

Date: January 14, 2020

Re: Electrification product needs for the MEP industry

Dear MEP Equipment Manufacturer,

As the need to decarbonize the building industry becomes more crucial, we as MEP engineers are consistently challenged with the need to design efficient, effective building systems that don't use fossil fuels.

This is being specifically driven by a number of local initiatives and legislations, already passed or in development; including but not limited to Local Law 97 (of 2019) in NYC, the ban on Natural gas in Berkeley, CA, the University of California Office of the President Carbon Neutrality Initiative, the "Clean Energy D.C. Omnibus Act of 2018," net zero building codes in Massachusetts, local gas moratoriums and others. More importantly, it is driven by the ultimate goal of net zero carbon and the reality that there is no way to reduce carbon emissions to safe and sustainable levels if we continue to heat our buildings with fossil fuels.

The Sustainable MEP Leaders group, organized by BuildingGreen, is a group of motivated individuals, representing many of the leading engineering firms in North America, including most of the signatories on this letter. Our teams include tens of thousands of MEP engineers practicing in the US market.

We need suitable equipment to address this growing need and we look forward to working with you to identify and meet this rapidly expanding market demand. We also need equipment that uses low-global-warming potential refrigerants. Finally, given the increasing attention on embodied carbon in buildings, we will be especially interested in products with environmental product declarations (EPDs).

We ask you to make it a priority to research, develop, market, and support the product types listed below. Please join us in the effort to support international climate goals and improve our industry together.

The list below represents many of the areas and elements of targeted product development we think crucial to the future success of decarbonized buildings. We're also encountering similar needs for process loads in many of the buildings we design, such as laboratories, hospitals, and commercial kitchens, but we have not itemized those needs here.

Heat Pump Solutions:

- All units tested and certified to operate at 0°F ambient without significant derating
- Increased compressor efficiency in heating mode at cold ambient temperatures (focus on equipment operation for both cooling and heating across OA temperature ranges)
- Development of products utilizing alternative refrigerants, such as HFO and CO₂, that have a lower global warming potential than traditional refrigerants, along with:
 - Low impact alternative refrigerants for existing equipment
 - Clear documentation on the carbon footprint of refrigerants
 - Decommissioning best practices
- Air-to-water heat pumps capable of producing warmer water at 0°F (HW supply targets):
 - Simultaneous cooling / heating machines (producing HW and CHW simultaneously through heat recovery operation)
 - Target warmer HW supply temperatures (100°F - 140°F or higher)
 - A full product line with heat pump sizes to include larger capacity systems, comparable to current water-cooled chillers and gas-fired boiler product sizes
- VRF systems:
 - Advancements in heating capacities at 0°F
 - Additional standard unit sizes and configurations, including both very large and very small units (for individual units in multifamily Passive House projects, for example).
 - Customizable units

- Domestic hot water generating units (DHW heater on the VRF refrigerant loop, rated for potable use, double wall HX, etc.)
- Air-to-air residential heat pumps (including PTAC replacements)

Heating / Service Hot Water Solutions:

- Water-to-water domestic heaters (ASME rated, capable of using CW loop to heat domestic HW, domestic/potable equipment with double wall HX in place)
- Air-to-water heat pump heaters with a focus on higher instantaneous capacity (requiring less HW storage)
- Electric boilers

Power / Battery Storage Solutions:

- Development of small to medium sized battery energy storage systems (~50 kWh – 200 kWh)
- UL listed for back-up / life-safety loads

Certifications: for all equipment, provide certification and testing relevant to the U.S. market, including but not limited to:

- NFPA 70
- ASHRAE 15
- ASME
- UL 465
- AHRI
- UL 924

You can keep us apprised of your progress in this area by emailing RoseAnn Grimes: RoseAnn@BuildingGreen.com. We look forward to sharing updates on your progress within our network and through public outreach to the entire industry.

Very truly yours,

The following leading MEP design firms:

