



## Massachusetts Clean Energy Center

Problem Statements from Commercialization Partners:

What does the market require, and how can startups address these needs?

Date of Issue: 2026

This document contains problem statements submitted by commercialization partners to MassCEC through its Tech-to-Market (T2M) funding initiatives. It offers:

- Market demand insights for climatetech startups
- A list of potential project partners within the MassCEC T2M network

The document will be updated regularly as additional problem statements are collected from the various Tech-to-Market programs.

Partners are labeled by climatetech sector/area of interest:

- **Energy and Electricity** – increasing renewable energy generation and modernizing the grid
- **Transportation** – transitioning to zero-emissions vehicles, enhancing public transit, and promoting alternative fuel options
- **Manufacturing and Industry** – Adopting carbon reducing technologies and processes, sustainable production practices through a circular economy, and carbon capture related technologies
- **Agriculture and Water** – adopting sustainable farming and forest management practices and leveraging nature-based solutions
- **Buildings** – improving energy and heating efficiency, transitioning to renewable sources, and implementing sustainable construction practices/materials
- **Resilience and Adaptation** – implementing climate-smart planning, strengthening infrastructure, and promoting nature-based solutions to reduce vulnerability to climate change

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\*For startups interested in working with utilities, please see the [Massachusetts Technical Standards Review Group \(TSRG\)](#) website to schedule a time to present at a TSRG meeting, which include representation from utility, developer, and state regulatory agencies. The TSRG is a forum for discussing DG interconnection and other distribution system issues.

*\*\* Project Partner expressed interest in working with startups through the Program outside of MassCEC's formal RFI process. All problem statements within this document are based on the submissions of participating Project Partners, and do not directly reflect the views of MassCEC.*

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## Berkshire Innovation Center

All

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Western Massachusetts is a rural region with a legacy of sophisticated manufacturing. Despite the expertise and industrial capacity of our manufacturing base, there has been a lack of climatetech manufacturing support infrastructure in Western MA that bridges the gap between R&D and commercial deployment. These problem areas are of particular interest to the BIC:

- Grid scale solutions to decarbonize energy generation, storage and distribution, especially to support climate justice in low-income regions and/or propel development & manufacturing of cleantech HW powered by a cost-effective and clean microgrid.
- “Fishbowl Deployments” – As a tight-knit region, pilot studies can be conducted with less outside influence, helping firms collect better data sooner.
- Sustainable materials and circular economy – development of high-performance materials that meet the needs of our manufacturing base with reduced cost to the environment.
- Climatetech hardware startups facing challenges accessing advanced prototyping, electronics, and testing equipment. Hardware is hard – the BIC’s in-house expertise, facilities, and network of contract manufacturers can make it easier.

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## City of Boston

*Buildings, Resilience and Adaptation*

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**Urban Heat:** Over the past decade, the City has seen a rise in temperatures by almost 3.5°F, with more hot days and nights than any decade in the last 50 years. Heat-absorbing surfaces

like asphalt, pavement, and dark roofs make Boston’s urban environment hotter than surrounding areas, with some neighborhoods 15 to 20 degrees hotter. As the intensity, duration, and frequency of extreme heat events increases, solutions for urban heat mitigation and equitable cooling are needed.

**Coastal and Inland Flooding:** The City is also focused on increasing resilience to coastal and inland flooding. The proportion of stronger storms and the intensity of daily precipitation with all storm types are projected to increase over the course of this century. Flood projections are expected to be more intense near the coastline, where rising sea levels and flooding events threaten coastal infrastructure, drinking water supplies, and other natural resources.

### **Building Technologies:**

The City has implemented the Building Emissions Reduction and Disclosure Ordinance (BERDO), which requires large buildings to comply with building emissions standards that decrease over time, with all buildings expected to reach net-zero by 2050. The City's zoning code was recently updated to include the Net Zero Carbon Zoning amendment, establishing a net zero emissions standard for new project filings after July 1, 2025. Small and large projects as defined in Article 80 will also be required to report on embodied carbon, while large projects must also conduct an embodied CO2e emissions life cycle assessment analysis.

