BEPS Laboratory Focus Group

Meeting #2 Summary

Meeting details: October 15, 2026 on Zoom from 2-4PM

Present: Brad Rock, Geoffrey Glass, Heather Burpee, John Kearns, Melissa Hutton, Alyssa Illich, Julie Scrivner, Steve Matthes.

Regrets: Nick Tran.

City of Seattle BEPS and Facilitation Staff: Alicia Daniels Uhlig, Nicole Ballinger and Samuel Manning (Office of Sustainability & Environment - OSE), Santiago Rodriguez-Anderson (Lattice Energy), Kirstin Pulles and Lisa Hasan (Unrooz Solutions)

Meeting slides are available at: BEPS Rulemaking Webpage

Agenda:

Topic	Time
Welcome and introductions, what we heard	5 mins
Target Setting Methodology Poll	10 mins
Breakout Rooms and Report Back – Part 1 - End use deductions – Non-dedicated uses - End use deductions – Standardized engineering calculations	50 mins
Break	10 mins
Discussion – Part 2 - Getting to net-zero - Cutting edge trends	30 mins
Wrap-up	10 mins

Organized by: Seattle Office of Sustainability & Environment

Facilitated by: UNROOZ SOLUTIONS

Technical analysis by: Lattice Energy

Group Discussion Summary

Target Setting Methodology Poll

Topic: The group was asked which of the three possible Laboratory Greenhouse Gas Intensity Target (GHGIT) setting methodologies they felt most comfortable with. The three options included 1) excluding anomaly data from the original data set, 2) keeping the existing provisional targets, and 3) re-running the data with updated energy use data but using the same buildings that were originally included in 2019.

Discussion:

- One attendee clarified that the second round of targets, within the existing provisional GHGITs for laboratories (2036-2040), might not feel easily attainable for all laboratory spaces.
- On the methodologies, Lattice answered two questions.
    - First, they clarified that 2 out of 14 buildings were considered anomalous in the 2019 data and were excluded in the 'exclude anomalies' methodology.
    - Second, they explained that the square footage of the included buildings is self-reported but includes some data quality checks. BEPS added a benchmarking verification requirement to improve self-reported data over time, such as standardizing a building's reported Gross Floor Area. The data is reviewed and large changes in emissions over time are flagged. Targets will also be reviewed in 2031.
- Among those who voted in the poll, 4 selected the 'exclude anomalies' methodology and 2 selected the existing provisional targets.
- One reason attendees shared for selecting the 'exclude anomalies' approach was slightly higher (less stringent) targets. Another was that excluding anomalies feels like a more rigorous approach.

Group Discussion Topic 1: End use deductions

Question to group - Do you use a switchover temperature to switch to non-electric heating systems?

Topic: Attendees were asked whether they have a specific temperature at which they switch from electric heat pump to other fossil-fuel heating systems.

Discussion:

- Participants shared that they use supplemental non-electric heating systems automatically when needed, but it is not based only on a specific outside air temperature. The building determines this automatically based on various factors including the individual building, the occupancy and the outside air temperature.

- Attendees were clear that the electric heating is not turned off at colder temperatures – it is supplemented with other sources when the desired setpoints cannot be met through electric systems and heat recovery.

Question to group - Are you using sub-metering for equipment in your laboratories?

Topic: OSE polled attendees to learn to what extent sub-metering is already in use in their buildings.

Discussion:

- Participants clarified whether sub-metering referred to thermal or electrical sub-metering, or both. Participants also explained that sub-metering is often installed, but may not be in use. OSE clarified that they are interested in any sub-metering that is actively used.
- One participant shared that metering and sub-metering is commonly used in multi-tenanted buildings for both air exchanges (CFMs), heating (BTUs), and electrical (kwh).
- Overall, most participants expressed that they are not using sub-metering in their laboratories in a way that would provide relevant load specific energy-use data for BEPS.
- Participants would use sub-metering more to provide energy use data if they were not required to pay for and install the meters themselves.
- One attendee shared that they have participated in the My Green Lab Sustainable Lab Certification program. This program encourages sustainability beyond energy use, including water, waste, and chemical use. They feel that certifications like this, which go above and beyond what BEPS requires for sustainability, should be incentivized through either financial support or further emissions deductions for buildings which participate to recognize their other sustainability efforts.

Breakout Group 1 – Non-dedicated uses

Which equipment qualifies for an end use deduction, is also used for another purpose?

Topic: OSE heard in the previous meeting that some equipment is used for multiple purposes, and it can be challenging to measure which energy use for the equipment is for a purpose which qualifies for an end use deduction, and which is not. This discussion asked the group for more examples of these kinds of non-dedicated uses.

