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Document reference number and title: (Recommendation from the MEP to SBM020) Draft methodological tool: Emissions from electricity generation and consumption (version 02.0)				
Item	**Section no.** (as indicated in the document)	**Paragraph/Table/Figure no.** (as indicated in the document)	**Comment** (including justification for change)	**Proposed change** (including proposed text)

1	-	Section 5.7.1.2, Paragraph 60	** The survey drop-downs appear to be set for the cookstoves draft methodology, so I am manually writing in where my comments go: We recommend that Table 4's hierarchy for calculating operating margin (OM) emissions be revised to include a causal regression-based statistical/machine learning model as an explicit tier beneath the economic dispatch-based model and above the simple OM model. As Resources for the Future's 2022 report (Source 1) on EIA emissions rate options explains, while dispatch-based methods may reflect actual marginal generator behavior, there are several practical limitations that constrain their use as a universal or preferred methodology. Dispatch methods require detailed operating data "often available only to grid operators," which has confined their deployment to a very small number of ISOs in the US and scaling them to non-ISO balancing authorities would require either replicating complex dispatch analyses or sharing data that may be restricted under market-manipulation rules. Dispatch-based estimates are also "strictly valid only for small changes in load," and both PJM's and ISO-NE's approaches treat imports as zero-emissions due to lack of visibility into neighboring grids, biasing results when imported fossil generation is actually marginal. In addition, WattTime and Climate TRACE have met with numerous grid operators about implementing this precise dispatch data OM method. Even many of the world's largest, most advanced grids (e.g. PJM) have informed us that due to the computational complexity of this problem, most grids technically have a defined dispatch order, but because it changes every 5 minutes and is highly confidential data that is intentionally not stored, in practice it would not be feasible to implement this method as written. However, what is possible and has often been done is to conduct regression- or scenario-based dispatch analysis to empirically measure the actual (not defined) dispatch order. This is extremely common, has been widely reviewed by grid operators and academics through coalitions such as VERACI-T.org, is widely used by private industry and governments such as	We recommend that Table 4's hierarchy for calculating operating margin (OM) emissions be revised to include a causal regression-based statistical/machine learning model as an explicit tier beneath the economic dispatch-based model and above the simple OM model.

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			California, Boston, and New York; and is available free and open source for over 99% of power grids worldwide from multiple different sources (e.g. Climate TRACE or gridemissionsdata.io). This model addresses the scalability gap because it relies on publicly available historical data rather than confidential dispatch information, allowing coverage of balancing authorities that cannot produce dispatch-based estimates. The RFF report notes these models can also correctly reflect import/export emissions where data coverage is comprehensive, an area where dispatch-based methods struggle. WattTime has also independently verified the causal regression methodology (Source 2). We therefore recommend that the hierarchy list include a causal regression-based statistical model as the next-best approach where dispatch data are unavailable or infeasible to obtain. As previously mentioned, WattTime and Climate TRACE already produce free open source, dispatch data analysis-based combined marginal emissions data (that uses a causal regression model to calculate OM) at the hourly level for over 99% of all locations worldwide. If useful, we would be happy to share it with any and all users of this methodology, free. We already provide it to various governments, companies, and UN agencies (including UNFCCC and UNEP). Sources: [1]: https://media.rff.org/documents/Report_22-08.pdf [2]: https://veraci-t.org/	

