Competitiveness Conversations Across America

Growing the Future with Blue and Green Tech

Tufts University, Joyce Cummings Center
Medford, MA
June 5–6, 2025

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Letter from The Hon. Deborah L. Wince-Smith, President and CEO, Council on Competitiveness

Dear Council Community,

As a new era of global disruption emerges, innovation has become more critical than ever to America's national competitiveness. For nearly a century, U.S. leadership in technology has been the foundation of its economic power, security, and global influence. Now, many nations—including, most significantly, China—are directly challenging that leadership. They are moving rapidly to surpass the United States, and to seize the strategic and economic edge that comes with leading the world in innovation capacity and capability.

To confront this challenge and support broadly shared prosperity across the United States, national leaders must come together and work to dramatically expand the country's innovation potential. To that end, the Council on Competitiveness, through its **National Commission on Innovation and Competitiveness Frontiers**, has set a bold goal since 2020: to increase the speed, scale, and number of U.S. innovations tenfold. Achieving this requires democratizing innovation—bringing more people and more places into the fold. The United States can no longer rely solely on a handful of concentrated tech hubs; we must nurture, build, encourage new innovation ecosystems in every part of our country. In support of this mission, the Council launched its **Competitiveness Conversations Across America** series to spotlight emergent, best, and "next" practices in place-making innovation.

The New England states—defined here as Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont—have a long and storied history as an innovation ecosystem, centered on the Boston Metro area. For the fourth Competitiveness Conversation of 2025, the Council traveled to Medford, MA, to see how the whole of New England—Boston and beyond—is preparing for a new innovation age, anchored by the "blue" (maritime) and "green" (sustainability) economies.

Of the many lessons learned from A Competitiveness Conversation: Growing New England's Next Generation Innovation Economy, three in particular struck a chord:

- New England is more than a national and global leader in the blue and green economies. The distinctive convergence taking place in New England is creating what Tufts University President Sunil Kumar calls the "teal" economy. This includes sectors like offshore wind energy, where New England leads the nation with more than three thousand megawatts of announced capacity coming online in the next decade, alongside more than $10 billion in committed investment. Also included in this "teal economy"

are more novel industries like growing seaweed as an additive in dairy cow feed, reducing agricultural methane emissions and combining the region's agricultural, maritime, and scientific research strengths to create new opportunities.

- New England has world-class infrastructure in place for generating new ideas and turning those ideas into prototypes. The region is home to 19 Carnegie Classification R1 research universities, representing the nation's most advanced higher education research institutions, with a strong cluster in the Boston area providing fertile ground for basic research. New England's 2022 R&D spend was more than $84 billion, and the region's venture capital market is strong, with Massachusetts alone netting $15.7 billion in VC funding, the third highest in the nation. But leaders in the region are less confident about the ability to scale new ideas commercially in the region; high costs in the region lead many startups to seek to scale elsewhere.
- While pockets of New England are home to world-class educational establishments, more work is needed to expand the benefits of such a distinctive asset base to the entire region. New England's rural areas remained underserved, limiting opportunity for those unable to move to the Boston metro area. Rather than expecting students to flow to urban areas for education, New England's university leaders recognize the need to meet students where they are. This is especially true in Maine and Vermont, two of the most rural states. By doing so, New England can tap into a wider pool of talent, blunting the effects of an aging population.

New England has the legacy—and the tools—to lead the United States in both the blue and green economies. However, unlocking this potential depends on strategic action and strong, visionary leadership, especially in the face of headwinds at the federal level. Among the co-hosts who made this event possible—Colby College President David A. Greene, Western New England University President Robert Johnson, Tufts University President Sunil Kumar, and University of Vermont President Designate Marlene Tromp—there is a shared commitment to making the changes necessary for long-term success. The New England Competitiveness Conversation would not have been possible without the vision and dedication of these leaders and their incredible teams, whose efforts helped spotlight the region's dynamism and innovation.

The Council will continue to build on the momentum of this and all previous editions of its Competitiveness Conversations Across America. And we look forward to a time when we can return to New England to witness the continued transformation unfolding across its communities and industries.

Sincerely,

The Hon. Deborah L. Wince-Smith
President and CEO
Council on Competitiveness

Agenda

June 5, 2025

AFTERNOON

3:30 Registration and Networking

4:15 Welcome

Dr. Sunil Kumar
President
Tufts University

The Hon. Deborah L. Wince-Smith
President and CEO
Council on Competitiveness

4:30 Putting Competitiveness in Context: Challenges and Opportunities

New England is one of the nation's most important centers of education, research, high technology, and finance—with reach across many industries. This panel—led by the co-hosts of this edition of the "Competitiveness Conversations Across America" and under the auspices of the Council on Competitiveness "National Commission on Innovation and Competitiveness Frontiers"—will discuss and connect two emergent and convergent domains: tech-based innovation across the blue and green economies. This panel will put into context the role each domain will play in advancing the region's long-term innovation capacity and capability, economic and productivity growth, and inclusive prosperity. At the same time, leaders will highlight the best and next practices for New England and the United States.

Panelists

Dr. Melissa Gilliam
President, Boston University

Dr. David A. Greene
President, Colby College

Dr. Robert Johnson
President, Western New England University

Dr. Marlene Tromp
President Designate, University of Vermont

Moderator

The Hon. Deborah L. Wince-Smith
President and CEO
Council on Competitiveness

5:15 Continuing Vannevar Bush's Spark of Genius

U.S. colleges and universities are the lifeblood of the nation's innovation economy—developing the talent, the research, and the pathway to technologies that have differentiated the United States from every other nation over the past 75 years. Born from the vision of Tufts University

graduate Vannevar Bush, this science and innovation model has evolved and responded to the challenges and opportunities facing the country for nearly a century. As America approaches its 250th birthday—and the Council its 40th—what role do America's universities play today in driving not only the research at the heart of innovation, but also in seeding the economic development crucial to place-making innovation in an era of disruption and discontinuity? This leadership dialogue will explore this issue—and offer ideas to keep the U.S. university and college system strong, relevant, and responsive to the competitiveness realities of today.

Mr. Chad Holliday
Chair, Global Federation of Competitiveness Councils
Chair Emeritus, Council on Competitiveness

Dr. Sunil Kumar
President
Tufts University

The Hon. Deborah L. Wince-Smith
President and CEO
Council on Competitiveness

Moderator

Mr. Jim Clifton
Chairman, Gallup

5:45 Welcome Reception

6:15 Competitiveness Conversation Dinner

Welcome Remarks

The Hon. Rebecca Tepper
Secretary of Energy and Environmental Affairs, Commonwealth of Massachusetts

The Hon. Edward Markey
United States Senator from Massachusetts

8:00 Dinner Concludes

June 6, 2025

MORNING

8:00 Breakfast, Networking, and Registration

8:30 Welcome Address

Dr. Sunil Kumar
President, Tufts University

8:45 Developing the Pillars of the New England Innovation Ecosystem

Leaders from industry, academia, national laboratories, labor, and government will discuss the pressing challenges and significant opportunities for New England to set the

national and global pace in the blue and green economies. The discussion will focus on pillars of the region's innovation economy, including talent, technology, investment, and infrastructure, which underpin the region's competitiveness and future success. This session will also highlight collaborations and best practices from within the regional innovation ecosystem that unite startups, established firms, research institutions, and government.

Panelists

Ms. Donna Hazard
Managing Director, Investments, SeaAhead

Dr. Keoki Jackson
Senior Vice President, The MITRE Corporation

Dr. Dennis McGillicuddy
Senior Scientist and Chief Science Officer, Ocean and Government Affairs, Woods Hole Oceanographic Institution

Dr. Beth Orcutt
Vice President, Research, Bigelow Laboratory for Ocean Sciences

Moderator

Dr. Denise Bruesewitz
Provost Designate and Professor of Environmental Studies, Colby College

9:30 Leadership Perspectives on the Furture of Energy Security, Innovation, Growth, and Global Impact

Panelists

Mr. Chad Holliday
Chair, Global Federation of Competitiveness Councils; Chair Emeritus, Council on Competitiveness

Dr. Emily Reichert
CEO, Massachusetts Clean Energy Center

Moderator

Dr. Reginald Brothers
Operating Partner, AE Industrial

10:15 Break

10:25 A Message on Innovation from Washington

The Hon. Susan Collins
United States Senator from Maine

10:30 Charting the Course for the Blue Economy—Navigation Innovation Change Waves Across Maritime Industries

Leading experts from academia, industry, and the scientific community will examine the challenges and opportunities at the intersection of maritime shipping and shipbuilding, fishing and aquaculture, coastal tourism, renewable energy, undersea mining, biotechnology, etc. This discussion will highlight the impacts on scientific discovery, innovative place-making, and regional economic development, ultimately creating a vision for greater productivity and prosperity in New England and coastal communities nationwide.

Panelists

Ms. Jennifer Downing
Executive Director, New Bedford Ocean Cluster

Mr. Steven Fox
Partner, Propeller VC

Mr. Andrew Hargens
Chief Development Officer, Massport

Mr. Nick Rotker
Chief BlueTech Strategist, Cross-Cutting Director, Advanced Maritime & Acoustic Technologies, The MITRE Corporation

Dr. Rockford Weitz
Professor of Practice and Director of Maritime Studies, The Fletcher School, Tufts University

Moderator

Dr. Dan Kuchma
Professor, Civil and Environmental Engineering, Tufts University; Member, MOCEAN

11:15 Seeding Innovation to Grow New England's Sustainable Technology Industry

How has New England become a hub for sustainable technology, agriculture, forestry, the decarbonization of the building and construction sectors, electric vehicle infrastructure, energy grid modernization, and other rapidly expanding sectors of the green economy? This panel of experts will address this question and provide recommendations to unlock and accelerate sustainable tech—ultimately enhancing the region's and nation's economy and resilience.

Panelists

Ms. Lily Fitzgerald
Director, Center for Advanced Manufacturing, MassTech

Dr. Rachael Floreani
Associate Professor, Department of Mechanical Engineering, University of Vermont

Dr. David Kaplan
Stern Family Endowed Professor of Engineering, Tufts University and Director, Tufts University Center for Cellular Agriculture

Dr. Julian David McClements
Distinguished Professor, University of Massachusetts Amherst

Dr. Meghan McGill
Senior Associate, Breakthrough Energy Ventures

Moderator

Dr. Matthew McNulty
Associate Director, Tufts University Center for Cellular Agriculture

AFTERNOON

12:00 Lunch

12:45 Lunch Keynote

Dr. Mark Peters
President and CEO, The MITRE Corporation

1:00 Unlocking New England's Economic Potential—Commercializing for the Future

How can next-generation innovations in the blue and green economies foster the new businesses and industries essential for creating the high-value jobs and resilient communities of tomorrow? This panel will examine the opportunities and challenges of commercializing new technologies in these two sectors, and it will highlight successful case studies, practices, and policies that can be expanded to drive the next wave of economic impact on land and sea.

Panelists

Mr. Joseph Curtatone
President, The Alliance for Climate Transition

Dr. Heather Darby
Agronomic and Soils Specialist, University of Vermont

Mr. Garvan Donegan
Director, Planning, Innovation and Economic Development, Central Maine Growth Council

Mr. Ben Linville-Engler
Deputy Director and Chief Investment Strategist, MassTech Collaborative

Mr. Vinit Nijhawan
Managing Director, Mass Ventures

Dr. Nichole Price
Director, Bigelow Center for Seafood Solutions

Moderator

Mr. Martin Son
Senior Director, Technology Transfer and Industry Collaboration, Tufts University

1:45 Afternoon Keynote: From Tradition to Transformation—New Bedford's Blueprint for Innovation

The Hon. Jon Mitchell
Mayor of New Bedford, Massachusetts

2:00 Acceleration Innovation—A Strategy for Developing Cutting Edge Technologies

Out innovating our global competitors in the blue and green economies—spanning maritime technology, shipbuilding, biotechnology, advanced energy production, etc.—is essential for the future of the United States, and New England is at the forefront of developing and commercializing the technologies that will shape the United States' global standing in the future. This panel brings together leaders from business, research, and academia to explore how the United States can unleash the innovation and commercialization necessary to firmly establish itself as the global technology leader.

Panelists

Dr. Bernard Arulanandam
Vice Provost, Research, Tufts University

Mr. Blair Bateson
Senior Vice President, Net Zero Strategy, Bank of America

Dr. Kirk Dombrowski
Vice President, Research and Economic Development, University of Vermont

Moderator

Mr. Chad Evans
Executive Vice President and Chief Operating Officer, Council on Competitiveness

2:40 Break

3:00 Linking Workforce, Innovation, and Investment: The Blue Economy and Beyond

New England's connection to its coast plays a vital role in the United States's global leadership in research, high-skilled employment, and innovation. By integrating New England's advanced technology, skilled workforce, and manufacturing capabilities within the blue and green economies—and aligning these assets with key sectors such as defense and energy—the region can attract greater public and private investment into blue and green-based industries. This panel will highlight examples of how the region can leverage its distinctive resources to grow investment, while also exploring opportunities to expand cross-sector partnerships that will propel the blue and green economies forward.

Panelists

Mr. Bruno Freitas
Principal, Lewis-Burke Associates

Dr. Eric Hines
Professor of the Practice, Civil and Environmental Engineering and Kentaro Tsutsumi Faculty Fellow, Tufts University

Dr. Anthony Kirincich
Senior Scientist, Woods Hole Oceanographic Institution

Moderator

Dr. Barbara Kates-Garnick
Professor of the Practice,
The Fletcher School, Tufts University

3:45 From Vision to Action: A Long-Term Strategy for Place-Making Innovation Across New England

The region and nation with the most efficient and sustainable economy will hold a competitive advantage over its rivals. This concluding panel will examine the path forward for New England to position itself as a leader in tomorrow's blue-green economy—as well lessons that can be shared to optimize the U.S. economy for a future in which sustainability and innovation will be increasingly linked.

Panelists

Dr. Robert Johnson
President, Western New England University

Dr. Sunil Kumar
President, Tufts University

Dr. Marlene Tromp
President Designate, University of Vermont

Moderator

The Hon. Deborah L. Wince-Smith
President and CEO
Council on Competitiveness

4:30 Conversation Close

Cross-Cutting Themes and Big Ideas

1. **Innovation is most effective when it begins with the needs, insights, and lived experiences of the end-user.** Technologies developed in isolation—no matter how advanced—often struggle to gain traction if they do not align with the practical realities of those expected to use them. Engaging stakeholders early in the innovation process ensures that solutions are grounded in real-world challenges and tailored to the contexts in which they will be applied. This not only increases the likelihood of adoption but also fosters a sense of ownership and collaboration that can drive further refinement and long-term impact.
2. **Cultivating a competitive mindset is essential for regions aiming to lead in the innovation economy.** While partnerships are valuable, a clear focus on outcomes, identity, and strategic advantage can drive meaningful transformation. We learned from New Bedford's Mayor Jon Mitchell how the city exemplifies this approach: while deeply collaborative, the city is ultimately in it to compete. Its leaders prioritize the advancement of the community above all else, embracing a results-driven ethos and a determination to out-hustle peer cities. This competitive spirit is helping New Bedford shed the label of a city in decline and establish itself as a rising hub for maritime innovation.
3. **Innovation alone is not enough; industrialization is key for the United States to set the pace in the next economic frontier.** New England's strength lies in producing scientific breakthroughs and early-stage innovations, but the real challenge now is creating robust pathways to scale those ideas within industry. The region must move beyond innovation alone and focus on effectively industrializing, manufacturing, and commercializing the technologies and processes that will shape the future, ensuring they achieve widespread adoption and meaningful economic impact.
4. **Breakthroughs begin with basic science.** A defining strength of the U.S. innovation ecosystem is its robust public investment in fundamental research. These advances often emerge from open-ended inquiry, driven not by market forces but by scientific curiosity, most often at the university level. For example, basic science enabled the discovery of the green fluorescent protein, which transformed biomedical science but only decades after its initial isolation. Without continued support for basic science, the serendipitous discoveries that fuel transformational progress—and that few private entities would take a risk on—will become increasingly rare.