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## City of Malden

### *Energy and Electricity*

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Massachusetts state policy requires that greenhouse gas (GHG) emissions be reduced to net zero by 2050. In the City of Malden, the building sector produces well over half of its greenhouse gas emissions, primarily through heating and power supply. Therefore, Malden is seeking ways to transition all of its building stock—residential, commercial, and municipal properties alike—off of natural gas. In particular, the City would like to explore “whole neighborhood approaches,” like neighborhood-scale networked geothermal.

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# Energy New England

## *Energy and Electricity*

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ENE is committed to advancing the clean energy transition by supporting innovative technologies that address the challenges of energy efficiency, electrification, and grid modernization. One key area of focus is enhancing the ability of municipal utilities to integrate renewable energy sources while maintaining grid reliability and affordability. Many of its municipal utility partners face challenges in managing the variability of renewable generation, and ENE is interested in solutions that optimize grid resilience through energy storage, demand response, and smart grid innovations. Additionally, as electrification accelerates, ENE is seeking technologies that can support widespread adoption of electric heating, transportation, and industrial processes while reducing overall energy consumption and peak demand stress on the grid.

ENE is particularly interested in technologies that facilitate grid modernization, energy efficiency, and decarbonization. Smart grid solutions, such as AI-driven demand response systems, could significantly improve grid flexibility and efficiency by enabling real-time adjustments to energy consumption patterns. Advanced energy storage technologies, including long-duration battery systems and virtual power plants, have the potential to help municipal utilities manage renewable energy intermittency while enhancing reliability. Additionally, as municipalities and businesses look to electrify transportation, ENE is interested in innovations in electric vehicle (EV) charging infrastructure, including vehicle-to-grid (V2G) technology that allows bidirectional energy flow. Other areas of interest include networked geothermal heating, next-generation heat pumps, and AI-powered energy monitoring tools that optimize energy use in residential and commercial buildings.

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## Eversource

### *Energy and Electricity*

Eversource is New England's largest energy provider, proudly serving more than 3.6 million electric and natural gas customers in CT, MA and NH. Eversource is deeply engaged with many

aspects of grid modernization in Massachusetts. In MA the stated objectives for grid modernization are to achieve functionality falling into three broad areas: (1) optimize system performance (by attaining optimal levels of grid visibility, command and control, and self-healing); (2) optimize system demand (by facilitating consumer price-responsiveness); and (3) interconnect and integrate distributed energy resources into the distribution system.

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## Global Partners

*Clean Transportation, Buildings, Manufacturing & Industry*

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Based in Waltham, MA, Global Partners LP (“Global”) has been fueling the Northeast for over 90 years. As one of the largest integrated owners, suppliers, and operators of liquid energy terminals, fueling locations, and convenience destinations, Global plays a critical role in both the wholesale and retail energy landscape.

### 1. Retail

With a strong retail presence across Massachusetts, Global is focused on creating meaningful guest experiences and supporting the Commonwealth’s sustainability efforts. Global Partners is currently exploring how to make specific pieces of their retail portfolio more energy efficient. Upgrading refrigeration, HVAC, and smart lighting systems are typically complex projects that can be costly. Global is interested in innovative solutions that drive operational efficiency and reduce costs.

Global has also recognized an opportunity to divert landfill bound waste by offering collection bins at its retail locations. With thousands of guests stopping by every day, these sites are well-positioned to serve as accessible drop-off points for non-traditional items, giving these materials a second life.

On a broader scale, Global is interested in solutions that address everyday operational challenges faced by retailers and small format grocers, particularly those that enhance sustainability, efficiency, or guest satisfaction.

### 2. Low Carbon Fuels

As Global expands its portfolio of low-carbon fuels, they have identified a significant gap in the availability of truly transformative, low-carbon, liquid fuels in the Northeast market. While reduced carbon liquid fuels do exist, there is an increasing demand for liquid fuel products for difficult-to-abate-sector use, with even greater emissions reductions, compared to traditional petroleum-based refined products. The problem is especially acute in gasoline, aviation, and maritime fuel markets as these markets are expected to rely on liquid fuels for decades but lack commercially viable alternatives.

Today, most low-carbon fuel production is geared toward the West Coast, drawn by market incentives and mature infrastructure. The Northeast, by comparison, lacks regional production and supportive tax incentives—despite having feedstock advantages like woody biomass and waterborne logistics. While tax credits such as 45Z do exist, they require the fuel to be domestic, which complicates logistics due to absence of low carbon fuel production in the Northeast that has imported more product than other regions due to its waterborne efficiencies.

