



March 23, 2016

RE: **Uniform Methods Project**
Draft Combined Heat and Power Evaluation Protocol for Stakeholder Review

The Alliance for Industrial Efficiency (hereinafter, “The Alliance”) appreciates this opportunity to comment on the draft Combined Heat and Power (CHP) protocol of the Uniform Methods Project (UMP). The Alliance is a diverse coalition that includes representatives from the business, environmental, labor and contractor communities. We are committed to enhancing manufacturing competitiveness and reducing emissions through industrial energy efficiency, particularly through the use of clean and efficient power generating systems such as combined heat and power (CHP) and waste heat to power (WHP). Our comments will help the UMP better advance these goals.

We are grateful for the inclusion of CHP in the UMP. As you recognize, CHP offers significant economic and environmental benefits by producing heat and electricity more efficiently than the separate generation of heat and power. By including a CHP protocol in the Uniform Methods Project, NREL is sending an important signal to stakeholders about the use of this technology. While we appreciate the addition of this technology to the UMP, we are concerned that the draft protocol undervalues these systems.

In particular, we believe that the draft misrepresents or undervalues CHP in several ways:

1. The data in **Table 2 (Part 1, at p. 9)** (“Typical CHP Operational Characteristics”) is inaccurate. Instead, we recommend relying on EPA’s “Catalog of Technologies” for current data on efficiency and heat recovery.¹
2. CHP’s principle benefit is that it displaces less efficient central power generation by producing both heat and electricity at the point of use. This may actually *increase* on-site fuel use, despite a reduction in fuel use (and associated emissions) throughout the airshed. Interestingly, the protocol acknowledges the need to “take into account [] cross fuel impacts” where “projects may use one fuel for the CHP system and offset another fuel for heating” (Section 3.2, at p. 13); however, does not consider similar indirect impacts that may occur off site. The protocol would benefit from a new section addressing overall energy savings:
 - a. By producing electricity at the point of use, CHP avoids electricity line losses associated with the transmission and distribution of power from a central generator. These savings can be significant, as average national line losses are 7 percent.² We recommend adding a discussion of CHP’s line-loss benefits (and including avoided line losses in the savings calculation). This discussion (and associated formulae) could be added to **section 3**.

¹ See U.S. EPA, CHP Partnership, March 2015, “Catalog of CHP Technologies” (available online at https://www.epa.gov/sites/production/files/2015-07/documents/catalog_of_chp_technologies.pdf).

² See, e.g., U.S. EPA, 80 Fed. Reg. 64662, at 64758, October 23, 2015, “Carbon Emissions for Existing Stationary Sources: Electric Utility Generating Units; Final Rule (“line losses account for approximately seven percent of all electricity generation.”).



- b. The protocol should provide additional background about CHP’s system-wide benefits. This will help put the potential modest increase in on-site fuel use in perspective. To calculate these benefits, the protocol will need to provide guidance on determining the efficiency (i.e., heat rate) of power that is being displaced at the central power plant. In particular, we recommend adding an additional subsection at the close of **section 3 (“Determining Savings at the Grid”)** to provide background about the system-wide fuel benefits of CHP, along with an equation for calculating system-wide savings. These benefits should be reiterated in a new section at the conclusion of **section 4.7 on “Overall Energy Savings.”**
3. The discussion in **Section 6.2** asserts that “CHP utilization over time tends to decrease.” This assertion relies on performance data from California’s Self-Generation Improvement Program (SGIP). This reliance is displaced, as SGIP provided incentives for installed capacity, rather than production. Consequently, systems were neither optimally sized nor utilized. More recent programs in New York and Massachusetts base incentives on system performance, rather than size. We recommend relying on data from these programs, rather than the outdated approach reflected in SGIP.
4. CHP offers substantial non-energy benefits, particularly in terms of enhanced reliability, improved resilience, and reduced emissions. These benefits are particularly important in the face of extreme weather events that may compromise the grid and may be a key reason to install CHP. We recommend adding a discussion of these benefits to **Section 6 (“Other Evaluation Issues.”)**.

Again, we appreciate the addition of a protocol for determining energy-efficiency savings for CHP to the Uniform Methods Project. We believe these modest additions will help ensure that CHP benefits are adequately accounted.

Thank you for the opportunity to comment,

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