5. **New England maintains one of the nation's strongest higher education ecosystems.** Home to 321 postsecondary institutions, including many of the world's most prestigious universities and a dense cluster of higher education institutions in the Boston area, New England is a global leader in education. This concentration contributes to the region's prodigiously well-educated workforce, with 43 percent of residents holding at least a bachelor's degree, by far the highest of any U.S. region.
6. **New England's coastline and maritime history provide it an unparalleled opportunity to lead in the blue economy.** With more than 5,500 miles of coastline and a longstanding economic and cultural reliance on the ocean, the region is uniquely positioned to drive the next generation of high-tech maritime innovation. New England is already home to 16,000 blue economy businesses employing 250,000 people and experienced more than 28 percent growth between 2011 and 2021. These employers include shipbuilders that deliver some of the world's most advanced submarines to the U.S. Navy—generating $2.5 billion in output and accounting for 6.7 percent of all shipbuilding employment nationwide.
7. **The region is deeply committed to sustainable energy production as both an economic and environmental goal.** Policymakers across New England are advancing the clean energy technologies needed to meet a projected tripling in electricity demand. In 2024 alone, investors committed $3.3 billion to clean energy initiatives in the region. Startups like Commonwealth Fusion Systems are at the forefront, developing next-generation energy technologies for deployment in New England and around the world. These startups are supported by public efforts like the Massachusetts Clean Energy Center, which provides invaluable testing grounds for new energy technologies.
8. **The co-location of strong blue and green technology sectors provides unique opportunities for convergence.** For example, New Bedford's history of oceangoing commerce allowed it to become a hub for the construction of offshore wind turbines, which will one day power as many as 900,000 homes. Similarly, work done developing methods for offshore agriculture may soon spawn an industry commercially growing seaweed to be added to dairy cow feed to reduce methane emissions.

9. **While New England is a leader in fostering startups, these innovators often go elsewhere to grow.** Despite $84 billion in R&D spending in 2024 and a strong culture of innovation, many startups founded in the region relocate to scale their operations. The high cost of living across New England makes it harder to recruit talent and drives companies to lower-cost areas as their needs grow. Still, advanced manufacturing remains a regional strength, and many startups continue to develop their technologies locally before scaling elsewhere, giving New England a critical foothold in early-stage innovation.
10. **A new model of university-led innovation is needed, which Tufts University President Sunil Kumar called "centrifugal densification."** This approach envisions innovation anchors, such as Tufts, extending their reach across the region to spark innovation in more places and engage more people—rather than concentrating activity around a single institutional hub.
11. **The New England states are small but can punch above their weight by working together.** With a combined population of just over 15 million, New England is smaller than four individual U.S. states, underscoring the importance of regional coordination to amplify its national and global impact. To drive inclusive economic development across the region, the New England states must align their strategies and pool their collective talents. Massachusetts, as the largest state by population, GDP, and capital resources, is well-positioned to lead, both by setting policy direction and by deploying its assets to support growth throughout the region.
12. **A key challenge for regional innovation is the disconnect between ambition and coordination.** Despite strong assets and talent, efforts are often fragmented, forcing innovators to rely on informal networks and cold outreach to find partners and expertise. Building centralized, regional "one-stop shops" for different industries and fields could streamline collaboration, strengthen connectivity, and help unlock the full potential of the innovation ecosystem.
13. **Disruptive innovations cannot just compete with legacy solutions—they must outcompete them.** To overcome the inertia of existing systems and achieve widespread adoption, new technologies must offer more than their traditional competitors. Bridging that gap requires financial institutions to play a central role, providing the capital, tools, and services needed to bring transformative technologies to market at scale.


Western New England
University

A First Look: Innovation and Competitiveness—New England

Dear Council Community,

On June 2025, the Council on Competitiveness convened on the campus of Tufts University in Medford, Massachusetts—just outside Boston—to explore the future of one of the United States' most dynamic innovation regions. Over two days, dozens of leaders from across Massachusetts, Maine, and Vermont came together to chart a course for the next chapter of New England innovation, anchored in the strength of its "blue" (maritime) and "green" (sustainability) economies. Coming away from this Conversation, I am confident that New England is prepared to lead the nation—and the world—toward a more prosperous, sustainable future that uplifts the economic well-being of all its residents.

To understand how New England will shape our shared future, it is essential to examine the factors underpinning the region's competitiveness. The Council developed the following competitiveness snapshot to highlight key trends defining the innovation ecosystem spanning Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont—and the ocean frontier beyond. By understanding the regional landscape across talent, technology, capital, infrastructure, and other foundational assets, we can better position ourselves to harness emerging opportunities and accelerate impact. I hope you will take a few minutes to review what we call a "First Look," framing the competitiveness factors of the region, which is included below this letter.

In your review, several high-level themes will emerge:

- New England's university system is unmatched, with a dense concentration of world-renowned institutions producing one of the nation's most educated workforces and a fertile environment for startups. Universities such as Tufts, the University of Vermont, Colby College, Western New England University, and Boston College—alongside research institutions like Bigelow Laboratory for Ocean Sciences and Woods Hole Oceanographic Institution, and FFRDCs such as MITRE—anchor a thriving innovation corridor.
- Complemented by a robust venture capital ecosystem and a deeply rooted entrepreneurial spirit that predates the founding of the Republic, New England has built a powerful platform to generate new technologies and the enterprises that commercialize them.
- However, challenges remain. High costs of living and comparatively limited manufacturing capacity can make it difficult for ventures to scale in-region. Additionally, disparities in opportunity across rural and urban

communities—particularly in Vermont and Maine, the nation's two most rural states—continue to hold back equitable economic development.

Despite certain headwinds—something every region faces—New England is a tremendous hub of innovation, and as regional leaders confront the defining challenges of our time, I am confident this community will work collaboratively and deliver solutions to bring them to scale.

It was a privilege to meet and learn from so many leaders in the region who are working diligently to advance innovation during the New England edition of the Council's Competitiveness Conversations Across America series. I leave even more certain that the region's future is bright—and that its leadership will benefit the nation and the world.

Sincerely,

Mr. Chad Evans
Executive Vice President and
Chief Operating Officer
Council on Competitiveness

NEW ENGLAND COMPETITIVENESS CONVERSATION

New England's innovation ecosystem has distinctive strengths and areas for growth.

Strengths

ACADEMIC EXCELLENCE	43% of New England's population aged 25+ has a bachelor's degree or higher, by far the most educated region in the country.
INVENTION	Regionally, New England ranks 2nd in patents per capita. Massachusetts ranks 3rd in total patents across all states.
R&D INTENSITY	Massachusetts ranks 1st in the nation in R&D intensity, and 2nd for total R&D funding.
BLUE-GREEN ECONOMY	Over $3.3B was invested into clean energy technology in New England in 2024.

Areas for Growth

HIGH COST OF LIVING	In 12 of 13 regional metros, buying the median home requires at least $100k in annual income.
POPULATION GROWTH	New England relies on international migration to maintain its population.
WORKFORCE NEEDS	The region has workforce gaps, particularly across the blue and green economies.
ENERGY INFRASTRUCTURE	The region will need to more than triple its generation capacity to meet load growth.

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NEW ENGLAND: REGIONAL ECONOMY

New England is one of the most economically productive regions of the country.

Bureau of Economic Analysis

- New England had the 3rd highest GDP per capita across the nation's 8 regions, cementing it as a hub for industry and innovation.
- From 2014-2024, New England's economy has grown at a slower pace (22%) than the national rate (27%). Rejuvenating growth will require renewed focus on the region's innovative industries.

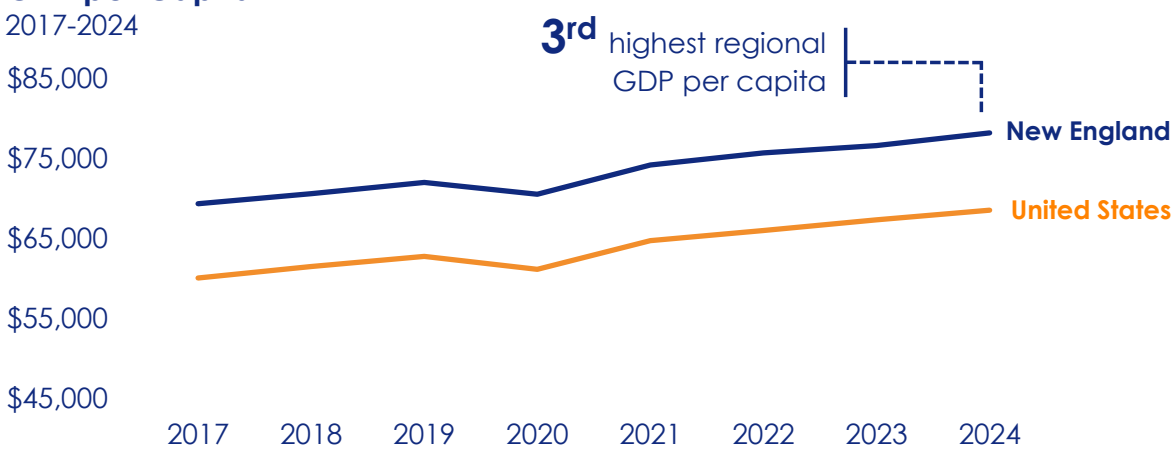
Massachusetts' robust business environment and innovation resources have positioned the state as a driver of national growth.

Massachusetts Technology Leadership Council; Mass Fintech Hub; MassBio; StartupBlink

- The technology industry accounts for 17% of MA's GDP, and technology workers account for 14% of the state's workforce, compared to only 10% nationally.
- MA is home to a booming financial technology sector, boasting $5.9B in funding, 350+ fintechs in the ecosystem, 400+ financial services organizations, and 105 leading academic institutions.
- MA's biopharmaceutical sector is booming, its workforce growing a nation-leading 15.2% year-over-year in 2021. The biopharmaceutical R&D workforce grew even faster at 17.2% year-over-year in 2021, second only to CA.
- The Boston area is home to > 3,000 startups, representing 5% of all startups in the United States. Boston ranks as the 4th best startup ecosystem in the United States.

GDP per Capita

2017-2024



Bureau of Economic Analysis

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NEW ENGLAND: REGIONAL ECONOMY

Maine's long coastline and forest coverage contributes to its leadership in aquaculture and forestry.

State of Maine Department of Economic and Community Development; NOAA

- ME's forestry and forest products industry is valued near $2.1B, accounting for 3% of ME's GDP.
- ME's marine economy values $3.6B, 5% of ME's GDP. This is largely due to its sizeable fisheries, as well as growing innovation in aquaculture and seaweed cultivation.

Vermont's green economy is represented by strong forestry and agriculture industries.

Federal Reserve Bank of St. Louis; Vermont Agency of Natural Resources; Think Vermont

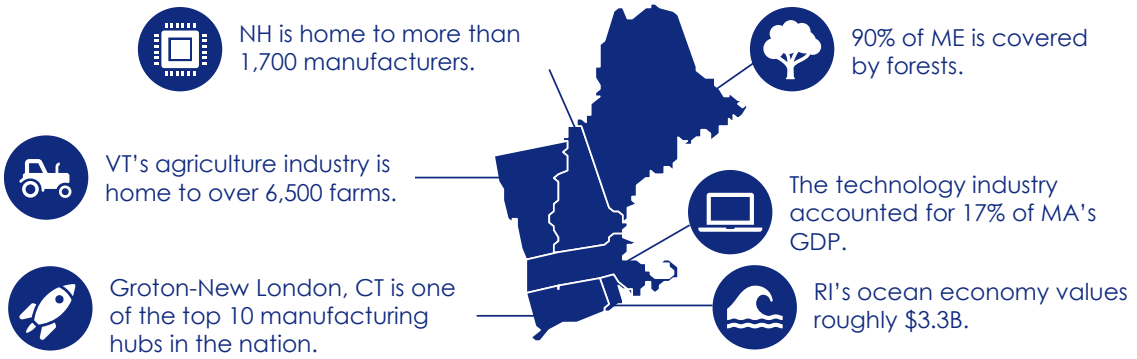
- VT's economy grew over 40% between 2017 and 2024, displaying strong post-pandemic growth.
- VT's forest products sector values over $1.4B and employs over 1,900 workers. In addition, VT's agriculture industry supports almost 54,000 direct jobs.

Rhode Island, Connecticut, and New Hampshire each bring unique strengths to the region.

Ocean Tech Hub; AdvanceCT; NH Department of Business and Economic Affairs

- RI's Ocean Tech Hub aims to increase regional GDP by $2.2B by 2030.
- CT is home to Groton-New London, one of the top 10 manufacturing hubs in the nation, and remains a key manufacturer of advanced military technology.
- More than 1,700 manufacturers call NH home and employ over 67,000 people with an output of $9.8B a year.

New England's Diverse Innovation Ecosystem



ME Department of Economic and Community Development; MA Technology Leadership Council; NOAA; NH Department of Business and Economic Affairs; AdvanceCT

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NEW ENGLAND: INDUSTRIES OF THE FUTURE

What is the Blue Economy?

- Aquatourism
- Shipping & Oceanic Trade
- Maritime Security
- Aquaculture
- Offshore Energy
- Fishing

New England's blue industries anchor the region's economy.

State of Maine Department of Economic and Community Development; NOAA

- The Northeast's marine economy is made up of roughly 16,000 businesses and 250,000 employees, and accounts for $23.7B in regional GDP.
- From 2011 to 2021, the blue economy grew its workforce by 13% and its GDP by 28%. In comparison, the region's highest-exporting industry, manufacturing, grew only 10% in GDP during that time — about a third of the marine economy's growth.
- In 2022, over $2B in venture capital was invested in the blue economy in New England — a 4x increase in just 10 years.

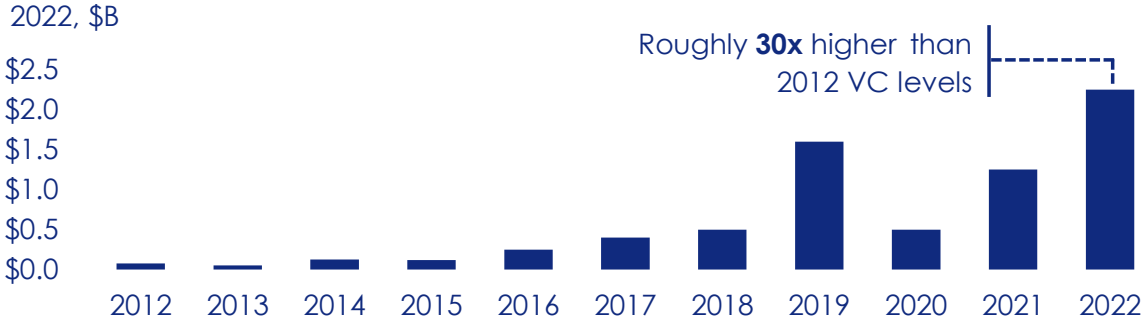
New England's shipbuilding ecosystem is a national leader, helping to secure U.S. maritime dominance.

General Dynamics Bath Iron Works; The Providence Journal

- Maine's General Dynamics Bath Iron Works, a key supplier of advanced warships, accounts for 6.7% of national shipbuilding employment. Through direct and indirect effects it supported an estimated $1.3B to state GDP and over $2.5B in total output.
- RI is home to the U.S. Navy's submarine research and development laboratory, the Naval Undersea Warfare Center, and General Dynamics Electric Boat, the primary builder of the nation's submarine force.

Venture Capital Investments into the Blue Economy in New England

2022, $B



Pitchbook, analysis by Netherlands Enterprise Agency

Compete. Council on Competitiveness

NEW ENGLAND: INDUSTRIES OF THE FUTURE

What is the Green Economy?

- Agriculture
- Electric Grids
- Clean Energy
- Forestry
- Battery Storage

New England is a national leader in clean technology, energy, and investment.

Rhodium; CNN

- In 2024 alone, over $3.3B was invested in the development of clean energy and its industry in New England.
- Commonwealth Fusion Systems, a MA based fusion-start up, is currently developing a first-of-its-kind nuclear fusion plant prototype 30 miles outside of Boston.

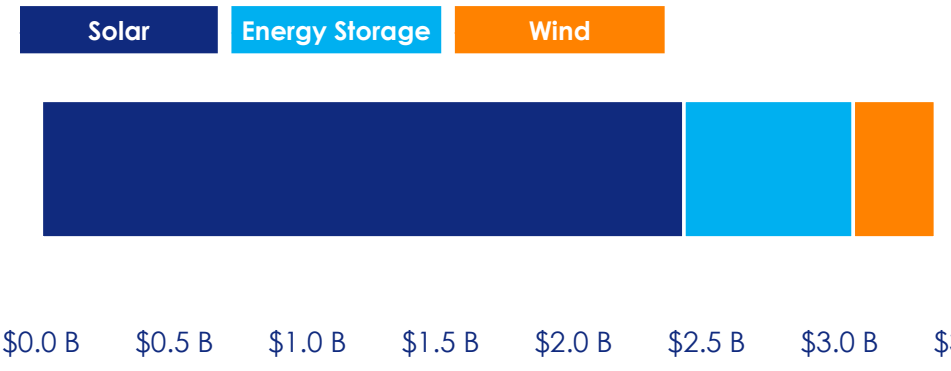
Advancements around battery storage will help solidify the region's energy security.

ISO New England; VT Department of Public Service; University of Vermont

- Batteries already make up 46% of New England's interconnection queue.
- VT ranks 3rd in the nation in small-scale storage capacity, with firms like Green Mountain Power Corporation leading in direct connected battery storage capacity.
- In 2023, University of Vermont and Vermont Electric Power Company began a five-year partnership to develop the Next-gen Energy Systems Simulation Technology Lab.

Innovative Tech Investment in New England

2024, by state and type



$3.3B in green tech investment in 2024

Clean Investment Monitor

Compete. Council on Competitiveness

$ NEW ENGLAND: INVESTMENT

New England has strong R&D spending, with a majority concentrated in Massachusetts.

National Center for Science and Engineering Statistics

- Annual R&D spending in New England totals an estimated $84 billion, $63 billion of that in MA alone. MA ranks 2nd in the nation for R&D funding and 1st for R&D intensity.
- New England has the second most patents per capita of any region, behind only the Pacific region. Across the region, four of the states (MA, CT, NH, and VT) rank within the top 11 patent-producing states per capita.

Massachusetts is a national leader in venture capital, supporting its leading start-up ecosystem.

Pitchbook

- Massachusetts has the third highest amount of venture capital funding in the nation and ranks first for venture capital as a share of GDP.

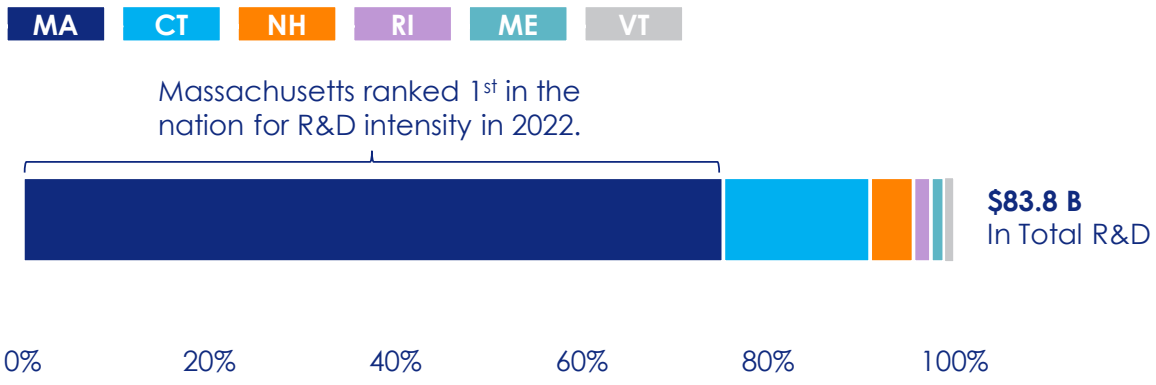
Major private investments are ongoing into advanced manufacturing and biomanufacturing.

FiercePharma; Burlington Free Press

- Continuus Pharmaceuticals recently announced a $125 investment into a new manufacturing facility in Woburn, MA. This stems from a $69.3 million federal contract Continuus secured with aims to reinvigorate the industry's domestic supply chain.
- GlobalFoundries was recently awarded $1.5B through the CHIPS and Science Act to expand domestic production of computer chips in Vermont.

Share of Research & Development Performance by State

2022



National Center for Science and Engineering Statistics

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NEW ENGLAND: PARTNERSHIPS

Public-private partnerships are driving collaboration, distributing resources, and accelerating innovation across the blue economy.

The Ocean Foundation; MITRE

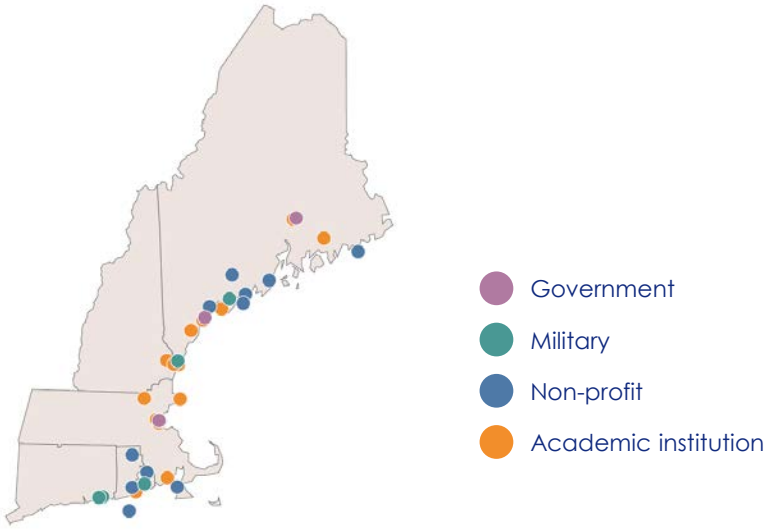
- There are 4 blue tech clusters in New England (Boston, New Bedford, New London, and Portland). These innovation hubs connect academic institutions, industry, and government stakeholders across the region.
- MITRE's BlueNERVE Network connects maritime researchers across the country to enable connection between lab equipment, modeling software, tools, and data. The partnership currently connects Woods Hole Oceanographic Institution, UMass Boston, UMass Dartmouth, Northeastern University, Massachusetts Maritime Academy, Tufts University, Mass Challenge, University of Rhode Island, and Naval Undersea Warfare Division Newport.

Academic initiatives are ongoing region-wide to accelerate innovation within green technology.

Western New England University; University of Vermont

- Western New England University's engineering program provides students with an emphasis on "green engineering," filling skills gaps and workforce needs.
- University of Vermont is home to Energyshed, an energy project that partners with the Department of Energy to explore place-based energy generation.

Blue Economy Resource Map
2024



SeaAhead

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NEW ENGLAND: WORKFORCE

New England houses several world-leading higher education institutions that bolster its economy and workforce.

New England Council

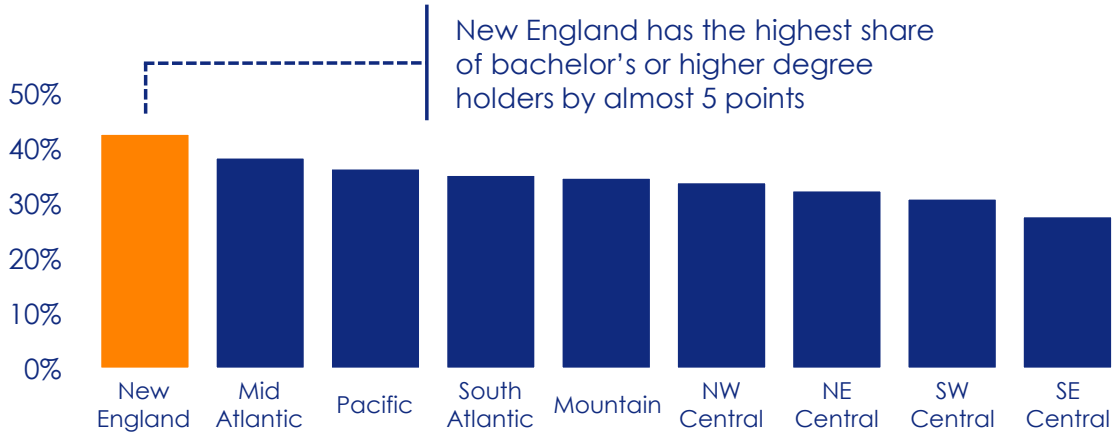
- New England is home to 321 post-secondary educational institutions, including many of the world's leading research universities.
- Higher education in New England generates an estimated $26.5B in economic impact and over 560,000 jobs annually. In MA alone, higher education generated a $15.6B economic impact and over 300,000 jobs each year.

New England boasts the nation's most highly educated workforce, with concentrations of highly educated STEM workers.

US Census Bureau, National Science Board

- 43% of the population aged 25+ has a bachelor's degree or higher, almost 5 percentage points higher than the second-highest region (Middle Atlantic).
- Nearly 19% of the population aged 25+ has a graduate or professional degree, the highest share of any region and over 5 percentage points greater than the national rate.
- As of 2021, MA held the highest share of workers with a bachelor's degree or higher in STEM occupations, as a share of total workforce, with NH, VT, and CT also cracking the top 15. At the same time, MA ranked 48th in its share of workers in the Skilled Technical Workforce (STEM workers without bachelor's), with other New England states near the bottom, suggesting that highly educated STEM workers may replace rather than complement Skilled Technical Workers.

Share of 25+ Population with Bachelor's Degree or Higher by Region
2023



US Census Bureau, American Community Survey

Compete. Council on Competitiveness

NEW ENGLAND: WORKFORCE

Net domestic emigration is contributing to slow population growth in region and threatening the future of the workforce.

US Census Bureau, University of Arizona, Boston University

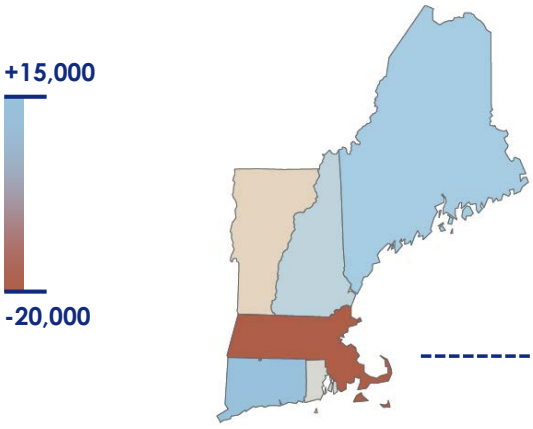
- Since 2020, New England's population growth has slightly lagged the national rate (2.2% vs. 2.6%). In that time, New England has relied on international migration (+400k) to mitigate domestic migration loss (-100k).
- The trend is slightly better for people aged 25+ with at least a bachelor's degree, with the region as a whole gaining 3,000 workers in 2022. However. MA lost 20,000 of these workers in 2022, and despite strong international immigration, MA's total civilian labor force declined by almost 100,000 from 2018-2023.
- Three dominant drivers have encouraged MA residents to out-migrate: housing costs, income taxes, and healthcare costs. Young people, not retirees, are driving MA's out-migration trends.

Despite these trends, the region must continue to expand its workforce, especially in emerging sectors like clean energy.

MA Clean Energy Center, VT Department of Public Service, NOAA

- In MA alone, an estimated 77,000 additional FTE workers will be required by 2050 to meet emissions reduction targets. Even in states like VT, which leads the nation in clean energy jobs per capita at 6%, workforce needs are growing rapidly.
- Programs like the Greater Boston Coastal Resilience Jobs Alliance, one of nine Climate-Ready Workforce Initiatives funded by NOAA, will be critical to filling gaps.

Net Domestic Miaration. 25+ Population with Bachelor's Degree or Higher
2022



MA: -19,961

Rest of Region: +23,309

Net domestic migration of 25+ year olds with a bachelor's or higher

MA was the only state with significant population outflow, ranking 4th in the nation.

US Census Bureau, analysis by University of Arizona

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NEW ENGLAND: INFRASTRUCTURE

High costs of living are impacting innovation in the region.

Federal Reserve Bank of Boston; Joint Center for Housing Studies of Harvard University; Boston Globe

- From 2016 to 2024, the average value of a single-family home has spiked across New England, more than doubling in two states: CT (+69%), ME (+102%), MA (+74%), NH (+102%), RI (+89%), VT(+67%).
- Across almost all metro areas in the region, the annual income required to afford the median priced home exceeds $100,000.
- In a survey focused on business conditions, more than 50% of surveyed MA businesses pointed to an inability to have workers relocate to the state as their largest recruiting hurdle. Over 80% of businesses said the high cost of living affects their decisions about whether to grow their presence in the state.

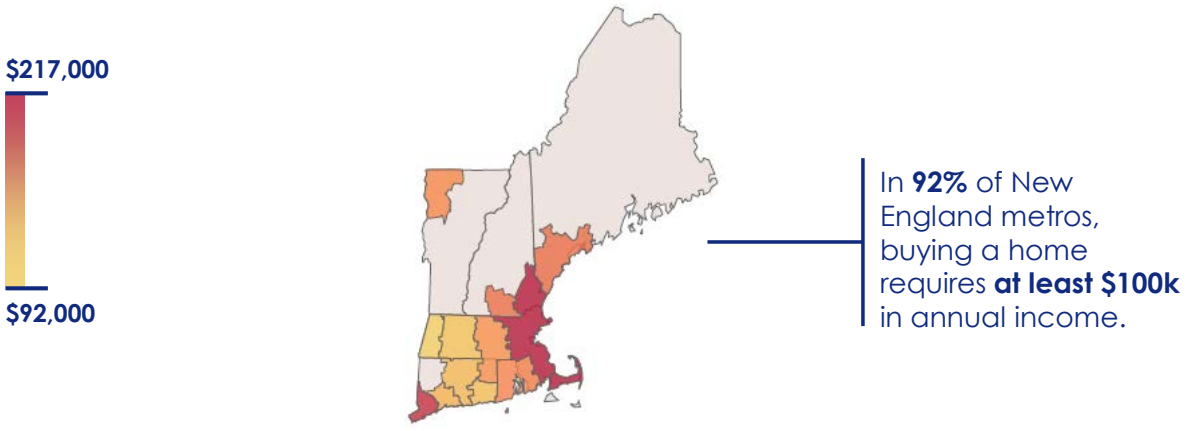
Demands on New England's transmission infrastructure and energy grid are growing.

Clean Air Task Force; ISO New England; Boston Globe

- To meet growing energy demands, the region will need to more than triple its regional electric generation capacity by adding over 100GW of clean energy resources.
- Projections estimate the region's electric grid could require up to $1 billion in annual transmission investments through 2050 to support a clean energy transition.
- An over $3 billion data center project is beginning construction in Westfield, MA, with experts anticipating more construction announcements as AI power needs grow.

Annual Income Required to Afford Median Priced Home

2024



Joint Center for Housing Studies of Harvard University

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Welcome

The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

Dr. Sunil Kumar
President, Tufts University

Session Overview

Opening the New England Competitiveness Conversation, Conversation Co-hosts Tufts University President Sunil Kumar and Council on Competitiveness President and CEO Deborah Wince-Smith asked why a Conversation diving into the competitiveness of New England's blue and green economies was so important to have in this moment in time, and laid out the critical history, facts, and figures that would underpin the next two days of crucial discussions.

Key Discussion Points

Kicking off the New England Competitiveness Conversation at the Joyce Cummings Center on the campus of Tufts University, **Tufts University President Sunil Kumar** paid heed to Bill Cummings, husband of the Center's namesake. Cummings grew up less than a mile from the site of the center that would one day bear his family name, a childhood marked by poverty. But, after graduating from Tufts University with a degree in economics, he found incredible success in business. Kumar pointed to Cummings's example as proof that the American Dream is far from dead. Now more than ever, leaders have a chance and responsibility to amplify the idea that hard work and a good education can lead to success.

Council on Competitiveness President and CEO Deborah L. Wince-Smith, after thanking the event hosts and Council members who made the Conversation possible, shared some of the Council's history and mission. Founded in 1986 by the "Dean" of American CEOs, John Young of Hewlett Packard, the Council is a movement comprised of CEOs, university presidents, labor leaders, and the directors of America's major

"The American Dream is taking a university degree and using it to not just do well, but do good in your community. When we think about American competitiveness, that is one edge we cannot forget."

Dr. Sunil Kumar
President, Tufts University

Department of Energy national laboratories, and committed to fulfilling Young's vision of a private sector, nonpartisan leadership organization focused on American competitiveness. The Council has had a tremendous impact over the years, including designing and executing the first "clusters of innovation" studies and summits in the 1990s, as well as convening the first National Innovation Summit at MIT in 1998. The work and effort and initatives that flowed from these efforts—including the pathbreaking "Innovate America" initiative at the heart of the America Competes Act—all combined and thrust place-making innovation into the nation's and the world's policy spotlight.

The Council's current flagship initiative, the National Commission on Innovation and Competitiveness Frontiers, stood up in response to two mega-trends defining the modern era. First, emerging and converging technological revolutions—AI, biotechnology, quantum, and more—are reshaping the global innovation and productivity landscape. They are also up-ending concepts of 21st century economic and national security. Second, following the end of the Cold War, a new global competition has emerged between democracy and autocracy, with the United States and China engaging as the world's key flashpoints in a wide-ranging global competition. China is laser-focused on advancing science and technology as a means of expanding national power, co-opting, in many ways, the United States's own innovation model to do so. China's model of civil-military fusion means that, as its technology advances, each new capability will be deployed across economic and security domains to increase state power. As President Xi has declared, "Whoever controls AI will control the world."

In response to these challenges, the Commission released in 2020 *Competing in the Next Economy*, including recommendations that considerably shaped President Biden's innovation agenda. In December 2024, the Commission released an updated report, *Competing in the Next Economy: Innovating in the Age of Disruption and Discontinuity*—laying out 50+ strategic recommendations for the incoming President Trump administration, Congress, and regional leaders. Both these reports lay out an ambitious goal: increasing tenfold—10x—the number of innovations developed in the United States; the speed of innovation; and the number of Americans engaged in the innovation economy.

