GREENHOUSE GAS PROTOCOL

Consequential Subgroup Meeting 5

May 1st, 2025

WORLD RESOURCES INSTITUTE

World Business Council for Sustainable Development

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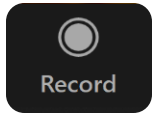

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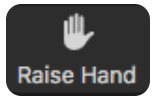
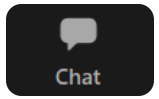


Please use the Raise Hand function to speak during the call.



You can also use the chat function in the main control.

Recording, slides, and meeting minutes will be shared after the call.

Be mindful of sharing group discussion time; keep comments as succinct as possible.

Agenda

1. Housekeeping and goals
2. Review and discuss issues 1-4
3. Next steps

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Goals of today's meeting

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Housekeeping and goals

Key discussion points for today

- How to approach build and operating margin weights.
- Align on details of the additionality tests.
- Discuss key points on purposes and uses of data.

Issues 1-4

Issue 1: calculation method and approach

- **Induced consumption** = total consumption * marginal emission factor
- **Avoided emissions** = generation * marginal emission factor
- **Marginal emission factor** = (w)(build margin) + (1-w)(operating margin)
  - Proposed default weight (w) = 0.5

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Refresher on build and operating margins

Note: Relative effects of operating vs. build margin are determined and applied for the project being assessed. (*Guidelines for Quantifying GHG Reductions from Grid Connected Electricity Projects, Chapter 5, page 30*).

Operating Margin - Electricity generation from existing power plants whose output is reduced in response to a project activity.

- Estimated by approximating the emissions from the specific power plants whose operation is displaced
- Short-run marginal emission rates can be used to estimate these impacts

Build Margin - The incremental new capacity displaced by a project activity, and its associated generation.

- Estimated from GHG emission rates of recent capacity additions or planned capacity additions
- Long-run marginal emission rates can be used to estimate these impacts

Issue 1: calculation method and approach

- Balancing build and operating margin weights is key to accurately assessing impacts of load and generation on the grid.

- Examples of generation projects that may exclusively impact the build margin (w=1):
  - Nuclear
  - Firm geothermal
  - Gas peaker

- Examples of generation projects that impact the build and operating margins (w<1):
  - Solar PV
  - Solar + storage
  - Onshore wind

- Examples of generation projects that may exclusively impact the operating margin (w=0):
  - Behind the meter solar
  - Run-of-river hydro

CDM suggests default build margin values of 0.25 for wind and solar plants, and 0.5 for all other types of generation.

In areas with high levels of BTM development, projects can impact build margin as well.

Issue 1: CDM guidance on BM/OM weights

Factor	Summary	Further Information
Project size	No change in weight on basis of absolute or relative size alone.	Alternative weights on the basis of absolute or relative project size alone do not appear to be justified.
Timing of project output	Can increase OM weight for highly off-peak projects; increase BM for highly on-peak projects.	Projects with mainly off-peak output can have a greater OM weight (e.g. solar PV projects in evening peak regions, seasonal biomass generation during off-peak seasons), whereas projects with disproportionately high output during on-peak periods (e.g. air conditioning efficiency projects in some grids) can have greater BM weight.
Predictability of project output	Can increase OM for intermittent resources in some contexts	Projects with output of an intermittent nature (e.g. wind or solar projects) may have limited capacity value, depending on the nature of the (wind/solar) resource and the grid in question, and to the extent that a project's capacity value is lower than that of a typical grid resource its BM weight can be reduced. Potential adjustments to the OM/BM margin should take into account available methods (in technical literature) for estimating capacity value
Suppressed demand	Can increase BM weight for the 1st crediting period	Under conditions of suppressed demand that are expected to persist through over half of the first crediting period across a significant number of hours per year, available power plants are likely to be operated fully regardless of the CDM project, and thus the OM weight can be reduced

Source: UNFCCC. (2018). *Tool to calculate the emission factor for an electricity system* (Version 07.0). Clean Development Mechanism. https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf

Issue 1: calculation method and approach

Calculating build margins using the GHG Protocol's "Guidelines" document for two hypothetical renewable energy projects, using the formula:

$$w = \min\left(1, \frac{CAP_{value}}{CAP_{rated} \bullet CF}\right)$$

CAP_{value} = capacity value (minimum level of demand reduction)

CAP_{rated} = rated capacity (power it is physically capable of delivering, i.e. nameplate capacity)

CF = capacity factor (average percent utilization)

	Iowa Wind	California Solar
CAP_{value}	20% (or 20 MW)	6% (or 1.2 MW)
CAP_{rated}	100 MW	20 MW
CF	40%	25%
Formula	$w = \frac{20\ MW}{100\ MW * 0.40} = 0.5$	$w = \frac{1.2\ MW}{20\ MW * 0.25} = 0.24$

Issue 1: calculation method and approach

- While the Guidelines document is not designed to be applied to all electricity load, there are lessons we can learn for applying the right build and operating margins to load.

