



# The Future-Ready Building

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8 BUSINESS DRIVERS ADVANCING  
BUILDING TECHNOLOGY



Technology  
expectations  
are evolving  
rapidly —  
are you  
future-ready?

Dear Industry Leader,

In this era of rapid technological advancement and growing environmental awareness, buildings must do more than simply exist — they must be future-ready to actively serve your purpose and drive your success. The building industry stands at a pivotal moment, and at Trane, we've spent decades understanding this fundamental truth: **the built environment is a powerful catalyst for achieving business objectives when approached with purpose and vision.**

Our journey began with a simple commitment: **putting customers at the heart of everything we do.** Today, that commitment has evolved into a comprehensive approach that combines our highly trained service technicians with cutting-edge smart building technology. This unique combination of human expertise and technological innovation enables us to help solve our customers' biggest challenges and future-ready their buildings to meet their business goals.

The integration of advanced building technologies is essential to achieving these goals. Through our work with customers across diverse sectors, **we've identified eight key business drivers that are shaping the future of building modernization.** These insights, coupled with our deep history in controls and machine learning, position us uniquely to help you navigate the complexities of today's built environment and prepare for tomorrow's challenges.

The insights shared in this report reflect our commitment to being more than just a solutions provider—we are dedicated to helping you create future-ready buildings that adapt and evolve with your business needs.



**Holly Paeper**  
President, Commercial HVAC Americas  
Trane Technologies







# The Imperative for Change

The built environment is undergoing a period of unprecedented change. This transformation is reshaping the landscape of building services and technology, which points to a clear reality — **buildings must evolve.**



**Aging Infrastructure Challenges**

**75%**  
of commercial buildings are **25+ years old**<sup>1</sup>  
Regular vs. deferred maintenance can reduce downtime by **35%** and unexpected breakdowns by up to **75%**<sup>2</sup>



**Talent Shortage Crisis**

**27%**  
of current workers are within **10 years of retirement**<sup>3</sup>  
HVAC technician demand is growing by **5%** annually, creating **40,000+** openings yearly through 2031<sup>4</sup>

These challenges intersect with the key areas that organizations most want to improve in their facilities.



## Buildings exist to serve a purpose, your purpose.

This fundamental principle drives everything we do at Trane. We understand that every building decision must align with your business objectives, which is why we always start with “why” before discussing “how.” In today’s dynamic environment, being future-ready is the new gold standard.

## Trane’s century of innovation makes the difference.

Our legacy spans over 100 years, with specialized building controls expertise dating back to 1978. Today, Trane supports tens of thousands of connected buildings and over 2 million pieces of connected equipment. These assets deliver as much as 5 billion data points each day.

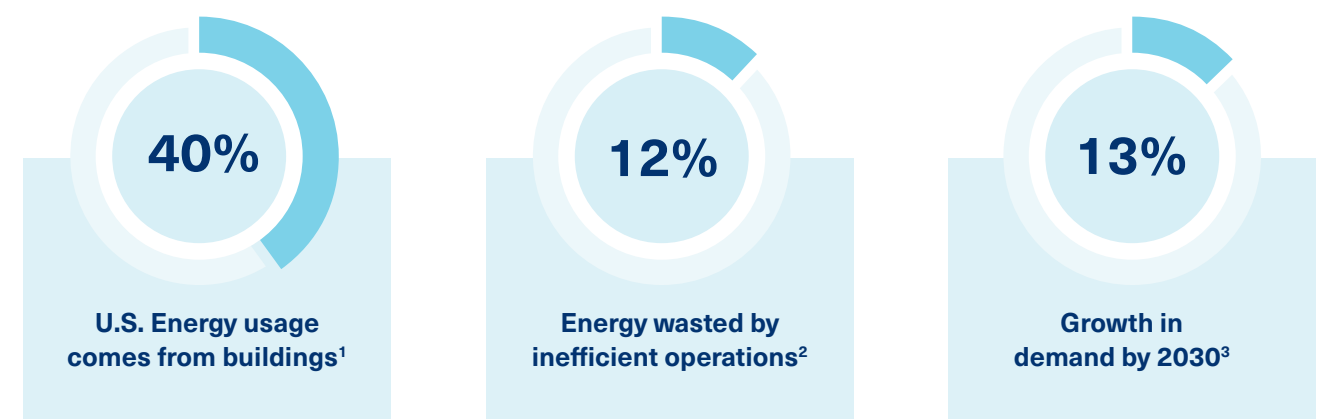
We've found these **8 Key Business Drivers** are the impetus for action for building modernization decisions. Unlock the insights to get started.

