

# Accelerating Cities' Net Zero Action

Key takeaways from partnership and innovative financing visioning labs

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**Boston University** Institute for Sustainable Energy



**PLACE-BASED  
CLIMATE ACTION  
NETWORK**



Foreign, Commonwealth  
& Development Office



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## Introduction

The goals of this project were to increase the ambition of cities in the UK and the U.S. to set and achieve net zero greenhouse gas emissions targets, to encourage more cities to commit to the UNFCCC "Race to Zero" in advance of COP 26 in November 2021, and to promote cross learning and collaboration between U.S. and UK cities. To support this, the Boston University Institute for Sustainable Energy (BU ISE) worked with the British Foreign, Commonwealth, and Development Office (FCDO) to deliver two virtual roundtables, branded as visioning labs to emphasize the interactivity, which convened stakeholders from city government, academia, and net zero experts from North America and the UK. The visioning labs convened a total of 51 stakeholders including representatives of 28 cities.

The participants included representatives of cities who have already set a net zero target as well as representatives of cities who are considering a net zero target. The participation of academics and net zero experts from nonprofit groups - C40, PCAN, UK100, Climate and Urban Systems Partnerships (CUSP), Climate Mayors, and MetroLab Networks - served to illuminate for cities that networks can support them and provide additional capacity to develop net zero roadmaps. The discussions included insights and lessons learned from all stakeholders convened, and there was extensive exploration of partnering opportunities including university-city partnerships, participation in regional, national or international networks of city climate practitioners and partnering with other stakeholders to drive change.

The focus and format of the visioning labs was informed by interviews that the BU ISE team conducted with stakeholders that also gathered information on the function and

strength of university/city partnerships and recent climate action successes and challenges. In these interviews, we identified the opportunities for cities' partnerships - with universities and with other stakeholders - to accelerate climate action and also the need for financing as two major topics of interest to cities focused on climate action. We held one visioning lab on each of these topics, and this paper summarizes the impact of city partnerships on climate action in Part 1, and emerging opportunities to finance city climate action in Part 2.

We note that questions about city climate action are especially salient at this moment, when cities are balancing climate action with their response to the public health and the economic challenges of COVID-19, often with strained municipal budgets. One further overarching challenge is the pressing need to ensure that cities' actions on climate, rebuilding the economy, and public health are equitable and anti-racist, given the stark light that 2020 shone on structural racism both through dramatically greater impacts of COVID-19 on communities of color and the unjust murders of George Floyd and numerous other Black people.

It is also worth noting that there is no cookie cutter approach either to city climate action in general or to financing city climate action. In particular, governance differences may be consequential, including the devolved powers that the states have in the U.S. that are not mirrored in the UK; the various relationships that exist between a municipality and local electric utilities; as well as what measures may be authorized by a municipality's voters. Nonetheless, the interviews and visioning lab discussions identified partnership opportunities and sources of financing that are supporting city climate action in North America and in the UK, and we summarize these here.

## PART 1: The impact of partnerships

During advance interviews conducted with North American and UK city climate leaders, a consistent theme arose around partnership successes, as well as gaps. There is a general understanding that **complex climate challenges cannot be solved alone, but rather through community support and collaboration**. Admittedly, opportunities for cities to pursue partnerships are affected by factors including powers at the state-level for U.S. cities, different utility ownership models, as well as differing levels and types of community engagement. Nonetheless, the importance of partnerships in getting to net zero emissions is evidenced by the multitude of networks that exist for cities to collaborate: Climate Mayors, UK100, C40 Cities, USDN, U.S. Climate Alliance, ICLEI, Global Covenant of Mayors, in addition to the many regional and local collaboratives. Furthermore, there are successes of cities partnering with universities, utilities, corporations, and community groups.