"From the day the Pilgrims landed at Plymouth Rock, on December 21st, 1620, New England's Blue and Green economies were in the making."

The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

A key finding of the Commission has been uncovering the deep dangers associated with the hyper-concentration of the country's innovation assets in just a handful of areas. For the United States to achieve the 10x goals, we need new innovation ecosystems emerging and engaging across the full breadth of the United States's geography and demography. To that end, the Commission launched the **Competitiveness Conversations Across America**—a series of regional summits highlighting the emerging innovation ecosystems across the country and highlighting the next and best practices they are using to succeed.

Looking back four centuries, Wince-Smith noted that New England's blue and green economies were in the making from the moment the Pilgrims set foot on Plymouth Rock. From the clipper ships that brought the wealth of the whole world to the port of Salem, to the construction of the world's most advanced ships in U.S. Navy shipyards, New England has been the home of the U.S. maritime industry. The nation's blue and green economies could hardly ask for more fertile soil; in 2022, the region saw $84 billion invested in research and development, and New England as a whole ranks only behind the Pacific Northwest in patents per capita by region. This potential is nationally recognized and leveraged. For example, the region hosts four Economic Development Administration Tech Hubs designated in the region with focuses as varied as novel semiconductor designs to uses for wood products.

However, challenges remain. Workforce growth as a whole has been slower in the region than the national average, with any growth largely driven by immigrants who have not yet been fully integrated into the innovation economy. The region will need $1 billion a year for energy upgrades, despite lower demand projections than the rest of the country. And a high cost of living and less business-friendly environment are factors driving entrepreneurs to other regions of the country.

PANEL

Putting Competitiveness in Context: Challenges and Opportunities

PANELISTS

Dr. Melissa Gilliam
President, Boston University

Dr. David A. Greene
President, Colby College

Moderator: The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

Dr. Robert Johnson
President, Western New England University

Dr. Marlene Tromp
President Designate, University of Vermont

Session Overview

New England is one of the nation's most important centers of education, research, high technology, and finance—with reach across many industries. This panel discussed and connected two emergent and convergent domains: tech-based innovation across the blue and green economies. Panelists put into context the role each domain will play in advancing the region's long-term innovation capacity and capability, economic and productivity growth, and inclusive prosperity. At the same time, leaders highlighted the best and next practices for New England and the United States.

Key Session Insights

Opening the first panel of the New England Competitiveness Conversation, **Council on Competitiveness President and CEO Deborah L. Wince-Smith** asked her fellow panelists a deceptively simple question: How do you define place-making innovation? For **Colby College President David A. Greene**, the first component was obvious: attracting talent. Having come to Maine from Chicago, he had transitioned from a place with one of the largest workforces in the country to one of the smallest. Dr. Greene was clear that demographics spelled trouble for New England; five of the top ten oldest states are in New England, as are five of the top six with the lowest birthrate. Bringing in young workers to New England is an existential problem for the region's economy.

In order to help jump-start innovation in the state's more rural areas, Dr. Greene has led a $52 million reinvestment project in Colby College's hometown of Waterville, a former mill town which has experienced a multi-decadal trend of disinvestment and population decline tied to the milling industry's downturn. However, a more recent strategy of investing in arts, in a new innovation center, and in other downtown amenities have provided a sense of vibrancy to the community. And more recently, Waterville has made concrete steps toward reversing its decline, boasting the development and deployment of 50 startups, along with a doubling of its tax base over the past decade. This sort of local place-making is not just vital for city budgets or cutting-edge startups; legacy industries need it to prosper as well. One community center in Waterville had to be built with imported wood—despite Maine being the nation's

"It is absolutely critical to make sure we are bringing in younger workers. If there are not opportunities for them, you are going to see the oldest region of the country, with the lowest fertility rate, a region that has driven change for a long time simply fall off the map."

Dr. David A Greene
President, Colby College

"If you do not understand that your work will become obsolete, you will become obsolete."

Dr. Robert Johnson
President, Western New England University

"What happens in the City of Boston affects what happens at Boston University. Their success is our success. We are a global institution, but our challenge is to stay locally responsible."

Dr. Melissa Gilliam
President, Boston University

most forested state, and forestry being a longtime mainstay of the state's economy. But without a thriving local economies and ecosystems, these industries wither.

Workforce concerns also loomed large for **Western New England University President Robert Johnson**, who, like his peers, is confronting the challenge of training students for successful careers in a rapidly evolving technological environment. A graduate today will, according to him, have up to 17 jobs across the span of their career—and many of these jobs do not yet exist. How can educators prepare and train students in an environment characterized by so much uncertainty and technological discontinuity? For Dr. Johnson, the answer is ensuring students possess a set of essential skills that differentiate them in the marketplace and that, increasingly, AI cannot replicate. Above all, this skillset must include the ability to "learn, unlearn, and relearn" ad infinitum as workplace needs shift over time. This way, his students are not only ready for the new jobs that emerge in the marketplace, but they are also ready to create the new jobs. Looking back on his own upbringing, Dr. Johnson noted how he was always told he had the power to make a difference in the world. He insists leaders today need to instill that same belief in new graduates.

Boston University President Melissa Gilliam shared her belief that greater emphasis is needed on local "social determinants of health" that have an outsized impact on an individual's quality of life and their ability to participate in the innovation economy. President Gilliam explained how addressing issues like ensuring patient care for vulnerable populations, addressing health inequities, and widening access to health insurance

"University strategic partnerships with industry are critical for place-making innovation. Do we need new models, or do we need to continue to ratchet up what we have been doing?"

The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

"If we can build partnerships out in rural communities, you can not only provide great education, but help these communities thrive."

Dr. Marlene Tromp
President Designate, University of Vermont

is not just a moral imperative. Addressing these issues is critical to community success. She drew a direct line between the success of the City of Boston in confronting these issues and the success of her school to carry out its educational mission, by widening the pool of people able to reach for a college education locally. While Boston University has a global reach through research, staying focused on the school's local community, and providing opportunities to the students in its own neighborhood, is just as crucial to the unviersitiy's long-term advancement.

Having just transitioned from her previous role as the President of Boise State University, **University of Vermont President Designate Marlene Tromp** shared how her experiences leading up to and in Idaho had shaped her overarching perspective on regional and place-making innovation. In particular, Dr. Tromp shared the incredible outcomes for a region that can emanate from thoughtful, strategic partnerships between major, local stakeholders—in the Idaho case, bridging a rich academic environment, with a strong national laboratory presence, with a vibrant, fast growing economy powered by industry (in Idaho's case, the semiconductor industry). And these positive, local and regional place-making outcomes can scale. Today, the greater Boise area and Idaho in general are considered global leaders in advanced semiconductor design and manufacturing—with leaders like President Tromp taking part in and representing not only Idaho but the United States in key international fora, like recent G7 Summits. However, President Tromp focused her opening remarks on the critical partnerships struck and led with rural communities, supporting opportunities for local education. She

signaled how the lessons she learned in Idaho around helping rural students access education at home—rather than facing a move to a more urban area—could be a model for states in New England, like Vermont.

Asked by the Hon. Wince-Smith whether new models of partnership with industry were needed, Dr. Gilliam noted how, during her time at the Ohio State University, she had overseen robust university collaborations with industry. Her focus was dual track: for the students, "who is graduating from our university, and what skills do they need to have? For the faculty, how do you take their innovations and get them out into industry?" Dr. Greene pointed out that in Maine, partnerships with industry was a more difficult proposition simply because there are fewer industrial players with which to partner. His focus is on attracting more industry to his state by both positioning Maine as a lower-cost alternative to other states, and by working with laboratories in the state to create technologies the existing local industries, like shipbuilding, need. Dr. Johnson supported that idea, pointing to a contract his school has to train people in the trades needed for advanced manufacturing, especially in the maritime space. He argued for doing "more of the same," doubling down on New England's legacy industries like shipbuilding and taking advantage of the region's historic strengths.

Dr. Tromp, a Victorianist, drew a parallel between today's emergence of AI and the late 19th century, with technology upending long-established ways of life—sparking pushback. She made clear that universities cannot rely solely on science and engineering to solve problems—the arts, humanities, and social sciences will be critical to helping society as a whole adjust to the new, disruptive technologies—like AI—emerging on the horizon.

Asked to give one final word to encapsulate New England's innovation economy today, and how it needs to evolve, Dr. Tromp chose "re-thinking" as educational models are upset. Dr. Johnson chose "agility" as a call for universities be ready to adapt to changing conditions. Dr. Greene chose "partnerships" as the underlying factor defining regional success, and Dr. Gilliam chose "convergence" to highlight the need for New England to pull together its diverse players into a cohesive, unified innovation ecosystem with a single vision. The Hon. Wince-Smith ended by adding "thriving" to the mix, as the region seeks to boost the prosperity of all its people by expanding the scope of the innovation economy.

PANEL

Continuing Vannevar Bush's Spark of Genius

PANELISTS

The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

Dr. Sunil Kumar
President, Tufts University

Mr. Chad Holliday
Chair, Global Federation of Competitiveness Councils

Chair Emeritus, Council on Competitiveness

Moderator: Mr. Jim Clifton
Chairman, Gallup

Session Overview

U.S. colleges and universities are the lifeblood of the nation's innovation economy—developing the talent, the research, and the pathway to technologies that have differentiated the United States from every other nation over the past 75 years. Born from the vision of Tufts University graduate Vannevar Bush, this science and innovation model has evolved and responded to the challenges and opportunities facing the country for nearly a century. As America approaches its 250th birthday—and the Council its 40th—what role do America's universities play today in driving not only the research at the heart of innovation, but also in seeding the economic development crucial to place-making innovation in an era of disruption and discontinuity? This leadership dialogue explored the issue—and offered ideas to keep the U.S. university and college system strong, relevant, and responsive to the competitiveness realities of today.

Key Session Insights

Gallup Chairman Jim Clifton observed that, while the United States is by many metrics, observations, and outcomes the best country in the world at academic and intellectual development, it has perhaps too often left entrepreneurial and commercial success too much up to chance. He cited the example of a mathematics savant with a communications disability who, in spite of his challenges, was given the resources and opportunities needed to make major contributions to his field; Mr. Clifton asked if, had the man been an entrepreneurial genius rather than a mathematical one, would he have been afforded the same attention and opportunities for development? In his view, the answer was a resounding "no." While the United States can pluck brilliant academics from obscurity and aggressively invest in them, doing the same for entrepreneurs is far less certain.

"I get concerned that the United States is the best in the world at intellectual development, but we have left too much of the entrepreneurship and commercial side of things to up to random chance."

Mr. Jim Clifton
Chairman, Gallup

Mr. Clifton offered three quantifiable metrics to measure the innovation economy. The first was the "Money Economy"- global GDP distribution. The United States holds about 29 percent of global GDP, while China and Europe each hold another 18 percent. While the United States remains the clear leader, many believe that China is the largest, which Clifton noted as a failure of education. The global economy stands at $100 trillion today and is expected to reach $200 trillion within a generation; Mr. Clifton made it clear that whichever country generates that "next" $100 trillion will win the future.

The second metric is the "Entrepreneurial Economy," which Mr. Clifton defined as the number of unicorns—startups valued over $1 billion—per

"Our higher education institutions fulfill a critical role in our entrepreneurial endeavors: Universities are a safe place for failure to occur."

Dr. Sunil Kumar
President, Tufts University

country. The U.S. lead here is even wider, with 729 unicorns—51.4 percent of the global total—compared to second-place China's count of 313. Mr. Clifton called for the United States to double down on this advantage as one of the best ways to "win" the future. He also noted the lack of unicorns emerging from wealthy Middle Eastern countries—arguing money alone cannot produce unicorns. Unicorns need an integrated innovation economy, not just investment, to flourish.

Mr. Clifton's final metric was the "Emotional Economy," defined as whether workers are "engaged" in their jobs—on a scale of 0 to 100 percent engagement. The United States ranges in the low-to-mid thirties of workers expressing themselves as fully engaged with their jobs, while China approaches 20 percent and Europe remains stuck closer to 13 percent. This gap in enthusiasm for work points to a U.S. workforce that is better able to "push the envelope" of new ideas in the workplace.

One fact on which all the panelists agreed: the U.S. research university system underpins all of these positive metrics for the United States. **Council on Competitiveness Chair Emeritus Chad Holliday** relayed a story from his service as DuPont Chair and CEO, when a highly prolific patenter and scientist in the company complained that he could not secure permission to work on a set of novel catalysts that were not core to the company's business direction. Holliday recalled sharing with the scientist that others would take care of such work. But Holliday also shared having to take a pause and reflect deeply when the scientist asked him what would happen if universities were suddenly not there or not funded to do such work. This reinforced for Holliday the absolute criticality of university funded and performed basic research to the U.S. economy.

Tufts University President Sunil Kumar echoed this sentiment, lauding universities' capabilities to filter radical new ideas through many people, creating breakthroughs where otherwise there would have only been marginal improvement. He also highlighted the important role universities play in developing the next generation of innovators—as well as a "safe place to fail," teaching them three critical lessons: how to turn basic research into a useful product, how to fail quickly, and how to pick up and move on after a failure.

In addition to teaching the capacity to fail, **Council on Competitiveness CEO Deborah L. Wince-Smith** contended a higher level role for universities: to empower and nuture student imagination. She separated imagination, the ability to create a whole new idea, from creativity, turning new ideas into reality, calling the former the "highest human discipline."

“Imagination flourishes in a university environment; we have to cherish that.”

The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

But universities are facing unprecedented public relations challenges; Mr. Clifton, a longtime pollster, suggested that a 10-percentage point drop in public approval is what he considers “bad.” Universities, by comparison, have seen a 30-point drop in the previous decade; according to Mr. Clifton, that qualifies as “disastrous.” Dr. Kumar pointed to messaging problems from universities as the culprit; contending universities have not done a good enough job explaining how their work benefits everyone. Instead, universities and their messaging and engagement with broader society have often been exclusionary. Dr. Kumar specifically called out the perverse pride taken by many universities at how many students they reject as an abysmal strategy. Instead, universities should focus on the real good they do in their communities; it was unsurprising to Dr. Kumar that Tufts’s veterinary school was the most well-liked part of the university, because that is a part of the university the community most often engages and sees as a benefit.

“At DuPont, communities often did not like us—until they came in and met us. If universities bring the community in and let them see what they are doing, it will help them immensely.”

Mr. Chad Holliday
Chair, Global Federation of Competitiveness Councils
Chair Emeritus, Council on Competitiveness

Mr. Clifton pointed out how, even with good intent, messaging is often obscured, not well known, and not well shared. For example, upon learning a colleague was assuming the presidency of the University of California System, Clifton discovered the System’s mission statement was not what he thought it might be. He was surprised it is “to be an engine for economic growth and jobs for the state of California.” He rhetorically asked his fellow panelists and Conversation participants how much more support would university systems receive if purpose like that was better known?

Mr. Holliday echoed the point about greater focus on community good, noting how DuPont's refineries garnered greater local support and trust when safety officers began regularly engaging with members of the community, on a one-on-one basis. He added universities could also revive their public image by focusing more on the community and society-enhancing innovations that come from them. DNA analysis, MRIs, radar, computers, web browsers, lasers, and synthetic insulin all came out of university labs, and all tangibly benefit ordinary citizens.

To combat a perception of political bias, the Hon. Wince-Smith concluded by asking why so many universities had been reticent to sign onto the "Chicago Principles" of free speech and expression. Dr. Kumar noted that, while more than 100 schools had created their own version of the statement, including Tufts, this particular wheel keeps getting reinvented as each school wants to put their own spin on it. However, the ideas in the statement are spreading.

Dinner Keynote from Secretary Rebecca Tepper

The Hon. Rebecca Tepper
Secretary of Energy and Environmental Affairs, Commonwealth of Massachusetts

Key Session Insights

According to Massachusetts Secretary of Energy and Environmental Affairs Rebecca Tepper, Massachusetts Governor Maura Healey has set the goal of making Massachusetts the leader in climate tech. One important step to doing so is the Mass Leads Act, which is increasing investment in the state's Clean Energy Center and marrying climate and energy strategies to economic development is crucial. However, while Massachusetts is first in climate tech startups per capita and third for total climate patents, the state struggles to retain startups after developing and nurturing them in their early stages, as startups leave to find both greater affordability and regulatory certainty. This presents an opportunity for Massachusetts: to work to bring the cost of living down, as well as to create a stable regulatory environment that supports business.

