

IN THE KNOW

THE KNOWLEDGE YOU NEED DIRECT FROM THE MINDS OF MEP ENGINEERS

LEED v4 Energy Update: Yes, It's Here

Some of you are aware that – as of March 1, 2024 – [LEED has raised the bar on energy](#), and that projects registered under LEED v4 BD&C or ID&C will now be required to follow an updated version of the Minimum Energy Performance prerequisite and Optimize Energy Performance Credit.

Here's what you need to know.

What It Was:

Before March 1, projects following LEED v4 had to achieve a minimum cost improvement depending on the rating system the project was following. For example, projects under the New Construction rating system had to perform 5% better than an ASHRAE 90.1-2010 baseline. This process was documented through the Minimum Energy Performance prerequisite credit. After a project demonstrated the Minimum Energy Performance, the project could earn additional points based on additional percent savings over the baseline. Up to 18 points could be earned by demonstrating a percent cost improvement of 50% or more, which was by far the largest individual credit within LEED.

What It Is Now:

As of March 1, all new projects must comply with the Energy Update version of LEED v4/v4.1, which dramatically changes how the Minimum Energy Performance and Optimize Energy Performance credits are documented. The new language nearly doubles the Minimum Energy Performance of all rating systems and dramatically increases the percent savings required to obtain additional points under the Optimize Energy Performance credit. The new language also incorporates greenhouse gas (GHG) emission performance into the requirements of the Optimize Energy Performance credit, accounting for roughly half of the available 18 points, and allows project teams to document energy performance through either a source energy metric or cost metric for the remaining points within the credit.



Two More Things:

- ASHRAE 90.1-2010 remains the referenced standard with this energy update, so project teams may continue to leverage currently published LEED v4 and/or LEED v4.1 interpretations and credit substitutions to document compliance.
- The total points available through energy performance remains unchanged. However, the percent improvement required to achieve maximum points has been dramatically increased and now requires projects to demonstrate energy costs savings or source energy savings and/or greenhouse gas emissions savings.

Here's the takeaway: this change has been a long time in coming, and in general helps bring alignment to LEED v4 and LEED v4.1. But it also puts additional pressure on design teams to coordinate early and remain extraordinarily connected throughout the design process. As always, be sure to involve your MEP engineering team in the conversation as project goals are being discussed.

[\(More info here.\)](#)

On the mind of **Benjamin Bahr**
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Green Building = Electric Heat... Right?

Heat pumps! Get your heat pumps! Electric heating solutions are the talk of the building industry, with conversations spilling into broader society.

To tackle climate change, the thinking goes, we need emission-free heating and cooling. The electric grid will become less and less carbon-intensive over time (as more and more renewable and emission-free generation sources come online) so electric heating *must* be the best choice for a green building. Even if an electric heating system emits more carbon today than a gas system, that will only be true for a limited amount of time, and the gas infrastructure installed today will persist and likely be replaced by more gas systems at the end of life. Right?

This is all true in most cases, but there is often more to the story than simply gas is bad, electric is good. Things to keep in mind as you're discussing your building project:

- **What are your (specific) goals?** Often, the motivation to build a "green" building is related to requirements from a statutory, funding, or certification standpoint. Not all certification systems reward the same behavior, and sometimes they are directly opposite. For example, a city policy based on ASHRAE 90.1 2019 Appendix G models in Minnesota might include gas heating in the baseline and will likely show more points for a high efficiency gas heating system than a heat pump system. On the other hand, programs like Living Future ban gas infrastructure. Knowing what's required, or choosing goals that align with the owner's values, is key.
- **Operational Costs:** Electric resistance heating is going to cost more than gas to operate in the upper Midwest under almost all conditions based on 2024 utility prices, but in many cases air-source heat pumps also cost more to operate in cold climates. When operating costs are higher and first costs are higher, electric solutions don't pay back on their own, so a broader conversation needs to happen.
- **Operational Carbon:** Different sustainability programs, organizations, and applications all use different definitions of carbon, and some of these can have a huge impact on the comparison. An existing building may be required to report on electric emissions based



on the existing grid mix, whereas a new construction project may need to consider marginal emissions (which is a forecast of emissions that would come on line to meet the new load).

- **Availability of Equipment:** Air source heat pumps are currently only available in certain sizes and with certain capabilities. For example, we are unaware of commercially available rooftop units with dehumidification capabilities (hot gas reheat) in heat pumps.

The short story? There's no one easy answer when looking to design a sustainable, "green" building. But good options are out there, and involving your MEP engineer early will help you determine the right systems to meet your project's goals.

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Need to Know: Cx Start and Cx End

Buildings are cool. They just are. I've been commissioning buildings for more than 15 years, and I still think buildings – the way they look, the way they function, the way they live and breathe – are really, really amazing. And I get to be a part of bringing them to life.



Over the years it's become clear that there is some confusion over certain components related to building commissioning; among these are the OPR and the BOD.

At the Beginning: Creating the OPR and the BOD

The OPR (Owner's Project Requirements) is a document authored by the project owner – with significant input and guidance from the project design team – that articulates the goals and expectations for a building project. It encompasses functional, operational, and performance criteria, including space requirements, budget constraints, sustainability goals, and desired aesthetics. The OPR serves as a blueprint for architects, engineers, and contractors, guiding the design, construction, and eventual operation of the building. It ensures that the final product meets the client's vision and operational needs, fostering clear communication and alignment among all stakeholders throughout the project lifecycle.

The Basis of Design (BOD) is developed based on the OPR. It provides a detailed explanation of how the project will meet the requirements set forth in the OPR. The BOD includes technical specifications, systems selection, materials choices, and design rationale.

Essentially, the BOD translates the OPR into actionable design decisions and serves as a reference point for architects, engineers, and contractors throughout the design and construction phases.

A commissioning agent like me will almost certainly ask questions about both the OPR and the BOD – and will offer insight, advice, and input – but the responsibility for these important documents falls to the owner and the design team.

At the End: Executing the OPR and BOD

A good commissioning provider gets really busy as a building is nearing completion and the building's systems are being brought on line. This is the glamorous moment where the controls contractor and I get together, sit on a couple buckets, and bring it all together to ensure that the OPR and BOD are being met.

As equipment and technology have evolved, the operation of buildings has become more complicated. As a commissioning provider, it's my job to make sure that the systems are fine-tuned to work right, and then to train up operations folks to make sure it runs right going forward. It's essential that we explain well how the facility is supposed to run to the people who are charged with running and maintaining it. Failing to do so can mean that any of the owner's and design team's objectives – energy savings, space comfort, etc. – can be lost.

People hire us because they want the systems they paid for to work right now and into the future. And I take that responsibility seriously. So – in those moments sitting on the bucket, optimizing the systems and aligning their performance to both the OPR and BOD documents – I'm frequently visualizing visiting this same building again in five years, and finding it operating perfectly.



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