



# CampusEnergy2021

BRIDGE TO THE FUTURE

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# District Energy Helps Cities Reach Net Zero Carbon

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# Overview of Vicinity and Our Systems

# About Vicinity

We are the leading provider of district energy solutions, offering energy investment, infrastructure and management to campuses and communities with mission-critical energy needs nationwide.

Our employees combine unmatched engineering and technological expertise with a singular dedication to our customers' success and a relentless focus on ensuring that they have the reliable, cost-effective, resilient and environmentally responsible energy they need to thrive.

## Our mission

To partner with our customers to provide them with cutting-edge technical expertise, dedicated personal service, infrastructure and investments to meet their mission-critical energy needs so they can focus their time and capital on achieving their goals.

# Largest portfolio of District Energy in the U.S.



**460**

Employees

**19**

District energy systems

**400+**

MW of CHP owned or  
operated nationwide

**230+M**

Square feet of  
space served

## Operate

We maximize efficiencies and mitigate risk to you through the supply of clean energy with ultra-reliable operation of energy infrastructure.

## Build

We design, construct and commission the energy infrastructure you need so you can focus on your core business.

## Invest

We develop solutions to help you avoid initial or replacement Capex on new or aging infrastructure while also reducing your operating expenses. We put our capital to work so you don't have to and we have a mandate to do so by our new owner.



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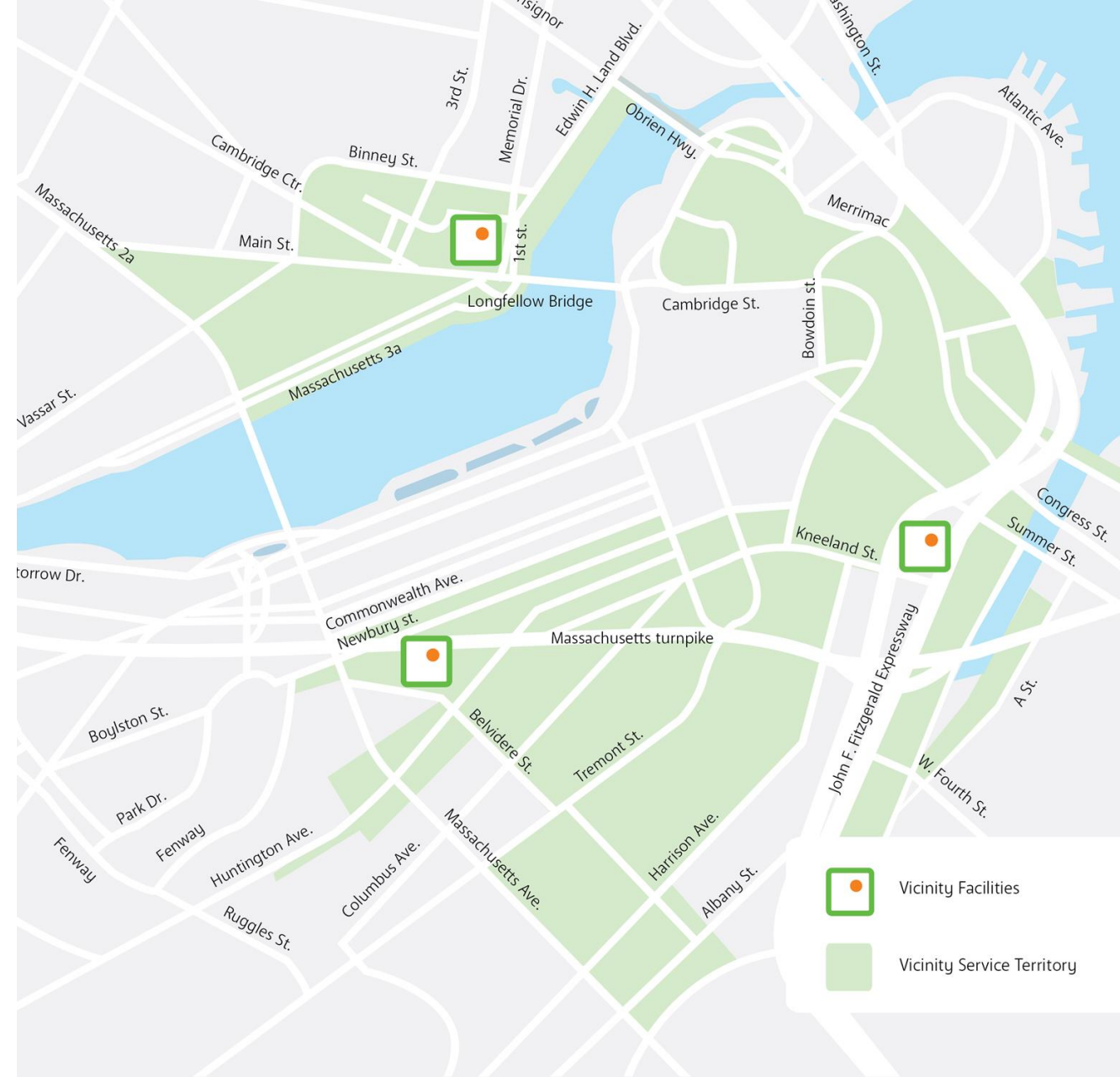
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# The Boston-Cambridge Network