As the "Bay State," Massachusetts has a deep connection to its maritime industries, and "blue-tech" employs 85,000 people in the state. While sustainable fisheries and transportation are critical to the New England blue economy, Secretary Tepper was especially focused on the future of New England's bourgeoning offshore wind industry. Despite current national political policy towards offshore wind, she expects the industry to grow in New England, with Massachusetts best positioned to benefit.

Beyond economic growth, Massachusetts is also committed to ensuring the state's future resilience in the face of environmental threats. In the past year, the ResilientCoasts Initiative, formed with the state, municipalities, businesses, and citizens, was created to protect coastal communities from the threat of more powerful storms and coastline erosion. Another innovative program the state launched seeks to restore salt marshes as carbon sinks.

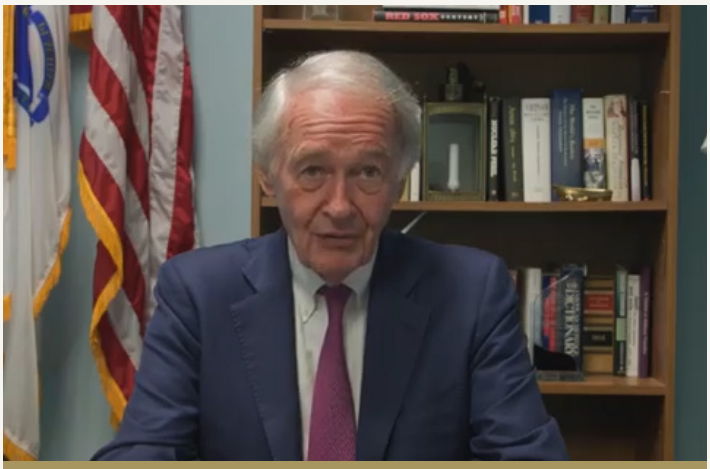
> “Marrying economic development with our climate and energy strategies can create jobs and the innovation we need to address our energy and climate challenges.”
>
> **The Hon. Rebecca Tepper**
> Secretary of Energy and Environmental Affairs, Commonwealth of Massachusetts

Secretary Tepper then turned to a critical input for the states’ innovation ecosystem: affordable energy, especially in the face of rising demand from electrification and data center expansion. To protect the state from global energy price fluctuations, Massachusetts is working to build an independent energy system, but Secretary Tepper stressed this would require exploring an “all of the above” energy strategy. With offshore wind facing long build times and policy headwinds, Secretary Tepper pointed to solar as the cheapest form of electricity that could be built quickly and suggested greater energy cooperation with places as far as Canada could provide accelerated paths to reliable energy.

However, any new energy buildout and any expansion of the New England innovation economy will rely on a skilled workforce, which is a challenge for the region. Massachusetts alone needs 34,000 new clean energy workers, which starts with exciting students about STEM fields and trades, like electrical engineering, which makes the clean economy possible.

To conclude, Secretary Tepper had the honor of introducing United States Senator from Massachusetts Edward Markey, appearing via video.

Dinner Remarks—Senator Edward Markey



The Hon. Edward Markey
United States Senator from Massachusetts

Key Session Insights

The United States Senator from Massachusetts, Edward Markey, began by thanking the Conversation hosts and their teams for organizing the New England edition of the Competitiveness Conversations Across America series at Tufts University. He praised New England's long-standing reputation as a hub for transformative ideas that change the world. Senator Markey then highlighted the region's leadership in building a more affordable, sustainable, and resilient future—pioneering technologies to sustainably harness ocean resources and leading the deployment of green energy solutions like wind and solar. He concluded with an optimistic note, expressing enthusiasm for the new partnerships and innovative ideas that will emerge from this vital gathering of leaders, and noting the important role they would have for the region's growing role as an innovation pacesetter.


Colby

Conversation Day 2 Welcome Address

Dr. Sunil Kumar
President, Tufts University

> "The Blue and Green economies have strong positive externalities for society; you cannot rely solely on the market to develop them."
>
> **Dr. Sunil Kumar**
> President, Tufts University

Key Discussion Points

On the second day of the New England Competitiveness Conversation, Tufts University President Sunil Kumar articulated the theoretical foundation for the event's importance: the great need for collaboration among industry, government, and academia to foster innovation. For him, the answer lay in the work of Stanford Economists and Nobel Prize Laureate Kenneth Arrow, and his work answering the question of why the "invisible hand" of the market fails to achieve socially optimal outcomes. Innovation is a positive externality—the benefit society reaps from an innovation is far greater than the benefit the innovator directly obtains, so investment in innovation is lower than it should be to produce the best possible outcome.

Kumar highlighted that this inefficiency is especially pronounced in the blue and green economies, where societal gains significantly outweigh the rewards for developers. He called on government and academia to actively promote greater investment in these sectors. Concluding his remarks, Kumar expressed hope that the connections forged during the Conversation would catalyze increased investment in blue and green technologies, ultimately delivering greater value to all of society.

PANEL

Developing the Pillars of the New England Innovation Ecosystem

PANELISTS

Ms. Donna Hazard,
Managing Director, Investments, SeaAhead

Dr. Dennis McGillicuddy
Senior Scientist and Chief Science Officer, Ocean and Government Affairs, Woods Hole Oceanographic Institution

Dr. Keoki Jackson
Senior Vice President, The MITRE Corporation

Dr. Beth Orcutt
Vice President, Research, Bigelow Laboratory for Ocean Sciences

Moderator: Dr. Denise Bruesewitz
Provost Designate and Professor of Environmental Studies, Colby College

Session Overview

Leaders from industry, academia, national laboratories, labor, and government discussed the opportunities for New England to set the national and global pace in the blue and green economies. The discussion focused on pillars of the region's innovation economy, including talent, technology, investment, infrastructure, partnerships, and policy underpinning New England's competitiveness and future success.

Key Session Insights

New England's innovation economy holds significant promise at the intersection of the blue and green economies—sectors with deep roots in the region and growing potential when combined. Colby College Provost Designate and Professor of Environmental Studies Denise Bruesewitz kicked off the leadership session by identifying this convergence as a catalyst for remaking the region's economic future. She pointed to the MARIA project at Bigelow Laboratories as a model, where researchers, businesses, and academic partners work together to reduce methane emissions by supplementing livestock feed with farmed marine algae and seaweed as an example of how this is unfurling in real time.

Bigelow Laboratory for Ocean Sciences Vice President for Research Beth Orcutt built on the power of aquaculture and, in particular, seaweed and algae farming as a regenerative, low-impact alternative for dairy feedstocks that requires no land or fertilizer. Orcutt noted, however, that the sector faces serious constraints, particularly in permitting and market development. She called on scientists and entrepreneurs to engage more actively with policymakers and investors to remove these barriers and scale sustainable marine solutions throughout the region.

"How do we widen the lens of Boston and Cambridge out to a regional scale?"

Dr. Denise Bruesewitz
Provost Designate and Professor of Environmental Studies, Colby College

Unlocking the potential of the intersection of the blue and green economies also requires a strong educational foundation and retention of homegrown talent. Higher education institutions across New England provide critical infrastructure for this transformation. Bruesewitz described how Colby College integrates a residential liberal arts experience with rigorous STEM training and entrepreneurship through partnerships with institutions like Bigelow Laboratories. This combination, she said, helps prepare students for innovation careers and creates incentives for them to remain in the region—offering a potential solution to the talent drain flagged by other speakers throughout the Competitiveness Conversation.

To fully capitalize on these educational and scientific assets, the region must align its investments with technologies that cut across sectors. Rather than picking winners among food, energy, or defense, regional stakeholders should prioritize

"[New England] is great at tinkering and coming up with new ideas, but then we need to scale it. What industries can our various states attract?"

Dr. Beth Orcutt
Vice President, Research
Bigelow Laboratory for Ocean Sciences

cross-sector platforms that serve multiple industries. Woods Hole Oceanographic Institution Senior Scientist and Chief Science Officer for Ocean and Government Affairs Dennis McGillicuddy advocated for this approach. He cited marine sensors and underwater vehicles—initially designed for deployment from submarine torpedo tubes—as examples of multi-use technologies that support both military operations and environmental monitoring. He underscored the unique capacity at Woods Hole to rapidly cycle innovations between lab and real-world testing environments and called for stronger links between research institutions and industry to accelerate deployment.

Forging those connections requires a more integrated ecosystem that brings together entrepreneurs, researchers, and investors. SeaAhead

"The observing network that is going to be needed to support the Blue economy is enormous. That investment is going to require partnership between government, industry, and academia to build."

Dr. Dennis McGillicuddy
Senior Scientist and Chief Science Officer, Ocean and Government Affairs, Woods Hole Oceanographic Institution

Managing Director for Investments Donna Hazard reinforced the importance of this integration. Her organization focuses on connecting startups with capital, customers, and research institutions to reduce the risk associated with deploying new marine technologies. She acknowledged that maritime industries tend to resist early-stage innovation due to high operating risks but argued that targeted incubators and public-private partnerships can overcome that hesitancy by reducing uncertainty. Hazard described SeaAhead's role as providing the "connective tissue" needed to move technology from concept to pilot to market.

This need for derisking extends beyond bluetech into a broader national security context. MITRE Corporation's approach offers a model for speeding up the commercialization of dual-use technologies. Senior Vice President Keoki Jackson explained that MITRE operates at the intersection of government, industry, and academia to address both economic and national security challenges. Over the past year, MITRE hosted eight partners at its New England bluetech facilities—including federal agencies, startups, and universities—to advance deployable technologies. Jackson framed this work as urgent and strategic, noting, "the United States is not just facing competition in the air, sea, space, and cyberspace domains; they are being actively contested by China." He cited the cutting of undersea internet cables—six times in one year—as evidence of mounting threats and argued that moving technology swiftly from research to mission-critical use must become a central policy priority.

"We talk about global strategic contestation; it is not just competition, the United States is contested across domains."

Dr. Keoki Jackson
Senior Vice President, The MITRE Corporation

Access to capital remains a major constraint in this effort. Hazard pointed out that bluetech startups often struggle to secure early-stage funding because of long development timelines and a lack of investor familiarity with the sector. She called for increased education among capital providers in hopes of generating a greater supply of "patient capital" willing to support technologies over multi-year horizons. She also identified programs like Massachusetts' lab-use subsidies as effective mechanisms to reduce financial barriers. Jackson added that funding sources aligned with national security, including the Defense Innovation Unit and NATO's Defense Innovation Accelerator for the North Atlantic, represent promising avenues for supporting dual-use technologies emerging from the bluetech ecosystem.

These investments are already beginning to produce measurable benefits. McGillicuddy described the emergence of ocean observation systems that mirror the sophistication of atmospheric weather models, enabling real-time tracking of currents, marine life, and environmental trends. When combined with artificial intelligence, these systems can generate new insights with broad implications. For instance, scientists recently uncovered a connection between salinity in the eastern tropical Atlantic and rainfall in the U.S. Midwest—an insight that would not have been possible without integrated data monitoring and advanced analytics. Orcutt identified this convergence of environmental data and machine learning as a strategic leadership opportunity for New England in the years ahead.

The discussion closed with a call for stronger regional collaboration. Hazard urged participants and stakeholders to actively build individual relationships across institutions and sectors, arguing that these connections form the foundation for the larger-scale collaborations needed to advance innovation. Strengthening those ties will be essential to realizing the full promise of New England's blue and green innovation economy.

"If we are all familiar with what each other's organizations can do, innovation can go much faster, and with much less risk."

Ms. Donna Hazard
Managing Director, Investments, SeaAhead

PANEL

Leadership Perspectives on the Future of Energy Security, Innovation, Growth, and Global Impact

PANELISTS

Mr. Chad Holliday
Chair, Global Federation of Competitiveness Councils;
Chair Emeritus, Council on Competitiveness

Dr. Emily Reichert
CEO, Massachusetts Clean Energy Center

Moderator: Dr. Reginald Brothers
Operating Partner, AE Industrial

Key Session Insights

AE Industrial Operating Partner Reginald Brothers opened the conversation by invoking the "Hargam Catechism," a three-part framework for evaluating innovation: What is the problem? How is it being solved today? And how should we solve it? Framing the discussion this way, Dr. Brothers asked Council on Competitiveness Chair Emeritus Chad Holliday to share his perspective on the future of U.S. energy security.

Drawing on his experience as former Chair of Shell, Holliday described how Shell regularly produces comprehensive energy scenarios that explore potential global energy futures. The company's latest report, "The 2025 Energy Security Scenarios: Energy and Artificial Intelligence," centered on AI's growing influence in the energy sector and marked the first time Shell used the word "security" in the title—highlighting the rising importance of energy as a national security issue.

Holliday outlined two key takeaways from Shell's scenarios. First, AI will dramatically increase energy demand while also expanding the availability of clean energy. Second, the power grid will become more modular, regional, and distributed, moving away from large, centralized power plants. As energy systems evolve, he noted that the mix of sources has broadened significantly, with alternatives like biofuels and hydrogen gain-

"I worry about threats to the whole energy system, ever from actors who are not sophisticated. We are going to have to think about energy security differently, especially during the transport phase."

Mr. Chad Holliday
Chair, Global Federation of Competitiveness Councils
Chair Emeritus, Council on Competitiveness

ing traction alongside traditional fossil fuels. He also explained that Shell's 2025 scenario predicted global CO2 emissions would peak within the next decade—the earliest peak ever projected by the company. However, he cautioned that this transformation introduces vulnerabilities. LNG infrastructure has proven fragile in wartime, as seen in Ukraine, and increasingly vulnerable to piracy. In response, more communities are seeking local control over energy to mitigate risks tied to global disruptions.

To accelerate the investment needed to reorient the energy system, Holliday described a Shell-led exercise where participants assumed roles from across the energy ecosystem—industry, NGOs,

"How can government and business work better together? Simple: listen to each other."

Dr. Emily Reichert
CEO, Massachusetts Clean Energy Center

and government. The takeaway: government, burdened by its broad accountability, faces the hardest job.

Massachusetts Clean Energy Center CEO Emily Reichert agreed, arguing that companies must understand the constraints and responsibilities government operates under to build more effective partnerships. At the same time, she said, government must recognize that businesses prioritize financial outcomes. Massachusetts Governor Maura Healey's administration has hosted stakeholder convenings, bringing together entrepreneurs, NGOs, and large energy firms under the premise that meaningful progress requires inclusive dialogue across interests.

This convening mindset also shapes internal government efforts. Governor Healey's "whole-of-government" strategy led to the appointment of the nation's first statewide climate innovation and resilience officer, whose inaugural 39 recommendations focused on inter-agency collabo-

ration. Reichert made the point that successful internal coordination makes it easier to generate cross-government support for policy solutions. She also urged policymakers to publicize outcomes more effectively, warning that without proof of success, other governments are unlikely to replicate even the most promising innovation-focused policies.

Despite the momentum, systemic change remains difficult. Holliday reflected on his time at DuPont, explaining that many innovation failures stemmed not from the technologies themselves but from how organizations approached them. To counter internal resistance, DuPont deployed "opportunity brokers"—often outside consultants empowered to bridge departments and drive the adoption of new technologies.

Reichert noted a similar challenge during her tenure at Greentown Labs, where startups frequently encountered the "not invented here" mentality when looking to scale their innovations. She found that having an "internal champion" within a company to help onboard a startup—often someone recently hired from outside the company—greatly increased a startup's odds of breaking through and forming a lasting corporate partnership.

The panel turned to the challenge of helping early-stage climate technologies grow and scale, particularly in New England. Reichert highlighted the region's strong research and startup ecosystems but warned of a persistent "valley of death" where promising technologies fail to mature. Holliday made the point that success depends on aligning innovations with corporate missions and maintaining clear communication throughout. Drawing on his international experience, he contrasted the decision-making approaches of Western and Japanese firms: the former prioritizes financial and technical metrics, while the latter focuses heavily on customer input and need, which is most important. The panel concluded that innovators must stop offering solutions in search of problems and instead tailor their products and services to address specific industry needs.

"How do we develop some national momentum to fund work securing our critical infrastructure? If we do not have critical infrastructure security, all of our work around innovation and sustainability becomes meaningless."

Dr. Reginald Brothers
Operating Partner, AE Industrial

Looking ahead, Reichert raised concern about declining support for basic science. She argued many breakthrough technologies originated in university labs, and renewed investment in basic research is essential to sustain long-term innovation. Brothers identified a more immediate vulnerability: the lack of a national plan for securing critical infrastructure. "Leading in innovation is meaningless if your gains cannot be protected," he warned.

Holliday echoed the need for centralized, strategic planning to identify and protect against critical vulnerabilities. Building on the theme, he shared an anecdote from 9/11, when New Jersey state troopers attempted to guard a DuPont chemical plant but were turned away over the outsized risks of using firearms at a chemical plant—a striking example of poor coordination between government and industry.