- 1 Sustainability
- 2 Operating Costs
- 3 Indoor Environment
- 4 Reliability & Uptime
- 5 Energy Efficiency
- 6 System Interoperability
- 7 Cybersecurity
- 8 Compliance & Reporting



# Sustainability & Decarbonization

The environmental impact of buildings has **made sustainability a business imperative**, with HVAC systems at the center of both the challenge and solution. Understanding current consumption patterns and future trends is crucial for organizations seeking to help **reduce their carbon footprint and optimize energy use**.



## Big energy demands require smart energy solutions.

Modern controls are laying the essential foundation for change. Today's AI-powered technologies enable organizations to analyze energy usage patterns with precision. Trane Autonomous Control can help support sustainability goals by:



Reducing buildings' carbon footprint by up to 40%



Reducing HVAC energy costs by up to 25%



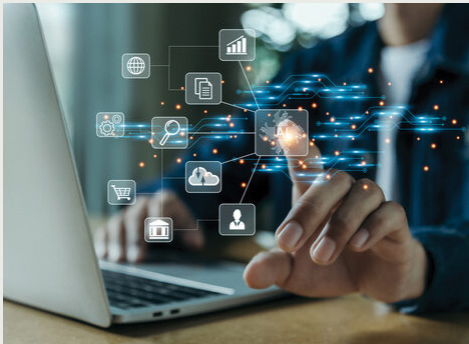
Making improvements 24/7 without human intervention



