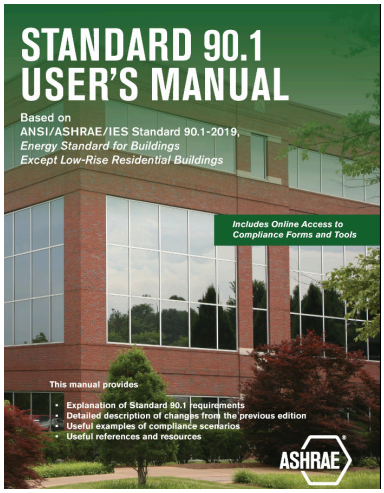
# IN THE KNOW

04.23

THE KNOWLEDGE YOU NEED DIRECT FROM THE MINDS OF MEP ENGINEERS

## Keep Your Eyes on the Code




On January 5, 2024 – yes, January 5, just a couple weeks from now – Minnesota will formally adopt the ASHRAE 90.1 2019 standard as the model for its new commercial energy code. What does this mean for your project? Well, to start, any project submitting for permit after that date is expected to comply with the new code. Most municipalities are expecting a rush as the deadline approaches, so plan accordingly. Other items of significance in the new energy code include:

- **COMPLIANCE PATHWAYS:** The 2018 IECC is no longer an option once the new energy code is enacted. As in the past, the ASHRAE standard provides flexibility, generally allowing either a prescriptive pathway (meeting or exceeding required values) or a performance pathway (utilizing an energy model to look at a building's performance more holistically). Within each pathway there are wrinkles and sub-pathways. Depending on the project type, the Performance Pathway and use of an energy model can oftentimes prove out cost savings by showing how an investment in one area (for example, equipment or appliances) can allow for savings in another area (for example, insulation). Also, note that many sustainability programs (LEED, etc.) require the Appendix G method within the Performance Pathway for compliance.
- **VERIFICATION AND TESTING:** The new code requires more aggressive verification and testing, conducted by a third party.
- **COMMISSIONING:** This is a biggie. Instead of being in the back of the code, this is now in the "How to Comply" section. All buildings over 10,000 square feet now require commissioning. And a commissioning agent is also now responsible for reviewing the drawings for energy code compliance, (not the building official). Plan on getting a commissioning agent on board early.
- **ARCHITECTURE:** There are more enhancements to the building envelope, including air leakage design changes which require blower door testing or a continuous air barrier design and installation verification program.

As with any code change, the key here will be communication with and between members of the design team. Want details? **Email me about our AIA-accredited Energy Code Presentation.** We'll bring it to you, and lay out what you need to know.

*on the mind of*
***John Henderson, PE, LEED AP BD+C***
*Mechanical Engineer, Associate*
*jhenderson@epinc.com*

## Refrigerant Transition: Keep it Cool

In 2024, a significant phase-out of refrigerants in commercial HVAC and refrigeration equipment is set to begin. This transition is a response to the environmental impact of certain refrigerants contributing to ozone depletion and climate change.


The phase-out mandates a departure from some commonly used hydrofluorocarbons (HFCs) with high global warming potential (GWP). This initiative aligns with international efforts, such as the Kigali Amendment to the Montreal Protocol, aimed at curbing the use of potent greenhouse gases.

Common refrigerants being phased down or phased out include: R-410A, R-134A, R-404A, and R-407C, among others. Potential replacements with lower GWPs include R-32 and R-4554B.

- **WHY SHOULD YOU CARE?** Refrigerants are used as the heat-transfer medium in almost all HVAC equipment. The phase out means that commercial HVAC and refrigeration systems will need to be designed, redesigned, or retrofitted to accommodate these new-generation refrigerants. *(continued on next page)*

## Refrigerant Transition: Keep it Cool *(cont.)*

- **WHAT'S THE POTENTIAL IMPACT?** Equipment efficiencies may change (placing an even greater emphasis on system design), and older equipment may require upgrades to accommodate the new refrigerants. Costs may be significant.
- **WHAT'S THE BOTTOM LINE?** Your MEP engineer should be on top of the changes, but you should ask questions about the equipment spec'd in your project – its performance, cost, and especially maintainability. Involving your facilities staff in design discussions is recommended, as they'll have important input around maintenance items.

The next few years will be messy as the transition occurs: older buildings with older equipment will present challenges, and new design projects will need to carefully consider design and equipment implications. Also, decisions about class A2L refrigerants – refrigerants characterized by mild flammability, low toxicity, and low global warming potential (GWP) – and regulations are coming, along with related design implications (especially around safety).

As always, a knowledgeable, forward-thinking MEP engineer will help avoid surprises and ensure your systems perform as needed and intended.

*on the mind of*
***Kevin Galbraith, PE***
*Senior Refrigeration Engineer, Associate*
*kgalbraith@epinc.com*

## Modular Construction and MEP Engineering: Go!

Modular construction is a process in which a building is constructed as "modules" off-site at a factory and then transported to the final site and "assembled." The buildings adhere to the same codes and standards as conventionally built facilities but are frequently built in a fraction of the time (which translates into faster time to market).

With several modular projects under our belt now (and several more in design), some important themes have emerged when considering modular construction for your project:

- **DUPLICATION:** Modular is all about repetition. If there's a high degree of repetition in your project – think multifamily housing, for example – modular may be a good option.
- **TIMING IS EVERYTHING (AND COORDINATION IS ESSENTIAL):** The design process always works best when solid decisions can be made early (and not frequently revisited), but it's more essential than ever in a modular project as there's a manufacturing element. Stops and reversals are difficult, time consuming, and costly. This places an emphasis on early and close coordination between the design team, the engineering disciplines, and the mod construction team. And equipment (even fixtures) needs to be chosen early.
- **LOCATIONS AND INTERACTIONS:** In modular design, MEP systems are all fed from a common corridor (typically a hallway). Consider early the design implications of this and look closely at how the systems can interact from mod to mod.
- **PERMITTING AND INSPECTION:** Coordination between city inspection and state inspection can be a challenge and needs to be coordinated between the manufacturing facility and the project site.
- **SCOPE OF WORK:** Getting a clear – crystal clear – scope of work is essential as the players involved in a project are somewhat muddier than in a traditional construction project. What's actually included? Who's doing it? When and where? Getting clear on the scope will absolutely save headaches and help everyone understand the true cost of the project.

*on the mind of*
***John Nordstrom, PE***
*Mechanical Engineer, Managing Partner*
*jnordstrom@epinc.com*