### **EV Charging**

With the need for electric vehicle (EV) charging growing and investment in EV charging infrastructure increasing across its retail footprint, Global is noticing high deployment costs, high utility fees, and longer than usual lead time for essential equipment.

As Massachusetts and other states push for higher adoption rates of zero-emission vehicles (ZEVs), Global is looking to streamline the charger deployment process to create a more commercially viable experience. Reducing the complexity, lead-times, and high cost of the deployment process would allow Global to scale its deployments faster. This will help to expand access and drive adoption in the market.

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## **IBEW-NECA of Greater Boston**

*All*

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1. IBEW-NECA needs better solutions for identifying, analyzing, and prioritizing potential clean energy projects to efficiently target business opportunities.
2. IBEW-NECA needs more advanced solutions for streamlining the design, engineering,



and construction phases of clean energy projects to enhance competitiveness and reduce overall project timelines and costs.

3. IBEW-NECA needs improved technologies and strategies to support contractors and developers in effectively proposing, marketing, and securing clean energy projects.

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## Leading Cities

*All*

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Municipalities often face barriers such as limited staff capacity, risk aversion, outdated procurement processes, and difficulty identifying trusted, high-impact solutions. Even when motivated to act on climate, cities struggle to evaluate emerging technologies, secure funding, and implement pilots efficiently—especially in small to mid-sized communities. Leading Cities overcomes these challenges and turns companies’ innovation breakthroughs into a revenue-generating, cost-saving, community-transforming reality for municipalities across Massachusetts. Whether the company is a seed-stage startup or scaling solution, Leading Cities offers the ability to pilot, validate, and expand climatetech innovation in real communities through: (1) unmatched access to municipal partners, (2) structured support from project ideation to implementation, and (3) a track

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## Littleton Electric Light and Water Departments

*Energy and Electricity*

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LELWD is committed to managing a power supply portfolio that complies with the Municipal Lighting Plant Greenhouse Gas Emission Standard (“MLP-GGES”) (M.G.L. c. 25A, § 11F3/4), while still providing its ratepayers with the lowest possible cost. LELWD also recognizes that reductions in carbon emissions through non-power supply portfolio measures (through

enhanced energy efficiency measures, promotion of energy efficient products such as electric vehicles, and rate design) are important contributors to future planning. LELWD will analyze new technologies to achieve the emissions reduction goals and to reduce LELWD's overall power supply expenses.

Technical barriers that LELWD is facing currently include finding the right balance between supply and demand on different distribution circuits throughout its system. LELWD has installed various generation sources throughout the system and to continue to do so LELWD needs to strategically place new generation within the system that does not cause reverse power back into onto the transmission grid.

LELWD is strategically positioning itself to meet the emissions standards as stated in the Clean Energy and Climate Plan for 2050. While LELWD works towards meeting these goals, LELWD is constantly searching for new ways to decarbonize.

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## Massachusetts Department of Conservation and Recreation (DCR)

### *Clean Transportation, Buildings*

Executive Order 594 (EO594) directs state agencies to reduce emissions from onsite fossil fuels by 95% by 2050. Goals and targets of this Order include the conversion to an all-electric fleet by 2050, reduce fuel oil use by 95% by 2030, and deploy 500 EV charging stations at state facilities by 2030. DCR ranks 13th out of 50 state entities in terms of emissions from onsite fossil fuels (Scope 1 emissions), 4th in fuel oil use (~190,000 gallons in FY24), 2nd in fleet size (~800 vehicles), and 1st in overall number of buildings (1,492 structures). As the steward of over 500,000 acres of land, maintainer of hundreds of miles of roadways and trails, and overseer of dozens of recreational facilities including pools and ice rinks, DCR has a significant opportunity to lead the transition away from fossil fuels for heating, transportation, and operational needs.

DCR is interested in exploring innovative technologies that will help its facilities, vehicles, and equipment operate without the need for fossil fuels. These technologies should support DCR's unique needs as a parks and recreation agency, without sacrificing critical areas of operation.