Cutting operating & maintenance costs



Enhancing efficiency without sacrificing comfort



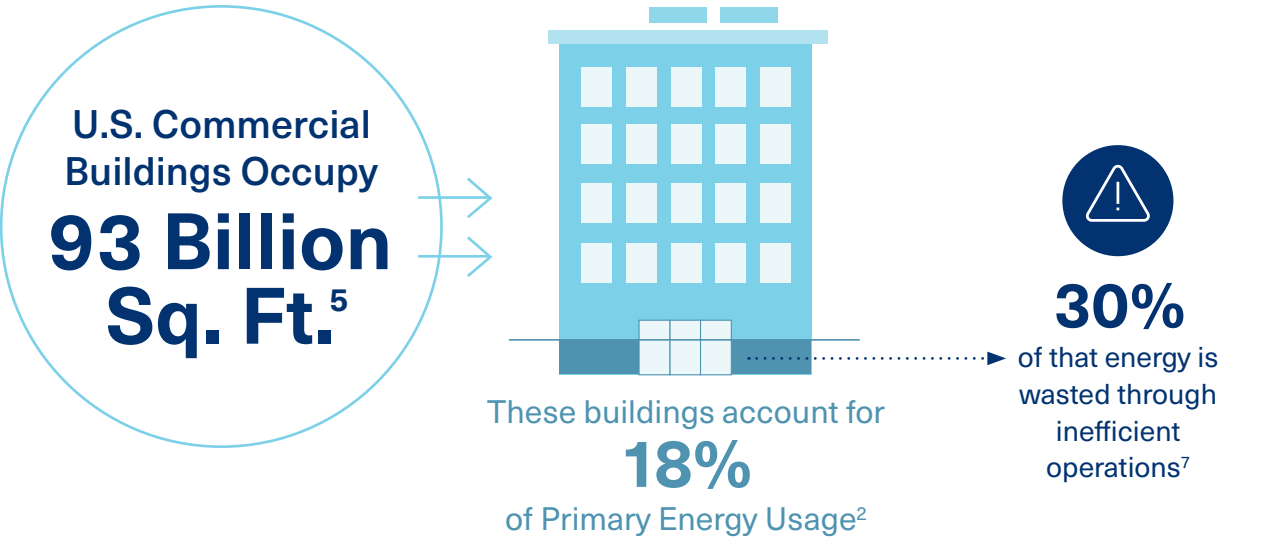
FROM ACTION TO IMPACT

**Autonomous Controls & AI**  
Through collaboration with **BrainBox AI<sup>4</sup>**, Trane has revolutionized HVAC efficiency. By combining AI-driven intelligence with Trane's advanced building management solutions, businesses can achieve:

- **40% reduction in carbon footprint**, enhancing sustainability efforts
- **25% reduction in HVAC energy costs**, improving financial outcomes
- **24/7 system monitoring and optimization**, ensuring continuous efficiency without human intervention

# Operating Costs

It's simple — **uptime impacts the bottom line**. When buildings run efficiently, operating costs follow suit. **Now is the time to take control of every square foot, improve energy use, and reduce operating costs.**



## Trane® Connect™

Our platform helps you gain a deep understanding of energy consumption and performance for your building through:



Data-Driven Insights



Energy Efficiency



Predictive Maintenance



User-Friendly Interface



Seamless Integration



FROM ACTION TO IMPACT

**The Petroleum Building** (Denver, Colorado)  
Through comprehensive upgrades including a building automation system (BAS), the facility gained clear visibility into all systems, improving reliability and helping prevent downtime.

- **\$117K** annual energy and operating savings
- **Increased** tenant retention



# The human side of building technology.

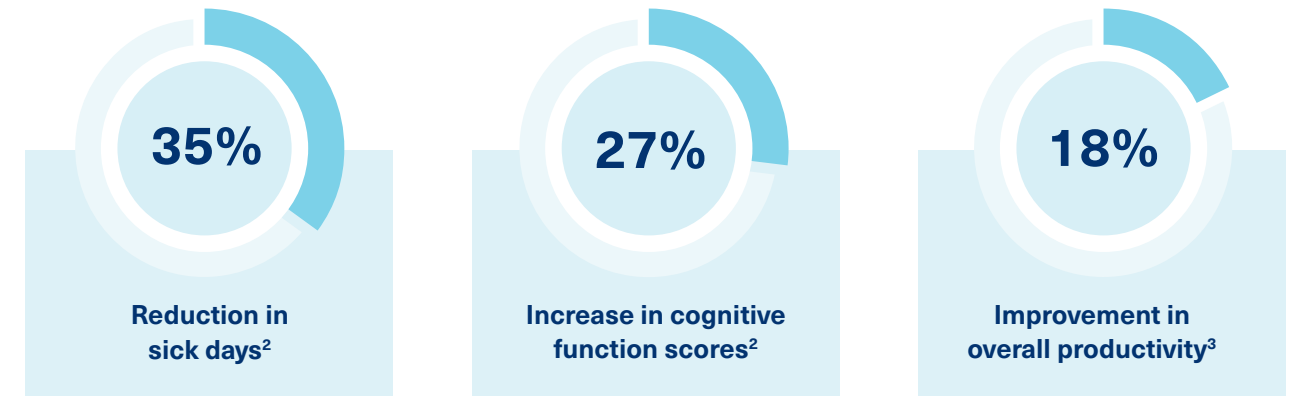


People spend almost 90% of their time indoors — making indoor environmental quality critical to well-being and productivity.<sup>1</sup>