## Largest CHP/District Energy System in New England

- **60M square feet** of space served
  - University campuses
  - All major downtown hospitals
  - Life sciences & biotechnology
  - Commercial real estate
  - 6,800+ Hotel rooms
  - Key City buildings
- **99.99% reliable delivery of steam** service for mission critical energy services
- **260 buildings** served
- **26 miles** of resilient/robust distribution network
- Over **1.6M metric tons of carbon reduction** since 2014, the equivalent of removing 64,000 cars from the road every year



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# Major Businesses, Campuses and Critical Facilities in Boston and Cambridge Use District Energy

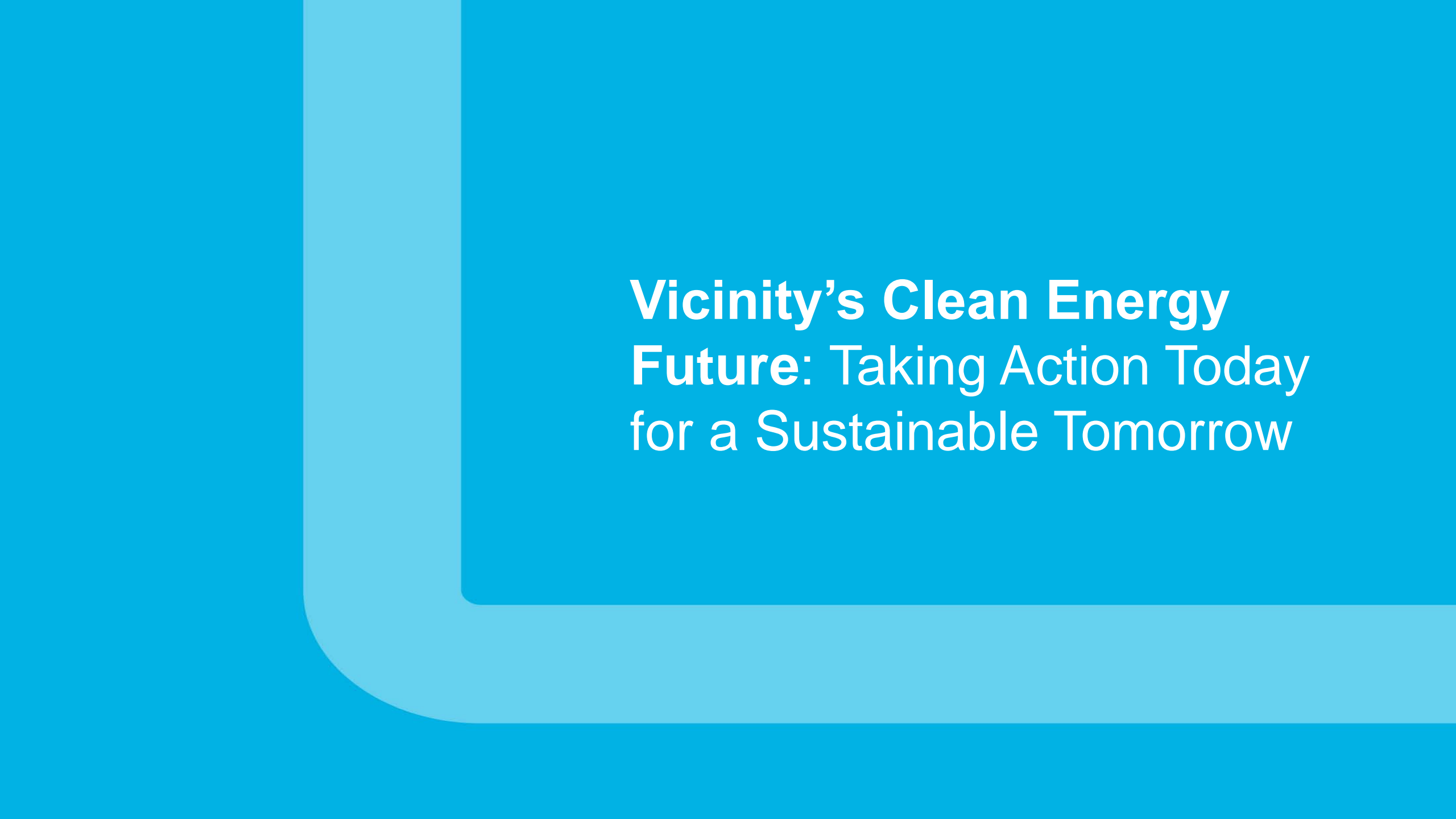
Many industry leaders in hospitality, education, biotechnology and pharmaceutical champion district energy for its resilient, sustainable benefits

