

SIEMENS



CRE Review Newsletter

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Thank you for your continued interest in our bimonthly newsletter. We are grateful for your attention and your time.

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Measuring greenhouse gas emissions: what this means for commercial building owners and operators



According to the National Renewable Energy Laboratory (NREL), buildings in the United States [accounted](#) for 37% of global CO₂ emissions in 2020. In response, many cities are beginning to implement energy performance regulations to drive lower carbon emissions. This, in turn, is causing building owners to become more engaged in developing sustainability strategies.

In their recent [report](#), NREL cites that most building Greenhouse Gas (GHG) emissions typically come from the combustion of fossil fuels for generating heat and electricity, while pipe and equipment leakages of methane or refrigerant can also contribute. NREL presents accounting frameworks and tools that building owners and operators can use to measure and inventory their emissions. This is an important first step before making decisions about reducing emissions.

Let's take a step back and examine the types of GHG emissions that you may encounter as you begin your inventory journey. In 2001 the Greenhouse Gas Protocol identified three categories of emissions.

- **Scope 1** – emissions within the building owner's control, such as onsite combustion for electricity and heat generation, and vehicle usage where the vehicles are owned assets of the organization. Energy reduction, occupancy-based use and electrification using clean energy are good solutions here. Baseline energy consumption is the best first step for reporting purposes.

Scope 2 – indirect emissions, including those related to purchased electricity, steam, heat, and / or cooling. Sourcing clean or low-carbon energy from energy producers can make an impact here.

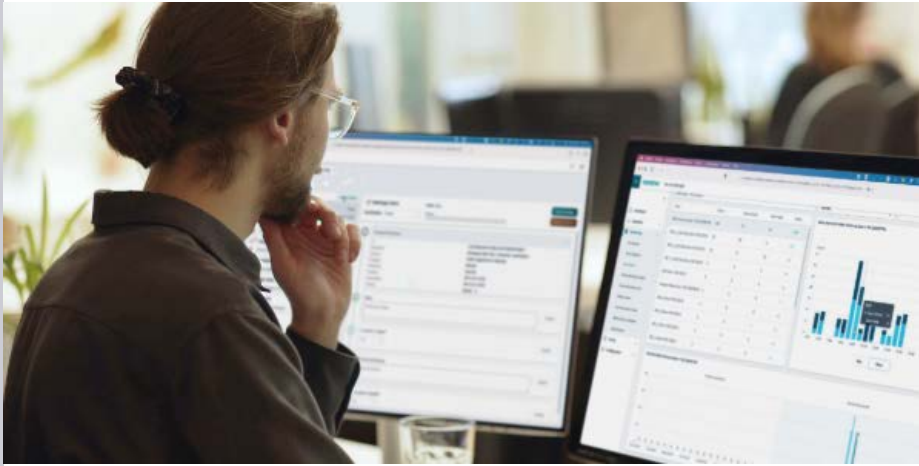
Scope 3 – all other indirect emissions, both upstream and downstream, for example from third party suppliers, business travel emissions, and day-to-day operational waste. This is by far the most difficult to mitigate and requires working with suppliers, employees and tenants.

Although commercial building owners' have more direct control over Scope 1 and Scope 2 emissions, all three categories are of equal importance. Building owners can make informed supply chain, construction, and operational decisions that have a positive impact on all three categories of emissions. With this information in hand, commercial property owners can then begin to measure their carbon footprint.

The US EPA's ENERGY STAR Portfolio Manager is, perhaps, the most widely recognized resource, as cited by NREL. Although many factors (building age, type, and usage; climate zone; organizational function) will affect a building's GHG emissions, Portfolio Manager will normalize for these factors so that commercial property owners can make informed decisions about how to move forward.

Even without mandated measurement and benchmarking, building owners can reap benefits from transparency into GHG emissions. Financial incentives are certainly one area of opportunity, but so too is the ability to create a competitive edge for the property.

Mixed-use, mixed-needs: The labor market for mixed use facilities has experienced disruption. Can building intelligence help?



Over the last several years, the labor market has experienced significant disruption and shifts in workplace dynamics. Millions of baby boomers have [left](#) the workplace since 2020 and more than 47 million Americans left or [changed](#) jobs in 2021.

This shift does not consider the technical / digital skills gaps that many organizations are experiencing. It's no different for owners and managers of mixed-use properties, who often find that there are not enough people with the right skills to effectively manage their building's increasingly complex systems.

Today's buildings are home to a growing number of building systems. These systems can be connected to achieve efficiency and optimize performance. Tenants depend on these systems to deliver smooth, uninterrupted, operation while property owners use them to provide predictable building outcomes; the latter to attract and retain tenants and keep expenses on-budget.

The good news is that these systems can acquire and deliver plenty of data; the bad news is that without the ability to convert the data into knowledge, performance improvements will be limited.

Mixed-use property owners are recognizing that, by adopting a building intelligence/knowledge approach, they can overcome the challenges that resource gaps have had on their operations. For example, with a building intelligence mindset, it's now possible to address the root causes of building performance issues, enabling building owners to fix things right the first time. In the end, this can lead to more effective management of building staff, improved uptime, and deliver greater tenant satisfaction.

Moreover, with this approach, it can become easier to make investment and operational decisions based on knowledge of an asset's behavior, which can also deliver improved resilience and flexibility. That is, addressing risks before they become disruptive reduces the chances of building staff being caught off-guard while also letting owners leverage building data to create happier, long-term tenants.

Did you know?



Energy Use Intensity

Real Estate firms are tackling their sustainability goals by reducing their energy consumption. How can they measure their success? Energy Use Intensity (EUI) is a calculation expressed as energy per square foot per year. It's calculated by dividing the total energy consumed by the building in one year by the total gross floor area of the building. However, certain property types will always use more energy than others. For example, an elementary school uses relatively little energy compared to a hospital.

So, for a mixed use property which of the following three property types is the least energy intensive?

- Hotel
- Office
- Retail

The answer is below

The median usage of energy (kBtu/sq2)

- Office: 116.4
- Retail: 120.0
- Hotel: 146.7

Source: Energy Star

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