## 3

### Indoor Environment

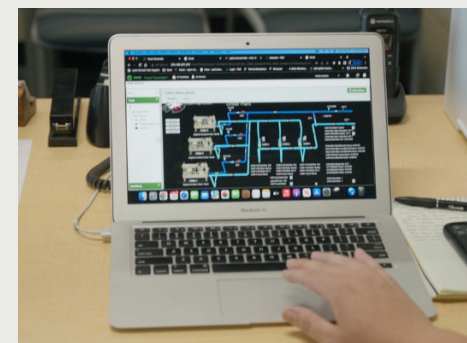
Keeping occupants safe and comfortable is essential. However, managing multiple environmental factors can overwhelm facility managers with constant adjustments and comfort complaints. Enhancing indoor air quality in modernized building is important, as it correlates with:



**A 3-step process with connected buildings makes it possible to achieve both enhanced indoor environmental quality (IEQ) and energy-efficiency goals.**

- 1 ASSESS**  
Indoor Air Quality, Lighting, Acoustics, and Thermal Comfort
- 2 MITIGATE**  
Work with experts to create a plan that balances energy efficiency and occupant comfort
- 3 MANAGE**  
Use automated controls and 24/7 monitoring and alarm management for real-time improvements

Through connectivity, facility managers gain comprehensive, real-time data about their indoor environments, enabling automated adjustments that maintain optimal conditions. This approach helps provide consistent occupant comfort while eliminating manual monitoring and reactive maintenance.



#### FROM ACTION TO IMPACT

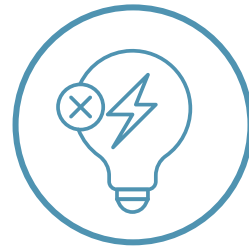
##### Joplin School District (Joplin, Missouri)

Through Trane's Intelligent Services and data analytics, Joplin High School transformed an inefficient building with inconsistent temperatures into a comfortable, energy-efficient learning environment, converting its largest facility into the district's most efficient school.

- Implemented **24/7** Critical Alarm Management
- **\$50K** in annual energy savings



Downtime costs are in the billions.



Building facility managers rank **Climate & HVAC Control** as one of the most important solutions for effective building operations.

They also rank **staff & stakeholder resistance to new technology** as the top barrier to adoption.

## 4

## Reliability & Uptime

For many organizations, downtime is not simply an inconvenience. It's a significant financial and operational risk. From hospitals to data centers to manufacturing facilities, system failures cause costly disruptions.

20%

of all outages could be prevented with equipment controls<sup>1</sup>

50%

of global data centers have experienced an outage in the past 3 years<sup>2</sup>

16%

of these organizations suffered losses exceeding \$1M<sup>2</sup>



**20%** of outages are because of **cooling failures**, with downtime costing **millions per hour**.<sup>1</sup>

**Keep critical environments running with smart building tech and tailored support.**



**Proactive Monitoring & Alarms:** Identify issues before they cause failures



**Remote Diagnostics & Predictive Maintenance:** Analyze real-time data to detect warning signs



**Service Level Agreements (SLAs):** Extend equipment life with tailored maintenance plans



**Custom Contingency Planning:** Build redundancy into systems for seamless transitions in emergencies



**Scalable Rental Solutions:** Keep operations running smoothly with backup support during peak demand or emergency repairs



### FROM ACTION TO IMPACT

**ARRIS Group** (Suwanee, GA)

Trane provided a total system-integrated service solution that includes central monitoring and real-time data from 69 mission-critical alarm and event points for this global data center.

- **99% uptime**, ensuring uninterrupted service for customers
- **60% reduction** in operational downtime, significantly improving efficiency





Delivering value today — while preparing for tomorrow's challenges.



Every dollar invested in building modernization returns an average of \$3 in operational savings over five years.<sup>1</sup>

5

Energy Efficiency

As energy demand grows, businesses face increasing pressures to operate more efficiently. Many buildings rely on outdated systems that waste energy and drive up costs.