In closing, Reichert acknowledged the uncertainty in today's federal policy environment but insisted there's no reason to be pessimistic about climate tech's future. "The industry has gone through many ups and downs and bounced back stronger each time," he said. Holliday concluded by urging action: "The perfect opportunity for innovation partnership is not coming." He challenged participants and the broader innovation community to "just move"—launching ventures and building partnerships now, even in the face of obstacles.

Keynote from Senator Susan Collins—A Message on Innovation from Washington

The Hon. Susan Collins
United States Senator from Maine

Key Session Insights

United States Senator from Maine, Susan Collins, opened her remarks by highlighting the enduring spirit of "Yankee ingenuity"—a hallmark of New England's historic and ongoing contributions to American innovation. Senator Collins noted that the Conversation's focus on the Blue and Green economies reflects a long-standing regional commitment to fostering economic growth while preserving the environment, efforts strengthened by world-class academic institutions

> "Our region is moving forward with an entrepreneurial spirit grounded in respect for nature."
>
> **The Hon. Susan Collins**
> United States Senator from Maine

and the work of leading scientists and researchers. She recalled how Captain John Smith, who named the region "New England" more than 400 years ago, helped set the tone for the region's industrious and resilient character. In her role as Senator, she made clear she is fighting to ensure continued federal support for the science and innovation that power New England's dynamic innovation economy, keeping Smith's vision alive today. Watch her video here:

PANEL

Charting the Course for the Blue Economy—Navigating Innovation Change Waves Across Maritime Industries

PANELISTS

Dr. Rockford Weitz
Professor of Practice and Director of Maritime Studies, The Fletcher School, Tufts University

Ms. Jennifer Downing
Executive Director, New Bedford Ocean Cluster

Mr. Andrew Hargens
Chief Development Officer, Massport

Mr. Steven Fox
Partner, Propeller VC

Mr. Nick Rotker
Chief BlueTech Strategist, Cross-Cutting Director, Advanced Maritime & Acoustic Technologies, The MITRE Corporation

Moderator: Dr. Dan Kuchma
Professor, Civil and Environmental Engineering, Tufts University; Member, MOCEAN

Session Overview

Leading experts from academia, industry, and the scientific community examined the challenges and opportunities at the intersection of maritime shipping and shipbuilding, fishing and aquaculture, coastal tourism, renewable energy, undersea mining, biotechnology, etc. This discussion highlighted the impacts on scientific discovery, innovative place-making, and regional economic development, ultimately creating a vision for greater productivity and prosperity in New England and coastal communities nationwide.

Key Session Insights

Beginning their discussion of the growing blue economy in New England, **Tufts University Professor of Civil and Environmental Engineering Dan Kuchma** noted how, given the diversity of the blue economy, the communities involved in different industries had the potential to pull in different directions, creating conflict. For communities to co-create policies that benefit all and avoid opposition, three foundational questions need to be answered:

1. Why is it critical for the United States to lead the blue economy?
2. What are the challenges and opportunities facing coastal communities?
3. And what needs to be done to address them?

Propeller VC Partner Steven Fox, answering the first question, pointed to a United Nations report from early-2025 that the blue economy would be worth $2.3-$3 trillion by 2030. The United States, he argues, has an outsized advantage in capturing this growth; its offshore energy and aquaculture markets are growing, coastal insurance premiums are driving a multibillion-dollar resilience market, and our ocean defense tech sector is world leading.

"Opposition is often the largest barrier to advancement. In order to keep communities from coming into conflict, technologies and mechanisms for development in the Blue economy must be co-created between them."

Dr. Dan Kuchma
Professor, Civil and Environmental Engineering
Tufts University
Member, MOCEAN

But **New Bedford Ocean Cluster Executive Director Jennifer Downing** cautioned that the United States is behind in investment in the blue economy. For example, Canada's blue economy supercluster has received $2 billion in investment, while the European Union has pledged $3 billion, and China is investing at even higher levels. But the United States does have opportunities to lead.

"Why should we lean into the Blue economy? Because it plays to our strengths as a nation, and our strengths as a region."

Dr. Rockford Weitz
Professor of Practice and Director of Maritime Studies,
The Fletcher School, Tufts University

Bills are before Congress to advance ocean innovation superclusters, and New England in particular has both the history of the maritime industry and the political will around climate tech to lead. Massachusetts and Rhode Island also received an EDA Ocean Tech Hub designation in 2023, making them more competitive to receive federal funding in the future and better able to close existing investment gaps.

Andrew Hargens, Chief Development Officer at the Massachusetts Port Authority, then offered an illuminating perspective on Massport's growing role in advancing New England's blue economy. While widely recognized for managing much of the Commonwealth's transportation infrastructure, Massport is also a major steward of land and assets around Boston Harbor—positioning it as a unique catalyst for economic innovation. In addition to supporting legacy sectors like fishing and maritime shipping, Massport is increasingly focused on unlocking new opportunities tied to emerging technologies, ocean-based industries, and sustainable development, helping to redefine the working waterfront as a 21st-century innovation corridor.

"[New England] has all the pieces—universities, researchers, datasets—to enable ocean autonomy and ocean AI. That is the value proposition for New England to lead the Blue economy."

Mr. Nick Rotker
Chief BlueTech Strategist, Cross-Cutting Director,
Advanced Maritime & Acoustic Technologies,
The MITRE Corporation

Tufts University Professor of Practice and Director of Maritime Studies at the Fletcher School Rockford Weitz reinforced the message

that New England has built-in strengths in the blue economy that are hard to match. Food, energy, and national security, especially shipbuilding, are all areas of legacy strength, and all areas with a strong bipartisan backing for investment. The United States leads in areas critical to the future of the blue economy—from sustainable fishing and aquaculture to offshore wind, clean fossil energy, and shipbuilding—an industry now gaining renewed focus under the current administration's maritime revitalization efforts. **Nick Rotker, Chief BlueTech Strategist at MITRE Corporation,** underscored a key advantage unique to the U.S.: the close proximity of world-class universities and research institutions to rich environmental data repositories, such as those at Woods Hole. By integrating advanced AI capabilities with these data assets, MITRE aims to improve model training and accelerate data-driven insights—amplifying the impact of both scientific research and technological innovation.

Asked about what concerns are facing New England's coastal communities, Mr. Hargens was quick to point to the need to protect physical assets on coastlines from rising sea levels and violent storms. Coordination between agencies and regulatory reform will be crucial to support novel solutions, like seawalls made from living material, and the businesses that create them.

Ms. Downing pointed to the need to keep the seafood industry healthy, as fish stocks have been depleted by overfishing, and regulations to protect them are not nimble enough to keep up with changing conditions. She noted how better data collection—like a project to equip fishing vessels with sensing systems—can make information more readily available, but regulation changes need to accelerate to keep pace. There is also pressure on local seafood processors, many of which lack the resources to compete with global competitors, even in places like New Bedford—the largest fishing port in the country.

"Most industries can adapt to changing conditions—but our regulations are not as nimble. We should be leaning into innovation and technology to make regulatory changes more efficient."

Ms. Jennifer Downing
Executive Director, New Bedford Ocean Cluster

Dr. Weitz was also concerned about the health of the ocean biosphere, citing a "Bermuda Triangle" of physical pollution, human-induced chemical imbalances, and biological disruption from overfishing. However, Mr. Fox touted his venture capital firm's investment into companies looking to solve these issues, be it through reversing acidification, reducing waste in fishing, or building more resilient concretes. While the oceans are under pressure, technologies are being developed to mitigate it, but permitting reform will be crucial for deploying them.

"We have a 'Bermuda triangle' of issues—physical, chemical, and biological—facing the ocean, but we also have talented people across sectors addressing them."

Mr. Steven Fox
Partner, Propeller VC

Mr. Rotker also called for institutions to commit to breaking down silos that prevent cooperation. The MITRE BlueTech Lab has been opened to the outside world, giving space for the testing of autonomous underwater vehicles; finding new ways to bring teams together is necessary to advance blue technology.

Dr. Kuchma then turned to finding the best practices for deploying solutions to bluetech problems. For example, while sticker price is often the biggest determinant for decisions in the energy industry, Europe has transitioned to a model where impacts on marine ecology are considered with similar weight. Should similar practices be implemented here?

"One of the first steps for building innovation is making connections. It is not complicated, but we did not know it needed to be done."

Mr. Andrew Hargens
Chief Development Officer, Massport

One idea shared by Mr. Rotker is to improve data-sharing across New England's laboratories, universities, and research institutions to foster greater cross-organizational understanding and innovation. And Ms. Downing reinforced the need to better support the startup ecosystem—particularly by expanding access to real-world saltwater testing environments. While support organizations exist to help connect startups with industry, many remain underpublicized and underutilized. Mr. Hargens illustrated this challenge by citing a Boston-based seafood-sorting startup that partnered with a firm in Alaska, bypassing nearby processors simply because they weren't part of a connected network. He noted that while Massport could serve as one bridge between innovation and industry, it cannot be the only one.

For Dr. Weitz, the core competitiveness issue in bluetech is not innovation, but scale—and the regulatory hurdles that impede it. He candidly shared that he had advised some startups to go abroad in search of more permissive permitting regimes. In countries like China, Japan, and South Korea—global leaders in shipbuilding—more flexible regulatory frameworks have enabled growth despite higher labor costs. In contrast, the United States, though known for openness, has drifted toward regulatory overreach. Encouragingly, he noted, there is growing bipartisan momentum to reverse that trend.

Asked for their final thoughts, Dr. Weitz was emphatic that the United States had all the pieces to lead the blue economy—it just needs to seize the opportunity. Ms. Downing, meanwhile, pushed for greater federal support for emerging place-based initiatives like the New Bedford Ocean Cluster. Mr. Fox highlighted the upcoming Ocean MBA program from Propellor VC, which is training bluetech founders on strategies for business success.

To wrap, Mr. Hargens and Mr. Rotker pressed Conversation participants to take advantage of the opportunity to reach out to their fellows and form new partnerships, paving the way for future success.

PANEL

Seeding Innovation to Grow New England's Sustainable Technology Industry

PANELISTS

Dr. Meghan McGill
Senior Associate, Breakthrough Energy Ventures

Dr. David Kaplan
Stern Family Endowed Professor of Engineering, Tufts University and Director, Tufts University Center for Cellular Agriculture

Dr. David Julian McClements
Distinguished Professor, University of Massachusetts Amherst

Dr. Rachael Floreani
Associate Professor, Department of Mechanical Engineering, University of Vermont

Ms. Lily Fitzgerald
Director, Center for Advanced Manufacturing, MassTech

Moderator: Dr. Matthew McNulty
Associate Director, Tufts University Center for Cellular Agriculture

"My students thought the same tools we developed for human medical wellbeing could be applied to food tech, and they were absolutely correct."

Dr. David Kaplan
Stern Family Endowed Professor of Engineering, Tufts University
Director, Tufts University Center for Cellular Agriculture

"[University of Massachusetts at Amherst] has been very successful academically in food sciences, but we are not going out and starting businesses. How do we change that culture?"

Dr. David Julian McClements
Distinguished Professor, University of Massachusetts Amherst

Session Overview

How has New England become a hub for sustainable technology, agriculture, forestry, the decarbonization of the building and construction sectors, electric vehicle infrastructure, energy grid modernization, and other rapidly expanding sectors of the green economy? This panel of experienced leaders addressed this question and provided recommendations to unlock and accelerate sustainable tech—ultimately enhancing the region's and nation's economy and resilience.

Key Session Insights

New England is already a global leader in cutting-edge green technologies—including in the rapidly evolving sustainable food sector. With more than 145 foodtech companies employing over 6,000 people and raising $9 billion in capital in the Boston area alone, the region has the foundation to lead the next generation of food innovation.

Matthew McNulty, Director of the Tufts University Center for Cellular Agriculture, expressed confidence that New England is well-positioned to shape the future of lab-grown meat and sustainable food production. He was joined by his colleague Dr. David Kaplan and University of Vermont mechanical engineering professor Dr. Rachael Floreani. Both McNulty and Kaplan began their careers growing tissues for medical applications; however, their students' curiosity—asking why the same technologies could not be

"Engineers make things, so why not make food?"

Dr. Rachael Floreani
Associate Professor, Department of Mechanical Engineering, University of Vermont

used to sustainably grow food —sparked their pivot toward cellular agriculture. The underlying science is fundamentally the same—and it holds transformative potential for the global food system.

Dr. Floreani noted food security is often overlooked as a pillar of national security alongside energy and manufacturing, especially in a region where one in ten people experiences hunger. She and others agreed that lab-grown meat and food-tech innovations offer real promise—but only if students and early-career engineers are inspired to join the field. Dr. David McClements, Distinguished Professor at UMass Amherst, echoed this sentiment. While his institution recently secured a $100 million investment in food science, he stressed the importance of moving innovation beyond the lab and into the market.

But food is just one piece of the sustainability economy. Dr. Meghan McGill, Senior Associate at Breakthrough Energy Ventures, which invests

"We are not asking investors to dip into their philanthropic bucket or invest out of the goodness of their heart. We are saying that these are companies that are investable for economic reasons."

Dr. Meghan McGill
Senior Associate, Breakthrough Energy Ventures

in decarbonization solutions, underscored the importance of innovation-driven sustainable solutions that also deliver financial returns. She described Breakthrough's three-tiered model to support entrepreneurs: discovery, development, and deployment. Discovery focuses on mentorship and market identification; development provides access to three $1 billion venture capital funds and aligned investors; and deployment, through the firm's Catalyst program, bridges the critical "valley of death" with funding for first-of-a-kind demonstrations and commercial pilots. For Dr. McGill, making these ventures profitable helps shift sustainability investments from a moral imperative to a market-driven opportunity. But

"People are surprised when I tell them I invest in manufacturing in Massachusetts, but in certain sectors, we have a real advantage."

Ms. Lily Fitzgerald
Director, Center for Advanced Manufacturing, MassTech

"Food tech is important for the Blue economy, but it is just as vital in the Green economy."

Dr. Matthew McNulty
Associate Director, Tufts University Center for Cellular Agriculture

profitability often comes with scaling innovation, which is a "team sport"—requiring aligned partners across every stage of development.

MassTech Center for Advanced Manufacturing Director Lily Fitzgerald spoke to New England's strength in regional innovation hubs, which effectively concentrate resources, expertise, and momentum. She highlighted the success of the region's four EDA-designated Tech Hubs across sectors, including semiconductors, marine technology, and sustainable wood products. Massachusetts is now poised to invest $75 million in a state-level hub initiative to seed additional innovation clusters. One promising area is battery electrode manufacturing, where three Massachusetts-based companies are already producing next-generation clean batteries—proof, she noted, that high-value manufacturing can thrive even in high-cost regions like New England.

Still, challenges remain in scale innovation in New England. Dr. McGill pointed out that even if startups launch their first demonstration projects in New England, commercial-scale facilities may naturally gravitate toward regions with cheaper land and energy. However, New England may be well-suited to "own" the demonstration phase—along with the engineering, procurement, and construction (EPC) capabilities that support national industry growth.

Returning to food innovation, Dr. Kaplan admitted he once assumed the industry would ultimately migrate to lower-cost regions in the Midwest or South. But that assumption is now changing. One Boston-area startup, TrueMeats, uses fiber-based systems to create meat alternatives from plant materials—a process that could repurpose New England's underused textile mills into future food production sites. Dr. McClements cited a Massachusetts Economic Development Council report

identifying food innovation as the most promising path for revitalizing the Western Massachusetts economy, particularly as traditional agriculture declines.

Ms. Fitzgerald added that many are surprised to learn that Massachusetts is home to more than 6,000 manufacturers, with strong competitiveness in sectors like medical devices and defense. Through the Massachusetts Manufacturing Innovation Initiative (M2I2), the state is helping early-stage manufacturers conduct pilot production runs—even if full-scale manufacturing eventually takes place elsewhere. What's critical, she stressed, is helping founders understand their options and pathways for scaling.

As the panel concluded, what stood out most was a sense of newfound alignment. Dr. Kaplan remarked that many panelists had not known each other well before the discussion, yet came away with a shared vision for New England's sustainable tech future. He set an ambitious goal: within 5–10 years, New England should be nationally recognized as the epicenter of food innovation—despite its small traditional agricultural footprint. To reach that goal, both Dr. Floreani and Ms. Fitzgerald focused on the need to inspire students to not just innovate, but to commercialize their ideas—and to do so locally.

Dr. McGill closed on an optimistic note: with New England's unique combination of innovation assets, policy support, capital, and collaborative spirit, the region has what it takes to lead the next generation of sustainable food technology.

Lunch Keynote from Dr. Mark Peters

Dr. Mark Peters
President and CEO, The MITRE Corporation

Key Session Insights

In his keynote address, **MITRE Corporation President and CEO and Council on Competitiveness Executive Committee Member Dr. Mark Peters** focused on the pivotal role that Federally Funded Research and Development Centers (FFRDCs) play in sustaining and advancing the U.S. innovation ecosystem.