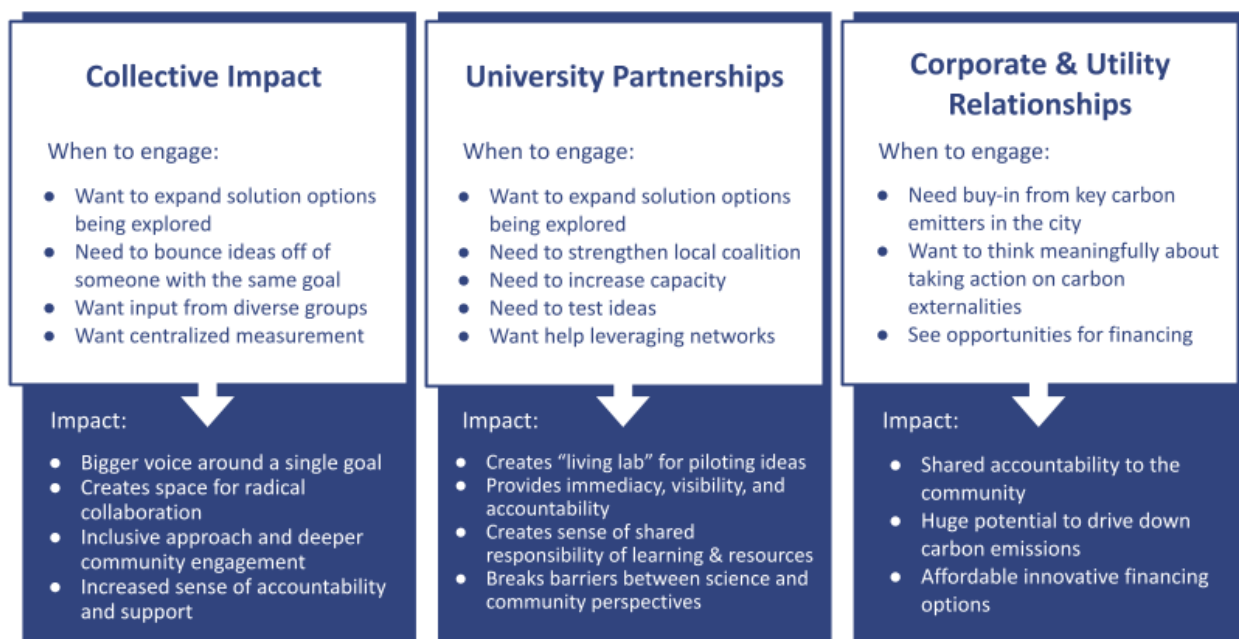
## Collective impact

Collective impact is the idea that **large-scale change requires a collaborative approach with a common agenda, shared measurement systems, mutually reinforcing activities, continuous communication, and a backbone support organization**.<sup>1</sup> Many of the visioning lab participants cite coalitions with these characteristics as enabling them to drive climate action forward in their communities.

Regional coalitions, such as the Colorado Communities for Climate Action (described in Appendix A) or the Place-Based Climate Action Network's (PCAN) regional commissions, create a bigger voice around a single goal. These networks have diverse representation - cross-party, different tiers of local government, urban and rural constituents - to have all viewpoints represented. This inclusive approach lends itself to more equitable results.

Bringing different people and networks together around the same goal can be conducive to creating a dialog that supports

## Key takeaways from the partnership visioning lab





radical collaboration and having structured conversations in a safe space. Some other benefits include having shared ownership and accountability, as well as centralized frameworks to reduce the daunting burden of reporting.

## Universities as anchor institutions

Visioning lab participants noted that universities often have incredible convening power, resources, and local community roots. This makes them natural partners for solving complex local city climate action challenges. Many cities are currently engaged with universities on a surface level, transactional basis for student consulting projects and single reports. However, the municipality-university relationship has potential to be much more. These relationships can and should be longer term partnerships that push research to action and policy implementation. **Increasingly, universities are willing to pilot specific climate actions on their campus with the idea that, if successful, that approach can be scaled up in their local city.**

To develop this collaborative relationship, both parties need to agree on a shared goal. This goal may begin as a top-level target of net zero emissions by 2050, but evolve into more specific goals around obtaining funding, engaging the community and gaining trust, and testing viable climate action initiatives.