**\$800 Billion** spent annually to power buildings, manufacturing plants and homes<sup>4</sup>

Enhance efficiency through Trane's holistic solutions.

|                                                                                                                    |                                                                                                                    |                                                                                                                          |                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Efficient Equipment</b> | <br><b>Building Automation</b> | <br><b>Monitoring &amp; Analysis</b> | <br><b>Maintenance &amp; Improvements</b> |
| <b>INSTALL</b>                                                                                                     | <b>INCLUDE</b>                                                                                                     | <b>COLLECT</b>                                                                                                           | <b>ENHANCE</b>                                                                                                                |
| High-efficiency heating, cooling and lighting systems improve energy use while maintaining indoor comfort          | Intelligent controls and automation technologies monitor and adjust energy consumption in real time                | Data-driven insights help identify inefficiencies and implement smart, connected building solutions                      | Continuous performance and long-term sustainability keep systems running through ongoing predictive maintenance and upgrades  |



FROM ACTION TO IMPACT

**SCDOT Headquarters** (Columbia, South Carolina)  
Comprehensive upgrades were made to resolve comfort challenges and inefficiencies, replacing outdated controls and eliminating reliance on a remote central plant. Trane's high-efficiency chillers, boilers, and web-enabled building management system now deliver improved performance and greater operational control.

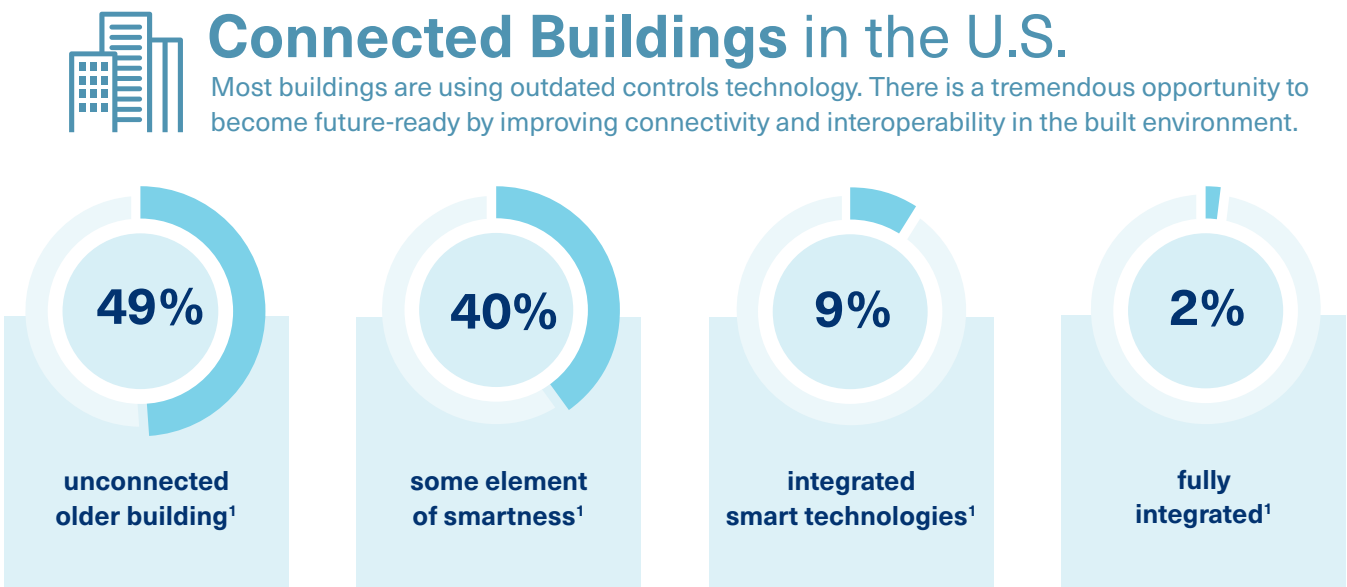
- **41% reduction** in energy use
- **\$75,425 guaranteed** annual operational cost savings



6

System Interoperability

Open controls enable smart buildings to integrate seamlessly across various systems and technologies. Trane leverages open, industry standard protocols to effortlessly connect with existing building systems of any age or manufacturer, facilitating essential data sharing without compatibility concerns.