- **Key question:** *"Does this electricity consumption cause new capacity to be built (**build margin**) or simply change which existing plants operate (**operating margin**)."*

- Factors that could impact build/operating margin weights:
  - **Load growth and shape**: new steady baseload that contributes to overall system load growth or reliability needs may affect the **build margin.** In contrast, existing or spiky/off-peak loads typically shift generation dispatch, impacting the **operating margin.**
  - **Dispatchability**: flexible load (EV charging) is more likely to impact the **operating margin.**
  - **Service expectations and procurement**: most grid operators plan capacity to meet overall system reliability standards, not differentiated by end-user. However, some large loads (data centers) may contract directly for new generation or reliability resources, influencing the **build margin.**

Issue 1: calculation method and approach

Case study: What build margin should be applied to a **data center** vs. a small neighborhood **bookstore**.

	Data center	Bookstore
Load size	Large	Small
Load shape	Steady (baseload)	Variable
Considered in utility planning?	Yes	No
Build margin	**>0.5**	**~0**

What other factors might we consider in assessing build margins for load?

While system planners treat most load equally in terms of reliability (i.e., same "value of lost load"), large, consistent, and high-uptime loads like data centers may trigger grid investments or contract new capacity directly, increasing their relevance for build margin. Small, variable loads like a bookstore typically shift dispatch without influencing new builds, aligning more with the operating margin.

Issue 1: calculation method and approach

Question: Should Proposal 1 adopt a **standard build margin weight (0.5)** for all load and generation projects, or should additional guidance be developed to reflect **differentiated impacts** across types of projects?

Considerations for discussion:

- What are the **benefits and limitations** of using a single default value versus differentiated weights?
- How might differentiated guidance improve alignment with **GHG Protocol's decision-making criteria** (e.g., scientific integrity, relevance, feasibility)?
- What steps would be needed to **develop more robust guidance**?
- Are there **existing tools, research, or practices** (e.g., in capacity planning, system reliability, or marginal factor estimation) that could inform this approach?

Note: As we explore next steps, we're increasingly encouraging proposals to be grounded in the kinds of analytical framing and system-specific insights that support robust, standards-aligned accounting methods.

Issue 2: boundaries

- All global electricity load
- Generation that meets additionality test(s)
- Backward looking, for the reporting year
- Only includes primary effects on the electric sector
- Ad-hoc consequential assessments should be used in addition
- Marginal emission factors should:
  - Reflect actual operational and planning boundaries, including imports and exports
  - Based on location and timing of consumption and generation

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Issue 2: discussion

Please share any concerns related to the boundary conditions in the previous slide.

Boundaries "Backward looking, for the reporting year"

- Should marginal emission factors be used purely for retrospective accounting, or to inform real-time operational decisions?
- If the intent is to inform forward-looking behavior, what are the implications for how MEFs are calculated and when they are known?
- Should MEFs be available on a forecast basis, and if so, what boundary rules ensure they're credible and actionable?

Note that emission factors (issue 6) will be discussed at the next subgroup meeting, but may be relevant to consider implications in this context as well

