

5 Key Actions to Achieve Building Emission Targets

Actionable Insights Powered by Atomiton EcoTransformer (ETX)

Operational Carbon in Buildings

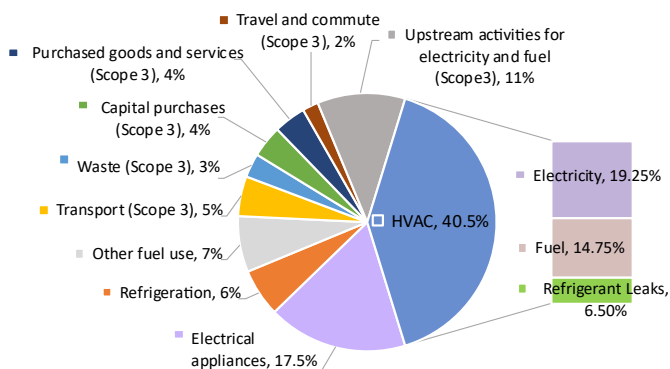
Buildings are responsible for approximately 40% of global greenhouse gas (GHG) emissions, making them a critical focus for achieving emission reduction targets. People spend approximately 90% of their time in various building environments. Building-related carbons are therefore more actionable through design, technology, and behavior changes.

Distribution of Operational Carbon in Buildings

Operational carbon is GHG emissions generated through the operational stage of the buildings. It doesn't include embodied carbon, which comes from the building materials used and the process to construct buildings.

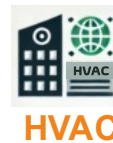
HVAC systems are frequently the biggest contributor to buildings' carbon footprints. HVAC systems include a range of different emission activities. Buildings in different uses (e.g., research vs. retailing) carry on different operational activities and have different emission profiles.

Figure 1. Average Distribution of Operational Carbon in Buildings



Understanding the carbon footprint distribution of your own buildings is the first step towards emission reduction. To do that you need emission tracking tools with sufficient specificity.

5 Key Actions to Reduce Emissions



- Understand CO₂e distribution
- Evaluate refrigerants
- Benchmarking CO₂e intensity
- Operational insights
- Technology alternatives



Electricity

- Identify top contributors
- Evaluate cleaner energy mix sources
- Consider power alternatives
- Operational efficiency



Refrigeration

- Benchmark and compare (high variability)
- Evaluate refrigerants alternatives
- Gain operational insights
- Plan system upgrades



Waste (Scope 3)

- Identify top waste types
- Remove data barriers
- Analyze recycling CO₂e impact
- Engage service providers



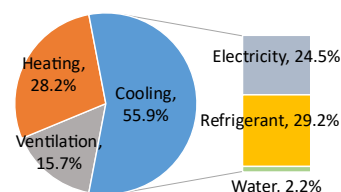
Transport (Scope 1 or 3)

- Include key variables in CO₂e model
- Standardize metrics across providers
- Scenario analysis (ordering changes, provider changes, etc.)

Reducing Emissions from HVAC

Frequently responsible for 40% of building emissions, HVAC systems are complex, multi-component systems with large variations in their carbon intensity across different buildings.

Figure 2. Common Emission Activities in HVAC



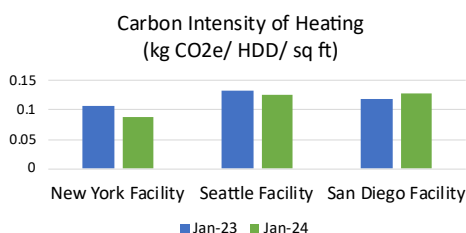
Most companies don't know whether more of their HVAC emissions come from cooling, heating, or ventilation. The answer depends more on the types of resources used, such as electricity, fuel, steam, water, and refrigerant, so understanding the translation between operational activities and CO₂e is essential for prioritizing actions. This translation is what we call the "emission accounting methods", and it's the reason why specialized software such as ETX is needed to provide necessary insights.

Given each HVAC system's carbon footprint profile, one or more of the following actions should be taken:

- *Analyze options and cost-benefit of refrigerants*
- *Benchmark heating and cooling carbon intensity*
- *Create and use operational insights from data*
- *Evaluate cost-benefit of technology alternatives*

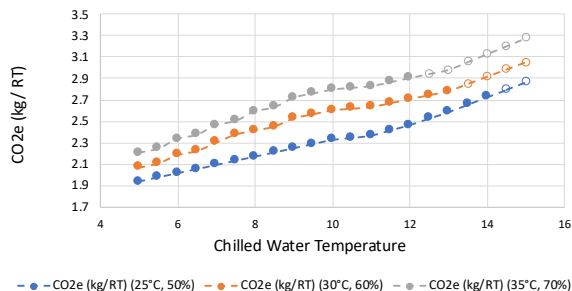
For example, one of Atomiton's client uses ETX to benchmark and compare the carbon intensity of facility heating, even though the sites use different heating systems and are in different regions. The metrics helped them identify top areas of opportunities for improvement.

Figure 3. Benchmark Heating and Cooling Carbon Intensity Example



Another client uses the granular data from ETX to understand the relationship between their chiller setpoints and carbon intensity, receiving insights to improve their emission performance.

Figure 4. Chiller Carbon Intensity in Different Operating Conditions



About Atomiton

Atomiton is a technology-based sustainability solution company with strong track records of helping businesses reach sustainability targets. Headquartered in San Francisco, the company serves global clients in the real estate, retail, logistics and manufacturing sectors.

Atomiton's customers consistently achieve 15%-35% CO₂e and operational cost reductions in their focused emission areas after using Atomiton's software and services.

EcoTransformer (ETX) SaaS Platform

Atomiton offers a SaaS platform that provides actionable building emission insights through business operations data.

Atomiton Managed Service

The managed service option includes ETX SaaS, combined with a full service of data sourcing, setup, reporting of emissions, as well as opportunity analysis by Atomiton experts.

Case Study

Customer Profile: Operator of 156 retail facilities and 12 distribution centers.

Result: Reduced total Scope 1 and 2 emissions by 16% within one year.

ETX Benefits:

- Streamlined GHG tracking, achieved high data consistency, quality, and frequency
- Used metrics to prioritize high intensity facilities and activities
- Used analytics to identify near-term opportunities to reduce emissions

Strategies Taken:

- HVAC at retail and distribution centers
- Refrigeration
- Reefers for transport
- Adoption of solar energy