Tracing MITRE's roots as a spin-off from MIT Lincoln Laboratory, originally formed to commercialize civil air defense technologies, Dr. Peters highlighted the organization's evolution into a global enterprise with 60 locations and a global leader in systems engineering. Today, MITRE is at the forefront of emerging fields such as artificial intelligence and quantum technologies. But as important as MITRE's scientific and technical capabilities is its role as a convener—forming and leveraging deep partnerships across government, academia, and industry, while operating six of the nation's 42 FFRDCs.

Dr. Peters called FFRDCs a uniquely American innovation asset—born out of the Manhattan Project and now home to capabilities ranging from supercomputers to test reactors. These institutions bring together the people, platforms, and physical infrastructure needed to accelerate breakthrough research and development. Alongside FFRDCs, the U.S. university system continues to differentiate the nation globally, anchoring regional innovation clusters and providing the foundational research that fuels long-term progress. Together, FFRDCs and universities form the backbone of a U.S. innovation model that many other countries are now seeking to emulate; however, he cautioned that declining investment in basic research would have serious consequences for national competitiveness.

Still, the U.S. model must evolve to meet the challenges of the future. Dr. Peters urged innovators and policymakers to revisit the texts forming a new roadmap for American science and technology policy—starting with the Council on Competitiveness's recent publications, including *Competing in the Next Economy: Innovating in the Age of Disruption and Discontinuity* and its Technology Leadership and Strategy Initiative's *Compact for America*. But he also called those in the audience to return to Vannevar Bush's seminal report, *Science, The Endless Frontier* (including the 70th anniversary edition with a forward from France A. Córdova, 14th Director of NSF and the special edition with a companion essay from Rush D. Holt), which laid the groundwork for the post-war U.S. innovation system. The report still offers powerful lessons for today.

Dr. Peters concluded his excellent keynote with a note that by learning from the past and combining it with present action, the nation can position itself for another century of transformative discovery and competitive leadership.

"If you combine the labs, the FFRDCs, and the universities, you get an incredibly powerful engine of innovation that can then engage with the private sector and emerging innovation ecosystems."

Dr. Mark Peters
President and CEO, The MITRE Corporation

PANEL

Unlocking New England's Economic Potential—Commercializing for the Future

PANELISTS

Mr. Garvan Donegan
Director, Planning, Innovation and Economic Development, Central Maine Growth Council

Dr. Nichole Price
Director, Bigelow Center for Seafood Solutions

Dr. Heather Darby
Agronomic and Soils Specialist, University of Vermont

Mr. Vinit Nijhawan
Managing Director, Mass Ventures

Mr. Ben Linville-Engler
Deputy Director and Chief Investment Strategist, MassTech Collaborative

Mr. Joseph Curtatone
President, The Alliance for Climate Transition

Moderator: Mr. Martin Son
Senior Director, Technology Transfer and Industry Collaboration, Tufts University

Session Overview

How can next-generation innovations in the blue and green economies foster the new businesses and industries essential for creating the high-value jobs and resilient communities of tomorrow? This panel examined the opportunities and challenges of commercializing new technologies in these two sectors, and highlighted successful case studies, practices, and policies that can be expanded to drive the next wave of economic impact on land and sea.

Key Session Insights

Opening the panel, Mr. Martin Son, Senior Director for Technology Transfer and Industry Collaboration at Tufts University, set the tone by urging a focus on the "how" of commercialization—how innovations in New England's blue and green economies actually reach the people and communities who will use them.

Mr. Vinit Nijhawan, Managing Director of MassVentures, reflected on the transformation of Massachusetts into a global leader in life sciences—an outcome that was far from inevitable in the 1980s, when the West Coast held that distinction. But with the presence of pioneering institutions like the Genetics Institute, proximity to Europe, and a vibrant academic sector, the seeds of an ecosystem were planted. He drew a parallel to today's blue and green economies, arguing that organizations like the Massachusetts Clean Energy Center (MassCEC) could play a similarly catalytic role. Nijhawan commented that the blue and green economies are poised to become as economically significant to New England as life sciences have been.

MassVentures, founded in the 1970s as the world's first public venture capital firm, was created to pull Massachusetts out of economic crisis. Since then, it has turned $8 million in state funding into billions in economic output. In 2022, it pivoted to focus on deeptech and academic spinouts, aligning with the state's economic development strategy. With a net annual return exceeding 14 percent—ranking in the top national quartile—MassVentures is demonstrating the value of sustained innovation investment.

"How do we take all of the amazing Green and Blue technologies coming out of our universities and labs, and get them into the hands of the people who can use them?"

Mr. Martin Son
Senior Director, Technology Transfer and Industry Collaboration, Tufts University

Mr. Ben Linville-Engler, Deputy Director and Chief Investment Strategist at the Massachusetts Technology Collaborative, discussed a similar public investment strategy, especially around the CHIPS and Science Act. He noted that advanced manufacturing is coming to the region via the "Science" side of the Act, but that Massachusetts is also highly competitive on the security-focused CHIPS side. He leads the North-

"Misinformation and lack of storytelling about the practical, human, and community level impacts are killing the sustainability industry. If we want to move this industry forward, we have to narrate those outside of research institutions and innovations centers."

Mr. Joseph Curtatone
President, The Alliance for Climate Transition

"Manufacturing is both a sector and a critical part of about any life cycle. If you want to make something, often you have to manufacture it."

Mr. Ben Linville-Engler
Deputy Director and Chief Investment Strategist, MassTech Collaborative

east Microelectronics Coalition (NEMC), the first CHIPS program in the nation, now encompassing 250 members across academia, industry, and research. Linville-Engler stressed that his work is not about funding isolated projects, but building entire value chains—especially in areas like manufacturing that underpin the success of blue and green economy sectors. With so many assets and actors in play, he sees one of his most important roles as "the bridge" connecting them.

Mr. Joseph Curtatone, President of the Alliance for Climate Transition, offered a nonprofit perspective grounded in regional collaboration. His organization spans New England, New York, and parts of Canada, and focuses on the full clean tech ecosystem—from energy generation to consumption, conservation, and decarbonization. Through programs like the long-running Greentech Open accelerator, Curtatone elevated the importance of aligning public and private interests to scale climate solutions. He made a strong case for more—not less—government engagement, arguing that shifting public opinion in favor of greentech is vital. Misconcep-

"The same strategies and playbook that New England used to get ahead in life sciences is being used to grow the Blue and Green economies. And we are in a place now where sustainability will be just as big for New England as life sciences."

Mr. Vinit Nijhawan
Managing Director, Mass Ventures

"If you ask people for a definition of economic development, you will often get a list of things. But that is not a strategy—how do you prioritize them?"

Mr. Garvan Donegan
Director, Planning, Innovation and Economic Development, Central Maine Growth Council

tions and a lack of local storytelling, he warned, are impeding support for policies essential to the climate economy's future.

Mr. Garvan Donegan, Director of Planning, Innovation and Economic Development at the Central Maine Growth Council, brought the conversation down to the local level. In Waterville, a rural town of 17,000, Donegan emphasized that economic development must start with a clear mission and robust partnerships. For communities hit hard by the decline of traditional industries like paper mills, entrepreneurial support is vital. He noted that while Maine ranks in the bottom 10 percent for attracting early-stage capital, it ranks in the top 10 percent for follow-on investment. Relatively new, the Growth Council has already responded with 18 public financing initiatives to date, aiming to spark investment and innovation in underserved areas.

Dr. Nichole Price, Director of the Bigelow Center for Seafood Solutions, spotlighted a Blue-Green crossover industry: seaweed. With the potential to reduce methane emissions when used as a dairy cow feed additive, seaweed exemplifies the kind of innovation that sits at the intersection of environmental and economic value. But hurdles remain—from regulatory approval to public perception and farmer adoption. Drawing from experiences lived in the United Kingdom, she cautioned that skepticism over safety and environmental impact could stall progress unless

addressed proactively. Success will require education, evidence, and engagement with both producers and the public.

Dr. Heather Darby, Agronomic and Soil Specialist at the University of Vermont and the only land-grant university representative on the panel, stressed the importance of involving end-users—like farmers—from the very beginning of the innovation process. She shared a personal story about implementing new cover crop technology on her family farm, which ultimately required another farmer's custom-built tool to work effectively. Her message was clear: no matter how advanced the innovation, it will fail without user buy-in. Engaging stakeholders early ensures that new technologies are both practical and desirable.

From Patchwork to Ecosystem

To close the session, Mr. Son asked whether New England is functioning as a true regional ecosystem or still as a patchwork of loosely connected networks. Dr. Price shared her experience trying to launch the seaweed-dairy feed project, which required cold-calling across institutions due to the absence of a centralized talent map. **She called for the creation of a regional "one-stop shop" to streamline collaboration.**

Curtatone challenged the region to overcome its longstanding parochialism, calling Massachusetts "the most parochial place in America" despite its leadership capacity. Breaking through that mindset—as some governors and university leaders are already trying to do —is essential to scaling cross-state cooperation.

Linville-Engler concluded that, in an era of uncertain federal support, regional collaboration is not just a strategy—it is a necessity. New England's prosperity depends on its ability to act as a unified, innovation-driven ecosystem.

"If you look at Maine's state flag, it is a fisherman and a farmer. Maine has always been the place where Blue and Green economies converge."

Dr. Nichole Price
Director, Bigelow Center for Seafood Solutions

Afternoon Keynote: From Tradition to Transformation—New Bedford's Blueprint for Innovation

The Hon. Jon Mitchell
Mayor of New Beford, MA

Key Session Insights

Mayor Jon Mitchell of New Bedford, Massachusetts, opened his keynote with a candid observation: any national conversation about competitiveness quickly becomes a place-based one. While Greater Boston has flourished in recent decades, that prosperity has not reached every corner of the state—or the country. The economic divide between "winners" and "losers" is growing wider. For Mayor Mitchell, this divergence became unmistakable when 90 percent of U.S. counties cast votes overwhelmingly for one presidential candidate or the other—an indication of deep regional polarization, particularly as traditional manufacturing hubs have shifted politically. Understanding the causes of that divide—and positioning New Bedford on the right side of it—is central to his strategy as mayor of a city not long ago perceived as being in decline.

After 14 years in office, Mayor Mitchell is grounded in first principles—the fundamental, self-evident truths that cannot be deduced from anything more basic. New Bedford is not a major metropolitan hub like Boston, nor is it home to a sprawling research university. So how does a smaller city chart a path to competitiveness?

He laid out a clear three-part strategy:

1. **Get the basics right.** Strong governance and a high quality of life are non-negotiables for sustained growth.
2. **Play to your strengths.** Do not try to be everything to everyone—identify what you do well and invest in it.
3. **Compete relentlessly.** In a country where cities and regions are in constant competition for talent, capital, and opportunity, standing still is not an option.

On the fundamentals, New Bedford has made substantial strides. Crime is down, graduation rates are up, and the city has reestablished both rail and air links to Boston. In terms of leveraging unique assets, New Bedford is leading with its historic strength in the maritime economy. The city hosts the largest fishing port in the United States, responsible for more than 70 percent of Massachusetts's seafood catch. As Mayor Mitchell put it, "What Omaha is to beef, New Bedford is to seafood."

This deep-rooted maritime identity gave New Bedford a head start in offshore wind—well before the sector gained mainstream traction in the United States. With its location near some of the most valuable offshore wind resources in New England, the city was ideally positioned to capitalize on the green energy transition. This was not luck—it was strategy.

The offshore wind push was backed by deliberate investment and long-term planning. New Bedford committed over $1.2 billion to dredging, port upgrades, and harbor infrastructure. The city even created a digital twin of its harbor to enable better management and planning. Workforce training and entrepreneurial support followed, including a $3 million investment—made in partnership with Vineyard Wind—into the Quest innovation incubator. These efforts were not just about wind energy; they were about building a new brand for New Bedford: a city where maritime tradition meets innovation.

> "In a place where decline has been as inevitable as the weather, we want to say: 'No, the future is in your hands. We can do something about it. And we are doing something about it.'"
>
> **The Hon. Jon Mitchell**
> Mayor of New Bedford, MA

Crucially, Mitchell noted New Bedford's culture of persistence. The city's progress did not come from perfection, but from a willingness to try, fail, learn, and try again. That mindset has created both competence and confidence in the city's ability to lead in new economic frontiers.

He closed with a bold statement—one he acknowledged might be seen as heretical in some circles: while New Bedford values collaboration, it is, above all, in it to **compete**. His priority is the advancement of New Bedford and its residents, whether that comes through partnerships or by out-hustling peer cities. It may sound zero-sum, he admitted, but in a world where perception can shape destiny, cultivating a fierce, competitive spirit is essential. It is how New Bedford will shed the label of a city in decline and earn recognition as a rising hub for maritime innovation.

PANEL

Accelerating Innovation—A Strategy for Developing Cutting-Edge Technologies

PANELISTS

Dr. Kirk Dombrowski
Vice President, Research and Economic Development, University of Vermont

Dr. Bernard Arulanandam
Vice Provost, Research, Tufts University

Mr. Blair Bateson
Senior Vice President, Net Zero Strategy, Bank of America

Moderator: Mr. Chad Evans
Executive Vice President and Chief Operating Officer, Council on Competitiveness

Session Overview

Out innovating our global competitors in the blue and green economies—spanning maritime technology, shipbuilding, biotechnology, advanced energy production, etc.— is essential for the future of the United States, and New England is at the forefront of developing and commercializing the technologies that will shape the United States' global standing in the future. This panel brought together leaders from business, research, and academia to explore how the United States can unleash the innovation and commercialization necessary to firmly establish itself as the global technology leader.

Key Session Insights

Mr. Chad Evans, **Executive Vice President and Chief Operating Officer of the Council on Competitiveness, opened the session by citing the unprecedented convergence of emerging technologies and rising global competition as key drivers behind the urgent need to accelerate innovation and commercialization in the United States.** The central questions, he posed, were these: How can the United States increase the speed of innovation, and what role can New England play in shaping this future?

Dr. Bernard Arulanandam, Vice Provost for Research at Tufts University, framed the current moment as an inflection point. The proliferation of artificial intelligence is amplifying the already transformative impact of digital connectivity. With its rich foundation in higher education and advanced technology, New England—particularly the Boston area—is well-positioned to thrive. However, Dr. Arulanandam asked, what is the force multiplier that can bring these assets together to meet the moment?

"Is the United States moving fast enough to take advantage of today's new technologies, or are others moving faster than we are, preparing to ride the wave of technological wave to a greater height than us?"

Mr. Chad Evans
Executive Vice President and Chief Operating Officer, Council on Competitiveness

Highlighting the importance of the finance and private equity sectors, Dr. Arulanandam suggested that these actors may now play a larger role in driving innovation. While Vannevar Bush envisioned a federal government-led approach to addressing grand challenges, Dr. Arulanandam argued, but given the scope and scale of today's problems, private capital must help fill the widening gap left by declining federal investment in research and development.

Dr. Kirk Dombrowski, Vice President for Research and Economic Development at the University of Vermont, echoed this sentiment while highlighting the duality of New

"Vannevar Bush's original was that the federal government would work to solve grand challenges. But today, from a higher education perspective, the grand challenges may be beyond the federal government."

Dr. Bernard Arulanandam
Vice Provost, Research, Tufts University

"If you could predict the innovations that you needed, then it would not happen at a university—it would happen at a business. It is the fact that you cannot predict what will work that keeps universities in business. If the United States loses that, we lose a big part of our competitiveness."

Dr. Kirk Dombrowski
Vice President, Research and Economic Development, University of Vermont

England's position. The region enjoys a dense concentration of industry, finance, and higher education institutions, yet it is small geographically and aging rapidly. Balancing these strengths and structural vulnerabilities will not be easy—especially if academia, one of the region's greatest assets, is weakened.

Dr. Dombrowski maintained universities perform an irreplaceable role in the innovation ecosystem. Their access to cutting-edge scientific infrastructure, ability to attract philanthropic capital, and strong government relationships enable them to generate breakthrough research and train the next generation of innovators. However, in today's politically charged environment, universities also carry increasing burdens and face mounting skepticism. Still, he insisted, no other institution can match the unique combination of capabilities that academia brings to innovation.

Mr. Blair Bateson, Senior Vice President for Net Zero Strategy at Bank of America, then outlined Bank of America's perspective on fueling innovation. Unlike early-stage venture

capitalists, the bank's clients are generally past the "valley of death." Mr. Bateson asserted that approximately 75 percent of clean energy deployment will come not from emerging technologies, but from scaling existing ones. For Bank of America's clients, the greatest challenge is not invention, but cost and scalability. In his view, disruptive technologies must not only compete with legacy systems—they must undercut them on cost to succeed at scale. Providing the capital and financial services to make that happen is where institutions like Bank of America play a critical role.