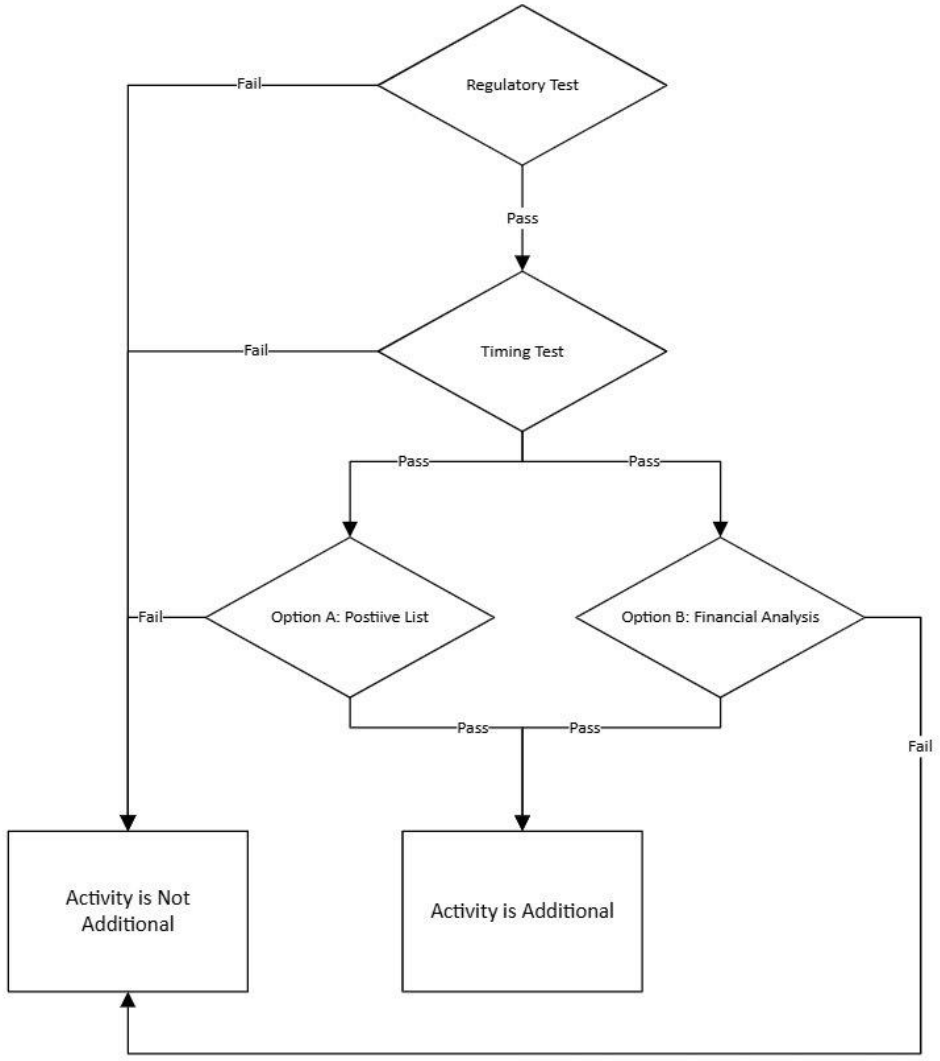
Issue 3: treatment of additionality

Global requirements:

- Must retain and retire EACs
- Test applies to new development, uprates, life extensions
- Contract extensions for original offtakers are permitted

Regulatory test – The generation from this specific facility from which the emission factor is derived should not be legally required.