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# Mass General Brigham

## *Buildings, Manufacturing & Industry*

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The health care sector is responsible for approximately 8.5 percent of carbon emissions in the United States. MGB is committed to reducing its carbon footprint and enhancing energy efficiency and lowering emissions. When it comes to sustainability, the health care industry faces particular challenges. Unlike most businesses, hospitals are open and operating 24/7, with significant power required to run medical equipment, air handling systems, sterilization processing units, refrigeration facilities, laboratories and complex technology around the clock. Identifying and implementing ways to reduce a hospital's carbon footprint, decrease the amount of waste sent to landfills and adopt environmentally responsible practices demands a collective and coordinated hospital-wide effort. The sector faces challenges such as

- **High Upfront Costs:** Transitioning to electrified systems—such as replacing gas-powered heating with electric heat pumps or upgrading to energy-efficient electrical grids—requires substantial capital investment.
  - **Infrastructure Limitations:** Many of its legacy facilities rely on aging electrical systems that aren't equipped to handle the increased load from full electrification. Upgrading transformers, wiring, and grid connections to support technologies like electric HVAC systems can be logistically complex and expensive. Building electrification must be developed in tandem with external utility capacity upgrades and grid modernization to be able to handle new grid dynamics.
  - **Energy Reliability Concerns:** Hospitals need uninterrupted power for critical operations. Electrification increases dependence on the grid, and at existing facilities with unreliable electric services or frequent outages, this poses a risk. Backup systems (e.g., diesel generators) undermine decarbonization goals, yet alternatives like battery storage are still costly and less proven at scale.
  - **Regulatory and Policy Gaps:** Inconsistent government incentives, overlapping and conflicting codes, slow permitting processes, or lack of clear standards for healthcare facilities will stall progress. It is difficult to invest without assured long-term support or alignment with changing regulatory policies and incentives
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# Massport

*Clean Transportation, Resilience and Adaptation, Manufacturing and Industry*

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Massport is committed to advancing sustainability and resiliency across its aviation, maritime, and real estate portfolios. Massport has an institutional history of exploring and implementing clean fuels and other pioneering sustainable solutions, and is eager to dive deeper.

Sustainable ground transportation is one of the first sustainability areas that Massport explored and implemented several projects over the past two decades. Massport has electrified portions of its vehicle fleets, transitioned to renewable diesel fuel, and continues to look for alternatives for specialized equipment that meet operational safety and efficiency needs. Massport is working to tackle issues including converting entire fleets, coordinating with tenants, and developing robust charging infrastructure across assets.

As Massport and its partners renovate and develop the built environment, biomimicry and circular design offer an opportunity to reduce resources over a building's lifetime. A majority of Massport and Massport-tenant buildings are LEED certified, scratching the surface of innovative approaches that integrate circular building materials and sustainable construction practices.

Carbon sequestration is another technological area in which Massport is seeking an understanding of potential use cases. Massport is interested in biologic and geologic methods to maximize carbon sequestration.

Massport is also in the process of exploring resiliency strategies for its working waterfront properties. This involves protecting its port terminals and shipyards against sea-level rise and increased storm intensity while maintaining access to the water edge and preserving operational capacity. Massport aims to safeguard its maritime facilities and ensure their continued functionality in the face of environmental changes. In areas where seawalls are required, Massport is considering the integration of technologies like EConcrete and Living Seawalls to invite sea life to an otherwise uninhabitable surface.

Massport is a member of the Zero Impact Aviation Alliance with MIT and other partners and is committed to increasing the adoption and use of Sustainable Aviation Fuel (SAF). This includes collaborating with airlines, fuel suppliers, and regulatory bodies to facilitate the transition to more sustainable fuel options. In addition to SAF, how can Massport encourage and support emerging innovation in the aviation sector?

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## MMWEC

### *Energy and Electricity*

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#### CriticalMass:

MMWEC's municipal utility members are committed to decarbonizing and electrifying their power portfolios, in alignment with the Commonwealth's carbon reduction goals.

Approximately half of MMWEC's members have already met the 2030 decarbonization targets of 50% carbon-free energy sales. All of MMWEC's member utilities have power portfolio "roadmaps" to guide the way to net zero carbon emissions in 2050, including plans for solar, wind and energy storage. MMWEC and its members are committed to addressing environmental justice concerns and improving access to energy efficiency, decarbonization and electrification initiatives for underserved communities, including low- and moderate-income residents, and renters.

In continuing to address MLP decarbonization and electrification goals, MMWEC is, on behalf of interested MLPs, pursuing deployment of the following types or technologies, or finding solutions to the following challenges.