Modern Control Systems can unlock more potential.

Updating and integrating systems can be challenging. Finding the right team that understands both your building's operations and your goals is key. At Trane, we prioritize these principles for seamless projects.



FROM ACTION TO IMPACT

**Trane Customer (USA)**

An industry leader in collecting and processing life-saving biological material sought expert guidance on controlling air and humidity in +150 labs. To operate within existing parameters, Trane identified an artificial intelligence (AI) enabled solution to connect with existing systems and predictively optimize performance. Within the first 6 months, they saw:

- **26.1% reduction** in CO2e
- **16% savings** in electricity

7

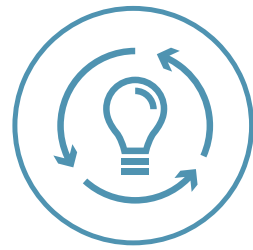
Cybersecurity

As technologies continue to permeate the built environment, new cyber threats emerge. While most businesses prioritize IT cybersecurity, building automation system security is often overlooked, potentially creating vulnerabilities in critical infrastructure.





# Unlock significant benefits with the Inflation Reduction Act (IRA)



Up to **\$3.4 Billion** has been allocated through **September 30, 2026**, to reduce energy consumption, decarbonize, and enhance the resilience of federal facilities.<sup>1</sup>

## 8

## Compliance & Reporting

As energy regulations evolve, building owners must comply with building performance standards, while accurately tracking and reporting energy use and emissions. Accessing utility rebates, tax credits, and funding can seem overwhelming, but organizations that stay ahead of these requirements can unlock significant benefits.



### **+\$3 Billion**

awarded annually in utility rebates for energy-efficiency improvements<sup>2</sup>

### **600+ Rebate Programs**

for high-efficiency HVAC, energy storage, and lighting<sup>3</sup>

### **Billions**

in grants and funding available for infrastructure modernization<sup>4</sup>

### Accurate reporting starts with current and accurate information.

We can help. Trane uses a data-driven approach in our building management system to guide you to sustainable results.



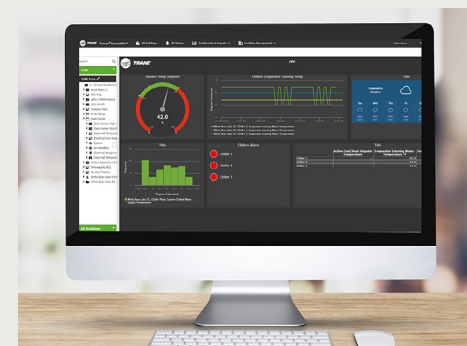
**Comprehensive baselining** helps understand buildings' energy usage and greenhouse gas emissions



**Ongoing monitoring, management & reporting** ensures programs stay on track



**Solution validation** verifies environmental sustainability outcomes are successfully delivered



### FROM ACTION TO IMPACT

#### **Six Luxury NYC Buildings (NYC)**

To meet Local Law 97 (LL97) requirements, a NYC real estate firm secured financial incentives while reducing emissions and energy costs. By aligning compliance strategies with energy reporting and available funding, these buildings are future-ready and deliver substantial financial and environmental benefits.

- **\$2.6M secured** in utility incentives
- **3,633 metric tons** of carbon emissions eliminated
- **5.2M kWh** in annual energy savings
- **Total LL97 compliance** through 2030



## Why Trane?

The path to a sustainable, efficient built environment requires more than individual solutions — it demands a comprehensive approach. At Trane, we combine system expertise with advanced HVAC equipment, proactive services, intelligent controls, and actionable insights to create a holistic solution tailored to your specific business outcomes.