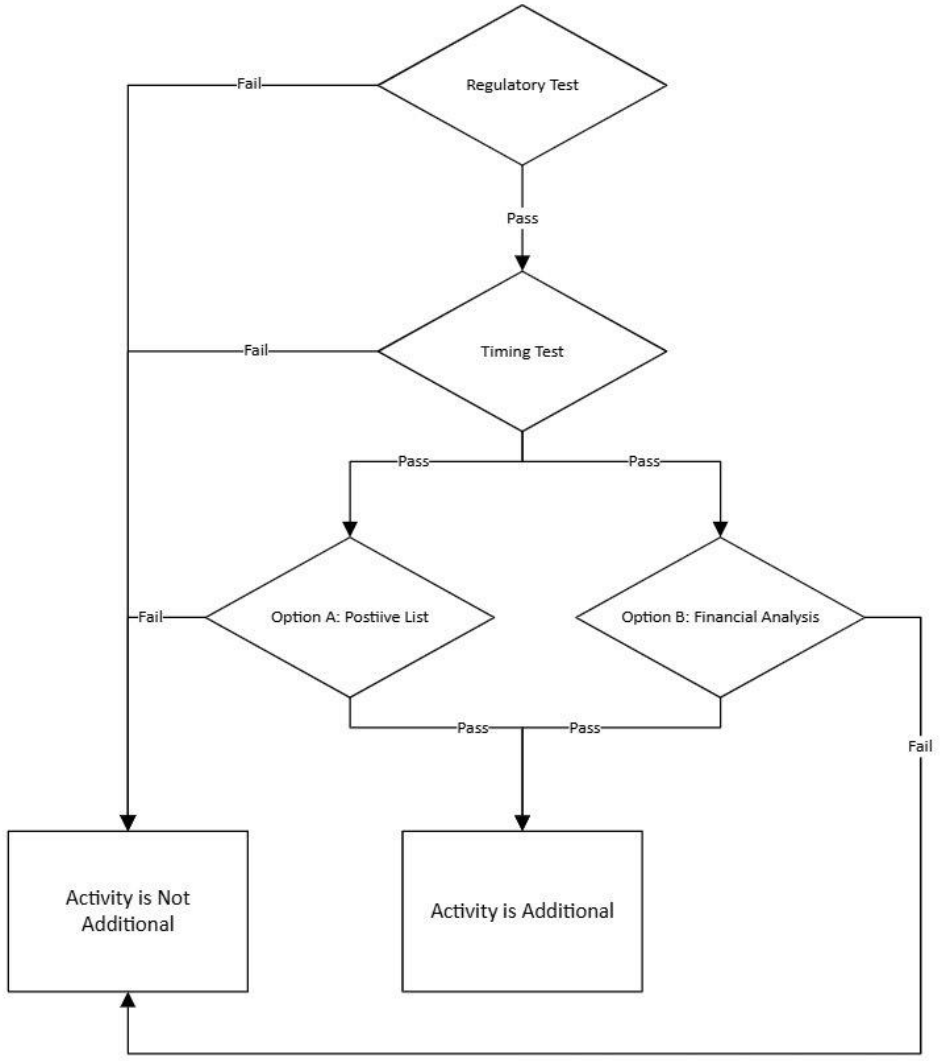
Timing test – Demonstrates that the relationship between the reporter and the specific generation facility existed or was anticipated prior or in proximity to the decision to build, re-power, uprates, or delay decommissioning of the generation facility.



Issue 3: treatment of additionality

Option A: Positive list – A list of qualifying criteria designed to be a pass/fail determination. Tests include:

- Self generation
- Physical PPA with direct line projects >= 10 year contract
- Project-specific PPA as original off-taker with >= 10 year contract
- Project-specific EAC-only offtake of sufficient size as original off-taker with >= 10 year contract
- Project-specific supplier contract, original off-taker with >= 10 year contract
- Tolling agreement or contract for differences for energy storage with >= 5 year contract



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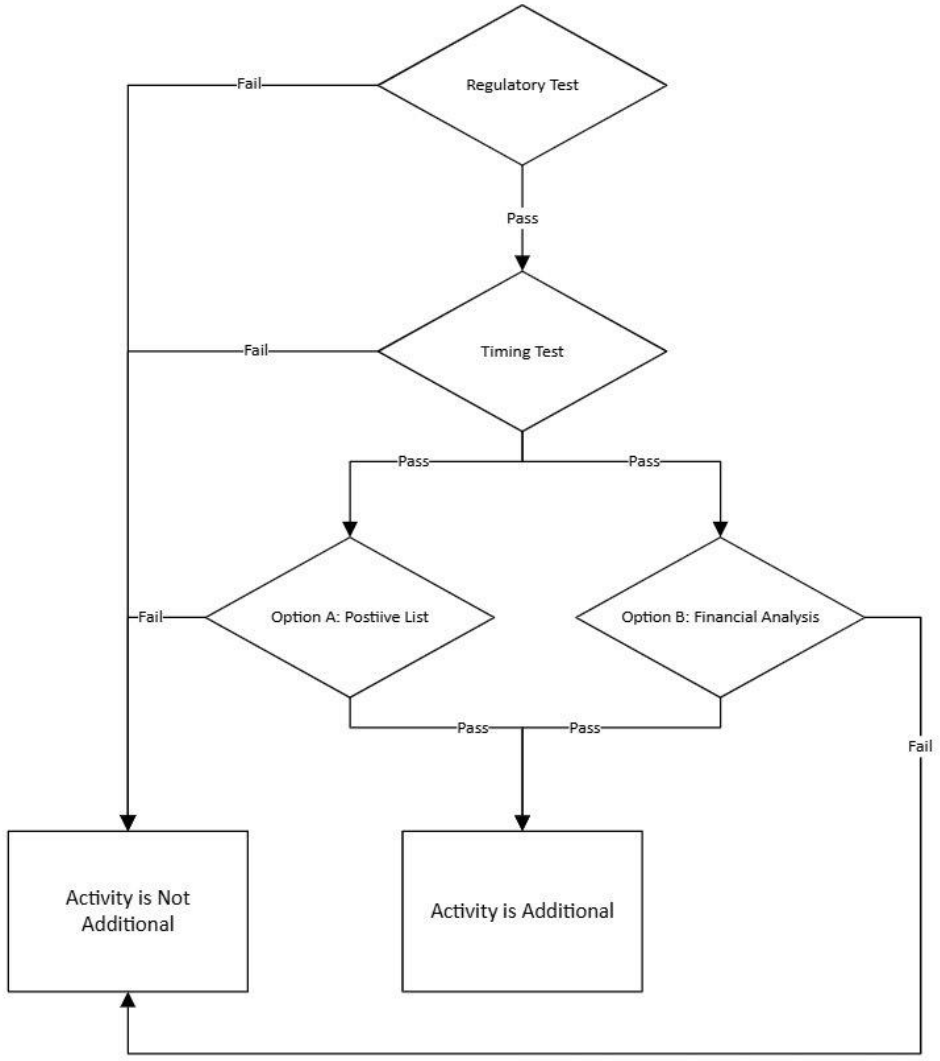
Issue 3: treatment of additionality