For example, Plymouth University established a regional innovation ecosystem - the Growth Acceleration and Innovation Network (GAIN) - with the City Council that helped bring \$150 million worth of assets under one entity to act with a shared purpose for the community (further details in Appendix A). An example of a university piloting a new approach that can be scaled up can be found at Boston University, where the new Center for Computing & Data

Sciences building, expected to be completed in 2022, will be 100 percent free of fossil fuels, have geothermal wells, state-of-the-art shading, and other energy efficient features that all align with Boston University and the City of Boston's climate action plans.<sup>2</sup>

## Relationships with corporate and utility stakeholders

Businesses and utility companies are often the highest carbon emitters in communities. Instead of working against these groups, municipalities can work with them. Working together can create shared accountability to the community, unlock potential to drive down carbon emissions, and can present opportunities to leverage partnerships for affordable financing options. **In some places, corporations are establishing strong roles to support city climate action**, e.g., BP is a strategic planning and technical partner for the City of Houston, and Bank of America and the City of Portland formed a strategic alliance to reduce energy consumption through an LED street light initiative.

Cities served by investor owned utilities may grapple with how to incentivize clean energy or make energy projects financially viable. Under these circumstances, it is especially important to engage with utility stakeholders to align goals and commitments. The visioning lab discussions revealed that the cities who do forge partnerships with utilities cite it as one of their biggest successes.

These successes are not born overnight. For instance, the City of Aspen worked with Aspen Electric and Holy Cross Energy for three years before landing on a 100 percent renewable energy commitment. Similarly, San Antonio, TX is building long term partnerships with city leadership serving on the Board of Trustees for the local utilities.



## PART 2: Emerging opportunities in financing

During the advance interviews conducted with North American and UK city climate leaders, a consistent theme across a variety of climate actions was new ways to finance that action or sometimes challenges in making the financing viable. One visioning lab participant noted that in climate action, one must "discover the right question for the moment we are in," adding that at this moment "we know *what* to do. We know *how* to do it. The question now is 'how are we going to pay for it?'"

### Green banks

Visioning lab discussants noted the impact of green banks, which first emerged in both the U.S. and the UK in 2008 - 2009. Today, there are green banks in Connecticut, New York,

California, Hawaii, Rhode Island, Montgomery County, MD, as well as in several other countries. **In addition to supporting the deployment of clean energy technologies, green banks can be a resilient source of financing amidst economic uncertainty and can have an outsize impact in supporting projects in low income communities.**

New York's Green Bank is providing substantial benefits to the state during the COVID-19 pandemic: it had its strongest second and third quarters ever in 2020, with a total of \$165.9 million in new investments and \$13.4 million of revenue generated during the second and third quarters; its cumulative revenue since it was founded in 2014 stands at \$100.2 million.<sup>3</sup> Projects it invested in in 2020 included community distributed solar plus storage, renewable and energy efficiency projects to benefit low- and moderate-income communities, wind farms, and fuel cells. In addition, it has established financing tools that respond to specific needs arising from COVID-19, including allowing deferral on loan repayments for borrowers in good standing that demonstrate hardship related to COVID-19, financing interconnection deposits to eligible large-scale renewables and community distributed generation developers with corporate guarantees and/or a pledge of assets as collateral, and restructuring financing to enable borrowers to secure federal or state stimulus funding.

Meanwhile, the Connecticut Green Bank substantially increased the adoption of solar energy in communities of color between 2015 - 2019. The change started when the Green Bank and its Board of Directors added incentives for low- and moderate-income households to its residential solar program, with the specific goal of addressing disparities in solar adoption. By 2019, there were 86 percent more residential solar installations in majority Black

neighborhoods, 18 percent more in majority Hispanic neighborhoods, and 20 percent more in No Majority race neighborhoods as compared to majority White neighborhoods, on a per owner-occupied household basis.<sup>4</sup>

The UK formed a Green Investment Bank in 2012, but sold it to the Australian bank Macquarie in 2017. UK100, a network of local government leaders, and others proposed that a new UK green investment bank be established, and in November 2020 the British Government announced a National Infrastructure Bank (see description in Appendix B). Recent announcements suggest it is likely to provide 1.5 billion GBP of investment each year.