2	-	Section 5.7.1.2.1	** The survey drop-downs appear to be set for the cookstoves draft methodology, so I am manually writing in where my comments go: Operator-derived dispatch data is often unavailable, making it an impractical option for calculating the OM. Therefore, we recommend that a Section 5.7.2.2 be added to describe the causal regression-based statistical methodology for estimating operating margin (OM) emissions rates, for use where dispatch data are unavailable or infeasible to obtain from the balancing authority or grid operator. Under this approach (Source 1), as implemented by WattTime/Climate TRACE, historical relationships between electricity load and generation by fuel type are estimated using regression or machine learning models trained on publicly available data covering grid conditions, weather, and emissions. These models estimate how generation by fuel source (and associated emissions) responds to a marginal change in load, typically by segmenting the analysis into bins of relevant grid conditions to isolate the causal effect of load changes from other confounding, time-correlated patterns. This step is necessary because naïve models can otherwise mistake correlation for causation — for example, incorrectly inferring that rising demand each morning "causes" an increase in solar generation, when both are driven independently by the time of day. The resulting marginal generation estimates by fuel type are then converted into marginal emissions estimates using fuel- or generator-specific emissions factors, which may be derived from sources such as EPA's Continuous Emissions Monitoring System data or Climate TRACE unit level emissions estimates. This methodology should require documentation demonstrating that the underlying regressions are causally, rather than merely correlationally, specified, since a poorly specified statistical model can otherwise produce systematically biased marginal emissions rate estimates. We note that this approach has the practical advantage of relying solely on publicly available data, making it scalable to grid regions that will not or cannot produce economic dispatch-based estimates. Sources: [1]:	Insert 5.7.2.2, which is a methodology for a casual regression model.

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			https://media.rff.org/documents/Report_22-08.pdf	

3	-	Section 5.7.1.3, Paragraph 93	** The survey drop-downs appear to be set for the cookstoves draft methodology, so I am manually writing in where my comments go: We recommend reverting to the "last 20% built" threshold approach used in CDM Tool 07, rather than adopting the proposed concurrent reference period approach. Following the release of this methodology, Climate TRACE applied it to calculate the build margin for all countries and all hours, and now updates this dataset annually with hourly granularity; it is available free of charge (e.g., at gem.wiki). Numerous NGOs, grid operators, and academics have empirically and theoretically validated this method and found it to be strongly predictive of the actual observed change in emissions that occurred when projects were built (see, e.g., https://www.gem.wiki/MBERs_validation). Experiments with different thresholds did not produce higher accuracy than the 20% threshold. By contrast, the concurrent reference period approach requires data from future time periods and has not, to our knowledge, been validated. Specifically, we recommend the following text change: Replace "Where the necessary data are available, the reference period shall reflect the period in which the Article 6.4 activity starts operation (hereinafter referred to as the 'concurrent reference period')" with "Where the necessary data are available, the reference period shall reflect the period during which the last 20% of electricity system generation was built (hereinafter referred to as the 'concurrent reference period')." We would also note two additional considerations relevant to this recommendation. First, the 20% threshold reflects the prior version of this dataset's guidance, and a substantial cross-standard alignment effort has already taken place on that basis; ongoing discussions with other standard-setting bodies (e.g., PCAF, CARB, and the GHG Protocol) regarding adoption of this same prior guidance are, to our understanding, premised on retaining the 20% threshold. Departing from it at this stage would work against global interoperability across these frameworks, and we would encourage the drafters to weigh that cost carefully against any rationale for changing it. Second, as noted	Replace “Where the necessary data are available, the reference period shall reflect the period in which the Article 6.4 activity starts operation (hereinafter referred to as the 'concurrent reference period')” with “Where the necessary data are available, the reference period shall reflect the period during which the last 20% of electricity system generation was built’ (hereinafter referred to as the 'concurrent reference period')”

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			above, we tested alternative thresholds and found that none produced materially more accurate results than 20%; because 20% was already the figure accepted across standards, we did not pursue a formal publication of that comparative analysis. We would be glad to share the underlying research or discuss it further with the drafting body if that would be useful in evaluating this recommendation.	

