

## **Reclaiming the Forest City: Northeast Ohio Regional Complete and Green Streets Program**

The Northeast Ohio Areawide Coordinating Agency (NOACA) and the City of Cleveland are forming a coalition to secure Climate Pollution Reduction Grant (CPRG) Implementation Grant funding for Reclaiming the Forest City: Northeast Ohio Complete and Green Streets Program. This program will pair an electric bike (e-bike) rebate program with tree planting and other complete and green streets measures across the five-county Cleveland-Elyria metropolitan statistical area (MSA). It will provide a financial incentive for residents to shift their travel model to e-bikes in order to reduce vehicle miles traveled (VMT) and support greening along transportation corridors in order to cut greenhouse gas (GHG) emissions, improve air quality, lower transportation expenditures, improve physical health, and enhance mobility for thousands of residents. To implement the program, the coalition partners will be supported by two local non-profits: Bike Cleveland and the Western Reserve Land Conservancy (WRLC).

### **Section 1: Overall Project Summary and Approach**

Northeast Ohio stands at a crossroads. In the 1800s, Cleveland came to be known as The Forest City due to its abundant shade and fruit trees, enhanced by its favorable location and access to freshwater along the southern shore of Lake Erie. But despite these advantages, the region's growth into an industrial and manufacturing center contributed to decades of poor transportation and land use decisions. These decisions resulted in an over-built, sprawling transportation system that created growing reliance on automobile travel, redlined pockets of poverty, communities over-burdened by unhealthy air, related health disparities, and a drastic reduction of the region's tree canopy.

As the region seeks to reclaim its "Forest City" title, tackle emissions related to climate change and poor air quality, and improve job opportunities and quality of life for all residents, NOACA and the City of Cleveland joined forces to create a Priority Climate Action Plan (PCAP) and a Comprehensive Climate Action Plan (CCAP), with ambitious science-based targets for reducing GHG emissions quickly and equitably. To achieve these targets, it will be necessary to reduce transportation-related emissions – not unlike other communities across the state and the nation. In 2021, transportation accounted for 28.5% of total GHGs in the United States (U.S.), more than any other sector.<sup>1</sup> From 1990 to 2021, transportation sector GHGs grew by 18.6% nationally, even as total GHGs fell by 2.3%.<sup>2</sup> Within the state of Ohio, transportation makes up 30.3% of GHGs, second behind the electric power sector; transportation sector emissions have increased in Ohio by 5.3% since 1990, even as total emissions have decreased by 21.3%, respectively.<sup>3</sup> Clearly, without taking concerted action to reverse these trends, the U.S., the state of Ohio, and Northeast Ohio cannot hope to achieve their climate targets.

While electrifying light-, medium-, and heavy-duty vehicles is essential for decarbonizing the transportation sector, it is not sufficient on its own. In its Sixth Assessment Report (AR6), the Intergovernmental Panel on Climate Change (IPCC) concluded that there "is a growing need for systemic infrastructure changes that enable behavioral modifications and reductions in demand for transport

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<sup>1</sup> U.S. Environmental Protection Agency (EPA), 2023, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021, Washington, DC: U.S. EPA, <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021>, accessed March 31, 2024.

<sup>2</sup> Ibid.

<sup>3</sup> U.S. Energy Information Administration, 2023, "State carbon dioxide emissions from fossil fuels tables: Ohio," Washington, DC: U.S. EIA, <https://www.eia.gov/environment/emissions/state/excel/states/ohio.xlsx>, accessed March 31, 2024.

services that can in turn reduce energy demand.”<sup>4</sup> Even as it acknowledges that the majority of GHG reductions will come from transitioning to cleaner fuels, The U.S. National Blueprint for Transportation notes “It is essential to implement design solutions that increase convenience, provide better access to clean modes of travel, and support demand management policies that make it easier and more convenient to choose more efficient travel options.”<sup>5</sup> If we fail to increase convenience and improve efficiency in transportation, “we will see the undesirable outcomes of travel amplified— more and longer trips needed to support day-to-day activities; long hours spent sitting in traffic on the daily commute; and higher expenses for gasoline, vehicle maintenance, and other costs.”<sup>6</sup>

It is imperative for the U.S. to invest in transportation alternatives, in order to reduce vehicle miles traveled (VMT) and place the country on the path to decarbonization. According to one assessment, the U.S. must reduce per capita VMT by at least 20% by 2030 in order to align with the goals of the Paris Agreement.<sup>7</sup> Beyond cutting climate pollution, reducing VMT can provide an array of benefits, including improving air quality, enhancing physical health, and reducing traffic fatalities. If the state of Ohio achieved the goal of cutting per capita VMT by 20%, it could cut cumulative GHGs by 172 million metric tons of carbon dioxide equivalent (MMtCO<sub>2</sub>e) through 2050, avoid 343 traffic fatalities annually, prevent nearly 2,500 annual deaths from air pollution, and save households almost \$3,000 per year in transportation-related expenses.<sup>8</sup>

Encouraging individuals to shift their short trips to active transportation modes (e.g. biking, walking) is one of the most effective ways to reduce VMT in the short-term. Biking, in particular, is a perfect mode choice for many trips under five miles, ensuring that biking could account for a significant share of the VMT reduction needed in metropolitan areas like Cleveland. Nevertheless, biking accounted for just 0.3% of commuting trips in the Cleveland-Elyria MSA during 2021, significantly less than the national average of 0.5%.<sup>9</sup> The share of all daily trips by bike is even lower. According to data from the NOACA travel demand model, biking made up just 0.04% of daily trips in Northeast Ohio during 2020; by 2050, that share is projected to fall further to 0.02%.

Electric bikes (e-bikes), which include a low-speed electric motor, can help increase the share of trips taken by bike, as the electric motors enable people to travel farther, faster, and with less physical

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<sup>4</sup> M. Pathak, R. Slade, P.R. Shukla, J. Skea, R. Pichs-Madruga, D. Ürge-Vorsatz, 2022, “Technical Summary,” In: *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York City, 98, [10.1017/9781009157926.002](https://doi.org/10.1017/9781009157926.002), accessed March 31, 2024.

<sup>5</sup> Muratori, Matteo, et al., 2023, *US National Blueprint for Transportation Decarbonization: A Joint Strategy to Transform Transportation*. No. DOE/EE-2674. U.S. Department of Energy (DOE). Office of Energy Efficiency and Renewable Energy (OEERE), <https://www.energy.gov/sites/default/files/2023-01/the-us-national-blueprint-for-transportation-decarbonization.pdf>, accessed March 31, 2024, 20.

<sup>6</sup> Ibid.

<sup>7</sup> Holland, Ben et al., 2023, *Urban Land Use Reform: The Missing Key to Climate Action*, Boulder, CO: RMI, <https://rmi.org/insight/urban-land-use-reform/>, accessed March 31, 2024.

<sup>8</sup> Warsing, Ryan, et al., February 15, 2024, “States Can Quantify the Benefits of Climate-Friendly Transportation Options With RMI’s Smarter MODES Calculator,” <https://rmi.org/states-can-quantify-the-benefits-of-climate-friendly-transportation-options-with-rmis-smarter-modes-calculator/>, accessed March 31, 2024.

<sup>9</sup> U.S. Census Bureau. “Commuting Characteristics by Sex.” *American Community Survey, ACS 5-Year Estimates Subject Tables, Table S0801*, 2022, <https://data.census.gov/table/ACSST5Y2022.S0801?q=S0801:%20Commuting%20Characteristics%20by%20Sex>, accessed March 31, 2024.

exertion. This makes them an excellent travel mode option for short trips for most people. Unfortunately, the higher upfront cost of e-bikes represents a real barrier to entry, particularly for low-income Northeast Ohioans. The average e-bike can cost \$2,000-3,000, more than double the price of a conventional commuting bike.<sup>10</sup> The cost differential can be even higher for electric cargo bikes, which can replace an even larger share of short car trips. As a result, while e-bike sales have increased significantly in recent years, they have not yet emerged as a true replacement for short car trips in Northeast Ohio. The region needs to take concerted action to reduce the sticker price of e-bikes in order to take full advantage of their potential as a climate solution.

Other factors influencing the use of active transportation modes include the perceived safety, comfort, and enjoyment of cycling and walking routes. Complete streets is a planning framework that incorporates various design factors into streetscapes to promote multimodal transportation. Complete and “green” street design principles often incorporate trees to generate ecosystem benefits that positively affect the experience of cyclists and pedestrians. Trees growing in street rights-of-way help to slow traffic, making streets safer for pedestrians and cyclists.<sup>11</sup> Shade and evapotranspiration cooling provided by street tree canopy allows for more comfortable walking, biking, and use of public transit and increases the appeal of cycling routes.<sup>12</sup> Trees and other vegetative buffers can also reduce the exposure of cyclists and pedestrians to air pollution.<sup>13</sup> For these and other reasons, residents are three times more likely to be physically active when they live in areas with high levels of trees and vegetation.<sup>14</sup> By combining an e-bike rebate program with complete and green streets, NOACA and partners will simultaneously reduce several barriers to reducing VMT in favor of multimodal and active transportation.

## Section 1.a. Description of GHG Reduction Measures

The *Cleveland-Elyria Metropolitan Statistical Area Priority Climate Action Plan* (PCAP) details ten regional climate action priorities. The Northeast Ohio Complete and Green Streets program focuses on implementation of two of these priorities, “Vehicle Miles Traveled Reduction” and “Nature Based Solutions,” by addressing a major local source of GHG emissions (single-passenger vehicles) and a major local carbon sink (trees) that are named in the PCAP. It also touches on the “Light Duty Vehicle Electrification” measure.

### **Priority GHG Reduction Measure 1: Regional E-Bike Rebate Program (Vehicle Miles Traveled Reduction)**

In partnership with the City of Cleveland and Bike Cleveland, NOACA is proposing to implement a regional e-bike rebate program to increase the adoption rate of e-bikes within Northeast Ohio,

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<sup>10</sup> National Conference of State Legislatures (NCSL), February 24, 2021, “State Electric Bicycle Laws: A Legislative Primer,” <https://www.ncsl.org/transportation/state-electric-bicycle-laws-a-legislative-primer>, accessed March 31, 2024.

<sup>11</sup> Ewing, R., & Dumbaugh, E. (2009). The built environment and traffic safety: a review of empirical evidence. *Journal of Planning Literature*, 23(4), 347-367.

