Demystifying Decarbonization: A Building Owner and Business Executive Quick Guide

Organizations face challenges to create more efficient operations and achieve sustainability goals. But it doesn't have to be a challenge. Here are 3 steps to successfully decarbonize your building and business.

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As pressure to reduce greenhouse gas emissions increases, organizations face several challenges to create more sustainable operations. Local, state, and federal regulations and incentives are driving critical decisions about buildings and infrastructure – both to remain compliant and to ensure long term viability. Public and private entities alike are responding to changing expectations for indoor environments, while at the same time working to understand the impacts of evolving building code changes and natural gas bans. Putting these things together as part of a holistic plan to meet environmental sustainability goals may feel like a daunting proposition.

It's critical to get a handle on your sustainability goals and develop a realistic plan to achieve them. This guide is meant to help building owners and business executives get on the right path to creating a decarbonization plan that will help to meet the environmental sustainability goals of today and help to set buildings and businesses up for long-term energy and cost savings and increased operational resiliency, well into the future.

3 Steps to Successfully Decarbonize your Building and Business

Step 1: Consider what is driving your decarbonization ambition to determine appropriate goals for each location in your portfolio

You're likely feeling the pressure to become a more sustainable operation from multiple sources. And it's important to understand the nuances of each so that you know what emission reduction goals you're accountable to meet.

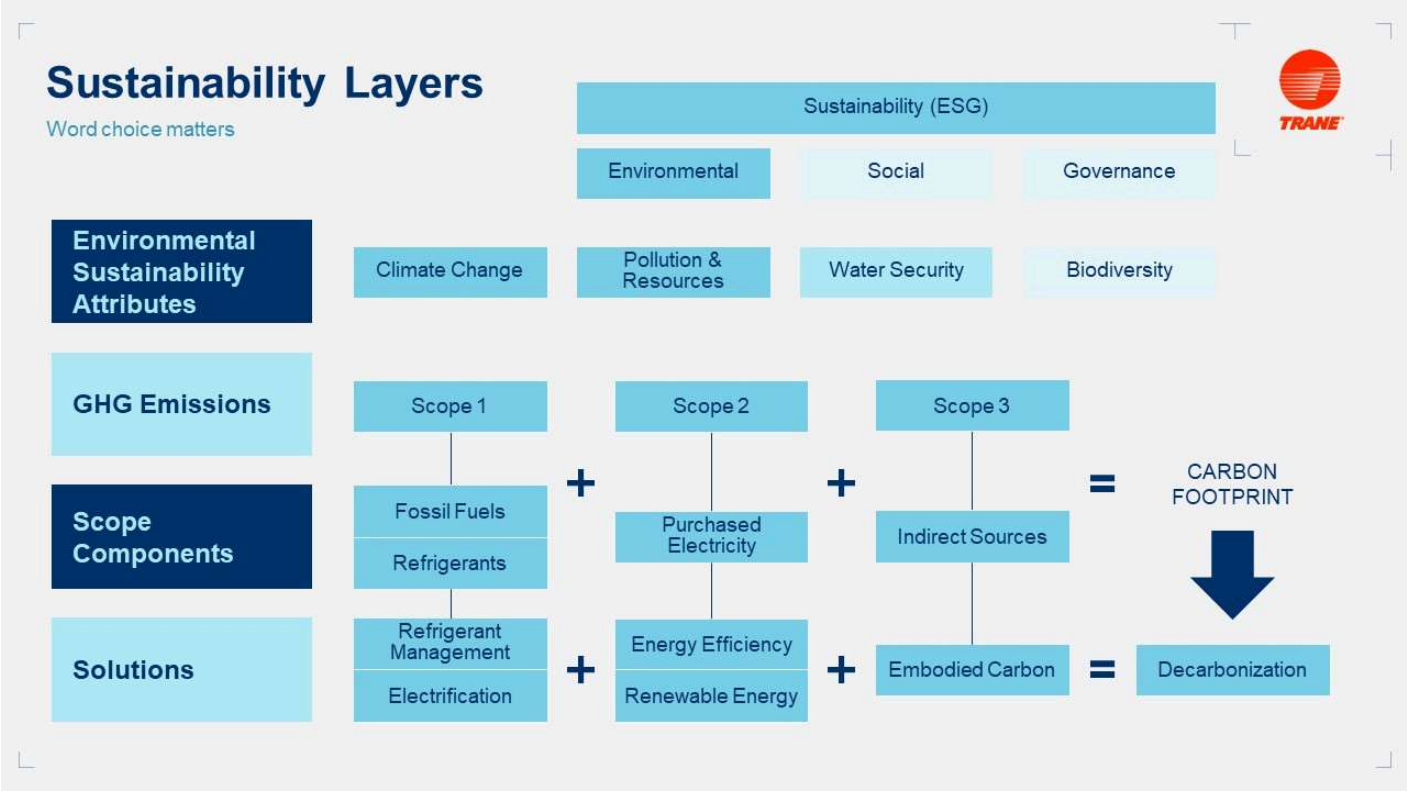
- **Policy & Regulatory**
  There is no shortage of regulations aiming to help achieve a more sustainable future. From overarching policies like the Paris Agreement to nationwide goals like the Department of Energy's 2023 efficiency requirements for residential and commercial HVAC equipment to varying local policies and regulations across North America. Making sense of the complex weave of regulations that impact each of your building and operation can be overwhelming. Coordinate with experts to help you navigate the regulatory landscape, so you have clear guidance on emissions requirements across your portfolio of buildings.