## Green bonds

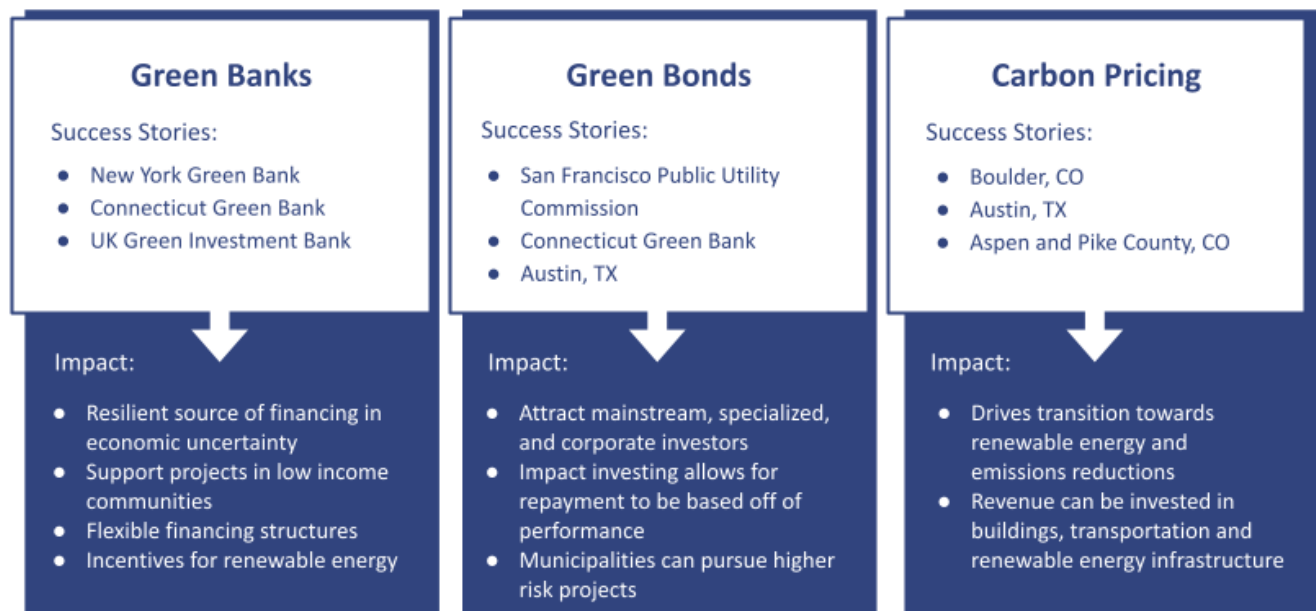
Like green banks, green bonds were established about a decade ago and are growing, with global issuance reaching \$255 billion in 2019, representing an increase of 49 percent relative to 2018. Of that global market, 30 percent of bonds (with \$76 billion value) were issued in the U.S.<sup>5</sup> (This

was followed by slower growth in issuance that reached \$270 million in 2020.)<sup>6</sup>

While not legally defined, bonds are considered to be green if they finance or refinance projects that have a positive environmental impact. While bonds may be certified as green, there are plenty of bonds that are not declared to be green even though they are issued for projects that have a positive environmental benefit. **The attraction of certifying a municipal bond as green has grown in part because the sustainable investors involved in the green bond market are diverse and include mainstream, specialized, and corporate investors.** It also enables the municipality to convey a positive message about their environmental values and actions to residents and voters.

The San Francisco Public Utility Commission has overall issued \$1.6 billion of green bonds since 2015 to finance its power, water, and wastewater systems, including \$342 million in October 2020 that was listed on the London Stock Exchange to fund a water system improvement program.<sup>7</sup>

## Key takeaways from the innovative financing visioning lab



In 2020, the Connecticut Green Bank offered residents the opportunity to invest in a \$16 million issuance of mini green bonds with \$1,000 value each to support additional clean energy efforts through the Green Bank, increasing the revenue of the Green Bank which otherwise draws from a utility bill surcharge, RGFI process, and federal sources.<sup>8</sup>

In March 2021, Austin Council approved a \$460 million Active Transportation and Safety Bond to support a variety of projects, ultimately supporting the goal of reducing vehicle dependence so that by 2040 only half of all trips are made by car with just one occupant. This is an example of a bond that is not formally declared as a green bond, although it supports projects that will have a positive impact on the environment.<sup>9</sup>

### Putting a price on carbon

Some visioning lab participants were interested in novel ways to price carbon. While the focus of carbon pricing is typically at the national, regional, or state level, **some U.S. municipalities have established programs that price carbon.** Boulder, CO introduced a Climate Action Plan tax after

voters approved the measure in 2006; it was renewed in 2012. The tax is applied to residents' electricity bills by the local electric utility. It has generated \$17.3 million since it was introduced, money that has been directed to improve commercial, industrial, and residential energy efficiency, as well as to increase local renewable energy, electric vehicles, and market innovation.<sup>10</sup> The utility Austin Energy put a price on carbon although the structure of the pricing is different and increases the utility's draw on renewable resources to generate power (described in Appendix B).