- **250 customers** in the central business district of Boston and Cambridge
- **75% of customers under long term contracts** with 99% renewal rate
- **70% of commercial real estate and Healthcare buildings** use district energy in Boston



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# **Vicinity's Clean Energy Future: Taking Action Today for a Sustainable Tomorrow**

# The Benefits of District Energy

Vicinity's district energy infrastructure provides communities with **peace of mind** in an emergency or extreme climate event. Our redundant systems can isolate and restore quickly, unlike other local utility companies, with the added advantage of having a lower carbon impact.

## Redundancy

**Multiple steam/chilled water facilities and backup sources** feed into our district loops.

Vicinity's **technology is flexible** and can adjust quickly in the event of supply interruptions or extreme climate events.

## Reliability

Our proven technology and systems provide **99.99% reliable delivery** of clean energy to buildings 24/7, eliminating the need to maintain and upgrade costly boiler and chiller plants in individual buildings. Customers don't need in-building redundancy; we have it in ours.

## Efficiency

Our network is designed to **isolate parts of the system** to perform maintenance, **protect the network** in an extreme climate event and distribute the benefits of our **clean energy roadmap** to customers.

## Resiliency

A major benefit of district energy is **expedited restoration capability** during an emergency event. **We recover much faster** than electric and gas utilities. Many of **our facilities are FEMA designated** as Critical Facilities and Infrastructure.

# District Energy Accelerates the Transition to a Carbon Free City

A net zero carbon future using existing district energy infrastructure **to minimize disruptions** and **avoid Citywide tax increases to build new solutions**

- District energy infrastructures are in place and ready to serve today—no additional capital or time wasted building new solutions such as solar or wind farms
- District energy facilities are adaptable and able to implement new renewable fuel sources and innovative technologies as they become available—passing along the sustainable benefits of our improvements to customers instantly
- We are located and serve some of the most populated Cities—our greening efforts lower carbon footprint and environmental impacts, not only for the businesses using district energy, but for the surrounding communities as well



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# Taking Action Today for a Sustainable Tomorrow

**Vicinity commits to reach net zero carbon emissions across all our operations by 2050.**

Our commitment to delivering affordable, reliable and sustainable energy to more than 230 million square feet of customer space is what drives our plan to lower carbon in our communities.

For decades, we've put new and innovative energy technologies and strategies to work, providing clean energy solutions and driving carbon reductions in the communities we serve. We continue to implement a cleaner energy mix, introducing renewable resources and investing in new solutions and infrastructure to further reduce carbon emissions in our operations.

As clean energy technology continues to evolve, our team is dedicated to adapting quickly to emerging trends and developing innovative solutions and opportunities to green our system.

Together with our employees and strong local partners, we will achieve net zero carbon emissions by 2050—providing a cleaner, greener environment for future generations.

