

COLORADO FRONT RANGE URBAN FORESTRY EXPANSION STRATEGY

JULY 2021

FULL REPORT



TABLE OF CONTENTS

| | |
|-------------------------------------------------------------------------|----|
| EXECUTIVE SUMMARY | 03 |
| WHY URBAN FORESTRY IS A CRITICAL INFRASTRUCTURE INVESTMENT | 03 |
| TRANSFORMATIVE ACTION IN COLORADO'S FRONT RANGE..... | 04 |
| THE COLORADO FRONT RANGE URBAN FORESTRY EXPANSION STRATEGY | 05 |
| STRATEGY DEVELOPMENT OVERVIEW | 07 |
| STRATEGY DESIGN PRINCIPLES..... | 07 |
| STRATEGY ELEMENTS | 08 |
| 1. WORKFORCE DEVELOPMENT..... | 08 |
| 2. FORESTRY PROJECTS..... | 10 |
| 3. COMMUNITY ENGAGEMENT..... | 12 |
| 4. RESEARCH..... | 14 |
| MEASURING SUCCESS..... | 15 |
| RESOURCE NEEDS AND TIMEFRAME | 16 |
| APPENDIX A. LIST OF PARTNERS ENGAGED | 20 |

EXECUTIVE SUMMARY

Cities and other local jurisdictions are mobilizing nationally to assert the importance of our urban forests as critical infrastructure to protect communities from a rapidly changing climate. These local jurisdictions and many other groups have come together as the [Trees 4 Community Recovery](#) campaign to ask the federal government to significantly increase investments in urban forests as part of both protecting our communities and putting our economy in service of improving urban conditions, particularly in our most underserved and at-risk communities. As part of this national initiative, a broad consortium of organizations across the northern Front Range have worked together over the past six months to formulate a **three-year “shovel-ready” urban forestry scale-up strategy** for the larger Colorado Front Range area. This strategy outlines an approach for dramatically increasing both tree planting and tree protection: create 300 new living wage urban forest workforce positions with 50% of these hired from historically underserved communities; plant 60,000 new trees over 3 years; protect and maintain 75,000 additional trees over 3 years; mitigate risks from 12,000 hazard trees over 3 years; work with a minimum of 10 neighborhood and community groups to reach 70,000 residents through equity-driven, culturally competent engagement focusing on tree planting and stewardship. Through this initiative, the longer-term goal is to support communities throughout the Colorado Front Range area in significantly increasing urban tree canopies - with a focus on equity for those communities that are in the most danger from extreme heat and other impacts of climate change. This initiative is projected to cost a total of \$33 million per year over 3 years with over half of these funds leveraged locally.

WHY URBAN FORESTRY IS A CRITICAL INFRASTRUCTURE INVESTMENT

The shockingly extreme heat waves that have descended upon huge parts of the “normally” temperate West and Northwest have driven temperatures close to 120°F. In urban centers, the predominance of impervious surfaces and lack of urban forest shade have led to temperature differentials of as much as 30°F between shaded and unshaded areas - and hundreds of deaths among those most exposed. This set of conditions has been especially acute in historically underserved and under-shaded areas where many of the most vulnerable community members live. Now, more than ever, we are witnessing the benefits of prior investments in urban forests - and the immense and growing costs where we have not made those investments. In the Front Range, a great deal of the urban canopy that is currently helping to moderate the impacts of climate change only exists because of human intervention. Significant investments in urban and community forestry are especially critical because forests do not grow naturally in much of the region.

Recognizing this immediate need and opportunity, a broad coalition of organizations and communities has formed with the goal of dramatically increasing the scale of action and investment in urban and community forests at a federal, state, and level. This group - [Trees for Community Recovery](#) - has proposed a bold community urban forest/green infrastructure investment of at least \$4 billion nationally to protect and expand urban forests, particularly in communities in the greatest need and at the greatest risk. Through their combined experience they have demonstrated how these funds will create or sustain more than 100,000 jobs annually, help plant more than 10 million urban trees, and support robust investments in workforce training and grants to community-based organizations.