The City of Aspen and Pitkin County implemented the Renewable Energy Mitigation Program in 2000, which assigns an energy budget for a new home and charges the resident a tax if they exceed that energy budget. Residents may install onsite renewables to reduce their grid-based energy consumption to stay within the assigned energy budget. The fees collected are allocated to energy efficiency and renewable energy.<sup>11</sup> In 2010, Aspen and Pitkin County expanded this scheme to cover new commercial buildings also. The residential program has been replicated in





four other areas in Colorado, as well as in Martha's Vineyard, MA.

## Looking forward

The past year has tasked climate leaders with balancing climate action with public health and a green economic recovery, all while ensuring actions taken are equitable and address historical structural racism that was substantially exacerbated in 2020. Yet it is notable that in the face of multiple challenges, there is a strong and expanding understanding of the urgency of acting to mitigate climate change, and a broader array of stakeholders are stepping up to take more decisive action, often in partnership with others. Many cities are actively engaged in learning from each other, often through networks that may be regional, national, or international in scale, and increasingly universities and corporations are partnering with cities on climate action.

Green banks and green bonds are well established and expanding in the U.S., both in magnitude and in diversity of offerings. The change in the Federal administration in January 2021 and the substantial increase in investor commitment to environmental, social, and governance requirements over the last year is likely to drive even more change in finance, likely opening up new opportunities to fund city climate action. In the UK, where the central government plays a crucial role, re-establishing an investment bank and issuing green bonds with 15 billion GBP value in 2021 are notable steps forward that can help UK cities drive climate action.

There may be opportunities to advance carbon pricing at a local scale in the U.S., although an ambitious carbon tax recently proposed in Portland, OR that seeks to impose a carbon price of \$25/carbon ton on facilities that produce more than 2,500 metric tons of carbon each year is likely to be delayed owing to the financial impact of

the COVID-19 pandemic on businesses.<sup>12</sup> Meanwhile, carbon pricing discussions are happening at the national level in the UK: after the country left the EU emissions trading scheme as part of Brexit, the central government is currently exploring a national emissions trading scheme.

Every city is in a unique position and stage in their local climate action and what may work for one city, might not work for another. Nonetheless, the stakeholder interviews and visioning lab discussions identified impactful partnership principles and opportunities for supporting city climate action in North America and the UK.

### Learn more about the Race to Zero

#### *What is it?*

The [Race to Zero](#) is the UN-backed, global campaign to rally leadership and support from all non-state actors for a healthy, resilient, zero carbon recovery. All members are committed to the same overarching goal: achieving net zero emissions by 2050.

#### *How do I join?*

To join, entities must fulfill the minimum criteria:

- ✓ Pledge
- ✓ Plan
- ✓ Proceed
- ✓ Publish

#### *How else can I help?*

If you are already a member, there is still more you can do:

- ✓ Recruit members
- ✓ Spread awareness
- ✓ Support organizations

**Act today! To join the Cities' Race to Zero, [click here](#).**

## Appendix A: Partnership Mini Case Studies

### Success of 'Colorado Communities for Climate Action' | Aspen CO

Colorado Communities for Climate Action (CC4CA) is a coalition of 35 counties and municipalities across Colorado advocating for effective state climate policy. Members span the Western Slope and Front Range; small rural towns and major suburbs; counties and municipalities; and wealthy, middle income, and low-income neighborhoods.

CC4CA ensures that its members - local elected officials and local government staff - can serve as witnesses during legislative hearings, meet with their legislators, testify during agency rulemaking processes, speak to reporters, and publish opinion pieces in local and statewide media outlets.