Option B: Financial analysis test – demonstrates that a specific generation facility would not have been financially viable in the absence of the support provided by the reporter.

- Support may be in the form of revenue from purchasing contractual instruments, or power price certainty from a long-term PPA.

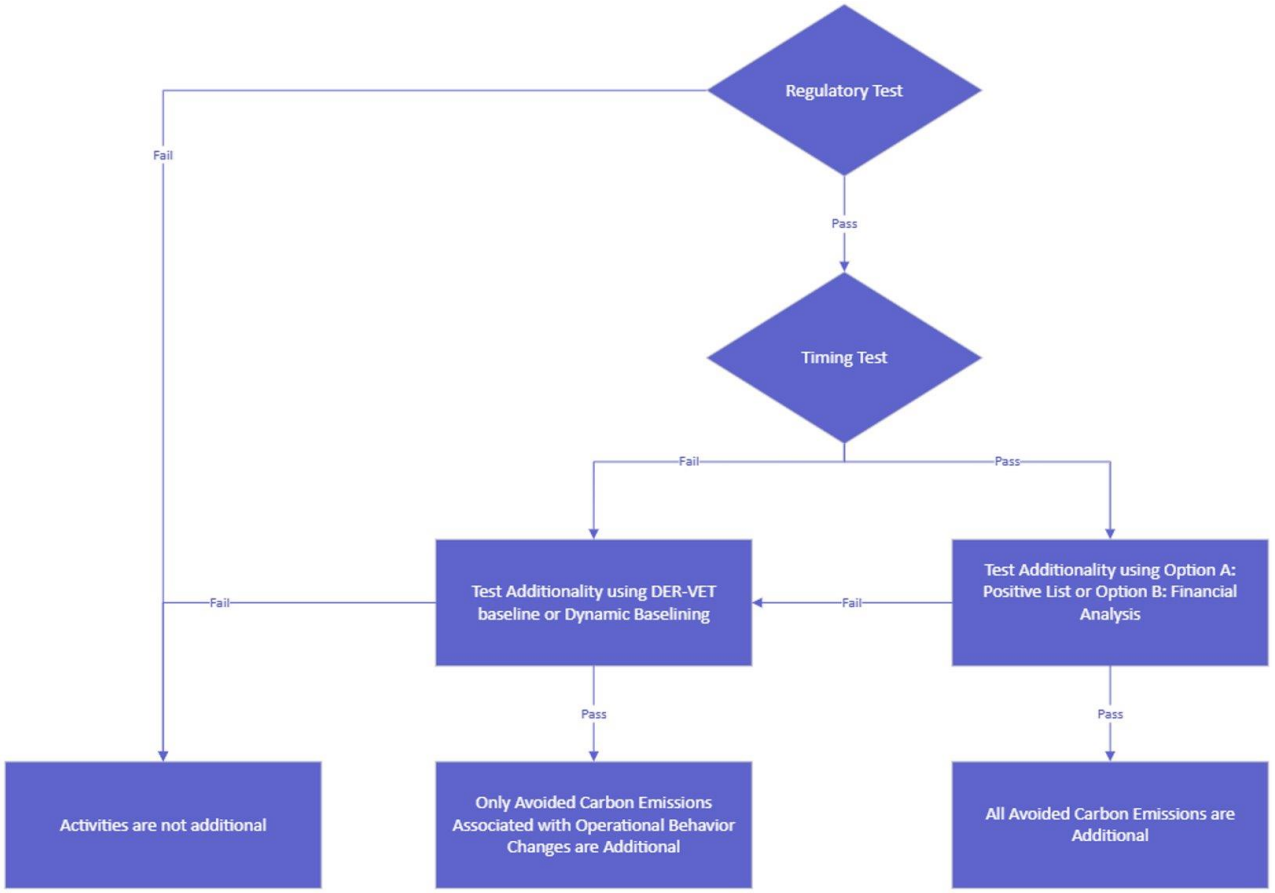
- Test shall conform with the requirements of the tool for conducting investment analysis approved by the Supervisory Board for the Article 6.4 Mechanism of the Paris Agreement.