# Vicinity's Journey to Net Zero Carbon Emissions

With decades of building and managing the largest energy districts in the U.S., Vicinity Energy continues to **innovate and invest** in sustainable energy infrastructure and technology, **helping businesses and institutions achieve their environmental, carbon reduction and energy savings goals.**

## Our Past

- Implemented major fuel transitions to reduce carbon footprint
- Introduced waste-to-energy and energy storage in our energy supply mix
- Integrated large- & small-scale CHP to increase efficiency of our district energy systems

## Our Present

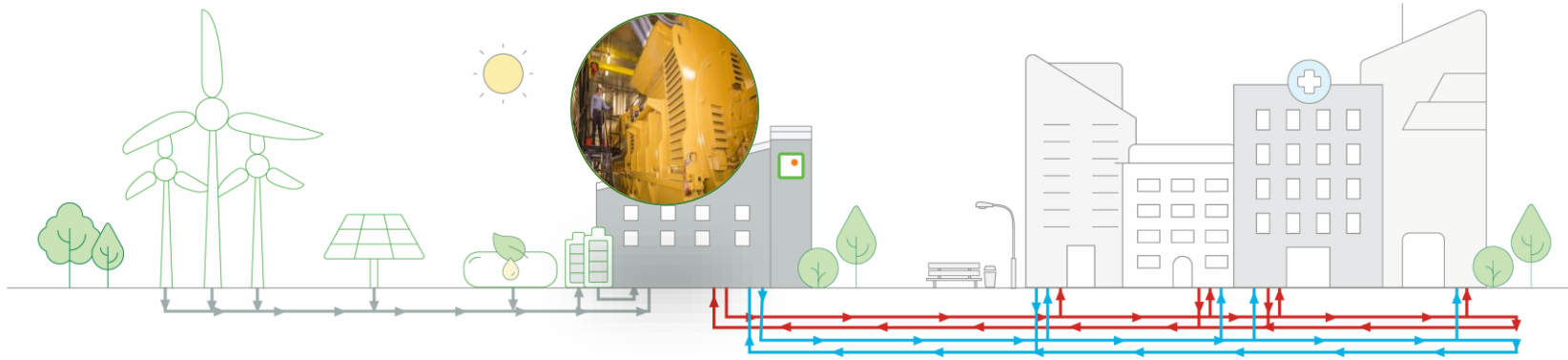
- Transitioning to net zero biofuels as an alternative to fossil fuels
- Electrifying generation to further reduce carbon emissions
- Investing in efficiency projects and our district infrastructure
- Exploring other innovative technologies (biofuel combustion turbines, battery storage, CO2-based dispatch, etc.) to accelerate our transition

## Our Future

**Leveraging the benefits of our clean energy systems to deliver net zero carbon solutions to our customers and communities we serve**

# Vicinity's Two Distinct Sets of Energy Assets: District Energy and Generation

Vicinity owns and operates **two distinct sets of energy assets** that currently work together to meet our customers' energy needs. These two sets of assets **play different roles in our net zero carbon future**



## District Energy

- Existing underground network of **over 26 miles** of pipe to distribute energy solutions to Boston and Cambridge customers
- Facilities equipped to use renewable fuel sources and stay running during a climate event**
- A no-cost, ready to use**, option for MA to meet electrification and net zero carbon goals
- 250 customers in MA** already using district energy steam for heating, cooling and sterilization

## Energy Generation

- Two large combined heat and power (CHP) stations, one in our Kendall facility in Cambridge
- CHP is the **most efficient** fossil fuel burner in energy generation
- The excess heat, steam, is used for heating, cooling and domestic hot water with zero carbon emissions
- CHP systems provide backup during grid interruptions/outages
- An electric generator can reach a maximum of 45% efficiency, a CHP system, with heat recapture, can reach 80% efficiency
- CHP is a critical part of our transition to a net carbon zero future**