<sup>12</sup> Eisenman, T. S., Coleman, A. F., & LaBombard, G. (2021). Street Trees for Bicyclists, Pedestrians, and Vehicle Drivers: A Systematic Multimodal Review. *Urban Science*, 5(3), 56.

<sup>13</sup> Ozdemir, Huseyin. "Mitigation impact of roadside trees on fine particle pollution." *Science of the Total Environment* 659 (2019): 1176-1185. Ren, Feihong, et al. "Trees help reduce street-side air pollution: A focus on cyclist and pedestrian exposure risk." *Building and Environment* 229 (2023): 109923.

<sup>14</sup> Ellaway, A., S. Macintyre, and X. Bonnefoy. (2005). Graffiti, Greenery, and Obesity in Adults: Secondary Analysis of European Cross-Sectional Survey. *British Medical Journal* 331: 611-2.

particularly among members of low-income and disadvantaged communities (LIDAC). This application for CPRG Implement Grant funding is a joint effort among NOACA, as the lead applicant, with the City of Cleveland as a coalition member and Bike Cleveland as an implementation partner.

### *Implementing Entities*

As the lead applicant, NOACA will serve as the grant recipient and primary contact with U.S. EPA on all grant deliverables, including the quality assurance project plan (QAPP), semi-annual, and final grant reports. The City of Cleveland, as coalition partner, will support the development of a request for proposal (RFP) to select the e-bike rebate Program Administrator, market and promote the program to prospective participants, contribute to the final program design, and support the tracking and evaluation of program benefits. The City reserves the right to launch an initial pilot phase of the e-bike rebate program for City of Cleveland residents in order to serve as proof of concept for the region-wide program. Bike Cleveland will also market and promote the program to prospective participants and help foster community among rebate recipients, including by providing information on safe e-bike riding, sharing resources on e-bike maintenance, and encouraging recipients to log their e-bike trips.

### *Program Scope*

The coalition partners will implement this program throughout the Cleveland-Elyria MSA). The regional e-bike rebate component builds off best practices from other successful programs across the U.S. It will take place over three years and have a total budget of \$7,000,000. Approximately \$6,440,000 will be allocated for e-bike rebates, divided across program years. NOACA will reserve \$560,000 (8% of the total budget) for program administration costs; this is the maximum budget available for program administration and is subject to change based upon the results of the competitive RFP process.

This e-bike rebate program will be a point of sale program. Northeast Ohio residents will apply for an e-bike rebate. Once selected, they will receive a rebate notification to use at participating retailers. These retailers will provide a discount, equivalent to the value of the rebate, off the sale price of a qualifying e-bike, cargo e-bike, or adaptive e-bike. Retailers will provide proof of purchase to the Program Administrator, which will then issue reimbursements. The program will provide market value rebates to residents of the Cleveland-Elyria MSA. It will also provide larger rebates to low-income residents whose annual income is less than 60% of the area median income (AMI). Coalition partners intend to direct at least 50% of rebates to qualified low-income residents. Larger rebates are also available for individuals with qualified disabilities who need an adaptive e-bike.

The proposed breakdown of rebate values is below:

- Market value e-bike rebate: \$400
- Market value cargo e-bike rebate: \$900
- Low-income e-bike rebate: \$1,200
- Low-income cargo e-bike rebate: \$1,700
- Adaptive e-bike rebate: \$1,400

To enhance program benefits for LIDAC areas, the program will provide an additional 5% rebate for e-bike purchases from qualified disadvantaged business enterprises (DBEs) or retailers located in LIDAC Census tracts. Program partners will develop a list of retailers that qualify for this additional rebate. The GHG reduction measures included in this application are drawn from the Cleveland-Elyria MSA PCAP.

### *PCAP Priority Measures*

The Cleveland-Elyria MSA PCAP includes a priority GHG reduction measure to reduce VMT in Northeast Ohio. The measure includes, but is not limited to, incentivizing smart land use patterns that create transit-oriented developments (TODs) around transit hubs, integrating transit providers and first/last

mile modes (bikeshare, scooters, electric car share), investing in multimodal transportation infrastructure and Complete Streets, and encouraging smart land use to minimize commute distances.

According to the regional GHG inventory, transportation accounted for 9.14 MMtCO<sub>2</sub>e (25.5%) of total GHG emissions in Northeast Ohio during 2018, second to residential energy use (25.7%). Light-duty vehicles (LDVs) emitted 6.3 MMtCO<sub>2</sub>e, 17.6% of total regional GHGs, larger than any other subsector. While transportation accounts for 28.5% of GHGs nationally, the contribution of LDVs to climate change is even larger; when one accounts for the indirect emissions from fuel and vehicle production, LDVs produced nearly 40% of total GHGs in the U.S. during 2019.<sup>15</sup> LDVs are also responsible for a significant share of criteria air pollutants (CAPs). During 2021, highway vehicles produced 29.9% of carbon monoxide (CO), 33.3% of nitrogen oxides (NO<sub>x</sub>), and 4.5% of fine particulate matter (PM<sub>2.5</sub>).<sup>16</sup>

The total health impacts of LDVs are substantial. Using U.S. EPA's CO-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA), applicants estimate that tailpipe emissions of criteria pollutants from highway vehicles were responsible for 3,901-8,824 premature deaths in the U.S. during 2023; 32-73 of these deaths occurred in the Cleveland-Elyria MSA. Health costs from these emissions totaled \$43.5-97.8 billion, of which \$356.7-807.7 million occurred in Northeast Ohio. Vehicle crashes are also a leading cause of death and injury in the U.S. From 2013 to 2022, the number of traffic fatalities increased by 30.1%, and the fatality rate per 100 million VMT rose 22.7%.<sup>17</sup> During 2022, 42,795 Americans died in traffic crashes, the highest number since 2007. This increase in crashes has been particularly costly for people outside of cars; more than 7,500 pedestrians and cyclists died in traffic crashes in 2022, a 40-year high.<sup>18</sup> During 2022, 264,960 total traffic crashes occurred in Ohio. These crashes resulted in 1,275 total fatalities, of which 344 (27%) were among cyclists and pedestrians.<sup>19</sup>

The e-bike rebate program falls under the VMT Reduction measure, as it facilitates mode shift away from LDVs, enhances multimodal transportation, and reduces VMT. The PCAP establishes a target of reducing regional VMT 15% by 2030 and 30% by 2050. Research demonstrates that people who purchase e-bikes reduce their VMT by 37% per person, on average.<sup>20</sup> According to an analysis for this grant, using the RMI E-Bike Environment and Economics Impact Assessment Calculator for Cities, if Northeast Ohio shifted 50% of car trips under three miles and 25% of trips 3-5 miles long, regional VMT would fall by 4.1%. This rebate program will be essential to facilitating e-bike adoption and VMT

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<sup>15</sup> Subin, Zach, Ben Holland, and Drew Veysey, April 5, 2023, "A Fork in the Road: States Will Determine the Future of US Transportation Pollution," <https://rmi.org/states-will-determine-the-future-of-us-transportation/>, accessed March 31, 2024.

<sup>16</sup> U.S. EPA, 2023, "Air Pollutant Emissions Trends Data," <https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>, accessed March 31, 2024. The share of PM<sub>2.5</sub> from highway vehicles does not include wildfires.

<sup>17</sup> National Highway Transportation Safety Administration (NHTSA), April 2023, *Early Estimate of Motor Vehicle Traffic Fatalities in 2022*, <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813428>, accessed March 31, 2024.

<sup>18</sup> Governors Highway Safety Association (GHSA), June 22, 2023, "Drivers Hit and Killed More Than 7,500 Pedestrians Last Year, Most Since 1981, New Projection Shows," <https://www.ghsa.org/resources/news-releases/GHSA/Pedestrian-Spotlight-Full-Report23>, accessed March 31, 2024.

<sup>19</sup> Data from Ohio State Highway Patrol, "OSTATS – Crash Dashboard," <https://analytics.das.ohio.gov/t/OSHPPUB/views/StatewideCrashes/StatewideCrashes2019?%3Aembed=y&%3AisGuestRedirectFromVizportal=y>, accessed March 31, 2024.

<sup>20</sup> fka Andersson, Alfred Söderberg, Emeli Adell, and Lena Winslott Hiselius. "What is the substitution effect of e-bikes? A randomised controlled trial." *Transportation research part D: transport and environment* 90 (2021): 102648.

reduction in the region.

The regional e-bike rebate program also falls under the Light-Duty Vehicle Electrification measure from the Cleveland-Elyria MSA PCAP. Since 2019, e-bikes have consistently outsold electric vehicles (EVs), due in large part to their accessibility and lower retail price. Americans purchased 18.4% more e-bikes than EVs in 2022; in 2020, they purchased more than twice as many.<sup>21</sup> Because of their lower price, greater efficiency, and limited embodied carbon, e-bikes are an essential tool in achieving significant GHG reductions within the transportation sector by 2030. On average, e-bikes get 1,000-4,000 miles per gallon equivalent (MPGe), making them more than 20 times as fuel efficient as the average EV.<sup>22</sup> As a result, e-bikes have already cut global oil demand by 1%, more than four times as much as EVs.<sup>23</sup>

Lastly, the regional e-bike rebate program influences the Clean Electricity measure from the PCAP, as e-bikes draw electricity from the grid. EV charging can place a strain on neighborhood grid infrastructure. Any increased demand for nighttime/overnight home EV charging may strain transformers by preventing them from cooling down at night. At 85% and 100% EV adoption rates, transformers may lose 8.1% and 31.4% of their expected lifespans, respectively.<sup>24</sup> Because e-bikes require substantially less electricity, they can ease this strain on the grid and create space for clean electrons to power other activities.

#### *Risks to GHG Measure Implementation and Benefits*

Certain challenges may threaten the implementation of this measure, undermining its potential benefits. Supply chain challenges can restrict the supply of e-bikes for rebate recipients. The lack of protected bike infrastructure in Northeast Ohio could also undermine demand for e-bikes and/or reduce the VMT that they can replace, as cyclists may feel uncomfortable riding on unprotected roads. Lastly, Northeast Ohio's climate is less conducive to year-round cycling than other regions. Climate change may affect this in positive or negative ways. Shorter, less intense winters may extend the traditional cycling season into the winter months. On the other hand, more extreme precipitation and flooding, more extreme heat, and more poor air quality days may make it less attractive for people to ride their e-bikes.