Mr. Evans then posed a sobering hypothetical: What would happen if federal research funding were cut by 25 or even 50 percent? Studies suggest such reductions could shrink GDP by 4 to 8 percent. How, then, can innovation endure?

Dr. Arulanandam responded by poining out that a defining feature of the U.S. innovation ecosystem—one that other nations have sought to replicate—is robust public support for basic science. He referenced the green fluorescent protein, first isolated in the 1950s, which has since become a staple in biomedical research. Discoveries like that are only possible when fundamental science is supported. Without this backing, such breakthroughs will become increasingly rare. Universities are often the only institutions willing to pursue "anything"—the uncertain, the exploratory, and the unexpected. Without this flexibility, Dr. Dombrowski warned, the "serendipitous" discoveries that drive transformational progress will diminish. He cited research in which frog cells were turned into autonomous machines, potentially disrupting the fields of automation and biomanufacturing. No private company would have funded that work, he noted, because the outcome was impossible to anticipate.

"AI does different things wells compared to humans; there is room for tremendous synergy, rather than just doom and gloom, if we design our organizations to take account of that."

Mr. Blair Bateson
Senior Vice President, Net Zero Strategy, Bank of America

Mr. Bateson added that although Bank of America does not fund basic research directly, it provides the financial scaffolding—home loans, car loans, and other essential services—that enables researchers to remain in New England. This support, while indirect, sustains the broader innovation ecosystem by keeping talent in place and allowing for the possibility of unexpected breakthroughs.

When asked whether artificial intelligence might help reduce the guesswork inherent in innovation, Dr. Arulanandam was optimistic. He saw significant promise in AI's potential to improve reproducibility and accelerate the pace of academic research. In contrast, Dr. Dombrowski expressed

concern. **Universities, he observed, are fundamentally in the "sentence business"—they produce knowledge, much of it in the form of text. A machine capable of generating that output represents a profound disruption to the traditional academic model. In his view, higher education is unprepared for the transformative impact of generative AI.**

Despite these concerns, Mr. Bateson offered a more optimistic perspective. He argued that AI is not likely to replace humans, but rather to complement them. Drawing an analogy from chess, he noted that while computers have long outperformed humans individually, human-computer teams consistently outperform machines alone. AI and human ingenuity, when combined, may unlock greater potential than either could achieve in isolation.

Mr. Evans reminded the panel that during the 1990s, prevailing projections forecast that both the European Union and Japan would surpass the United States economically. But those forecasts failed to account for how effectively the United States would embrace the internet era. The result was a surge in productivity that left both regions behind. Asked whether the United States is prepared for the next wave of innovation, Mr. Bateson pointed to a critical gap. While digital productivity has soared, manufacturing productivity has lagged, particularly in the sectors central to the blue and green economies. This shortfall leaves the United States vulnerable in key areas like energy supply chains and advanced production infrastructure.

Looking ahead five to ten years, Dr. Dombrowski identified neural systems and autonomous technologies as the most likely to be transformative. Dr. Arulanandam emphasized renewable energy as the most important long-term area of focus, while noting that his institution would continue to support leading research in nutritional science.

Mr. Bateson, reflecting the broad mandate of a national financial institution, said that Bank of America does not "pick winners." Instead, the bank provides essential financial services across sectors—whether in the blue, green, or broader economy—ensuring that innovation of all kinds has access to the capital it needs to grow.

As the session drew to a close, the panel reflected on New England's unique advantages. Dr. Arulanandam was unequivocal: the region's deep reservoir of highly skilled labor is its greatest strength. If people are the engine of innovation, then New England is well-positioned to lead. Dr. Dombrowski, representing Vermont, pointed to Massachusetts's leadership within the region. Individually, New England's states are small, but when united—with Massachusetts at the helm—they form a powerful collective force. Mr. Bateson offered a more intangible yet no less significant asset: New England's culture of unrestrained innovation. This reputation has become self-reinforcing, attracting those eager to push boundaries and make the impossible possible. Sustaining this momentum is vital if the United States is to remain the global innovation leader. It is this kind of mindset, he argued, that makes it possible to go from Kitty Hawk to the Moon in just 66 years—or to reach the next equivalent milestone of this century.

To conclude, Mr. Evans asked each panelist to offer one word or phrase that encapsulates New England's future. Dr. Dombrowski chose **"ambition,"** citing a recent rise in regional energy and focus. Dr. Arulanandam selected **"agility,"** reflecting New England's ability to pivot between sectors and seize emerging opportunities. Mr. Bateson closed with **"responsible growth,"** the title of Bank of America's sustainability report—reminding all that sustainability cannot be achieved without meaningful growth, a truth that too often escapes environmental debates.

PANEL

Linking Workforce, Innovation, and Investment: The Blue Economy and Beyond

PANELISTS

Dr. Eric Hines
Professor of the Practice, Civil and Environmental Engineering and Kentaro Tsutsumi Faculty Fellow, Tufts University

Mr. Bruno Freitas
Principal, Lewis-Burke Associates

Dr. Anthony Kirincich
Senior Scientist, Woods Hole Oceanographic Institution

Moderator: Dr. Barbara Kates-Garnick
Professor of the Practice, The Fletcher School, Tufts University

Session Overview

New England's connection to its coast plays a vital role in the United States's global leadership in research, high-skilled employment, and innovation. By integrating New England's advanced technology, skilled workforce, and manufacturing capabilities within the blue and green economies—and aligning these assets with key sectors such as defense and energy—the region can attract greater public and private investment into blue and green-based industries. This panel highlighted examples of how the region can leverage its distinctive resources to grow investment, while also exploring opportunities to expand cross-sector partnerships that will propel the blue and green economies forward.

Key Session Insights

One of the most important factors that sets New England apart from other regions—and binds its communities together—is its deep connection to the coast through the emerging blue and green economies. **Yet, according to Dr. Barbara Kates-Garnick, Professor of the Practice at Tufts University's Fletcher School, the region has yet to master the transition from research and prototyping to full-scale commercialization.** While New England excels at generating scientific breakthroughs and early-stage innovation, she argued that the next critical challenge is building stronger pathways to industry. The question is no longer whether New England can innovate—but whether it can industrialize those innovations at scale.

A key component in closing this commercialization gap, she emphasized, will be sustained federal support. **Bruno Freitas, Principal at Lewis-Burke Associates, acknowledged the difficulty of addressing current federal dynamics without venturing into partisanship.** Regardless of political affiliation, however, the reality in Washington is one of significant uncertainty. Massive budget cuts, downsizing, and restructuring of the federal scientific establishment have cast doubt on the future shape of public R&D support. In such an environment, Mr. Freitas advised focusing on what is certain. One clear trend is the coming surge in U.S. energy demand—driven in large part by electrification and the rapid expansion of artificial intelligence. Data centers alone currently consume 4 percent of U.S. electricity; within five years, that share is projected to triple.

This explosive growth in demand, regardless of which party holds power, will necessitate an "all-of-the-above" approach to energy. Mr. Freitas urged stakeholders to use this moment as an opportunity to grow the blue and green economies. He pointed to the Energy Act of 2000—which included funding for an ocean energy testbed he helped advocate—as a model. The ocean, he argued, remains an underutilized but essential energy resource. Renewable energy deployment is not a matter of if, but when. However, influencing federal policy is slow work, akin to turning an aircraft carrier: progress is made incrementally, not all at once.

Still, government is only one pillar of a three-legged stool supporting the blue and green economies—alongside academia and industry. Each of these sectors faces unique challenges. Universities must meet the needs of both faculty and students. Industry will not adopt new technologies unless there is a viable business case. And government action is ultimately responsive to voters. At the heart of all three challenges is communication—convincing each stakeholder that new technologies are worth their time, trust, and resources. Without alignment across all three sectors, the blue and green economies cannot achieve their full potential.

Dr. Eric Hines, Professor of the Practice in Civil and Environmental Engineering at Tufts University, brought a practitioner's perspective to this challenge. He recounted his efforts to brief policymakers in Washington on offshore wind well before the sector gained traction in the United States. His early advocacy helped secure funding through post-2008 economic recovery legislation, enabling the transformation of the Massachusetts Wind Technology Testing Center from a modest operation into the world's largest wind testing facility. Similarly, the Marine Commerce Terminal in New Bedford was designed with the future of offshore wind in mind, built using cutting-edge underwater mapping technology to support construction logistics.

However, Dr. Hines cautioned that technological innovation alone is insufficient. Its legitimacy must be recognized by financial institutions and legal systems. During the Terminal's construction, a dispute over the presence of boulders led to litigation. Despite the availability of advanced data, a court dismissed the information as inadmissible, resulting in a ruling against the project team. Without standards and certifications that affirm the reliability of new technologies, their credibility—and thus their adoption—can be undermined.

Dr. Anthony Kirincich, Senior Scientist at the Woods Hole Oceanographic Institution, has worked extensively to address that very challenge: validating ocean-based technologies. He leads a long-running project that monitors wind speeds at the sites of future offshore wind farms, providing a high-confidence data stream that improves the predictability of project returns. Yet collecting data "beyond repute" requires rigorous documentation and validation—an effort complicated by differing expectations between academia and industry. Still, his project, active since 2016, has generated the world's longest continuous offshore wind dataset. When European researchers questioned the open-source data, Dr. Kirincich was able to defend its accuracy and methodology.

But data quality is only one piece of the puzzle. Equally important is establishing shared standards—such as how to monitor whale activity near wind sites. Ocean testbeds, he argued, allow scientists and industry leaders to co-develop these standards and ensure their applicability across the sector.

Expanding on the need for connectivity between research and application, Dr. Kates-Garnick raised a critical point: what does all this mean for the next generation of innovation workers, particularly those in skilled trades who help move technologies from lab to market? Dr. Kirincich noted that many advanced-degree students no longer see academia as their desired career path. Instead, institutions must forge deeper partnerships with industry to identify new roles for these highly trained individuals—particularly roles requiring skilled hands and practical knowledge. He described a Department of Energy project he led that deployed wind-monitoring equipment on tugboats to improve forecasting. By the project's end, the captains of those vessels had become not only collaborators but co-contributors to the scientific effort.

When asked about the outlook for offshore wind in New England, Dr. Hines acknowledged current headwinds. Still, he emphasized that $30 billion worth of offshore wind development—totaling 6,000 megawatts—is already being built, supported by the strong partnerships forged across the region. Mr. Freitas agreed, stressing that perseverance during difficult periods would position New England to capitalize when conditions

improve. At present, the region is still reliant on European expertise, as Europe entered the offshore wind market earlier. But with the right investments, infrastructure, and workforce, New England can successfully nearshore those capabilities.

Dr. Kirincich concurred, asserting that by leveraging the region's strengths in research, testing, and prototyping, New England is uniquely positioned to become the most competitive environment for offshore wind development in the world.

PANEL

From Vision to Action: A Long-Term Strategy for Placemaking Innovation Across New England

PANELISTS

Dr. Robert Johnson
President, Western New England University

Dr. Sunil Kumar
President, Tufts University

Dr. Marlene Tromp
President Designate, University of Vermont

Moderator: The Hon. Deborah L. Wince-Smith
President and CEO, Council on Competitiveness

Session Overview

The region and nation with the most efficient and sustainable economy will hold a competitive advantage over its rivals. This concluding panel examined the path forward for New England to position itself as a leader in tomorrow's blue-green economy—as well as the lessons that can be shared to optimize the U.S. economy for a future in which sustainability and innovation will be increasingly linked.

Key Session Insights

To begin, **Council on Competitiveness President and CEO Deborah L. Wince-Smith** asked each of her university co-hosts for their top-level thoughts as the Conversation came to a close. **Western New England University President Robert Johnson** was clear that the most valuable ingredient in the New England innovation economy was its people, but that those people were going to have to learn to adapt faster than ever before. It took a century to go from the steamboat to the combustion engine—but, as Dr. Johnson asked, how many revolutions have we seen in just the past decade? Students—as well as industry, academia, and government—need to get more comfortable with the process of learning, unlearning, and relearning as technologies like AI rapidly reshape the world around us. Paradoxically, agility amongst uncertainty needs to become the new steady state for New England.

One of the biggest takeaways for **Tufts University President Sunil Kumar** was how he evaluated the legacy of Vannevar Bush and his "Endless Frontier" model of U.S. research. His model solved the problem of how to scale innovation but created what Dr. Kumar called a "centripetal" model centered around universities, leaving many people behind. In his view, pursuing the Blue and Green—or, as he coined them, "Teal"—economies was a great opportunity for all of New England, and it would be a shame to dig a "moat" around the Boston metro area that excluded others. Even New Bedford, just thirty miles away, had been broadly excluded from the Boston higher education ecosystem. Dr. Kumar was adamant that universities need to go out to places like New Bedford, rather than expecting New Bedford to come to them. A renewed local focus will be critical in other ways; he argued that too great a focus on solving global problems would lead researchers to neglect local needs. Local economic development needs to remain front and center; New England needs to be a place welcoming to the four-person startup and the 40,000-person giant. If it is not, there is a lot of shoreline in the world—companies will find somewhere else to set up shop.

University of Vermont President Designate Marlene Tromp emphatically agreed that universities cannot expect all the attention to run "downhill" towards them. Dr. Tromp spoke on the Conversation's first panel about the need to reach rural students where they are, rather than expecting them to funnel into cities. She doubled down on that point, citing the need to ensure "placebound" students still have opportunities. If they are not reached, then they will be forced to choose between either second-rate opportunities or leaving New England for good—accelerating the region's outward migration. Dr. Johnson echoed her point, desiring to get away from the idea of "educational deserts" without opportunity. While Boston is flush with universities, the rest of New England has plenty of potential students—but no way to educate them without asking them to pick up and move away from home to an expensive urban area. For Dr. Johnson, there is no "demographic cliff" for New England; the young people are there, they just need to be reached.

The Hon. Wince-Smith pointed to the example of New Bedford as a model for the rest of New England. A decade ago, the city was in dire economic and social straits, seemingly on its way towards inevitable decline. But through a risk-taking, thriftiness, and "Yankee Ingenuity," the city's leadership had managed to turn the ship around. A similar story played out across the Atlantic in the West Midlands of the United Kingdom, where Aston University is leading an economic revival without the help of the national government. This attitude of shaping one's own destiny will be a critical factor shaping New England's success in the years to come. Dr. Johnson emphatically agreed, citing the need to recapture the "can-do" attitude and human spirit that built this country for the 21st century. Dr. Tromp, a Victorianist, referenced a characterization about Americans from that period: "a nation of rapscallion dreamers who crossed an ocean with no money." Those dreamers did and built things not for their own benefit, but for the benefit of the generations that would come after. While people want progress and innovation to happen quickly, it is a time-intensive process; failures and setbacks will happen, so patience is essential when considering investment. Dr. Tromp mentioned that, when higher education came under attack, there was not enough pushback, leading to demoralization in universities today. Universities need to convince the public that investment in universities is a part of that long-running American tradition of exploring, experimenting, and investing in the future.

Looking back into history for inspiration himself, Dr. Kumar told the story of how he was currently in conflict with the Duke of Northumberland in the United Kingdom over an artifact in the Duke's possession: the oldest known map of the Revolutionary War. Known as the "Map of Medford," having the artifact back in New England would be a point of pride for Tufts. Dr. Kumar shared the story to make two points: first, place-making innovation required a sense of hubris—you need to be willing to walk up to someone and say, "this map is ours." Second, you have to take your sense of place seriously. If he wanted, he could likely get the Smithsonian involved and return the map to U.S. soil—but then, it would no longer belong to New England. If you want to lead in place-making innovation, you need to be willing to go it alone.

Zooming in on one sector New England's innovation economy, the Hon. Wince-Smith asked whether her fellow panelists thought the region could successfully revitalize its shipbuilding sector. Dr. Kumar was clear: it had to. According to him, the oceans are a more challenging domain to operate in than space, and New England has always stood at the forefront of exploration. New England already builds the most advanced ships in the world at U.S. Navy shipyards in New London, CT, and is leading the world in the development of underwater autonomous vehicles. Dr. Tromp called the shipbuilding industry a metaphor for the New England innovation economy as a whole: while the new ships may not look like the ones of old, New England is still at the forefront of their development.

Asked for one final word to take away from the Conversation, Dr. Kumar offered "geographic advantage;" New England has a deep connection to its coast, and it needs to leverage that to succeed in the new century. Dr. Tromp offered up "rerisking:" rediscovering the willingness to take risks and be bold. Dr. Johnson supported that idea, reiterating that it would be the human spirit that ultimately determines New England success. The Hon. Wince Smith left them with a quote from the father of the U.S. Navy, John Paul Jones: "Those who do not risk cannot win."

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