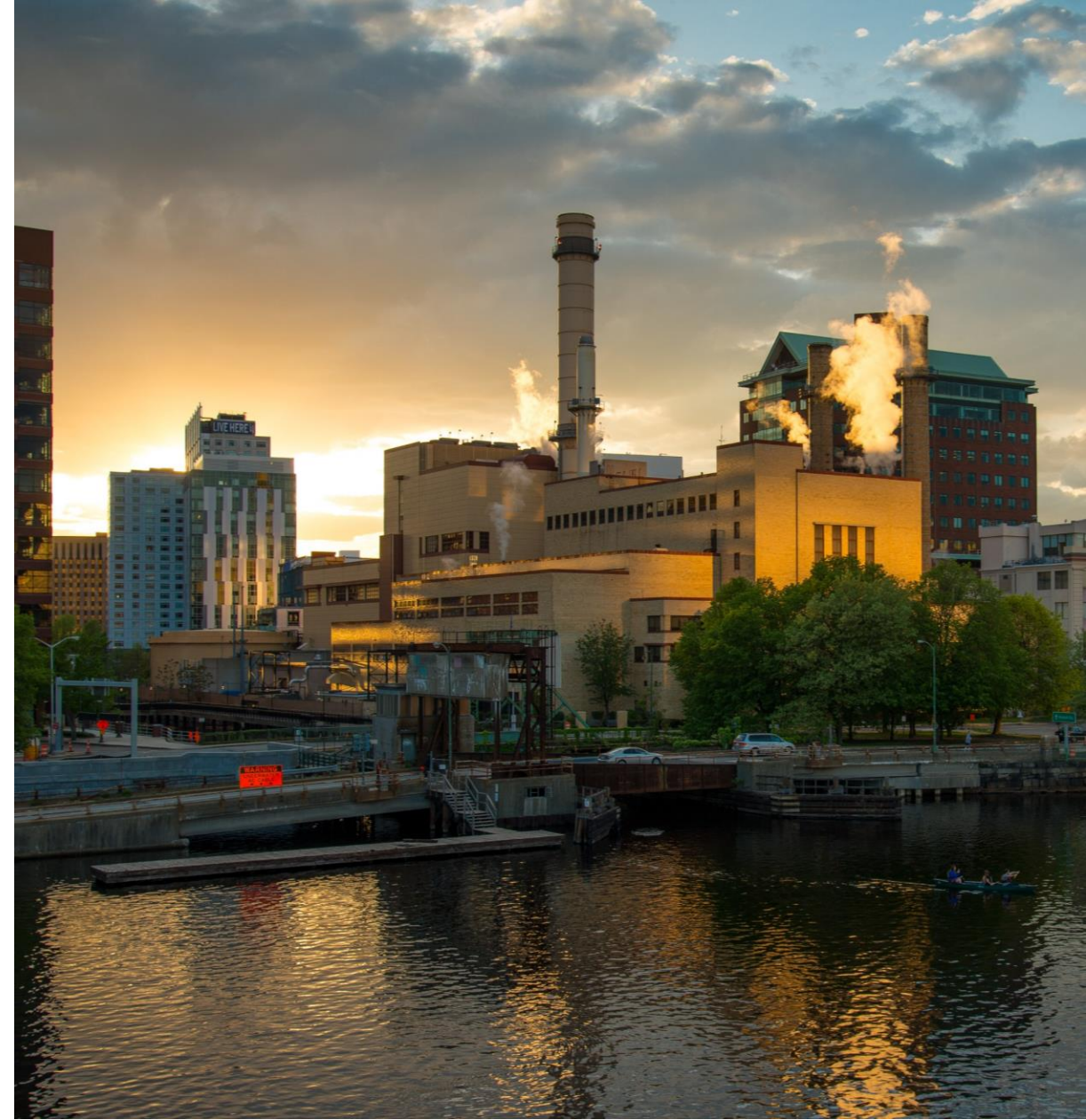
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# Vicinity's Boston-Cambridge Green Steam through CHP