#### **Priority GHG Reduction Measure 2: Regional Complete & Green Streets Program (Nature-Based Solutions)**

The Northeast Ohio Complete and Green Streets Program will encourage active transportation by making streets, sidewalks, and bike and pedestrian trails safer and more comfortable for users. NOACA will allocate \$3 million of the project budget to implement this measure, including \$200,000 to complete a five-county study to identify priority implementation locations that address a combination of GHG reduction, urban heat, and social needs; \$900,000 to support implementation of complete and green streets projects; and \$1.9 million to support tree planting along priority multimodal transportation corridors.

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<sup>21</sup> Coren, Michael J., October 17, 2023, "Think you need another car? Consider an e-bike instead," *Washington Post*, <https://www.washingtonpost.com/climate-environment/2023/10/17/electric-bikes-cars-cost-testing/>, accessed March 31, 2024.

<sup>22</sup> Lent, Tom, 2020, "Results to date from the Ebike Monitoring Project," E-Bike 1000 MPG Project, <https://sites.google.com/view/ebikestudy/results?authuser=0>, accessed March 31, 2024.

<sup>23</sup> Azhar, Muhammad Rizwan and Waqas Uzair, November 16, 2023, "The world's 280 million electric bikes and mopeds are cutting demand for oil far more than electric cars," *The Conversation*,

<sup>24</sup> Diahovchenko, Illia, Anastasiia Chuprun, and Zsolt Čonka. "Assessment and mitigation of the influence of rising charging demand of electric vehicles on the aging of distribution transformers." *Electric Power Systems Research* 221 (2023): 109455.

NOACA's PCAP details the priority GHG reduction measure, "Nature-Based Solutions," which includes tree canopy preservation and expansion, green stormwater management, and complete and green streets implementation strategies. Implementation of this measure will also be guided by NOACA's *Complete and Green Streets Policy* (2020), which aims to "create a measurably better transportation system that is more equitable, balanced, and effective and which offers every user of the public right-of-way safe, connected, and sustainable transportation options." The policy has four goals:

1. Create a comprehensive, integrated, and connected transportation network that supports sustainable development and provides livable communities.
2. Ensure safety, ease of use, and ease of transfer between modes for all users of the transportation system.
3. Restore the natural hydrologic function of the region's watersheds.
4. Provide flexibility for different types of streets, areas, and users.

Transportation needs range widely across Northeast Ohio from a rural to highly urbanized gradient. NOACA will invest in tree planting and complete and green streets improvements around multimodal transportation routes throughout the region including bike lanes, bus routes, pedestrian routes, and Amish buggy corridors to increase the comfort and safety of these routes for users and reduce VMT. Support for tree planting will expand on existing regional canopy growth initiatives and will lead to direct GHG reductions through carbon capture. It will also enable direct reductions in air pollution and indirect GHG reductions by encouraging residents to shift to active transportation modes. This measure includes a five-year program to implement streetscape projects across Northeast Ohio that demonstrate the principles of NOACA's *Complete and Green Streets Policy*; these improvements will directly reduce GHG emissions through carbon capture and will indirectly reduce GHG emissions through reductions in VMT.

#### *Implementing Entities*

NOACA will manage the procurement, completion, and distribution of findings of a GIS study to identify priority areas for complete and green streets program implementation along regional transportation corridors that support multimodal transportation. NOACA will manage the program in accordance with its *Complete and Green Streets Policy*, which details the eligibility requirements for projects in addition to grant requirements. The policy summarizes eligible projects accordingly:

"Sponsors are required to consider bicycles, pedestrians and transit access improvements in the planning and design of their proposed project as well as green infrastructure. In particular, incorporate infiltration, biofiltration, and/or storage to collect, retain, or detain stormwater runoff as well as sidewalks, bike facilities, street crossings (including over- and under-crossings), pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways should be designed, constructed, operated and maintained so that all modes and pedestrians, including people with disabilities, can travel safely and independently."

The policy specifically prohibits consideration of projects that consist only of resurfacing and general maintenance. NOACA will solicit, select, and manage disbursement of grant funds to eligible projects and will take primary responsibility for monitoring and reporting.

As an implementing partner, Western Reserve Land Conservancy (WRLC) will manage tree-related activities including tree planting, tree giveaways, establishment, and monitoring within Cleveland through its Reforest Our City program. In 2014, WRLC launched Reforest Our City to address Cleveland's depleted tree canopy and mitigate the impacts of climate change. With a staff of three full-time employees and a seasonal Tree Crew, Reforest Our City hosts tree plantings and distributes free trees in priority (low-canopy, high-need) neighborhoods. It also trains residents and volunteers in tree biology,



planting, and maintenance to encourage a grassroots reforestation movement. To date, Reforest Our City has planted 8,000 trees and distributed another 8,000 trees throughout the region. More than 2,500 volunteers have participated in Reforest Our City activities. Additionally, more than 300 volunteers passionate about reforesting Cleveland have graduated from the Tree Steward Training program and are fully trained in proper care and maintenance techniques. ROC's current annual budget has grown to \$495,470, which funds the planting, maintenance, and distribution of 1,000 trees annually.

WRLC's comprehensive tree care program maintains trees through the three-year establishment period. Species selection is tailored to withstand the unique challenges posed by urban environments, including the evolving climate and increased rainfall patterns. Each growing season, the program employs Cleveland residents to water newly planted trees throughout the growing season, which is responsible for the program's track record of more than 86% survivorship of its trees in a highly urbanized setting.

WRLC will also manage partnerships and contracts for tree-related work across the remainder of the NOACA service area. It will track the numbers, species, and locations of trees for reporting purposes and will create specifications for tree giveaways, planting, watering, mulching, protection, and pruning to replicate its successful tree establishment track record across the region.

#### *Program Scope*

#### **Task 1: Identify Priority Areas for Transportation Corridor Nature-Based Solutions**

NOACA will complete a GIS-based study of the region to identify areas for nature-based solutions—including complete and green streets projects and tree planting—along transportation corridors. NOACA will classify areas from Very Low to Very High priority for interventions including impervious surface removal to improve stormwater management, reduce urban heat islands, and increase vegetation; tree planting to increase tree cover and reduce urban heat island, remove air pollution, and absorb stormwater; traffic-calming measures along corridors that have documented safety concerns include pedestrian, cyclist, and Amish buggy crashes within the past 5 years; extending bicycle lanes; and building connectivity to schools, parks, and green space.

This task will guide implementation of the Nature-Based Solutions GHG Reduction Measure and addresses a regional need that has been identified by local implementation partners including planning agencies, municipalities, stormwater authorities, and tree planting partners for enhanced data to guide decision making about targeted investments.

**Task 1 Key Milestones:** Major milestones of this task include securing a contractor to complete the GIS study early in Year 1, shortly after project initiation. The GIS study will conclude approximately six months after initiation and will guide further implementation of Nature-Based Solutions. See Section 3.c for detailed Task 1 milestones.

#### **Task 2: Implement a Regional Complete & Green Streets Program**

NOACA will create a program to solicit and implement complete and green streets projects throughout the region<sup>25</sup> that enhance the safety and comfort of streets to encourage active modes of transportation. Project eligibility criteria are detailed in the NOACA Complete & Green Streets Policy; additionally, projects must be sited within Nature-Based Solutions priority areas that are identified in Task 2.

**Task 2 Key Milestones:** In years 1-4 of the project, NOACA will release an annual RFP to solicit eligible

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<sup>25</sup> The City of Painesville in Lake County is excluded from this application, as it is covered by a separate application for CPRG Implementation Grant funding for nature-based solutions.



complete and green streets projects that adhere both to federal grant guidelines and NOACA's Complete and Green Streets Policy. NOACA will choose eligible projects for implementation that are located within priority areas for complete and green streets projects as identified in the Task 2 prioritization study. Up to \$225,000 in projects will be supported each year; funds that are not spent will be rolled over to subsequent years. Project construction will wrap up no later than Year 5. See detailed milestones in Section 3.c.

### **Task 3: Increase Tree Canopy to Shade, Cool, and Calm Active Modes Corridors**

WRLC will plant and distribute trees through its Reforest Our City (Cleveland-based) initiative and will manage contracts for tree planting and distribution in the remainder of the NOACA service area. Trees will be planted within High and Very High priority areas for nature-based solutions along transportation corridors that were identified by the GIS study. Certified arborist oversight will ensure that species selection favors biodiversity, pest and disease resistance, climate-ready species, and the largest species appropriate for each planting site.

**Task 3 Key Milestones:** WRLC will plant, distribute, and oversee the planting and distribution of approximately 3,376 trees per year in Years 1-5. Through its Reforest Our City initiative, it will plant, water, and mulch 875 trees per year and distribute an additional 2,500 trees per year to residents of LIDAC Census tracts. WRLC will manage contracts in each of the five counties to plant an additional 665 trees within street rights-of-way, transportation corridors, and along bike and pedestrian paths within priority areas for Nature-Based Solutions. Contractors will include municipal forestry departments, park agencies, and tree care companies, with preference given to programs and contractors who have certified arborist oversight, a track record of successful tree establishment, and who are located within LIDAC Census tracts. WRLC will provide financial support and technical expertise to soil and water conservation districts, park districts, and environmental and community nonprofit agencies in the five-county region to distribute an additional 3,322 free trees to residents who commit to planting trees in front yards along active-modes transportation corridors. Nursery stock will consist of containerized trees from 3- to 15-gallons in size. Tree distribution activities must give priority to landowners within LIDAC census tracts.

#### *Risks to GHG Measure Implementation and Benefits*

Potential risks to implementing this measure include limitations in local capacity and expertise, materials, and scale. Smaller municipalities and agencies in the region have fewer staff and often lack staff members with extensive expertise in nature-based solutions including clean and green streets. These challenges have been observed locally with tree planting projects—even when the intent is to prioritize low-canopy LIDACs, such communities often have very limited ability to manage tree projects, which indirectly favors higher-resourced communities. Applicants will mitigate this risk through the work of the Cleveland Tree Coalition's network of partners, which has been able to share expertise and onboard new community partners who are implementing tree projects.

A second risk relates to the ability to source adequate quantities of tree nursery stock of the desired species. As awareness about local tree canopy inequality and the benefits of trees has grown over the past decade after adoption of the Cleveland Tree Plan, there has been more local competition for limited nursery stock that has not yet grown to meet local demand. In response to this need, at least two new nurseries have been established in the last two years to meet local demand. A five-year grant timeline can also allow for contract growing with regional commercial nurseries.

