

# Twin Cities Climate Resiliency Initiative



Summer 2021

# Statement of Need

**Climate change is threatening residents of the Twin Cities today, with hotter temperatures, destructive storms, extreme precipitation events, increased flooding and degrading ecosystems. Our community's least advantaged residents are impacted the most, and scientists predict these effects will worsen considerably in the coming decades.**

The City of Minneapolis developed a **Climate Action Plan in 2013** and declared a **Climate Emergency in 2019**. The City of St. Paul adopted a **Climate Action and Resilience Plan in 2019**. Hennepin County adopted a **Climate Action Plan in April 2021**. The Metropolitan Council is working on an **Climate Action Plan to be completed in early 2022**.

**A key strategy for mitigating the effects of climate change is to expand urban tree canopy coverage.** Trees sequester carbon, capture stormwater, filter air pollutants, cool streets and buildings and provide wildlife and pollinator habitat. The Twin Cities' tree canopy is threatened by development, invasive species, climate change and decreased funding for tree planting. And tree canopy can't be established quickly - it takes 10-20 years for an urban tree to become a meaningful contributor to the tree canopy.

Our urban tree canopy is an **essential component of urban infrastructure** that keeps our Metro Area livable and economically vibrant - just like our transit systems or water management systems. Research shows the tree canopy can be increased ~30-40% across the Twin Cities, which would materially improve air and water quality and reduce energy use and urban heat islands. And planting and maintaining this expanded tree canopy will generate new Green Economy jobs.

The Twin Cities has the opportunity to establish an **Urban Tree Planting Carbon Offset Market** where public investments in tree planting can be subsidized by selling carbon credits to private sector companies looking to offset their carbon footprints.

**Now is the time to launch a public/private partnership to increase the metro areas investment in it's tree canopy** with a holistic approach to urban forest management that includes updated policies and planning and increased funding for planting, maintaining and preserving trees on public and private land across the Twin Cities.

# Goals

- 1. Significantly increase tree canopy coverage across the Twin Cities.**  
The University of Minnesota's [Twin Cities Metropolitan Area Urban Tree Canopy Assessment](#) estimates that tree canopy coverage can be increased on average 30% across the metro area.
- 2. Mitigate the [Metro's major heat islands](#) and equalize tree canopy coverage across environmentally disadvantaged parts of the metro area.**
- 3. Increase carbon sequestration and establish a local [Carbon Offset Market](#) to fund ongoing investments in climate resiliency.**
- 4. Significantly increase the amount of stormwater captured by trees.**
- 5. Significantly increase capture of particulate air pollution.**
- 6. Increase percentage of native and adapted tree species planted on public and private land to improve habitat for wildlife and pollinators.**
- 7. Develop a Green Economy urban arborist workforce recruited from our BIPOC and low income communities trained to plant and maintain the Twin Cities tree canopy infrastructure.**

# Benefits of Urban Tree Canopy\*

- Sequester carbon
- Cool urban heat islands
- Capture stormwater
- Filter air and water pollutants
- Reduce energy use
- Provide jobs in urban forestry
- Promote environmental equity and justice
- Improve biodiversity with native and adapted tree species
- Encourage physical activity
- Improve mental health
- Reduce crime\*
- Increase property values
- Improve traffic safety on urban streets
- Improve commercial corridor performance
- Support 7 of the United Nations Sustainable Development Goals

\* See slide 23 for details



# Why We Must Act Now\*

The importance of urban trees is undisputed. Urban and community forests are critical infrastructure in addressing the combined impacts of urban heat, air, toxic pollution and climate change. They also create good paying jobs and hold the key to more economic opportunity.

- With a projected 10-fold increase in heat-related deaths in the eastern U.S. by 2050, trees are the most effective means of combating urban heat islands, preventing an estimated 1,200 heat-related deaths and countless heat-related illnesses each year.
- Trees in metropolitan areas and communities across the country absorb 822,000 metric tons of air pollutants and help prevent 575,000 cases of acute respiratory illnesses, such as asthma, annually.
- Our urban and community forests provide more than 15% of our country's total forest carbon sequestration benefits.
- At the same time, by providing shade in summer months and blocking wind during winter, trees reduce residential energy usage costs by nearly \$7.8 billion annually.