Boston Climate Action—specifically supports CHP produced district energy

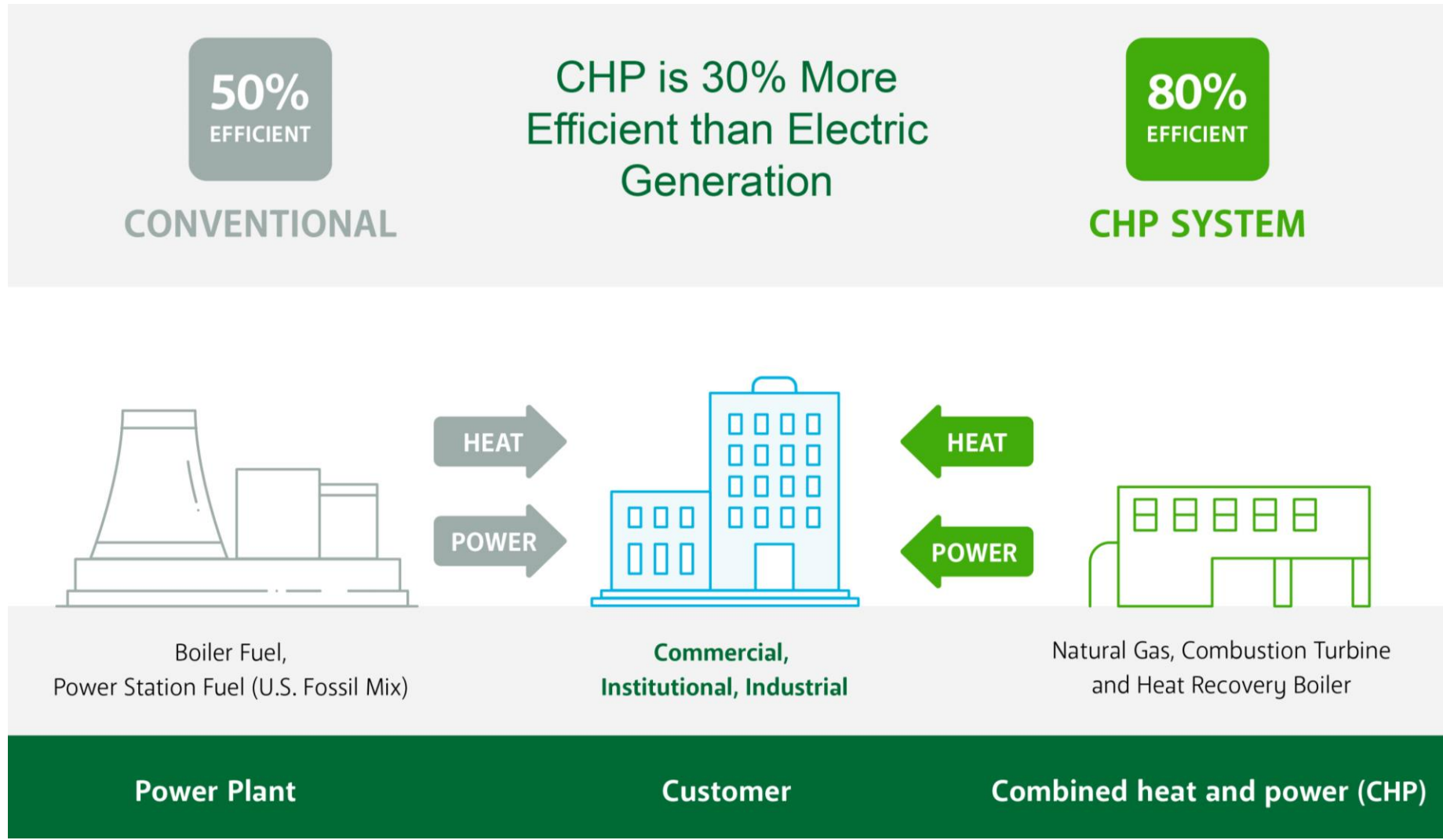
- Under ISO-NE methodology, all carbon emissions from Vicinity's CHP are attributed to electricity production
- State of the art GE Frame 7FA gas turbine system, with OEM's fleet leadership "build"
- No new onsite combustion source permitting required
- No new gas line construction required; Vicinity has access to interstate gas system



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# Vicinity's Kendall CHP is more Efficient than Conventional Generation



# Tackling Global Energy Problems Locally with District Energy

# Tackling Global Energy Problems—Together.

## **Sustainable development of cities and communities**

We partner with local governments to help them meet their cities' sustainability goals and ensure the vitality of urban infrastructure and neighborhoods.