The final risk relates to achieving the scale that is necessary to achieve significant GHG reductions. Pilot projects have proven to be locally effective at shifting the region toward widespread adoption of new, green technologies—for example, in Northeast Ohio this shift has been seen with pervious pavement

and growing adoption of solar projects following implementation of key pilot projects. While the direct GHG reductions achieved through nature-based solutions associated with this project are small, there is potential for larger, indirect GHG reductions through the reduction of VMT and by demonstrating proof-of-concept that will lead to regional adoption of new, green strategies.

#### *PCAP Priority Measures*

The PCAP includes Nature-Based Solutions as one of ten priority GHG reduction measures. This reduction measure describes three actions that are relevant to this grant request:

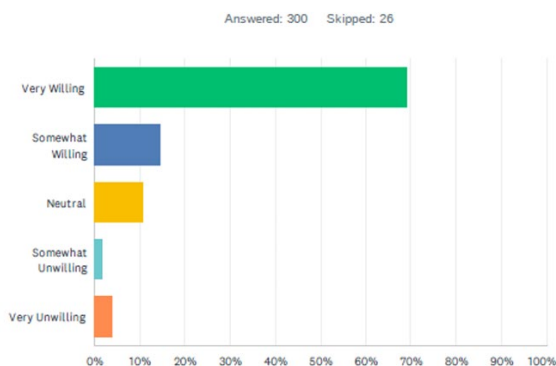
- Expand tree canopy, coordinate tree planting programs and disseminate knowledge (e.g. on suitable species) throughout the region
- Remove unutilized pavement and other impervious surfaces, decompact soil and restore natural surfaces to support stormwater absorption
- Expand green infrastructure grant programs throughout the region

To estimate GHG reductions from implementation of nature-based solutions, the PCAP modeled increases to forest and non-forest tree canopy area. The PCAP assumed an annual increase of 2.94% of forest and tree canopy, based on the projected tree planting that is needed to meet the goals of the *Cleveland Tree Plan*. However, a recent tree canopy study of Cuyahoga County measured an overall decline in tree canopy cover during the study period of 2011-2016 of approximately 1% tree canopy area by year, suggesting the need for widespread tree canopy growth initiatives to meet the assumptions of the PCAP. The PCAP model also applied an increase in parks and conservation land area from 7% of the region in 2010 to 15% in 2040, based on the *Vibrant NEO 2040* “Do Things Differently” scenario. For the increased forest and tree canopy area, the PCAP projected a total 2030 projection of 0.15 million Mt CO<sub>2</sub>e ( low impact) and a total 2050 projection of 0.42 million MtCO<sub>2</sub>e (medium low impact).

Applicants selected Nature-Based Solutions as a priority GHG reduction measure for the Implementation grant based on NOACA research that identified support for this measure across its service area, even within very rural areas where climate change skepticism is prevalent. Outreach during the PCAP planning process showed that, among 300 public survey respondents, 85% were Somewhat Willing or Very Willing to plant 1-2 trees on their property to expand tree cover (see figure). Additionally, “Include multimodal transportation infrastructure and complete streets in transportation planning” was identified as the top transportation goal at a two-day climate action priorities regional workshop.

Finally, Nature-Based Solutions provides significant co-benefits to communities that enhance other PCAP priorities. The Nature-Based Solutions included in this grant proposal will enhance the VMT reduction measure by addressing environmental barriers to shifting short trips to active transportation modes.

Q19 Are you willing to plant a new tree or two on your property to help expand tree cover?



*In a PCAP planning survey, 70% of respondents across NOACA's service area were very willing to plant trees on their property.*

## CPRG Program Goals

This program will advance the goals of the CPRG program in several ways. First, it will achieve significant short-term (2025-2030) GHG reductions from incentivizing the adoption of e-bikes and complement this with long-term, lasting GHG reductions from tree planting and complete and green streets investments. Second, it will provide substantial community benefits, including enhanced air quality, reduced noise pollution, improved public health from physical activity, reduced stormwater runoff, and reductions in the urban heat island within Northeast Ohio. The program is designed to ensure that at least half, if not more, of these benefits accrue to LIDAC areas. Third, this program complements and enhances existing funding mechanisms for climate action in the region. Applicants have identified e-bikes as a short-term priority measure for which no existing funding source exists. They have also structured the tree planting and complete and green streets components to build upon existing funding sources and increase the GHG reduction potential of the e-bikes program. Lastly, this program builds upon proven GHG reduction efforts to create immediate and long-lasting GHG reductions that Northeast Ohio and other regions across the U.S. can readily replicate and scale up in coming years.

## Coalition Partners

NOACA and its implementation partners will procure contractors through a competitive bid process that complies with the Procurement Standards described in 2 CFR Part 200. NOACA will submit an executed Memorandum of Agreement (MOA) that attests to coalition member duties by July 1, 2024.

## Section 1.b Demonstration of Funding Need

Currently, there exists no dedicated federal funding source for e-bikes. Though members of Congress have introduced the Electric Bicycle Incentive Kickstart for the Environment (E-BIKE) Act, the bill has not passed, and the provision did not make it into the final version of the Inflation Reduction Act (IRA). While e-bikes may qualify under other federal grant opportunities, such as the IRA's Community Choice Grant, Northeast Ohio has already identified other priority projects that align better with the goals of these grants. There is also no funding available for e-bikes from the State of Ohio, and it appears that the state has prioritized electrifying LDVs in its PCAP. While e-bike rebate programs from other cities and states, including Columbus and Denver, have demonstrated the demand for e-bikes, cost remains a significant barrier, particularly for low-income residents. To date, no local funders, such as local municipalities or community foundations, have stepped in to fund a rebate program. Securing CPRG funds can help coalition members prove the latent demand for e-bikes within Northeast Ohio and quickly expand the number of e-bikes in the region. Coalition partners can then leverage this success to secure supplemental funding from local partners.

Complete and green streets grant opportunities are scarce at local, state, and federal levels. In 2023, the City of Cleveland received a \$2.3 million grant from the U.S. Department of Transportation (U.S. DOT) to support a Safe Streets & Roads For All program, which will implement safety improvements and a safety study of one Cleveland neighborhood. Funding opportunities that support depaving are limited.

In 2023, the Cleveland Tree Coalition and the City of Cleveland partnered on an application to the U.S. Forest Service Urban and Community Forestry IRA program (USDA-FS-2023-UCF-IRA-01) to support a tree planting, maintenance, and outreach program in Cuyahoga County; it was not selected for an award. While individual member organizations of the Cleveland Tree Coalition have received grants to support tree planting and education/outreach activities related to trees, these programs have a limited geographic reach (Cleveland and Cuyahoga County) and are not managed by a central coordinating agency. Within the past five years, implementation partner WRLC has received grants totaling \$449,000 in support of its Reforest Our City program. None of these grants specifically focus on using tree planting

and complete and green streets elements to advance active transportation, as this program would.

## Section 1.c Transformative Impact

As evidence from other cities has shown, e-bikes have the potential to transform the transportation sector in Northeast Ohio over a short period and dramatically reduce emissions, particularly from short distance car trips. One third of total trips in the Cleveland-Elyria MSA are three miles or less, and 47% of trips are under five miles. Replacing a portion of these short trips with e-bikes will provide substantial benefits. One study estimated that replacing half of short car trips (i.e. those less than four kilometers one way) with bike trips in Cleveland would cut ambient PM<sub>2.5</sub> by 0.05 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ), leading to 53 fewer premature mortalities, 184 fewer asthma exacerbations, 1,405 fewer lost work days, and \$427 million in total health cost savings. Cleveland would also experience 42 fewer premature deaths per year and reap an additional \$233-313 million in annual benefits from increased physical activity.<sup>26</sup> E-bikes also open up the benefits of cycling to a larger community of people, including women, older Americans, and people with disabilities.<sup>27</sup> And Northeast Ohio's Amish population has already shown an interest in using e-bikes to enhance their mobility.<sup>28</sup>

At the moment, Northeast Ohio is not on track to meet its climate goals for transportation. Just 0.04% of daily trips occur by bike, and this share will fall to 0.02% by 2050. While the region has called for cutting VMT by 15% and 30% by 2030 and 2050, respectively, the reference case scenario assumes that VMT will grow by 0.33% per year. The region is also lagging behind on EV adoption. Cleveland has the fourth lowest EV adoption rate (0.9%) among the 50 largest MSAs.<sup>29</sup> Investing in e-bikes and the complete and green streets to facilitate their use presents an unprecedented opportunity to transform the transportation landscape in a region that is lagging in this area. E-bikes present an unparalleled way to get drivers out of cars. When provided with an e-bike, regular drivers increased the amount of time they spent cycling by 25% and reduced their VMT by 37%.<sup>30</sup> E-bikes owners ride more often, ride longer distances, and are more likely to use their bikes for transportation purposes than traditional cyclists.<sup>31</sup>

Depaving spaces in the public right of way provides a significant opportunity to address climate change hazards with more effective use of land. Decreasing impervious surfaces in the public right of way by removing unnecessary pavement can decrease the risk of flooding along roadways. Concrete and asphalt paving temperatures can reach 120–150°F during peak summer high temperatures<sup>32</sup>. On average in cities across the United States, tree shading can reduce temperatures by 37.5 degrees

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<sup>26</sup> Grabow, Maggie L., et al. "Air quality and exercise-related health benefits from reduced car travel in the midwestern United States." *Environmental health perspectives* 120.1 (2012): 68-76.

<sup>27</sup> Lee, Kyuhyun, and Ipek Nese Sener. "E-bikes toward inclusive mobility: a literature review of perceptions, concerns, and barriers." *Transportation research interdisciplinary perspectives* 22 (2023): 100940.

<sup>28</sup> Toll, Michal, March 12, 2023, "Believe it or not, the Amish are loving electric bikes," *Electrek*, <https://electrek.co/2023/03/12/believe-it-or-not-the-amish-are-loving-electric-bikes/>, accessed March 31, 2024.

<sup>29</sup> DriveOhio, 2024, "Ohio Alternative Fuel Vehicle Registration Dashboard," <https://drive.ohio.gov/about-driveohio/policy/ohio-alt-fuel-vehicle-reg-dashboard>, accessed March 31, 2024.

<sup>30</sup> Andersson et al, 2021.

<sup>31</sup> MacArthur, John, Jennifer Dill, and Mark Person. "Electric bikes in North America: Results of an online survey." *Transportation Research Record* 2468.1 (2014): 123-130. Fyhri, Aslak, and Hanne Beate Sundfør. "Do people who buy e-bikes cycle more?." *Transportation research part D: transport and environment* 86 (2020): 102422.