\* Excerpt from [Trees for Community Recovery website](#)

# Legislative Agenda

1. **Heritage Tree Ordinances** to preserve existing trees on public and private property
2. **Updated Public Works Practices + Guidelines** for increased tree protection, maintenance and planting (road & utility construction)
3. **Updated Community Planning and Economic Development Guidelines** for increased tree protection, maintenance and planting (e.g. Developer requirements)
4. **Incentive programs** to encourage private property owners to plant and maintain trees

# Partnerships

- Twin Cities coalition forming with Trust for Public Land, The Nature Conservancy, Minneapolis Parks Foundation, Tree Trust, MN Landscape Arboretum, The Family of Trees, St. Paul Parks Conservancy, Mn Shade Tree Advisory Committee, MN350, Mississippi Park Connections
- Member of national [Trees for Community Recovery](#) coalition lobbying for \$4 billion in annual federal investment over the next five years to conserve, restore and grow urban and community forests and create more than 100,000 family-supporting jobs with a priority in underserved communities of color. Coalition includes cities of Boulder, Chicago, Cleveland, Denver, Newark, Pittsburgh, Portland, San Francisco.

# Potential Funding

1. **Federal ARPA (American Rescue Plan Act of 2021)  
Covid-19 State & Local Government Aid**
2. **Federal Infrastructure Bill Funding**
3. **Climate Resiliency Levy ballot initiatives**
4. **State of Minnesota grants & bonding**
5. **Government, philanthropic and foundation grants**
6. **Voluntary carbon offset credits program marketed to Minnesota and national companies**



# Carbon Offset Program Overview



# Carbon Offset Program Overview

Establishment of a large-scale urban tree planting initiative provides the opportunity to establish a **Carbon Offset Program** that will generate revenue that can be invested back into additional tree planting and other climate resiliency initiatives:

- **Carbon Offsetting** entails calculating carbon emissions produced by a business and then purchasing equivalent “credits” from projects that prevent or remove emissions of an equivalent amount.
- **Voluntary Carbon Offset Programs** let businesses offset their carbon footprint by paying other entities to sequester carbon or reduce greenhouse gas emissions.
- Many companies participate in Voluntary Carbon Offset programs as a key component of their [Environmental, Social and Governance \(ESG\)](#) commitments. A [McKinsey research report](#) estimates the market for voluntary carbon could reach \$50 billion by 2030.
- Urban Tree Planting Carbon Credits offer co-benefits beyond carbon sequestration - stormwater, heat island and air pollution mitigation, green workforce development and enhanced environmental equity.

# Potential Local Corporate Partners with Published Climate Action Goals

Company	Published Climate Goals
<a href="#">UnitedHealth Group</a>	✓
<a href="#">Target</a>	✓
<a href="#">Best Buy</a>	✓
<a href="#">3M</a>	✓
<a href="#">U.S. Bank</a>	✓
<a href="#">General Mills</a>	✓
<a href="#">Supervalu</a>	✓
<a href="#">Land O' Lakes</a>	✓
<a href="#">Ecolab</a>	✓
<a href="#">Ameriprise Financial</a>	✓
<a href="#">Xcel Energy</a>	✓
<a href="#">Cargill</a>	✓

# Carbon Offset Pilot - City of Minneapolis

- Green Minneapolis has initiated a partnership with [City Forest Credits \(CFC\)](#) - a nonprofit carbon registry and certification organization that specializes in urban tree planting projects.
- Working with CFC, Green Minneapolis will establish the first Urban Tree Planting Carbon Offset Project in Minnesota, partnering with the Minneapolis Park and Recreation Board to pilot the program.
- Minneapolis is ideally suited to pilot an Urban Tree Planting Carbon Offset project:
  - [#1 Park System](#) in the country.
  - MPRB is responsible for planting and maintaining hundreds of thousands of trees on public property in Minneapolis.
  - MPRB has an existing tree planting capability that is easily scalable.
  - MPRB's [Mission and Vision](#) is to “permanently preserve, protect, maintain, improve, and enhance its natural resources” including trees.
  - An emergency Minneapolis tree levy is expiring in 2021. With new funding, increased tree planting can be initiated in 2022 with minimal project start-up.