- **Public Pressure**
  With climate change growing in importance in the minds of everyday Americans, people increasingly expect businesses to operate responsibly and ethically. More and more customers consider the environmental practices of their favorite brands and employees are requesting responsibility from their employers.

- **Shareholders and Stakeholders**
  Because of this increase in public pressure, shareholders and stakeholders are also under the microscope to ensure that the businesses they invest in, or support, have emission reduction plans in place. Additionally, as businesses and organizations evaluate their carbon footprints, they are increasingly looking at the emissions of suppliers in their supply chain to make decisions about purchases of raw material and inputs. This is driving a need for increased reporting and a cascade of climate commitments throughout the value chain.

Step 2: Determine your current emissions baseline

To understand where you want to take your business in the future, you must first get a baseline understanding of your current energy and emissions landscape. Getting honest about your current carbon footprint provides a realistic view of how to build an effective and achievable decarbonization strategy.



As is illustrated in the graphic above, three components make up your sustainability program: Environmental, Social, and Governance – commonly referred to as ESG. Your carbon footprint is comprised of three "Scopes" – Onsite, Energy, and Value Chain.

- **Scope 1 "Onsite" emissions** are emissions used directly within your operations and are commonly made up of fossil fuels.

- **Scope 2 "Energy" emissions** are electricity purchased from the electrical grid. While you are accountable for these emissions, it is not directly in your control.

- **Scope 3 "Value Chain"** emissions are a more complex set of emissions related to the creation and transportation of products and services.

Making changes to reduce emissions in any of these three scopes is how you achieve decarbonization. Working with an expert, you can determine the appropriate mix of initiatives within this framework to achieve your sustainability goals while supporting your business and financial goals.

Step 3: Make a Decarbonization Plan

Decarbonization comes down to four main components: Energy Efficiency, Electrification, Renewable Energy, and Refrigerant Management. Let's look at what goes into each component.

- **Energy Efficiency**
  The goal of energy efficiency is to help improve the building's infrastructure to eliminate waste in your operations. This can be done by upgrading to more efficient equipment, making improvements to limit the heat entering or escaping from the building, or reducing the load it takes to heat or cool the space.

  The process of becoming more energy efficient starts with simple, cost-effective measures such as identifying and addressing air leaks to installing sophisticated building automation systems that monitor energy use and waste in real-time. A great way to gain greater efficiency is to **start with an energy assessment** (https://www.trane.com/commercial/north-america/us/en/services/energy-and-sustainability/energy-analysis-and-monitoring/energy-assessment.html).