<sup>32</sup> Pomerantz, M., B. Pon, H. Akbari, and S.-C. Chang. 2000. The Effect of Pavements' Temperatures on Air Temperatures in Large Cities. Paper LBNL-43442. Lawrence Berkeley National Laboratory, Berkeley, CA. See also Cambridge Systematics. 2005. Cool Pavement Draft Report. Prepared for U.S. EPA.

Fahrenheit.<sup>33</sup> Planting additional trees on transportation corridors encourages multi-modal transit use by cooling streets and sidewalks, calming traffic, and reducing air pollution.

Coordinating and adding capacity to a regional network of tree canopy programs will curb the losses of tree canopy that is seen in rural, suburban, and urban communities in Northeast Ohio. According to the Cuyahoga County Planning Commission, the county lost an average of 1% tree cover per year in the period from 2011-2017. Similarly, the City of Cleveland is currently not on track to meet its goal to increase citywide tree canopy cover from 18% to 30% by 2040, which would require nearly a threefold increase in local planting efforts. In some neighborhoods in Cleveland, the tree canopy cover is as low as 6%.

Distributing trees to landowners is an effective tool to increase tree cover on private land. In Cleveland, nearly one-third of land area is privately owned residential land; this land use type contains both a majority of tree canopy cover and comprises a majority of observed canopy losses from 2011-2017. Studies of tree distribution events show that 89% of trees are planted, with observed losses of 3.8%-4.6% per year,<sup>34</sup> similar to survivorship rates of street trees in highly urbanized environments.<sup>35</sup> Providing free trees to landowners is one way to encourage investment in tree canopy where it will not burden city governments that are struggling to maintain public tree canopy.

## Section 2: Impact of GHG Reduction Measures

### Section 2.a Magnitude of GHG Reductions from 2025 through 2030 (Near-Term)

#### GHG Reductions: E-Bike Rebate Program

In order to quantify the GHG reduction potential from the regional e-bike rebate program, applicants utilized the RMI E-Bike Environment and Economics Impact Assessment Calculator for Cities (E-Bike Calculator). This tool, which RMI released in October 2023, enables users to quantify the impact of incentivizing e-bikes in order to shift residents from cars to e-bikes for short trips (under five miles).<sup>36</sup> The E-Bike Calculator is the best available tool for this analysis, as it assesses the benefits of a rebate program for any U.S. city and to customize program parameters, including number, size, and makeup of rebates.

Applicants worked with RMI to customize the calculator for the Cleveland-Elyria MSA. The E-Bike Calculator only estimates the benefits of an e-bike rebate program for 10 years, which it assumes is the functional lifespan of an e-bike. Because the proposed regional e-bike rebate program would take place over three years, a portion of the benefits would extend into years 11 and 12. To account for this, applicants updated the Calculator outputs to reduce the benefits in years one and two by 66% and 33%, respectively, to reflect the fact that the program would disburse one-third of the rebates each year. Applicants also amended the outputs to extend two-thirds and one-third of program benefits into years 11 and 12, respectively. Based on this analysis, the e-bike rebate program will reduce GHG emissions in

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<sup>33</sup> Wang C, Wang Z-H, Yang J. Cooling effect of urban trees on the built environment of contiguous United States. *Earth's Future*. 2018;6:1066–1081. doi: 10.1029/2018EF000891.

<sup>34</sup> Roman, L. A., Battles, J. J., & McBride, J. R. (2014). Determinants of establishment survival for residential trees in Sacramento County, CA. *Landscape and Urban Planning*, 129, 22-31.

<sup>35</sup> Hilbert, D. R., Roman, L. A., Koeser, A. K., Vogt, J., & van Doorn, N. S. (2019). Urban Tree Mortality: A Literature Review. *Arboriculture & Urban Forestry*, 45 (5), 167-200.

<sup>36</sup> Grunwald, Bryn, Heather House, Jacob Korn, and Ellen Kennedy, 2023, "E-Bike Environment and Economics Impact Assessment Calculator," Boulder, CO: RMI, <https://rmi.org/insight/e-bike-environment-and-economics-impact-assessment-calculator/>, accessed March 31, 2024.

the Cleveland-Elyria MSA by 16,791.7 MtCO<sub>2</sub>e from 2025-2030.<sup>37</sup> This reduction is durable in the near-term, as the e-bikes funded through the program have an expected lifespan that will stretch beyond 2030. However, e-bike recipients need to replace the bike's battery every four years. If recipients do not complete this, it may reduce the durability of the bikes and lower near-term GHG reductions.

### GHG Reductions: Complete and Green Streets

Applicants used the U.S. Forest Service's i-Tree Tools Suite to quantify the benefits of planting 7,363 trees over a five-year project period, including within impervious areas that have been depaved. Model assumptions are detailed in Section 2.d and the Technical Appendix. Based on the i-Tree Planting models, GHG reductions from tree plantings equal 168.9 MtCO<sub>2</sub> sequestered and 330.7 MtCO<sub>2</sub> avoided, for a total reduction of 499.6 MtCO<sub>2</sub> from 2025-2030.

### Section 2.b Magnitude of GHG Reductions from 2025 through 2050

Because the e-bikes subsidized through this program will be on the road from 2025-2036, the measure will continue to generate GHG reductions beyond 2030. The application for this analysis conservatively assumes the bikes this grant funds will be scrapped after 10 years. If properly maintained, e-bikes can remain in operation longer for a much longer span, meaning that the GHG reductions here are likely an underestimate. Nevertheless, it is also possible that some of the program participants will stop using their bikes before the 10-year window expires for various reasons. While some of these participants may transfer their e-bikes to another person (which would ensure the benefits continue to accrue), others may stop riding them altogether. In this instance, the actual GHG reductions from 2025-2050 may fall short of estimates. Based on this analysis, the e-bike rebate program will reduce GHG emissions in the Cleveland-Elyria MSA by 30,957.1 MtCO<sub>2</sub>e from 2025-2050.

i-Tree Planting models estimate tree plantings will sequester 1,397.0 MtCO<sub>2</sub> and avoid 2,735.8 MtCO<sub>2</sub> from 2025-2050, for a total reduction of 4,132.7 MtCO<sub>2</sub>. These calculations account for annual mortality of 2.6% for planted ROW trees and 4.6% for trees that are distributed for planting on private property.

### Section 2.c Cost Effectiveness of GHG Reductions

The cost effectiveness of all GHG reduction measures, including e-bikes, tree establishment, and complete and green streets, is calculated as:

Requested CPRG funding (**\$9,999,000**) / Quantified GHG reductions from CPRG funding from 2025-2030 (**17,291.3 MtCO<sub>2</sub>e**) = **\$578.30 per MtCO<sub>2</sub>e**.

### Section 2.d Documentation of GHG Reduction Assumptions

Please refer to the Technical Appendix for a description of the assumptions behind the GHG reductions for the regional e-bike rebate program measure.

Two separate i-Tree Planting models were run to simulate the direct planting of 7,363 trees of 1-inch truck diameter in size, split into 1,540 street right-of-way tree plantings (2.6% annual mortality) and distribution of 5,822 trees for front-yard residential planting (4.6% annual mortality). Tree model inputs consisted of 23 and 25 species of trees, respectively, based on local species lists provided by WRLC and a tree care company. The number of trees per species varied based on the relative species abundances used for ROW versus yard plantings. Other model parameters are described in the Technical Appendix. A

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<sup>37</sup> For a more detailed methodology and spreadsheet containing outputs and annual GHG reductions, reference the Technical Appendix and GHG Reductions attachment.

five-year lag in benefits accrual was included in the final reporting of GHG reductions.

## Section 3: Environmental Results - Outputs, Outcomes, and Performance Measures

### Section 3.a Expected Outputs and Outcomes

As described in Section 2, this program would mitigate a total of 35,089.8 MtCO<sub>2</sub>e. Based on social cost of carbon estimates from U.S. EPA, the GHG savings associated with this program will produce \$4.35 million to 12.35 million in total benefits (in 2020 USD), using a 2.5% and 1.5% discount rate, respectively.<sup>38</sup> These benefits offset 43.5-123.5% of the program's total cost.

The RMI E-Bike Calculator also estimates reductions of CO, NO<sub>x</sub>, and PM<sub>2.5</sub> from e-bike rebate programs. Because they do not have tailpipes, e-bikes generate no direct emissions of CAPs. However, because the electricity used to charge their batteries comes from the grid, e-bikes are responsible for a small amount of air pollution. The E-Bike Calculator accounts for the emissions associated with charging and subtracts it from total co-pollutant emissions reductions. Over the course of the e-bike rebate program, Northeast Ohio will enjoy reductions in CO, NO<sub>x</sub>, and PM<sub>2.5</sub> emissions of 319.99 tons, 10.66 tons, and 0.95 tons, respectively. According to COBRA, the region will reap \$578,012-1,303,604 in total health benefits.

The e-bike rebate program will also generate benefits from increased physical activity. Applicants used the World Health Organization's (WHO) Health Economic Assessment Tool (HEAT) model to quantify these benefits. Assuming that rebate recipients will ride their bikes 3.5 miles per day (20 minutes of daily physical activity), the program will prevent 57 premature deaths over 10 years, with a total benefit of \$242 million (2020 USD), using a 3% discount rate. Lastly, e-bikes cost less to operate than LDVs (or EVs). The RMI E-Bike Calculator estimated savings program participants will save nearly \$12.7 million from reduced vehicle operating costs.

i-Tree Tools model outputs estimated the following benefits of 7,363 new trees from 2025-2050:

<b>Benefit</b>	<b>2030</b>	<b>2050</b>
Electricity Saved (kWh)	143,872	1,190,210
Fuel Saved (MMBtu)	2,241	18,536
Rainfall Interception (gallons)	2,938,694	24,311,016
Evaporation (gallons)	2,935,794	24,287,022
Transpiration (gallons)	4,951,749	40,964,471
Avoided Runoff (gallons)	691,379	5,719,591
Air Pollution Reduction - total (metric tons)	2.60	21.50
O3 Removed (metric tons)	0.63	5.25
NO2 Avoided (metric tons)	0.06	0.46
NO2 Removed (metric tons)	0.09	0.76
SO2 Avoided (metric tons)	1.69	13.99
SO2 Removed (metric tons)	0.04	0.33
VOC Avoided (metric tons)	0.01	0.06
PM2.5 Avoided (metric tons)	0.03	0.23
PM2.5 Removed (metric tons)	0.05	0.42

### Section 3.b Performance Measures and Plan

<sup>38</sup> See the GHG Reductions attachment for the completed workbook.