#### Innovate Mass:

#### **Connected Homes**

As a tactic in peak mitigation, MMWEC developed and administers Connected Homes, a residential demand response program, for the municipal utilities of Massachusetts. In its fifth year, Connected Homes leverages the technology of smart appliances and devices into cost savings for light departments and their customers, allowing municipal utilities to better manage their electric load, reduce costs, and keep rates low by reducing their energy consumption during peak energy usage events. Technology types controlled to reduce energy usage during peaks are smart Wi-Fi-thermostats, smart hot water heaters, mini split controllers, electric vehicles and electric vehicle chargers. At present, 14 Municipal Light Department towns are enrolled in Connected Homes including Belmont, Hingham, Holden, Holyoke, Ipswich, Mansfield, Marblehead, Peabody, Princeton, Reading, Shrewsbury, South Hadley, Sterling and West Boylston.

Connected Homes acts as a further accelerator to incentivize the adoption of electrification. Therefore, MMWEC seeks to scale the program from only smart technology energy reduction during peak events, to a program that can reduce peak usage by sharing stored energy from residentially sited devices to the grid during scarcity and constraint events.

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## MRECo

### *Energy and Electricity*

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MRECo has the only ocean test sites for hydrokinetic energy devices (Wave and tidal) in the Commonwealth and may have the only test stand for tidal energy prototypes in the world. MRECo is willing to assist in any way feasible to support ORE startups.

MRECo already has tidal and wave test sites and wide experience working with startups in wave, tidal, and associated instrumentation, and routinely provides advice to startups in ORE.

**MRECo has two ORE sites:**

Borne Tidal Test Site (BTTS) – BTTS is a fully permitted test site for tidal energy devices up to three meters in diameter. The fixed platform provides a stable support for both the turbine under test and sensors. The objective system will provide grid connection and broadband instrumentation connectivity. A support arm provides the ability to raise and lower a turbine, and power a power load for turbine testing and electrical power of sensors is provided.

Cuttyhunk Wave Test Area (CWT) – The CTW provides a partially permitted test area for wave conversion devices. Fully permitting requires definition of the anchoring or other bottom mounted structures, and MRECo has the experience to facilitate the completion of these permitting requirements. The site provides power and grid connection with the micro-grid on Cuttyhunk Island. MRECo has characterized the wave climate and continues to gather additional information for a DOE funded wave device test in 2026.

Industry Support – The MRECo staff has broad experience in the hydrokinetic (Tidal and wave) industry as well and product development and commercialization, start-up business planning and fund raising.

Permitting – MRECo has unrivaled experience in permitting and licensing tidal and wave projects and for both testing and commercialization of deployment sites.

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## National Grid Partners

*Energy and Electricity*

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National Grid is actively seeking advanced, scalable solutions to mitigate grid impacts caused by the accelerating adoption of distributed energy resources, including electric vehicles. A pressing challenge is the strain on low-voltage distribution infrastructure—particularly in residential and small commercial sectors—where demand for Level 2 EV chargers is increasing exponentially.

Key barriers include:

- Panel capacity limitations in legacy buildings that cannot support 240V chargers without costly upgrades.
- Local transformer overload risk due to the clustering effect of EV adoption in neighborhoods.
- Peak load amplification, especially during evening hours when EV charging and residential demand overlap.

## National Grid

*Energy and Electricity*

The Commonwealth has been extremely successful in supporting and enabling clean energy solutions over the past few decades. As a result, this has pushed Massachusetts to the #2 position in the nation for solar PV installations per square mile, which is a huge success in driving toward the state’s aggressive decarbonization goals. However, the saturation combined with the increase of large-scale energy storage requests has led to challenges in the continued pace of growth and enablement of DER interconnections. To that end National Grid has identified several challenges below which may benefit from a partnership with third party resources to develop meaningful solutions to benefit our customers through this MassCEC grant program.

The grid of yesterday needed to address one-way power flow to supply energy to end use load customers. The current grid has complex two-way power flow with dynamic DER resources spread across the distribution system. This makes the fluctuations in electrical characteristics on the grid more drastic, increasing the complexity for accurate system analysis.