## **Energy resilience**

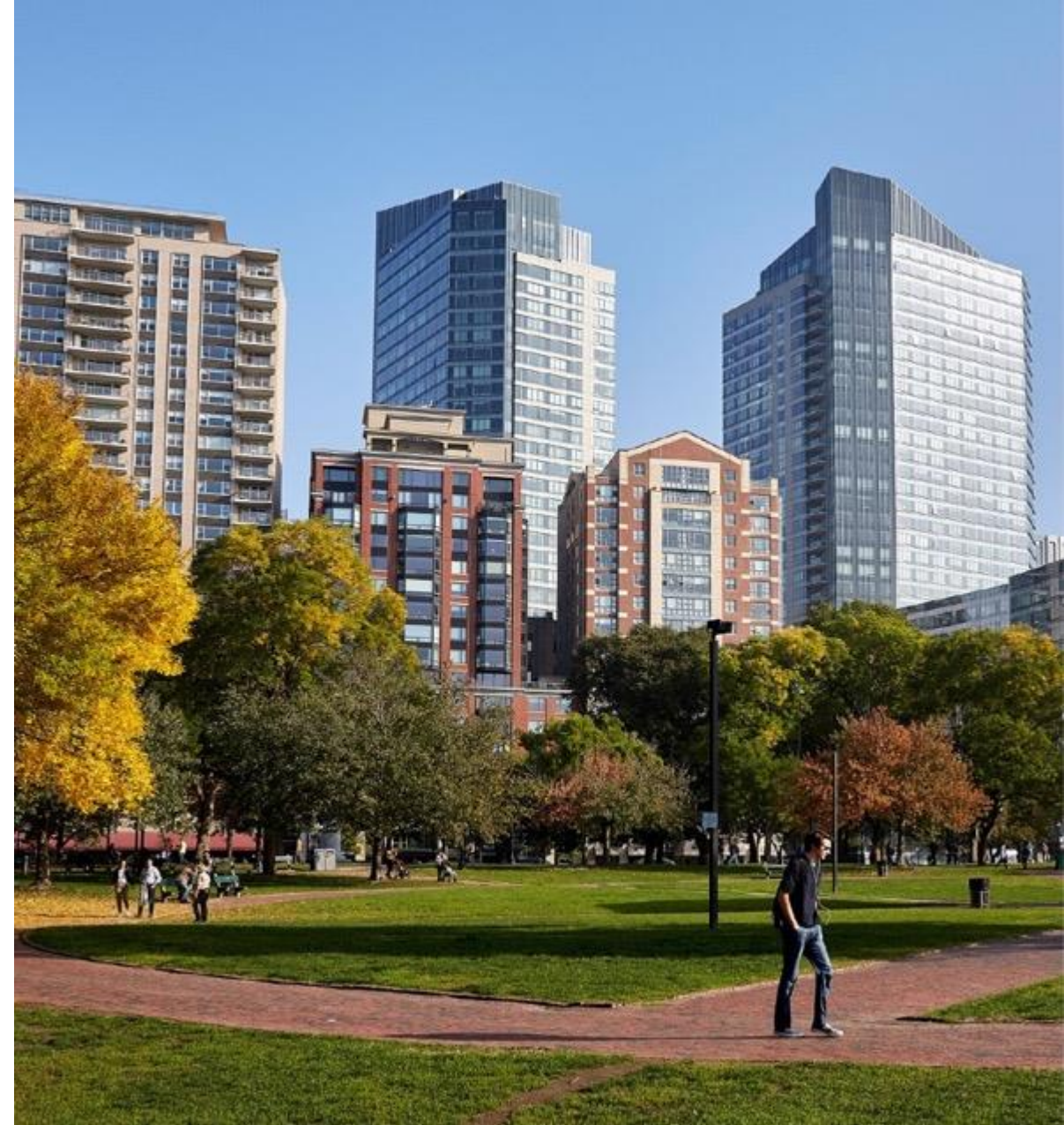
We design our systems to ensure the continuity of the energy supply that is critical to our customers' safety, comfort and success.

## **Carbon footprint reduction**

We collaborate with our customers to reduce greenhouse gas emissions, the equivalent of removing 170,000 cars from the road each year

## **Efficient use of resources**

We work to optimize resource consumption and improve the efficiency of energy assets in the cities and campuses we serve.





Microgrid O&M solutions for the headquarters and research campus of a global biotechnology company

# Biotechnology Company in Cambridge, Massachusetts

- Vicinity experts were involved at all stages of the development of a 5.3 MW combined heat and power (CHP), including feasibility, business plan development, equipment selection, negotiation for grid interconnection, fuel supply provisioning, environmental permitting, construction management and commissioning.
- In the event of an electrical grid outage, the CHP plant provides a continuous source of thermal energy and electricity in support of vital biotechnology research.
- Today, Vicinity provides O&M services to the biotechnology campus with a five-member onsite team, ensuring reliability, safety and efficiency by applying industry standards and best practices.
- Vicinity has helped the client develop an electrical load shed scheme to prioritize critical loads in research space, while also helping to significantly reduce the campus' utility expenses and carbon footprint.
- The campus has reduced carbon emissions by approximately 36,000 metric tons per year and its annual energy consumption by 25 percent.