**E-Bike Rebate Program:** Applicants will use the following performance measures for the e-bike rebate:

1. Number of e-bike rebate applications received
2. Share of e-bike rebate applications received from low-income recipients
3. Share of e-bike rebate applications received from LIDAC Census tracts
4. Number of e-bike rebate applications processed by Program Administrator
5. Number of e-bike rebate applications awarded by Program Administrator
6. Share of e-bike rebate applications awarded to low-income recipients
7. Share of e-bike rebate applications awarded in LIDAC Census tracts
8. Share of e-bikes purchased at bike retailers in LIDAC Census tracts
9. Number of e-bike trips per week
10. Number of e-bike miles ridden per week
11. Number of VMT per week (before purchasing e-bike)
12. Number of VMT per week (after purchasing e-bike)

Coalition partners will implement a two-phase performance plan. First, partners will request that all e-bike rebate recipients log their e-bike trips using Strava and/or Gohio Commute. Strava is a mobility tracking app that allows users to log their trips for more than 30 types of physical activities, including e-bikes. Gohio Commute, in turn, is a statewide trip planning, ridematching, and trip logging platform developed by Ohio's metropolitan planning organizations, including NOACA. Gohio Commute users can sync the platform with their Strava accounts; they can also take advantage of the platform's companion app, Commute Tracker, to automatically log their trips. Coalition partners will encourage and assist rebate recipients to log their e-bike trips via one or both platforms. Coalition partners may host challenges and incentive programs via Gohio Commute in order to engage regularly with e-bike rebate recipients and encourage them to continue logging their trips over the long run.

Second, coalition partners will continue an annual survey of rebate recipients to quantify the benefits of the program. The Program Administrator will be responsible for surveying a statistically significant sample of rebate recipients during the three years of the rebate program. This approach will supplement trip logging and provide a validation of the program's benefits across the duration of the rebate program.

**Northeast Ohio Complete and Green Streets Program:** The PCAP recommends three metrics with which to measure the Nature-Based Solutions priority GHG measure that will be implemented by this project:

1. Share of region covered by tree canopy: calculated once in Year 1 (GIS prioritization study)
2. Square feet of impervious surfaces removed (reported annually)
3. Number/acres of trees planted (reported annually)

In addition, NOACA will report annually on performance measures including:

4. Number of complete and green streets projects and estimated GHG reductions based on linear feet of enhanced roadway, stormwater gallons captured, and active transportation mode users.
5. Tree-related metrics including the number, species, and locations of trees planted and given away; carbon capture and air pollution removal of planted trees; and gallons of stormwater runoff avoided. Additionally, within Cleveland, all trees will be recorded in WRLC's GIS system at time of planting with geographic location, height and caliper width. Tree failures are recorded as discovered during maintenance. Trees which fail within the first 3 years of planting are replaced the following season, except in rare cases where the cause of failure is a previously unknown environmental factor which cannot be mitigated.

### Section 3.c Authorities, Implementation Timeline, and Milestones

## **Measure 1: Regional E-Bike Rebate Program**

As the lead applicant, NOACA will serve as the grant recipient and primary contact with U.S. EPA on grant deliverables, including the QAPP, semi-annual reports, and final grant report. NOACA and the City of Cleveland will jointly conduct a competitive RFP process to select a third-party contractor to serve as the Program Administrator. The City will also market and promote the program to prospective participants, contribute to the final program design, and support the tracking and evaluation of program benefits. The City reserves the right to conduct an initial pilot phase of the e-bike rebate program for City of Cleveland residents in order to serve as proof of concept for the region-wide rebate program. As implementing partner, Bike Cleveland will serve as the e-bike rebate program's liaison to bike retailers in Northeast Ohio, in order to ensure their participation in the program and help to troubleshoot issues that may arise. Bike Cleveland will also market and promote the e-bike rebate program to prospective participants and help foster community among rebate recipients, including by providing information on safe e-bike riding, sharing resource on proper e-bike maintenance, and encouraging recipients to log their e-bike trips on the designated tracking applications for this grant (Strava and Gohio Commute).

The Program Administrator will manage the day-to-day operations of the rebate program, ensuring that there is an entity dedicated to implementing the program as outlined in this grant application. The Program Administrator will carry out all essential administrative functions of the program, including, soliciting applications from potential participants, screening applications, issuing awards, reimbursing bike retailers, and providing regular reports to program partners. The Program Administrator may also choose to hold multiple rebate application cycles during each program year, as Denver has done, in order to increase participation and make program administration more manageable.

### *Implementation Timeline*

- Estimated Award Date: October 1, 2024
- RFP For Program Administrator Released: November 11, 2024
- Program Administrator Selected: January 10, 2025
- QAPP Submitted: January 31, 2025
- Program Administrator Contract Signed: February 14, 2025
- Year 1 Program Promotion Begins: March 24, 2025
- Semi-Annual Report Submitted to U.S. EPA: March 31, 2025
- Year 1 Rebate Application Window Opens: June 23, 2025
- Annual Report Submitted to U.S. EPA: September 30, 2025
- Year 2 Program Promotion Begins: March 23, 2026
- Semi-Annual Report Submitted to U.S. EPA: March 31, 2026
- Year 2 Rebate Application Window Opens: June 22, 2026
- Semi-Annual Report Submitted to U.S. EPA: September 30, 2026
- Year 3 Program Promotion Begins: March 22, 2027
- Semi-Annual Report Submitted to U.S. EPA: March 31, 2027
- Year 3 Rebate Application Window Opens: June 21, 2027
- Semi-Annual Report Submitted to U.S. EPA: September 30, 2027
- Final Grant Report Submitted to U.S. EPA: February 29, 2028

## **Measure 2: Regional Complete and Green Streets Program**

### *Task 1: Identify Priority Areas for Transportation Corridor Nature-Based Solutions*

NOACA will oversee completion of this task in Year 1. NOACA will solicit competitive bids through an RFP for a GIS-based study that identifies priority locations for nature-based solutions along buffered

transportation corridors that support active modes of transportation. The GIS study will use aerial imagery and LiDAR to classify land cover to establish a baseline for regional tree canopy area—a metric that is recommended by the PCAP to provide a mechanism to measure future progress—as well as quantify the recent trend of regional tree canopy change across the past 5-10 years. It will prioritize areas for complete and green streets projects, tree planting, and green stormwater management within buffered transportation corridors by combining geospatial data across NOACA’s five-county service area.

#### Task 1 Milestones. Year 1:

- NOACA will solicit competitive bids for a GIS-based study via RFP: November 2024
- NOACA will select a contractor for the GIS priority areas study: January 2025
- The GIS contractor will initiate the prioritization study, including the following geospatial data, at minimum: bicycle lanes, bus routes and bus stops, pedestrian and cyclist crash statistics, road type and vehicle use information, 5-class land cover (including tree canopy and impervious surface) and change, stormwater management potential, urban heat island mitigation, social and human health indicators for LIDAC populations: February 2025
- Areas will be classified from Very Low to Very High priority for nature-based solutions along multimodal transportation corridors based on their potential to improve the comfort and safety of pedestrians, cyclists, public transportation riders, and Amish buggy riders: April 2025
- Findings of the GIS study will be shared via NOACA’s GIS portal: July 2025

#### *Task 2: Implement a Regional Complete & Green Streets Program*

NOACA will oversee implementation of a regional complete and green streets program in Years 1-5.

#### Task 2 Milestones. Year 1:

- NOACA releases an RFP to solicit eligible complete and green streets projects that adhere to federal grant guidelines and NOACA’s Complete and Green Streets Policy. NOACA advertises the opportunity to its network. December 2024
- NOACA details provisions for competitive procurement of bids that comply with federal grant guidelines: January 2025
- NOACA scores RFP responses and selects eligible projects totaling up to \$225,000: March 2025. Any unallocated funds will be rolled over to Year 2.
- NOACA disburses funds on a quarterly reimbursement basis based on proof of eligible procurement practices and costs that comply with local, state, and federal guidelines for funding sources: Q3, Q4 2025.
- NOACA prepares an annual report on awarded project activities and estimated GHG reductions that are based on metrics including linear feet of enhanced roadway, depaved area, trees planted, stormwater gallons captured, and estimated active transportation modes (pedestrians, cyclists, etc) users: December 2025

#### Years 2-4:

- NOACA releases yearly RFPs to solicit eligible projects and advertises the opportunities to its network: December 2025, 2026, 2027.
- NOACA scores applications and selects eligible projects totaling \$225,000 per year (plus unallocated funds from prior years): March 2026, 2027, 2028
- NOACA disburses funds on a quarterly reimbursement basis based on proof of eligible procurement practices and costs that comply with local, state, and federal guidelines for funding sources: Quarterly, 2026, 2027, 2028.

- NOACA prepares annual reports as described above: December 2026, 2027, 2028.

Year 5:

- Construction concludes on complete and green streets projects: July 2029.
- NOACA disburses the remainder of grant funds to eligible projects. September 2029.
- NOACA prepares a final report of project impacts, including GHG reductions for the five-year program. December 2029

### *Task 3: Increase Tree Canopy to Shade, Cool, and Calm Active Modes Corridors*

WRLC will plant 876 trees and distribute 2,500 trees through its Reforest Our City program. WRLC will contract and partner with external agencies to plant an additional 664 trees and distribute 3,322 trees throughout the rest of the PCAP service area.