  Upgrading to high-efficiency equipment, including HVAC and lighting, helps to reduce the overall cost of ownership and may help to improve the energy efficiency within your building. Installing automation systems allows you to centrally **monitor and manage the energy** (https://www.trane.com/commercial/north-america/us/en/services/energy-and-sustainability/energy-analysis-and-monitoring.html) in buildings across the country, leading to significant savings. Your building and energy expert can work with you to **find ways to pay for building upgrades now by using future energy savings** (https://www.trane.com/commercial/north-america/us/en/services/energy-and-sustainability/financing-and-energy-services-contracting/energy-savings-performance-contracting.html).

- **Electrification**
  To create a greener energy grid, renewable energy sources like solar and wind are being developed. This means electricity is becoming less emission-intensive across North America. One of the best ways to take advantage of these greener energy sources is to electrify your heating and cooling operations. An emerging decarbonization strategy is to transition space and process heating equipment to system designs and equipment standards that allow for all electric, net-zero ready operations. Building and business owners in areas with clean, low-cost electric grids will see more near-term benefit for electrification of heat. That said, electric heat is 'net-zero ready', because it can ultimately be supplied by a renewable energy source. This is a huge advantage for any building looking to achieve decarbonization goals.

  Since utilities are making significant investments to update the grid, many are incentivizing customers to take advantage. The right expert can help you determine how you can receive reimbursements from utilities that can support electrification updates.

- **Renewable Energy**
  Building and business owners can leverage renewable energy (https://www.trane.com/commercial/north-america/us/en/services/energy-and-sustainability/renewable-energy-and-distributed-energy-resources.html) as a tool to help reduce emissions while gaining more control over their energy supply. While renewable energy has historically been seen as a "cost premium" to traditional energy sources, there are emerging models that allow buildings to secure renewable energy at a discount to traditional power sources.

  Building owners should explore all the renewable energy options available to them and identify which one has the best alignment and significant returns to the business

  There are two main ways to secure renewable energy:

  - **Onsite:** A renewable energy asset or system is installed at the facility and provides energy supply directly to the building.

  - **Offsite:** A commitment is made to an offsite renewable energy asset (likely a large utility-scale development) that allows the owner to recognize the renewable energy attributes.

- **Refrigerant Management**
  The often-overlooked costs of refrigerant leaks could be impacting both the environment and your bottom line. A solid refrigerant management strategy starts with baselining, tracking, and managing the losses of refrigerants, and looking for ways to reduce refrigerant losses. While this is important from a reporting perspective, getting a handle on refrigerant leaks will also improve equipment performance and reduce service events.

  The second step is to assess the global warming potential (GWP) of the refrigerants currently used in systems and look at transitioning to lower GWP refrigerants as equipment is upgraded or in future investments.

Building owners and business executives like you will have growing pressure to decarbonize their operations in the years to come. There are unique challenges, as well as immense benefits, that come with reducing emissions while avoiding negative impacts to core business operations and customer experiences. Balancing these challenges by developing a roadmap to decarbonization that focuses on creating financially attractive solutions to achieve your goals is a core competency

of the expert teams that support Trane Energy Services (https://www.trane.com/commercial/north-america/us/en/services/energy-and-sustainability.html).

Looking to begin, accelerate, or complete your decarbonization journey? Connect with a Trane expert to **develop a financially attractive solution to meet your sustainability ambition.**

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About the author

Trevor Joelson, Decarbonization Program Lead – Key Accounts

Trevor Joelson is a program lead for Trane's decarbonization program for key account customers. Through this program, Trevor collaborates with larger enterprises to define their environmental sustainability objectives and establish initiatives and programs to reduce operational emissions through financially attractive and measurable projects.

Trevor joined Trane through an acquisition of Fellon-McCord in 2016 and has held various roles in corporate energy & sustainability management over the last decade. His subject matter expertise is in the energy markets and how the supply-side of energy connects to the built environment.

Trevor lives with his family in Dallas, TX and is a graduate of the University of Louisville.

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