## The Trane Advantage: People + Technology

- +** INDUSTRY-LEADING SMART BUILDING INNOVATIONS
- +** ADVANCED AI & MACHINE LEARNING CAPABILITIES
- +** HIGHLY TRAINED SERVICE TECHNICIANS
- +** NATIONWIDE SERVICE NETWORK ENSURING CONSISTENT, QUALITY SUPPORT

### The power of integration.

Our open controls and solutions work in harmony to improve building performance, reduce environmental impact, and enhance occupant well-being. True innovation lies in the efficiency of integrated facility systems and seamless operational workflows. By combining core capabilities with nationwide expertise, we help you transform your buildings into high-performing assets that meet both today's demands and tomorrow's challenges.

### We achieve excellence through innovation.

Our commitment to advancing the industry has earned us recognition through prestigious awards for our groundbreaking technology, high-performance equipment, and pioneering sustainability initiatives. As we continue to lead the way in developing solutions for our customers striving to be future-ready, we remain dedicated to setting new standards of excellence.



**2023 Controls  
Product of the Year**  
Tracer SC+ and  
Symbio Controls



**2023 HVAC  
Product of the Year**  
Ascend Air-Water Heat  
Pump, Model ACX



**Facilitiesnet 2024  
Vision Awards**  
for Trane Autonomous  
Control



**2024 E+E Leader Award  
for Energy Innovation**  
for Project with  
The State of New Mexico



**NAESCO accredited**  
Energy Service Provider



**2024 Product  
Innovation Award**  
Automation + IOT  
Tracer SC+



**Department of Energy  
Qualified  
ESCO**

### Industry connections matter.

We actively engage with leading organizations, contributing our expertise and collaborating on developing best practices that shape the future of our building systems. These relationships allow us to stay at the forefront of technological advancements and regulatory developments, ensuring you benefit the most.

- RFMA
- ACTE®
- ACCT
- ASHE®

- ASHRAE
- SMACNA®
- AACC
- ASBO

- IFMA™
- AASA
- nc3
- NIGP

- HFMA
- BOMA
- DLA
- MCAA





**We have the scale to deliver locally with national consistency.**

Our network of experts around the country is ready to help you along your journey. Connect with a Trane expert today to develop a tailored strategy that meets your building and business needs with specific, actionable solutions.

|                                                                      |                            |                                   |
|----------------------------------------------------------------------|----------------------------|-----------------------------------|
| <b>Largest HVAC services footprint + region-of-use manufacturing</b> | <b>170+</b><br>Locations   | <b>17,000+</b><br>Associates      |
| <b>3,000+</b><br>Technicians                                         | <b>2,000+</b><br>Engineers | <b>1,800+</b><br>Account Managers |

**Your journey is our passion.**

Through our people, legacy, and forward-thinking technology, we are here for every stage of your journey. Prepare your building to be future-ready with a team that's committed to helping you achieve your goals.



**DECARBONIZE**

We address decarbonization challenges together, combining our equipment, controls, and services to help you meet your sustainability targets



**MODERNIZE**

Enhance value and functionality throughout the life of your building and systems with our innovative solutions



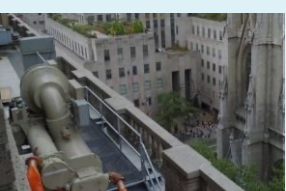
**MANAGE & IMPROVE**

Take your building to the next level with our end-to-end programs focused on performance enhancement and efficiency



**REPAIR & MAINTAIN**

Ensure efficient, reliable operations with our extensive service network always by your side



**RENTALS**

Access temporary and supplemental HVAC systems to fill critical gaps when it matters most



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Contact Trane  
to begin your  
future-ready  
journey.

Visit [trane.com](https://trane.com) to contact  
your local sales rep.



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