# Pilot Project Overview

- **PROJECT SCOPE:** 7000 trees planted over a one year period including street trees and park trees. Focused on heat islands (e.g. North Minneapolis) and environmentally disadvantaged areas.
- **PROJECT CARBON CREDIT CERTIFICATION:** Performed by **City Forest Credits**, following its [Tree Planting Protocol](#).
- **PLANTING METHOD:** Single Tree, Tree Canopy Method for Park-like Sites and Tree Planting Method for Riparian Sites.
- **PROJECT LOCATION:** City limits of the **City of Minneapolis**
- **LAND OWNER/LEGAL SIGNATORY:** **Minneapolis Park and Recreation Board (MPRB)**
- **PROJECT OPERATOR:** **Green Minneapolis** contractor to MPRB
- **SCHEDULE:** CFC Project Acceptance in 2021, Planting completed 2022, 25 Year Duration 2023 - 2048

# Pilot Project: 25 Year Financial Model\*

Cost to plant/maintain 7,000 trees	\$285/tree	\$2M
7000 trees = 18,700 credits	\$25.00/ credit	\$467,500
10% credits (Year 1) = 1,870 credits	\$25.00/ credit	\$46,750
40% credits (Year 3) = 7,480 credits	\$25.00/ credit	\$187,000
30% credits (Year 5) = 5,610 credits	\$25.00/ credit	\$140,250
Remaining 20% credits (Year 25) = 3,740 credits	\$25.00/ credit	\$93,500

\* Financial Model for High Level Illustrative Purposes Only



# Growth Model

The vision is to establish dozens of urban tree planting carbon offset projects across the greater Minneapolis/St. Paul metro area:

- Launch **20 additional projects** with the MPRB - one every year over the next 20 years.
- **Expand across the Twin Cities metro area** with additional tree planting projects with other government jurisdictions:
  - MnDOT
  - City of St. Paul
  - Hennepin, Ramsey and other metro counties
  - Metropolitan Council
  - Suburban municipalities
- Establish a **Private Property Urban Tree Planting program**.
- In conjunction with the Urban Tree Planting projects, establish a **workforce development program** to train people for the region's emerging Green Economy.

# Current Status

- Agreement approved between Minneapolis Park and Recreation Board and Green Minneapolis to pilot the state's first urban tree planting carbon offset project. Project start-up under way.
- \$2.25M pending funding request from City of Minneapolis American Rescue Plan Act funds for City of Minneapolis tree planting.
- Discussions under way with Hennepin County, City of St. Paul and MnDOT to launch additional urban tree planting carbon offset projects.
- Proposal to Metropolitan Council to incorporate metro wide urban tree canopy infrastructure policies in forthcoming Met Council Climate Action Plan.
- Coalition forming with Trust for Public Land, The Nature Conservancy, the Minneapolis Parks Foundation, Tree Trust, MN Landscape Arboretum, Mississippi Park Connections, Greater MSP.
- Seeking lead Corporate Sponsor for program.

# Appendix



# APPENDIX

- City of Minneapolis Climate Action Plan (2013)
- City of Minneapolis Climate Emergency Declaration (2019)
- City of St. Paul Climate Action & Resilience Plan
- Hennepin County Climate Action Plan Excerpts (2021)
- United Nations Sustainable Development Goals
- Tree Return on Investment
- About Green Minneapolis

# Minneapolis Climate Action Plan

The [Minneapolis Climate Action Plan](#) is a roadmap to reducing Minneapolis' climate impact. Target goals by 2025 are to:

- Reduce greenhouse gas emissions by 30%
- Generate 10% of electricity from local, renewable sources
- Raise the bicycle commute mode share to 15%
- Increase recycling rate to 50%
- Reach a composting rate of 15% of the entire waste stream



# City of Minneapolis Declared a [Climate Emergency](#) on December 14, 2019

Now, Therefore, Be It Resolved by The City Council of The City of Minneapolis:

- That the global warming caused by human activities, which increase emissions of greenhouse gases, has resulted in a climate emergency that severely and urgently impacts the economic and social well-being, health and safety, and security of the City of Minneapolis; and demands a local, national, social, industrial, and economic mobilization of the resources and labor of the United States, the State of Minnesota, and the City of Minneapolis, at a massive scale to halt, reverse, mitigate, and prepare for the consequences of the climate emergency and to restore the climate for future generations.
- Be It Further Resolved that the City of Minneapolis has acted and will take even more aggressive action to halt, reverse, mitigate, and prepare for the consequences of the climate emergency.



# St. Paul Climate Action & Resilience Plan

St. Paul's [Climate Action & Resilience Plan](#) is a framework to address the impact of Climate Change:

- Carbon neutrality by 2050
- Reduce emissions by 50% by 2030

# Hennepin County issued draft [Climate Action Plan](#) in February 2021 - 7 Key Strategies

## Strategy #6: Build and maintain green infrastructure and sequester carbon on all county- owned property

- Install green infrastructure to manage stormwater on county-owned property, including on tax-forfeited properties in flood prone areas to protect surrounding properties and create green spaces.
- Explore a green jobs/pathways program concept for installation, establishment, and maintenance of green infrastructure.
- Convert turf grass to plants that sequester carbon where appropriate.

# Hennepin County issued draft Climate Action Plan in February 2021 - 7 Key Strategies

**Strategy #7: Decrease the heat island effect, especially in areas with highest vulnerability:**

- Coordinate operations of readily accessible and culturally appropriate cooling centers.
- Preserve mature trees, plant more trees and plants, and address maintenance issues.
- Convert hardscape where possible into pervious pavement or green infrastructure.
- Pursue site development performance standards that include green infrastructure.
- Gather better, real-time data to allow for targeted notification of weather-related warnings.

# Program Supports 7 of the 17 United Nations Sustainable Development Goals

# 3 Good Health and Well-being

#6 Clean Water and Sanitation

#10 Reduced Inequalities

#11 Sustainable Cities and Communities

#13 Climate Action

#14 Life Below Water

#15 Life on Land

# Tree Return on Investment

- **A single street tree returns \$90K of direct benefits** (not including aesthetic, social, and natural) in the lifetime of the tree, for a planting cost of \$250-600 (including first 3 years maintenance).
- **Trees absorb 60% of rainwater that falls on them.** A mature tree absorbs 48 pounds of carbon dioxide a year.
- **Temperature differentials of 5-15 degrees** are felt when walking under tree canopied streets.
- A properly shaded neighborhood, primarily by **street trees**, can **reduce energy bills 15-35%.**
- A US Forest Service study found that a **10% increase in tree canopy was associated with a 12 percent decrease in crime.**
- In one study, 83 percent of realtors believe that mature trees have a **“strong or moderate impact”** on the salability of homes listed for under \$150K; for homes over \$250K this perception increases to 98 percent.

# Green Minneapolis

[www.greenminneapolis.org](http://www.greenminneapolis.org)

- **A multi-project 501c3 conservancy founded in 2014**
  - Fundraising
  - Planning and Advocacy
  - Operations and Programming
- **Enhance the vitality of Minneapolis through parks and greening. Key projects:**
  - The Commons
  - Peavey Plaza Renovation
  - Hennepin/Lyndale Crossroads
  - Greening Lab
  - Twin Cities Climate Resiliency Initiative
- **Build public-private partnerships to achieve greening projects that can't be done by government alone:**
  - MPRB
  - City of Minneapolis
  - Hennepin County
  - MnDOT
  - Corporate Donors
  - Foundations
  - Individual Donors