Issue 3: treatment of additionality (energy storage)

- All load shifting can be considered additional if it passes:
  - Regulatory test, and
  - Timing test, and
  - Positive list test OR financial analysis test

- Otherwise, only incremental load shifting (behavioral changes) can be considered additional, assuming the project:
  - Passes a regulatory test, and
  - Conducts baselining using a universal dispatch model or dynamic baselining



Issue 3: discussion questions

- Are there any concerns with the overall architecture of the additionality test framework (regulatory > timing > option A/B)?
- Is 10 years (and 5 years for energy storage) an appropriate contract length for the projects identified in the positive list framework? What would an alternative be?
- Option A (positive lists) vs. Option B (financial analysis). Which one is better? Can we offer both as options?
- What if a project fails Option B but passes Option A?
- Why should energy storage be subject to different additionality rules than electricity generation projects?
- How to handle generation from existing projects that can demonstrate they would have passed the additionality test at the time? Or that were once additional, but may not pass an additionality test today?
- Does the current framework appropriately accommodate participation by smaller buyers?
- How should the framework handle projects built in merchant or quasi-merchant markets, where price signals — not a specific buyer — drive investment? Does this invalidate the financial test, and if so, what adjustments are needed?
- How does this additionality framework align or diverge from voluntary carbon market rules, IRA tax credits, or the Article 6.4 mechanism under the Paris Agreement?

Issue 4: purposes and uses of data

Purposes

- Indicator of the generation emissions caused by a company's demand for electricity.
- Estimate electric-sector emissions impacts of a company's procurement (generation and storage).
- Identify and prioritize consumption and procurement decisions that reduce electric-sector emissions.
- Establish, and report progress toward, targets and goals related to emissions impact of consumption and procurement.
- Incentivize ambitious climate action.

Uses

- Setting, and tracking progress against, targets for reducing emissions over time by minimizing induced emissions and maximizing avoided emissions.
- Recognizing actions that are impactful for reducing emissions outside of the value chain inventory boundary.
- Identifying times and locations of consumption with high marginal emissions rates to inform abatement planning.

Issue 4: discussion questions

- Is the use of "caused" language appropriate for a consequential-style performance metric? Especially if using the same BM/OM weight for all load and generation?
- Is this metric meant to reflect a real-world change in generation behavior, or a standardized target for organizational emissions performance?
- Could language like “emissions associated with marginal generation serving organizational load” or “performance-based emissions metric for electricity consumption” provide a better fit?
- "Identifying consumption and procurement decisions" implies the use of real-time marginal emissions data to make decisions, while actual calculations use historical marginal emissions data. Is there a disconnect here? Further, do real-time build margin emission factors exist?

Next Steps

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Development of final document

- Final document to be presented to AMI and ISB in June will be a word document.
- Continued use of slides for presentation at subgroup meetings.
- Parallel development of final document considering changes discussed in subgroup meetings.

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Next Steps

- **May 12th –** first draft of detailed proposal on issues 5-7
  - Temporal and geographic granularity
  - Emission factors and data types
  - Feasibility

- **May 22nd meeting**
  - Members should be prepared to discuss issues 5-7 and recommend changes and edits to language submitted by members of the subgroup
  - We do not intend to use polling, but discussion should inform further development of proposals

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Thank you!

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