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## Olin College

*Energy and Electricity, Manufacturing and Industry, Buildings*

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Focused on human and planetary health, Olin's College as a Living Lab (CaLL) will achieve the Engineering for Everyone vision through novel and transformative: 1) design, development, and delivery of impact-centered education, 2) pathways and access to engineering education, 3) public-private-people partnerships of companies, public agencies, universities, institutes, communities, and individuals, and 4) convening of discussions and dissemination of learnings about the technical, social, and temporal dimensions of the sustainable solutions it investigates. This initiative positions Olin as an experimental testbed for reinvention and sustainability, and for transformation within and outside Olin.

The initial focus of Olin's CaLL strategy are 1) achieving net zero emissions by 2029, 2) integrating college operations and curriculum to create meaningful, , impact-centered learning opportunities for students, faculty and staff, 3) developing students' identities as collaborators for change by practicing relational models of human-centered design and deepening and centering sustainability in the curriculum, 4) working towards equity, access, and inclusion by dismantling systemic barriers and creating new pathways for all to feel a sense of belonging, and 5) proposing new, bold, and innovative approaches to engineering education.

The engineering and operations team is continuously looking for products and technologies that:

- Reduce energy usage
- Reduce GHG emissions
- Increase preventative maintenance and reduce unplanned maintenance
- Increase on-campus renewable energy
- Help to manage the campus energy and demand profile



- Improve comfort and air quality
  - Improve campus sustainability (energy, waste, water, new construction, materials)
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## Saint-Gobain

*Manufacturing and Industry*

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With operations in >70 countries, including >150 sites in North America alone, Saint-Gobain manufactures materials that go into almost every industry, including medical, automotive and construction markets. In Massachusetts, Saint-Gobain maintains 2 advanced R&D centers and 8 manufacturing plants producing materials such as roofing shingles & granules, silicone tubing, abrasive sandpaper, and ceramic products. Moving to a circular economy is a key pillar to decarbonizing Saint-Gobain's operations; however, many of Saint-Gobain's materials are notoriously difficult to circularize and limiting the state's ability to recover value from these materials. As an example, according to the Environmental Protection Agency, the majority of the 11 million tons of asphalt shingle scrap generated per year in North America goes to landfill.<sup>1</sup> As such, Saint-Gobain seeks to support growth-stage companies to pilot solutions that tackle key challenges in material circularization.

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## Shrewsbury Electric and Cable Operations

*Energy and Electricity*

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Energy storage will be an essential grid technology moving forward, as its power supply transitions to more intermittent renewable resources. Adoption of energy storage in Shrewsbury remains very low, both for behind the meter customer applications and utility-

scale, mainly due to its high upfront cost. SELCO's reliability also makes the need for backup power very rare.

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## The TRUE Collective

*Transportation, Adaptation and Resilience*

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The TRUE Collective is developing a Clean Energy Community Hub and satellite climate tech training space for the Whittendon neighborhood of Taunton, and are facing the following challenges:

- Insufficient capacity and/or antiquated switchgear (5kV) serving LIDAC neighborhoods of the City.
  - Space and challenges of getting an appropriately sized BES system approved by fire and town to support resilience requirements.
  - Emission free transportation of disadvantaged youth to the facility
  - EV Charging availability and reliable charging
  - Insufficient clean and resilient energy job opportunities available for Taunton LIDAC community
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## Town of Andover

*All*

Andover's limited diversification in its commercial and industrial districts, particularly in areas focused on specialized laboratories and manufacturing, poses challenges for repurposing older building stock. However, the Town of Andover recognizes a unique opportunity in clean technology and clean tech manufacturing to transform these spaces and address existing vacancies. By leveraging the broad scope of clean tech, the Town aims to promote these facilities as a means to mitigate the impact of cyclical development patterns and strengthen its economic resilience.

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# Unitil

## *Energy and Electricity*

Unitil Corporation is a public utility holding company with operations in Maine, New Hampshire and Massachusetts. Together, Unitil's operating utilities serve approximately 108,500 electric customers and 88,400 natural gas customers. Unitil is interested in partnering with a technology provider to assist in planning of customer owned DER on the electric distribution system.