Task 3 Milestones: Years 1-5 (Spring and fall planting seasons, 2025-2029):

- WRLC plants and distributes 175 trees per year in Cleveland through its Reforest Our City initiative. Planting locations will be identified from among High and Very High priority locations for Nature-Based Solutions as identified by the GIS study.
- WRLC distributes 500 free trees per year to private landowners in Cleveland LIDAC census tracts that are designated for planting in front yards, where trees can shade and cool sidewalks and streets and provide energy savings to homeowners.
- WRLC manages contracts in each of the five counties to plant trees within transportation corridors in priority areas for Nature-Based Solutions. Contractors will include municipal forestry departments, park agencies, and tree care companies, with preference given to programs and contractors who have certified arborist oversight, a track record of successful tree establishment, and who are located within LIDAC census tracts.
- WRLC will provide financial support and technical expertise to soil and water conservation districts, park districts, and environmental and community nonprofits in the five-county region to distribute free trees to residents committed to planting trees in front yards along active-mode transportation corridors. Nursery stock will consist of containerized trees from 3- to 15-gallons in size. Tree distribution activities must give priority to landowners within LIDAC Census tracts.
- In collaboration with local partners, WRLC will provide educational resources to landowners, partners, and contractors on the topics of tree species selection, proper tree planting techniques, and young tree care.
- WRLC will provide annual reports on the number of trees that are planted and distributed including size, species, and location. (December)
- NOACA will calculate and report on GHG reductions associated with tree plantings. (December)

## Section 4: Low-Income and Disadvantaged Communities

### Section 4.a Community Benefits

**E-Bike Rebate Program:** As noted, applicants intend to award at least 50% of rebates to residents of LIDAC areas and to low-income individuals. Accordingly, at least half of program benefits should accrue to LIDAC Census tracts, which are listed as an appendix. Direct and indirect benefits to LIDAC areas from the regional e-bike rebate program include, but are not limited to:

- GHG emissions reductions: At least half of the benefits from GHG emissions reductions should accrue to LIDAC Census tracts.

- Reductions in CAPs, including CO, NO<sub>x</sub>, PM<sub>2.5</sub>, and volatile organic compounds (VOCs): At least half of the benefits from CAP reductions will accrue to LIDAC Census tracts. These reductions will directly benefit public health among residents of these tracts, particularly residents living adjacent to heavily-trafficked roads. Residents of LIDAC Census tracts are exposed to higher levels of ground-level ozone, NO<sub>2</sub> and PM<sub>2.5</sub>, than the MSA average, meaning this program will help to address inequities in air pollution exposure. The benefits of CAP reductions will also accrue to downwind LIDAC Census tracts, particularly in northeastern Cuyahoga County and Geauga and Lake Counties, which are the areas with the region's highest ozone concentrations.
- Reductions in noise pollution: Beyond GHGs and CAPs, LDVs also emit significant amounts of noise pollution, which is the world's second largest environmental health problem.<sup>39</sup> Vehicles account for the majority of noise pollution in American cities, and the problem is more acute for LIDAC areas.<sup>40</sup> In Northeast Ohio, LIDAC tracts are exposed to 44% more traffic volume.
- Physical activity benefits: The e-bike rebate program will promote mode shift away from LDVs and increase physical activity among program participants. As a result, at least half of the physical activity benefits discussed in Section 3a should occur in LIDAC areas. This will be particularly beneficial, as LIDAC residents perform worse on a number of health indicators. Life expectancy for LIDAC residents is 2.5 years shorter than the MSA average. LIDAC residents also have higher rates of asthma, chronic obstructive pulmonary disorder (COPD), diabetes, and stroke, and are more likely to report having poor physical and mental health, respectively. Accordingly, this e-bike program can play a small role in addressing underlying health inequities.
- Increased mobility and transportation access: Physical mobility is key for resilience to climate change. Households without access to personal vehicles have lower rates of employment, lower incomes, and lower rates of social mobility.<sup>41</sup> Access to a vehicle is also a key determinant of social vulnerability to climate change and disasters.<sup>42</sup> The rate of zero vehicle households is 31% higher among LIDAC Census tracts in Northeast Ohio. These tracts also have higher scores on the U.S. DOT's Travel Barriers index. By providing LIDAC residents with discounted e-bikes can increase their physical and social mobility.
- Reduced household transportation costs: In 2022, households in the lowest income quintile spent more than double their after-tax income on transportation than those in the top income quintile.<sup>43</sup> While vehicle ownership provides clear benefits for low-income households, it also saddles them with high costs. E-bikes can help to provide the benefits of vehicle ownership at a far lower cost. As discussed in Section 3a, program participants will save nearly \$12.7 million through an e-bike rebate program, and at least half of these savings will occur in LIDAC areas.

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<sup>39</sup> Peris, Eulalia, January 2020, Noise pollution is a major problem, both for human health and the environment," European Environment Agency, <https://www.eea.europa.eu/articles/noise-pollution-is-a-major>, accessed March 31, 2024.

<sup>40</sup> Lee, Eunice Y., et al. "Assessment of traffic-related noise in three cities in the United States." *Environmental research* 132 (2014): 182-189.

<sup>41</sup> Smart, Michael J., and Nicholas J. Klein. "Disentangling the role of cars and transit in employment and labor earnings." *Transportation* 47.3 (2020): 1275-1309. King, David A., Michael J. Smart, and Michael Manville. "The poverty of the carless: Toward universal auto access." *Journal of Planning Education and Research* 42.3 (2022): 464-481.

<sup>42</sup> Flanagan, Barry E., et al. "A social vulnerability index for disaster management." *Journal of homeland security and emergency management* 8.1 (2011): 0000102202154773551792

<sup>43</sup> U.S. DOT Bureau of Transportation Statistics, September 19, 2023, "The Household Cost of Transportation: Is it Affordable?" [https://www.bts.dot.gov/data-spotlight/household-cost-transportation-it-affordable#:~:text=In%202022%2C%20the%20lowest%20income,of%20less%20than%20roughly%20%2425%2C000.0.&text=In%202022%2C%20the%20household%20making,12%25%20\(Figure%201\)](https://www.bts.dot.gov/data-spotlight/household-cost-transportation-it-affordable#:~:text=In%202022%2C%20the%20lowest%20income,of%20less%20than%20roughly%20%2425%2C000.0.&text=In%202022%2C%20the%20household%20making,12%25%20(Figure%201)), accessed March 31, 2024.

- Climate resilience benefits: Up to one-third of the heat in urban areas comes from the thermal pollution produced by vehicles. Eliminating this thermal pollution by promoting mode shift and electrifying the vehicle fleet can ameliorate the urban heat island effect, making communities more resilient to the impacts of climate change.<sup>44</sup> Climate change also threatens transportation infrastructure in Northeast Ohio by accelerating the freeze-thaw cycling, increasing heavy precipitation and flooding, and rising temperatures. Because e-bikes are far lighter than LDVs, they can help to mitigate some of these damages by placing less strain on roads.

By encouraging participants to log their e-bike trips with Strava and Gohio Commute, coalition partners will be able to monitor what share of e-bike trips and miles occur in LIDAC areas. The applicants will supplement these trip logs with survey data from program participants.

There are some potential negative effects of the e-bike rebate program for LIDAC communities. If program participants switch more trips away from conventional bikes than from LDVs, emissions of GHGs and CAPs may increase slightly. The health benefits of physical activity may also decrease somewhat if recipients shift more trips away from walking or conventional bikes and do not increase the length of their e-bike trips to offset this shift. Additionally, the WHO HEAT model results suggest that the e-bike program may lead to an increase in traffic fatalities. To minimize these risks, coalition partners are working with bike retailers to provide discounted safety equipment (helmets, locks) to rebate recipients. All or nearly all of the potential reduction in physical activity from shifting biking and walking trips to e-bikes will be offset by the fact that e-bike owners tend to ride farther and longer.<sup>45</sup> Additionally, the complete and green streets elements of this program will further encourage rebate recipients to ride their e-bikes and will help to enhance safety for all road users.

**Regional Complete and Green Streets Program.** Applicants will prioritize implementation of nature-based solutions within LIDACs by awarding the portion of funding that is earmarked for nature-based solutions approximately in proportion to the LIDAC populations of each of the five counties: Cuyahoga County, 74% (of which Cleveland is 55% of total funding); Lorain County, 22%; Lake County, 2%; Geauga County and Medina County, 1% each. Direct and indirect benefits of the regional complete and green streets program include:

- Reduces regional green space inequality. Across Northeast Ohio, LIDACs tend to have lower tree canopy cover and reduced access to parks and green space. Depaving and adding plants and trees increases green space cover and brings the many benefits of trees and green space (reduced stress, reduced air pollution) to LIDACs. Green space inequality will be measured by tree canopy cover, linear feet of street improvements, and depraved area.
- Reduces air pollution and urban heat island. Trees and vegetation filter out air pollution and particulate matter. Air pollution benefits are estimated at \$170,508 over the project period; i-Tree Tools will provide updated measurements based on the number of trees that are planted within LIDACs. The GIS prioritization study will provide a baseline for urban heat island that can be compared in future studies, such as Cleveland State University.
- Energy cost savings. Through evapotranspiration cooling by trees that are planted through this project, i-Tree Tools estimates that LIDAC communities will save \$321,321 in fuel and electricity

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<sup>44</sup> Mussetti, Gianluca, et al. "Do electric vehicles mitigate urban heat? The case of a tropical city." *Frontiers in Environmental Science* 10 (2022): 810342. Li, Canbing, et al. "Hidden benefits of electric vehicles for addressing climate change." *Scientific reports* 5.1 (2015): 9213.

<sup>45</sup> Castro, Alberto, et al. "Physical activity of electric bicycle users compared to conventional bicycle users and non-cyclists: Insights based on health and transport data from an online survey in seven European cities." *Transportation research interdisciplinary perspectives* 1 (2019): 100017.

costs over the lifetime of the project.

- Vehicle crashes (disbenefit). A potential disbenefit of nature-based solutions within LIDACs is the increased risk of injuries from traffic accidents involving trees.<sup>46</sup> This disbenefit is less pronounced in urban areas, where traffic moves at lower speeds and trees assist with traffic calming—this is the dominant landscape type in Northeast Ohio LIDACs—compared to rural LIDACs where vehicle speeds are higher. This disbenefit will be measured with vehicle crash data.

## Section 4.b Community Engagement

Both NOACA and the City of Cleveland conducted various engagement processes to connect with residents in Cleveland and the MSA to gather community feedback for the PCAP. As part of the development of its Climate Risk and Vulnerability Assessment (CRVA) during fall 2023, the City of Cleveland conducted a public survey and held four in-person public engagement sessions to gain input from populations that did not participate in the survey process.

Throughout this engagement process, community members repeatedly expressed concern about the transportation system in the region and the lack of trees in their neighborhoods. Participants in public engagement sessions within the City of Cleveland asked the City to invest in walkable and bikeable streets and to shift away from car culture. Some attendees expressed concerns about air quality in their neighborhood from car emissions and heavy traffic, especially during rush hour. The City also heard concerns that some neighborhoods are more vulnerable to climate hazards due to a lack of green space, trees, and biking infrastructure. One individual requested the City to “plant more trees and create more green space including trails and greenways.” During March 2024, Bike Cleveland conducted an online survey among bike retailers in Northeast Ohio. Bike shops that responded to the survey expressed support for a regional e-bike rebate program, confirmed that they would be willing to participate in the program, stated they could sell enough e-bikes to meet program targets, and indicated they would be willing to offer discounted safety equipment (helmets, locks, etc.) to rebate recipients.