In just five years, CC4CA has evolved from a promising idea into an influential coalition shaping state climate policy. It can be very difficult for individual local governments to influence state policy on their own, but this coalition of counties and municipalities all speaking with one voice is having an outsized impact. This year, CC4CA helped:

- Secure passage of SB20-204, which creates a fee-based enterprise fund for the Colorado Department of Public Health and Environment to step up work on clean air protection programs,
- Secure passage of seven other meaningful bills, including legislation making it easier for electric vehicle manufacturers to sell in Colorado,
- Play defense on key climate and energy policies all the way through the session.



### Community Engagement for Shaping the Climate Action Plan | Providence, RI

Mayor Jorge O. Elorza has set a goal for Providence to become carbon neutral by 2050 and has dedicated resources to support frontline communities to lead the charge. Frontline communities are closest to and most impacted by the issues. These communities are experiencing the impacts today. This is not an existential, long-term challenge; it is their daily survival.

When the most impacted are centered in a decision-making process, the resulting interventions and solutions are transformative. This plan, which was co-created by the Office of Sustainability and the Racial and Environmental Justice Committee (REJC), tackles climate change by addressing the root causes: structural racism, economic inequality, and our extractive economy.

Providence's Climate Justice Plan takes a systems-thinking and place-based approach to addressing climate change. Albeit daunting, this adds a layer of complexity that is critical to acknowledge and understand if we are to begin to solve the problem. The urgency of our social and environmental challenges require that we no longer work in silos. Providence's vision for a low-carbon future is one where your race or zip code no longer determines your health or economic outcomes. Where decisions are made collectively to allow those who are most impacted to have the greatest say. Where land stewardship is valued over ownership. Where access to clean water and land is not just a luxury for the wealthy, but a fundamental human right.

## Universities as 'Living Labs' for Sustainability | Plymouth, UK

Universities can do more to deliver against the sustainability agenda through their education, research, and service activities, working with faculty, staff and students, as well as their wider stakeholder community and alumni body. Adopting an approach called a "living lab," universities can be engines of societal transformation. In this way they become more connected to the community and wider society they serve - locally rooted but globally connected.

For example, Plymouth University (PU) transformed as an inspiration in the manner of an "anchor" institution - rooted in its local community by mission, invested capital and relationships to students, employees and vendors that controls vast economic, human, intellectual, and institutional resources with the potential to bring crucial, and measurable, benefits to the city-region. For instance, the university established the Growth Acceleration and Innovation Network (GAIN) as a regional innovation ecosystem with the City Council bringing \$150m worth of innovation assets under one governance entity.

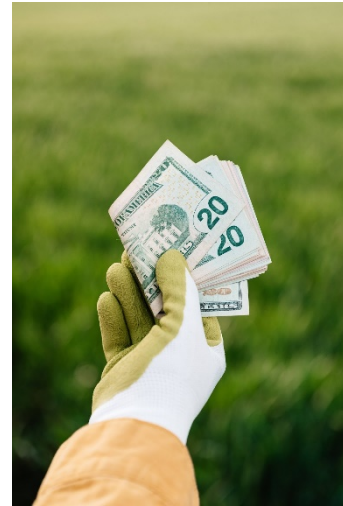
Harnessing their incredible convening power, universities can position sustainability as an intentional and aspirational strategy with sustainable development and the SDG framework a means to that end. Leadership at all levels, and by students, is key to success in acting with a shared purpose. Radical collaboration within the university and with its stakeholders can enable higher education to make a fuller contribution to sustaining the economic, environmental, cultural, and intellectual well-being of our global communities.



## Appendix B: Innovative Financing Mini Case Studies

### National Investment Bank with a local net zero mandate | UK100

To reduce emissions from the power sector in the UK, we need to switch from dirty fossil fuels to renewable energy generation that is local and decentralized. In its report “Accelerating the Rate of Investment in Local Energy Projects,” UK100 noted that local authorities are uniquely placed to facilitate investment in local energy projects. They have significant powers and responsibilities and control large budgets which they can use to help underpin investment in new infrastructure. However, they struggle with limits to their capacity and in-house know how, the policy landscape changes rapidly, and local council staff and elected decision-makers often struggle to keep up.