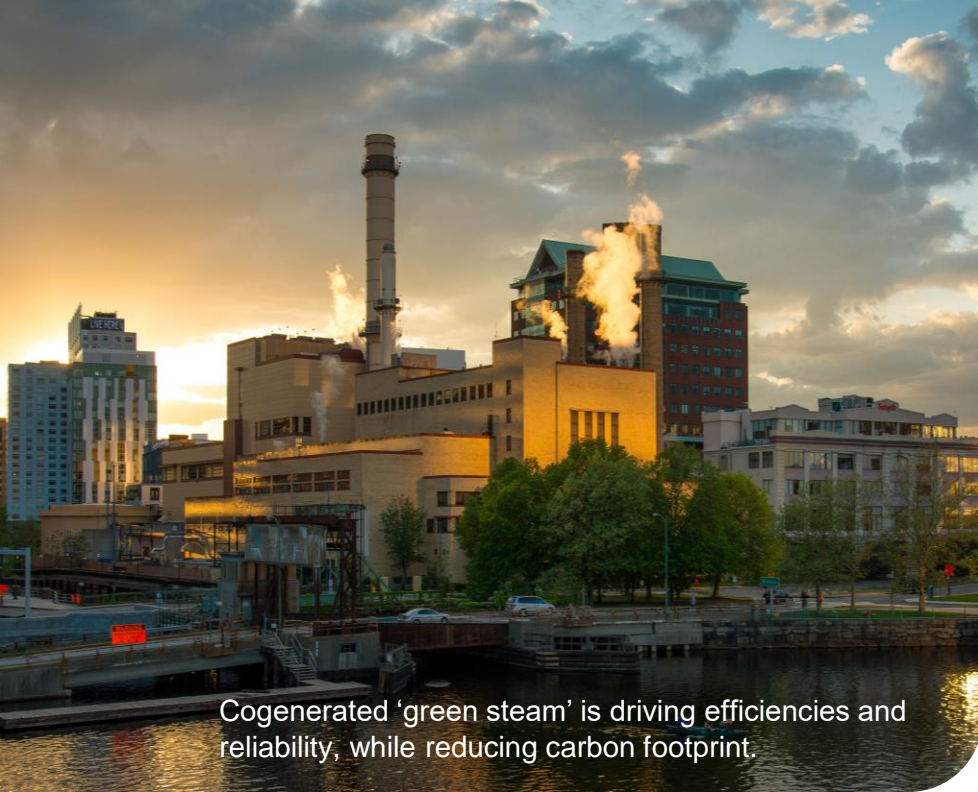
## Project Facts:

- **6 buildings served** with electricity and high-pressure steam
- **1.1 million square feet** of laboratory, research and office space
- **25% reduction** in energy consumption
- **5.3 MW** of electricity produced
- **27,000 lbs/hr** peak thermal (unfired)
- **36,000 metric tons/yr** carbon reduction



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Cogenerated 'green steam' is driving efficiencies and reliability, while reducing carbon footprint.

## Project Facts:

- **175 MW CHP capacity** at Grays Ferry Cogeneration Facility in Philadelphia
- **256 MW CHP capacity** at Kendall Cogeneration Station in Cambridge
- **170,000 equivalent cars** removed from the road through greenhouse gas reduction
- **200,000,000+ square feet** of commercial space served in the United States
- **99.99%** reliable energy delivery

# Combined heat and power in Boston and Philadelphia

- In the U.S., Vicinity operates and maintains more than 400 megawatts (MW) of efficient CHP capacity, with its two largest cogeneration systems supplying the Philadelphia and Boston-Cambridge districts.
- Although conventional power plants waste two-thirds of the fuel energy they consume, using CHP, this thermal energy is re-captured in Vicinity's Philadelphia and Boston-Cambridge district systems.
- 'Green steam' refers to Vicinity's low carbon thermal product, which in large part comes from a CHP process.
- Vicinity operates our own CHP systems which supply our districts, in addition to operating individual customer CHP systems.
- With CHP, Vicinity is heating and cooling the cities of Philadelphia, Boston and Cambridge with recovered energy—reducing carbon footprint and improving energy reliability in these communities.



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For more information, visit [vicinityenergy.us](https://vicinityenergy.us).