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# UMass Amherst

## *Energy and Electricity, Manufacturing and Industry, Transportation, Buildings*

In 2017, through the work of the Chancellor's Sustainability Advisory Committee (CSAC) UMass Amherst identified six high level strategic sustainability areas to focus on over the next decade. These areas were Carbon Mitigation, Zero Waste, Food Security, Hands-On Learning, Resiliency, and Cohesive Communication. Its campus leadership prioritized Carbon Mitigation and Zero Waste and concurrent task forces, and consultant led studies were conducted.

## Decarbonizing UMass

The Carbon Mitigation report resulted in its "UMass Carbon Zero" campaign. This has accelerated the work to decarbonize its campus resulting in multiple district level utility projects, new construction and major renovations of large facilities, and renewable energy projects, all contributing to the electrification and decarbonization of its campus and the compliance with MA Executive Order 594: Leading By Example: Decarbonizing and Minimizing Environmental Impacts of State Government. With over 15 million square feet of facilities, 26 miles of steam lines, a state-of-the-art cogeneration power plant, and 300 buildings, this decarbonization process will be difficult but UMass Amherst is committed to reducing its carbon footprint and UMass Amherst is exploring different roadmaps to do so as quickly as is feasible. The ongoing projects demonstrate that UMass Amherst is committing considerable resources to these efforts.

## Getting UMass to Zero Waste

Its campus is also invested in furthering its ability to reduce its solid waste footprint and create a more circular economy. With a 50%+ waste diversion rate, student-led sustainable reuse programs, over 1,500 tons of food waste recovery and conversion to renewable energy through anaerobic digestion, and the year-round recycling of over twenty different difficult to manage

waste streams at its own Waste Recovery Transfer Facility, UMass Amherst has made progress in this area but there is still more to do.

#### Zero Waste & Resiliency Technologies

UMass Amherst is open to exploring any emerging clean/climate technologies that will contribute to its decarbonization, resiliency, and waste reduction efforts.

#### Decarbonizing Technologies & Materials

In addition to the decarbonization technologies currently in use here at UMass Amherst, it is interested in other emerging technologies that will help with its Carbon Zero goals, such as energy storage (batteries or thermal), pilot opportunities to advance enhanced deep geothermal, innovation with vehicle-to-grid (V2G), or vehicle-to-everything recharging stations and energy management, high temperature thermal storage, and advanced utility-scale high temperature heat pumps.

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## University of Massachusetts Boston

### *Energy and Electricity, Buildings*

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UMB is an urban public research university with a commitment to environmental stewardship on campus, and sustainability research and education. It has a strong School for the Environment and leading climate and energy researchers on campus, as well as an Environmental Analytics core facility. It has published an [Energy and Carbon Master Plan](#). The goal of this plan is to provide a pathway that gets UMass Boston to net-zero and to a more resilient campus by 2050 by: a) Reducing energy consumption and enhancing resiliency in existing buildings; b) Building energy efficient and resilient new buildings; c) Switching fuel sources by electrifying the Central Utilities Plant and expanding sea-water heat pumps; and d) Utilizing renewable energy, on and offsite.

The UMB campus is currently comprised of 13 buildings totaling 1,751,900 square feet. The Overarching challenges as identified in its Master Plan:

- Buildings are currently provided with hot and chilled water from a central plant powered by burning natural gas. Major equipment at the central plant will need replacement within the next 5-10 years including a 33% capacity increase to meet anticipated growth by 2050. There is both key opportunity to electrify the central plant and avoid burning more fossil fuels on campus, as is also required by Leading by Example state executive orders.
- A collection of older buildings referred to as the Heritage Buildings will require major renovations. This is a key opportunity for projects to reduce loads imposed on the central plant, improve building energy efficiency, install Occupancy sensors / building controls and transition to low temperature hot water systems.
- There are operational issues, low-cost energy conservation measures, and deep energy retrofit opportunities that were identified during the plan development. These are key opportunities to reduce thermal loads imposed on the central plant, improve building energy efficiency, and install renewable energy technology. UMass Boston bring these opportunities to its general attention given the range of potential solutions Mass CEC has in its portfolio of companies.

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## UMass Lowell Rist Institute for Sustainability & Energy and Innovation Hub (iHub)

*Energy and Electricity, Agriculture and Water, Resilience and Adaptation, Manufacturing and Industry*

Among the areas that are of particular interest to the Rist Institute and iHub are climate change mitigation and resilience, renewable energy, energy storage and transition, hydrogen - production, storage, transport or application, energy storage & transition (heat, electricity), batteries - next gen, recycling & circular economy, clean chemistry innovation, and urban agriculture.