Discussion:

- Examples of equipment used for multiple purposes relevant to end use deductions included:

    - A diesel fuel tank that serves both fossil fuel generators and emergency backup heat.
    - Natural gas boilers that are used for daily heating and used for emergency heat during extreme weather events and electric outages.
    - Steam boilers which are used for building heat and lab process loads.
- Attendees suggested alternatives to sub-metering these non-dedicated, including:
    - Allowing building owners to exempt a certain percentage of the equipment's energy use.
    - Estimating deductions based on the amount of time the equipment is used for one purpose vs another.
    - Referring to design load calculations to understand what amount of the boiler's capacity is for deduct uses.
- Participants consistently emphasized that making emergency backup systems more complex introduces additional risk in critical times.

Breakout Group 2 – Standardized engineering calculations

Topic: The focus group expressed concerns in the previous meeting about the challenges of sub-metering equipment which qualifies for end use deductions but does not have a standardized deduction calculation workbook. This discussion asked for more information about alternatives to sub-metering, which types of equipment will fall into this category, which equipment is the most challenging to sub-meter, and brainstormed possible alternatives to sub-metering this equipment.

Discussion:

- Attendees have used engineering calculations, energy modeling, and short-term metering to validate emissions/energy use reductions for purposes other than complying with BEPS.
- Incentive programs often rely on whole building meter data. More generous pay-for-performance programs provide incentives based on realized energy or emission savings rather than calculations.
- Trend lines from boiler loads can help estimate reduced loads
- Participants noted that sub-metering data is not necessarily higher quality than engineering calculations based on utility grade data.
- There may be physical limitations to installing meters. Sub-metering is typically easier for new construction.
- Gas can be hard to submeter.
- Existing submetering data and research is limited and may be hard to generalize
- Equipment which participants would most want alternative options to sub-metering include:
    - Boilers (for process loads to separate from usage for heat or hot water)
    - Backup generators
    - Steam - autoclaves

    - Steam - sterilizers, glass wash
    - Kitchen equipment
    - Humidification
    - Domestic and lab hot water
    - Bench gas
- There was no equipment in this list which was considered to have very standard and consistent energy use across buildings, though participants suggested that some specific equipment (autoclaves, steam humidification by CFM) could use a deductions workbook approach
- Standardizing calculations across buildings may be challenging, so attendees suggested allowing custom calculations because there is a small number of laboratories within the BEPS jurisdiction
- One approach could be to use control system trending data combined with energy calculations
- Attendees encouraged Seattle to provide an alternative for BEPS to CBPS' sub-metering requirements, which they have found too onerous and costly.

Group Discussion Topic 2: The Last Mile

What is challenging about getting to net-zero emissions for laboratories?

Topic: Attendees expressed that while meeting the first GHGI targets for laboratories feels attainable, the final push to net-zero emissions feels challenging. This discussion asked for more information about why the final emissions reductions feel challenging, what barriers exist, and how common these barriers are.

- Laboratories have high ventilation rates with single pass air and require a high number of minimum air changes per hour, often in large spaces. This requires heating a lot of air. High ventilation rates also include high exhaust air rates. Some heat can be recovered but not all. Even if maximizing heat recovery, the systems required to fully heat a highly ventilated building electrically become expensive per ton of carbon saved.
- Ventilation electrification is also limited by the structural capacity of the building, zoning regulations (roof coverage limits, solar requirements, max building height), and electric capacity.
- Seattle's climate is heating driven but mild. Smaller heat pump systems can cover most heating needs, but to use heat pumps entirely during the coldest days becomes significantly more expensive.
- The additional electrical capacity for larger electrical systems is also financially and structurally prohibitive, and roof space is in high demand with other equipment needs.
- Upgrades to additional components of the existing mechanical system may be required due to decarbonizing the boiler. The current differences between what a

fossil fuel-powered boiler can heat to (higher temperature) versus an air source heat pump (lower temperature) impacts some existing distribution systems like VAV boxes, which will be costly to update.
- Other attendees voiced their agreement with these challenges, suggesting that these are widespread for laboratories.
- One attendee emphasized that there are still many opportunities for decarbonization on the way to net zero, but achieving net zero could be prohibitively expensive and physically impossible with existing technology.
- Attendees are concerned about significant predicted increases in electrical utility rates from Seattle City Light as another challenge.

What cutting-edge trends towards decarbonization are happening in laboratories?

Topic: The meeting concluded by asking the attendees to share examples of new trends in decarbonization for laboratories.

- Many manufacturers are making higher temperature heat pump hot water heating equipment, and this will likely continue to improve.
- Local electric steam generators can replace some boiler demand.
- Electric point-of-use autoclaves are becoming available.
- Air quality measurement tools in some cases allow more variable air flows and a reduction of air change rates when air quality is high. The participant noted, however, that code might not currently allow adjusting the air change rate.