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4	-	Section 5.7.1.3, Paragraphs 93-103	** The survey drop-downs appear to be set for the cookstoves draft methodology, so I am manually writing in where my comments go: The tool currently calculates the build margin (BM) emission factor as a single annual value determined once per calendar year based on a multi-year reference period. As footnote 23 acknowledges, this annual BM value is applied uniformly across all hours even where the operating margin (OM) is determined on an hourly basis. This creates an inconsistency in temporal resolution between OM and BM and it limits the conservativeness benefits that hourly granularity is intended to provide. However, calculating BM only annually smooths over these variations and can understate emissions impacts during periods when higher-emitting marginal capacity is most relevant, or conversely overstate them when it is not. This reduces the accuracy and conservativeness of the resulting CM emission factor relative to what an hourly approach would achieve. Instead, an hourly (or, alternatively, annual load-profile-weighted) build margin would better reflect how the marginal contribution of new capacity varies by technology and by time of day/season, since the penetration and dispatch of different technologies (e.g., solar, wind, gas peakers) is not constant across hours. Recommendation: Revise Section 5.7.1.3 to include an hourly BM calculation option (or a profile-weighted BM approach) as an alternative to the current annual-only method, consistent with the hourly OM options already provided in Section 5.7.1.2. Climate TRACE and WattTime, a coalition of nonprofits and academic institutions, already provides this data for the globe and would be happy to provide it for free in perpetuity in order to support this revision. If a representative would like to discuss this with us, please reach out at chandni.sinha.das@watttime.org.	1. Paragraph 96 (Section 5.7.1.3) Replace "Activity participants shall determine the BM emission factor as the generation-weighted average emission factor (t CO2/MWh) of all power units p during the period t, calculated as follows:" with "Activity participants shall determine the BM emission factor as the generation-weighted average emission factor (t CO2/MWh) of all power units p during the period t, where t may be the calendar year y or, where an hourly BM emission factor is used, the hour h within calendar year y, calculated as follows..." 2. Paragraph 99(a) (Section 5.7.1.3) Replace "the BM emission factor shall be updated for each calendar year using the same historical reference period and the same set of power units p" with "the BM emission factor shall be updated for each calendar year, or for each hour where an hourly BM emission factor is used, using the same historical reference period and the same set of power units p." 3. Paragraph 99(b) (Section 5.7.1.3) Replace "the BM emission factor shall be updated using the concurrent reference period and a new set of power units p" with "the BM emission factor shall be updated for each calendar year, or for each hour where an hourly BM emission factor is used, using the concurrent reference period and a new set of power units p." 4. Footnote 23 (Section 5.7.1.4, attached to paragraph 103) Replace "Note that the BM emission factor is always calculated for a calendar year y of the crediting period. Where the OM emission factor is determined on an hourly basis, the annual value of the BM emission factor may be applied to each hour h." with "Note that the BM emission factor may be calculated for a calendar year y of the crediting period, or, where the OM emission factor is determined on an hourly basis, an hourly BM emission factor (EFBM,h) may alternatively be calculated and applied to each hour h."

5	-	Section 5.7.1.4, Table 5	** The survey drop-downs appear to be set for the cookstoves draft methodology, so I am manually writing in where my comments go: The current tool specifies ranges for wOM and wBM in Table 5 rather than a single fixed weighting. Research exists suggesting that when using an hourly operating margin and build margin, a weight of 0.5 (i.e., an equal 50-50 split between OM and BM) may be the most accurate approach and can help mitigate the potential for gaming the OM/BM split (See: https://www.gem.wiki/MBERs). That source also notes that further research is needed and, in the interim, suggests it may be more conservative to stick with the current method. We therefore recommend adopting a fixed 50-50 weighting between OM and BM, in place of the ranges currently specified in Table 5. Our organization has conducted research (Source 1) into this question and has not identified evidence that any other weighting is more accurate than an equal 50-50 split. To our knowledge, this is currently the only research that has specifically examined this question beyond the original GHG Protocol derivation of the OM/BM framework, and we have not found a basis to conclude that a different weighting would be more accurate. We believe a fixed 50-50 weight would be a conservative choice in the absence of stronger evidence pointing to a different split, since it does not rely on assumptions about relative capacity value across technologies that may not hold uniformly across all systems (see footnote 25 of the tool). A fixed weight would also provide greater certainty for market participants, which we believe could support greater deployment of clean energy by reducing uncertainty in emission factor calculations If the Supervisory Body/MEP moves toward an hourly build margin combined with a fixed 50-50 weighting, Climate TRACE and WattTime would be pleased to provide free global data to support this approach, and to commit to keeping this data available at no cost in perpetuity. We would welcome the opportunity to discuss this further. Sources: [1]: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5425615	Consider adopting a fixed 50-50 weighting between OM and BM, in place of the ranges currently specified in Table 5.