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# Wakefield Municipal Gas & Light Department (WMGLD)

## *Energy and Electricity*

Wakefield Municipal Gas & Light Department (WMGLD) is a public power utility serving the town of Wakefield Massachusetts. WMGLD and its employees provide their customers with safe, reliable, competitively priced, and environmentally responsible energy resources and services that enhance quality of life, while adjusting to the ever-changing energy marketplace. WMGLD is committed to being a trusted partner for their customers and the greater community in promoting the use of electric power and other energy resources to achieve an affordable, cleaner, and more sustainable energy future.

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## WHOI

### *Energy and Electricity*

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As an institution, WHOI strives to lead innovation in ocean and climate technology and have developed unrivaled Access to the Sea and Equipment and Instrument Test Facilities to bring new methods and technologies from the drawing board to routine scientific use. Transitioning WHOI technologies outside of the institution to serve society has been a long-term focus for WHOI.

Growth areas within the startup landscape across the Commonwealth that could benefit from WHOI engagement and potential effort include: Work on sensor validation and testing for climate, carbon, and energy transitions within the ocean space. Work that requires ocean testing or validation at permitted ‘ocean test sites’. Work on parameter sensing via non-destructive sampling (i.e. ‘lab on a chip’, remote electromagnetic active or passive sampling, acoustic communications and sensing). Work on autonomous vehicle design, operational configurations, enclosure and/or housing research, behavior programming, and transitions to market. Finally, energy is an order one issue within oceanographic systems and critical to

scientific progress, making energy efficiency and energy focused designs a key area of focus for WHOI's long-term mission and growth.

Interactions between WHOI and startups in the Commonwealth on these transformative issues could enable synergistic growth of experience and knowledge, successive launches of small firms, and a dramatic growth of both training opportunities for high-tech workers and long-term high-tech jobs within the local climatetech community.

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## Weathernews Inc.

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Weathernews Inc. is a global leader in weather intelligence and meteorological services, headquartered in Japan with operations spanning 30 offices across 21 countries. With consolidated revenues of 22.2 billion yen (FY2024), approximately 1,152 employees, and a 40-year heritage in private weather forecasting, WNI serves over 10,000 maritime vessels globally and more than 2,500 corporate clients across aviation, energy, agriculture, logistics, and retail sectors.

The core problem statements driving WNI's business focus center on climate change and operational resilience across weather-sensitive industries. Key challenges include extreme weather-related supply chain disruptions, the need for precise localized forecasting to optimize safety and efficiency, regulatory requirements for CO2 emissions reduction and decarbonization compliance (particularly in maritime), grid stability challenges from renewable energy integration, and building organizational resilience to climate impacts. These challenges create urgent demand for advanced weather intelligence that enables companies to simultaneously reduce environmental impact while maximizing operational performance and profitability.

WNI's technology capabilities combine proprietary satellite infrastructure (including WNISAT-1 and WNISAT-1R for ocean and atmosphere monitoring), AI-driven forecasting models leveraging 40+ years of big data, real-time observation networks aggregating data from 27,000+ locations globally, and integrated digital platforms. The company is particularly interested in

advancing capabilities around emissions tracking and carbon intensity monitoring, ensemble-based routing optimization algorithms, probabilistic forecasting for extreme weather adaptation, and climate risk quantification platforms. Recent strategic expansion into climate tech services (launched June 2022) demonstrates focus on climate change risk analysis, business continuity planning, and environmental compliance—addressing the intersection of operational optimization and sustainability imperatives that increasingly define enterprise decision-making.

**Sustainability Commitment and Value Creation:** WNI has demonstrated measurable climate impact through its Optimum Ship Routing service, which has achieved 2.8 million metric tons of CO2 emissions reduction annually for maritime clients, and is actively pursuing net-zero Scope 1 and 2 emissions by 2030 with carbon neutrality by 2050. The company's receipt of the Minister of the Environment Award for Climate Action (December 2023) and commitment to renewable energy (82.8% of headquarters electricity consumption as of 2024) reflect positioning at the intersection of climate mitigation and business value creation—a strategic advantage in engaging enterprises navigating both sustainability mandates and competitive pressures in a climate-changing world.