to be material." – what does this mean?
8. P13 point B – stratification cannot be based on proxy areas- strata could be initially defined on this basis, but must ultimately be determined based on conditions existing or forecast to exist due to management within the project area..
9. Equation 4 – Variable $C_{|t=0}$ is incorrectly defined – it is not per unit area.
10. Equation 5 – summing per unit area carbon densities is wrong – must be averaged on a weighted basis. In general continuing to calculate per unit area carbon densities, rather than calculating per stratum stocks earlier, is causing a lot of problems.
11. P14 – It should be specified that pre-existing forest inventory data must meet the +/- 10% at 90% confidence interval criteria.
12. Initial carbon stock must be determined in the project area, not in reference or proxy areas.
13. There is a mathematical gap between equations 6 and 7 – 7 gives per hectare/ per plot density, but then the plots in a given stratum have to be averaged.
14. For both above ground and deadwood biomass the method associates single plots with areas, and calculates based on single plots. Providing that the totality of the plots within a stratum meets the statistical criteria, and that the area represented by each plot within the stratum is identical, this method is not technically incorrect. However, it is unusual, and it might be cleaner to average the plot results and apply to the stratum as a whole, again subject to statistical criteria.
15. BCEF method should calculate total above ground biomass, not just that for merchantable trees, which can be several multiples smaller. Otherwise there may actually be an apparent increase in total carbon after logging, since non-merchantable trees which were damaged may now show up in the deadwood pool.



16. Step 3.1.3 – need to clarify – as written this would suggest that deadwood estimates from time $t=0$ in the baseline (before logging) are valid for the next 10 years, despite the fact that the paragraph above points to the probable increase in this pool after logging. Furthermore, it is not clear what is being re-sampled after 10 years, since the baseline case is counterfactual. Is this sampling in a reference area? In general the author appears to confuse estimations of baseline and project cases at several points in the methodology
17. Step 3.2 This step again ignores changes in the deadwood pool over time, and is therefore incorrect, given that deadwood is being accounted. Conservatively, the methodology could ignore deadwood by assuming that all biomass not extracted from the site remains living on site. However, this would be very conservative. If this approach was taken, point 15 above could be ignored.
18. Figure 2 page 24, although only illustrative, is extremely misleading. In general it can be expected that the carbon stocks under the LtPF will be nearly flat unless the area has previously been logged, and certainly that growth rates in the baseline scenario will exceed those in the LtPF scenario at some time. The paragraph below the figure then embeds this error methodologically. Carbon accumulation rates in mature forests are not approximated by anticipated growth rates in logged forests, and may in fact in many cases be approximately 0. Probably an assumption of 0 would be at most only mildly conservative, unless the area is a re-growth phase from a previous harvest. This is a major error and must be corrected.
19. Page 25 Para 2 – the assumption that all carbon not sequestered long term in products is emitted in the year of harvest is not conservative for the baseline case – it results in increased credits. However, VCS may choose to accept this approach in the interests of simplifying accounting.
20. Option 2 Page 26 Equation 28 is correct, but unnecessary, given that estimates of commercial volume had previously been calculated.
21. Step 3.4 – as discussed above, this step could (and quite likely should) be conservatively omitted in the interest of simplicity.
22. The ΔC variable found in the variable definitions for equation 30 is not found in the equation, and is confusing.
23. Page 33 Para 3: It is not necessarily safe to assume that vegetation management and fuel removal activities for protection under the baseline are greater than under the LtPF scenario. However, if desired, this could be specified as an applicability condition. Otherwise, emissions under the LtPF scenario from these activities should be accounted if they are significant.



24. Page 33 para 6 – the author has confused ex-ante estimation and ex-post monitoring – presumably this section refers to ex-ante estimation, and fuel use must therefore be projected, not based on ex-post fuel records.
25. Step 4.2 needs to make clearer the distinction between leakage within the operation, and market leakage. Probably the requirement for no leakage within the operation should be an applicability requirement.
26. Step 5.2 – Unclear. Is the author suggesting a possible monitored baseline on the reference area?
27. Appendices 1 & 2– I did not conduct a review of the appendices.