In the future, as Cleveland and NOACA work on the CCAP, more public engagement sessions will occur across the MSA. Both NOACA and the City will work with public engagement consultants to continue to gather feedback and suggestions from the community about climate actions and hazards.

WRLC will work with community development corporations in City of Cleveland LIDAC, low tree canopy neighborhoods to engage residents in the siting, planting, and maintenance of trees. By working with these trusted community partners, staff will connect with resident stakeholders who will recruit additional participation by their neighbors. In advance of tree planting and distributions, WRLC staff will conduct outreach to residents by going door-to-door, attending block club meetings and community events. Staff will also table at high-traffic community sites including grocery stores and libraries. During outreach, staff will share information on the benefits of trees, recruit residents to receive a free tree for their yard and encourage residents to become Tree Steward volunteers. Residents will also assist with species selection and placement of trees. Following Tree Steward training, residents will staff tree planting events and recruit their neighbors to plant trees in their yards. WRLC will continue to follow up with residents regarding tree care and maintenance through email communications and text messaging and offer technical assistance as requested.

## Section 5: Job Quality

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<sup>46</sup> Eisenman, T. S., Coleman, A. F., & LaBombard, G. (2021). Street Trees for Bicyclists, Pedestrians, and Vehicle Drivers: A Systematic Multimodal Review. *Urban Science*, 5(3), 56.



Job benefits associated with the Regional Complete and Green Streets Program are most directly impacted by arboriculture services that will be required for tree planting and establishment. WRLC's Reforest Our City program aligns with good jobs principles developed by the U.S. Department of Labor and the Department of Commerce by creating employment opportunities, promoting equity, engaging the community, and fostering environmental sustainability. Reforest Our City strategically targets neighborhoods that have historically faced challenges due to redlining and lack of green space, ensuring job opportunities and tree benefits reach communities that need them most.

Reforest Our City employs three permanent employees and hires a four-person seasonal Tree Crew every year. Pay ranges for permanent positions are \$44,200-\$84,600 in annual salary. Benefits include medical, dental, prescription drug and vision coverage; short term and long term disability coverage; paid time off (vacation and sick days bundled together); paid holidays; and a 403b retirement plan. Eligibility for all benefits starts on the first day of employment. Tree Crew employees are seasonal, full-time employees (40 hours per week) with hourly pay rates of \$17-\$20; their position has a fixed start and end date. They are eligible for medical, dental, prescription drug and vision coverage; 403b retirement plan; and 32 hours of PTO after completing 30 days of employment. These are hourly paid positions eligible for overtime. WRLC recruits a diverse pool of candidates by posting position openings on job boards and sharing widely with local partners. Members of the Tree Crew receive extensive training and exposure to the field of arboriculture that prepares them for careers in the industry. The career prospects for arboriculture workers are strong: there is an estimated national shortage of over 8,300 tree industry workers annually, and American Forests projects there will be 173,000 arboriculture jobs to fill by 2028.<sup>47</sup> Tree trimmers and pruners are paid a median wage of \$22.64 hourly or \$47,080 annually.<sup>48</sup> In addition, Reforest Our City actively trains and empowers local Tree Stewards, community volunteers responsible for planting, caring, and maintaining trees in their neighborhoods. By providing training and creating opportunities for residents to engage in tree-related work, Reforest Our City fosters job creation and skill development.

WRLC will procure contracts for tree planting in other parts of the NOACA service area that abide by the same labor standards as Reforest Our City. Past tree planting contracts have utilized a rate of \$500-\$600 per tree for planting, which provides for wages in the range of \$15-29 hourly plus benefits, and \$400 per tree for two years of establishment that pays for watering, mulching, and pruning at similar rates. Local nonprofit agencies, small landscape contracting businesses, and large tree care companies have all successfully planted trees at these contracted rates in Northeast Ohio.

## Section 6: Programmatic Capability and Past Performance

NOACA has managed several projects which are funded through discretionary grants, often in partnership with community partners. Currently NOACA is under agreements with various federal agencies for the projects listed below:

### 1. Regional Infrastructure Accelerators (RIA) Program

- Project title: Northeast Ohio Areawide Coordinating Agency Regional Infrastructure Accelerator
- Assistance agreement number: 693JJ32250007

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<sup>47</sup> American Forests. 2024. Career Pathways Initiative. <https://www.americanforests.org/project/career-pathways/>

<sup>48</sup> Bureau of Labor Statistics, U.S. Department of Labor, 2022. *Occupational Employment and Wages, May 2022. 37-3013 Tree Trimmers and Pruners*. Accessed March 26, 2024 at <https://www.bls.gov/oes/current/oes373013.htm>

- Federal or non-federal funding agency and assistance listing number (formerly known as the CFDA number): 20.233
- Description of the agreement: This agreement permits the Build America Bureau to provide up to \$225,000 to NOACA to support two major initiatives: (1) to develop a regional MPO-focused business model to develop and sustain RIAs, and (2) to support specific large-scale transportation projects through the process to apply for U.S. DOT credit assistance programs, primarily TIFIA.
- Build America Bureau (BAB) Contact: Carl Ringgold (carl.ringgold@dot.gov), 202-913-3748
- Project agreement status and management: NOACA was one of five national recipients of the first rounds of awards made through this new grant program. NOACA is the direct recipient and provides invoices and quarterly reports to BAB. We currently schedule bi-weekly calls with BAB to ensure we are on the same page as the project progresses. As of the timing of this application submission, NOACA is approximately halfway through managing its RIA project in conjunction with US BAB. This was a new type of project for NOACA. We hired a consultant who has expertise with large scale federal credit assistance programs, and they are supporting NOACA and partners on executing the deliverables of the agreement. We had to extend the agreement by one year to ensure we had plenty of time to execute the agreement in its entirety. At this point, the project is moving along well.

## 2. INFRA (Nationally Significant Multimodal Freight & Highway Projects program)

- Project title: Irishtown Bend M-90 Corridor Bank Stabilization
- Assistance agreement number: 693JF72040009
- Federal or non-federal funding agency and assistance listing number (formerly known as the CFDA number): unknown (not listed on agreement nor NOFO)
- Description of the agreement: This agreement allows the Maritime Administration to support the stabilization of the Irishtown Bend hill in the City of Cleveland along the Cuyahoga River. It will include a new bulkhead, drainage, utility relocation, sewer repair, grading, and a roadway reconstruction on this 25 acre site with about 2,000 linear feet of frontage along the river.
- Contact from the Maritime Administration: Gerald Hill (Gerald.hill@dot.gov)
- Project agreement status and management: This agreement was executed in September 2022, with award to a contractor in July 2023. The project is currently underway. NOACA is the direct recipient and provides invoices and quarterly reports to MARAD. We currently schedule monthly calls with MARAD to ensure we are on the same page as the project progresses. As of the timing of this application submission, the project is approximately 20% complete.

## 3. Climate Pollution Reduction Grant

- Project Title: NOACA Cleveland CPRG
- Assistance agreement number: 00E03472
- Federal or non-federal funding agency and assistance listing number (formerly known as the CFDA number): 66.046
- Description of the agreement: This agreement supports NOACA and the City of Cleveland's efforts to create a regional plan focusing on climate mitigation to address GHG emissions and reduction measures. The region consists of a five county area comprising diverse communities.
- Contact from the US Environmental Protection Agency: Carter Cranberg (cranberg.carter@epa.gov) 312-353-0605
- Project agreement status and management: NOACA, the City of Cleveland, and other partners were able to successfully complete the grant requirements in a relatively short period of time. This included developing a Primary Climate Action Plan (PCAP), which was due March 1, 2024.

## Reporting Requirements:

### 1. Regional Infrastructure Accelerators Program

- Project title: Northeast Ohio Areawide Coordinating Agency Regional Infrastructure Accelerator
- NOACA has so far submitted its required quarterly reports for this grant, including status updates on the project deliverables. The next quarterly report is due April 20, 2024. The project was delayed from the onset and has an updated ending period of performance date. This was all communicated to the program coordinator, and an amendment for a no cost extension was executed. We expect to fully complete the project by the new deadline.

### 2. INFRA (Nationally Significant Multimodal Freight & Highway Projects program)

- Project title: Irishtown Bend M-90 Corridor Bank Stabilization
- NOACA has so far submitted its required quarterly reports for this grant, including updates on project deliverables. The next quarterly report is due April 20, 2024. This project is still relatively early in its process. We communicate at least monthly with the program coordinators, providing them with status updates and challenges.

### 3. Climate Pollution Reduction Grant

- Project Title: NOACA Cleveland CPRG
- NOACA has submitted two required quarterly reports for this grant; the next report is due April 30, 2024. NOACA has also successfully submitted the first of its three major deliverables, the Priority Climate Action Plan (PCAP), as of February 28, 2024. NOACA's next major deliverable, the Comprehensive Climate Action Plan (CCAP) is due July 27, 2025. NOACA has not experienced any significant delays, and the agency is very satisfied with project outcomes to date.

## Section 6.c Staff Expertise

NOACA is the metropolitan planning organization for the counties of Cuyahoga, Geauga, Lake, Lorain, and Medina in Northeastern Ohio. NOACA has a budgeted staff of 47 individuals across all agency functions, including professional planners, engineers, and dedicated finance, administrative and IT support staff. With over 50 years of organizational experience and a track record of successful grant administration, NOACA is well-positioned to ensure the project's goals are met and to guarantee sound reporting and fiscal management throughout the project's period of performance. The technical expertise of the NOACA staff will be integral in advancing the objectives of the projects contained in this application. NOACA staff in the Strategic and Environmental Planning division developed and wrote the PCAP that supports the application; their skills will be valuable to reviewing GHG reduction efforts on an ongoing basis through the life of the project. In addition, NOACA Programming staff annually evaluate requests for formula federal funding (i.e. CMAQ), making them well-suited to review applications for the Complete & Green Streets funding that is proposed. More information regarding the backgrounds of key NOACA personnel and partner organizations can be found in the biographical appendix.

## Section 7: Budget

A complete budget narrative and budget table are included as attachments to this proposal.