UK100 proposed that a Net Zero Investment Bank be launched to unlock place-based green investment, and to provide technical support to navigate the complexities of securing development and investment capital, creating a business case, beyond feasibility studies funded by grants. A Resilient Recovery Taskforce of local leaders representing 24 million people across the country submitted a proposal to the Chancellor to unlock £100bn as part of his Spending Review in September 2020. In November, the British Government announced a new National Infrastructure Bank. UK100 is currently engaging with key ministers to ensure that net zero and local leadership are placed at the heart of the Bank.

UK100's research indicates that initial public funding of £5 billion could crowd in £100 billion of private finance investment in local energy systems by 2030 through partnership approaches. This would enable industry and private capital to work with the UK's local authorities to scale up opportunities to invest in local energy projects, in turn creating more job opportunities. Recent research by the Local Government Association shows that as many as 694,000 direct jobs could be employed in the low-carbon and renewable energy economy by 2030 in England, spread evenly across the country.

### Income-tiered electric vehicle car share | City of Boston

Recharge Boston is the City of Boston's program to encourage the use of EVs. The primary goal of the Recharge Boston program is to complement and support the goals of Go Boston 2030, the City's transportation plan. Go Boston 2030, aims to shift travelers away from personal vehicles to public transit, walking and biking, and shared trips. We also need to make all remaining cars zero-emission vehicles. The City of Boston's 2019 Climate Action Plan Update identified exploring sustainable models for community based EV car share as a high-priority strategy. This was an effort to support city-wide ZEV deployment and accelerate carbon reductions. The City of Boston is committed to expanding sustainable and equitable transportation access.

Under the leadership of E4TheFuture, a local non-profit organization, the City of Boston, Eversource, Metropolitan Area Planning Council, Shared Mobility, Inc., and Nuestra Comunidad, received a grant from the Massachusetts Clean Energy Center (MassCEC) to pilot the City's first



income-tiered electric vehicle car sharing program starting in 2021. The program will be in Roxbury. It will provide access to Roxbury residents and businesses, but is open to all. The program will provide a clean and convenient personal transportation option, with a focus on affordable access.

Car share is gaining popularity as a transportation alternative for those who cannot afford a car or choose not to own a car. Electric vehicle (EV) car sharing introduces clean, quiet EV technology. Sliding rates for use of the EVs will enable low-income residents to access personal transportation at very affordable costs. This service will complement public transportation. It will provide an option for errands, appointments, and for small business owners to deliver goods. The program also welcomes market-rate subscribers. Market-rate subscribers would pay slightly more than low-income users. Even for market-rate users, the cost of car sharing is below the average cost of car ownership.

### Putting a price on carbon at the city level | Austin, TX

Austin Energy has deliberately pursued clean energy in recent years, putting out annual bids for renewable energy and making plans to close the local power plant, the Fayette Power Project, in 2022. Last year, Austin Energy set a goal that “86 percent of Austin Energy’s electricity generation will be carbon-free by year-end 2025, 93 percent will be carbon-free by year-end 2030, and all generation resources will be carbon-free by 2035” in its Resource, Generation and Climate Protection Plan of 2020.



One program that is important in enabling Austin Energy to achieve this goal is called “Reduce Emissions Affordably for Climate Health” (REACH). Under this program, Austin Energy has put a price on carbon and incorporated that into the generation dispatch price. This initiative was proposed and supported by a local member of the Citizens’ Climate Lobby, and Austin Energy’s plan was approved by the Austin city council in March 2020. The REACH program increases the typical price of coal from approximately \$0.02/kWh to approximately \$0.026/kWh.

With clean energy produced by wind and solar regularly available to Austin Energy, this change in the price of coal is projected to reduce the City of Austin’s carbon emissions by 30 percent - or approximately 4 million metric tons - from when it was introduced in 2020 until the Fayette Power Project coal plant is fully closed in 2022. Looking forward, Austin Energy’s plan indicates that after 2022 “the REACH plan is expected to reduce carbon emissions by 8 percent each year, until achieving zero carbon emissions by 2035.” The city expect to maintain that rate of decarbonization by placing a small carbon price on its natural gas electricity generation after the coal plant is closed.

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