TRANSFORMATIVE ACTION IN COLORADO'S FRONT RANGE

Individuals, organizations, and local jurisdictions have been significant participants in this initiative (1). Mayors from across the Front Range were signers on a request to the Biden Administration to significantly increase federal investments in urban forestry. Simultaneously, a broad consortium of organizations and urban forestry officials from across the Front Range began work on a “shovel-ready” urban forestry expansion strategy in collaboration with six other “vanguard” cities across the US. These plans demonstrate that these communities have the experience, the networks, and the strategies ready to rapidly implement urban forestry expansion in ways that significantly improve public health and safety, create new economic opportunities, and build resilience to the risks posed by climate change.

Working across the Front Range region, this multi-jurisdictional plan outlines a three-year strategy to plant and protect over 100,000 trees, create over 300 new jobs, remove or prune thousands of trees currently endangering life or critical infrastructure, and identify and protect hundreds of acres of urban forests critical to preserving community livability. It is designed to kick-start a new scale of urban forestry activity commensurate to both the scale of the challenges we face and the opportunities that taking action at this scale creates. This initiative also represents a new phase of broader regional collaboration in the management of urban landscapes as critical infrastructure. This collaboration will be essential to grow and sustain a multi-decade focus on enhancing urban landscapes in ways that can protect and sustain the communities living within them.

(1) See Appendix A for a list of organizations and individuals who have participated in the development of this strategy for the Denver Metro area.

THE COLORADO FRONT RANGE URBAN FOREST EXPANSION STRATEGY

The Colorado Front Range area is very likely to face increasingly dangerous high temperatures, along with flooding and drought, as a result of climate change (2). These impacts will disproportionately affect the region's most vulnerable residents, especially low-income communities and people of color. Trees and shade can play a major role in reducing the impacts of climate change, particularly extreme heat.

Tree canopy currently covers about 16% of the Colorado Front Range region (3). Unfortunately, tree canopy is often much more limited in socioeconomically vulnerable areas, leaving major gaps in "[tree equity](#)" (4). Threats to the region's urban forests include aging and poorly maintained trees, development pressure, climate change (drought, fires, flooding, and increasing temperature extremes), and impacts from disease and insects, including emerald ash borer. City and county goals call for increasing tree canopy to 20-30%, which would require a dramatic increase in funding to protect existing trees and to plant millions of additional trees. Protecting existing trees is especially crucial because newly planted trees do not provide their full benefits for 20 to 30 years (5).

Urban forestry is the management of trees as a natural resource and as public infrastructure; it requires a workforce of skilled urban tree care workers who can address the particular challenges of urban environments. Because there are not enough skilled workers to meet current needs, expanding the urban forestry workforce is crucial to expanding and protecting Colorado's Front Range tree canopy. There is also a growing need for utility arborists for both urban and rural areas to help maintain safe energy infrastructure in the face of increasingly intense wildfires and weather events.

Urban tree care has only recently been recognized as a skilled trade profession despite having required highly-skilled work for generations. As a consequence, full data on this sector is still being compiled. However, regional workforce assessments indicate there are approximately 1,000 workers classified as arborists with many

(2) [Bianchi, Chris. 2020. How often does it hit 100 degrees in Denver? The Denver Post, Saunders et al. 2017. Future Extreme Heat in the Denver Metro Area](#)

(3) 14% is from i-Tree and 16% is from the 2013 Urban Forest Assessment

(4) [Tree Equity Score](#)

(5) Threats to the region's urban forests include aging and poorly maintained trees, development pressure, climate change (drought, fires, flooding, and increasing temperature extremes), and impacts from insects and disease. Emerald ash borer was first found in Colorado in the fall of 2013, and ash trees represent about 15% of the trees in the Metro area (Colorado State Forest Service).

more working as skilled tree maintenance technicians. Preliminary assessments with local tree care companies indicate the potential for a more than 15-20% annual growth rate in hiring in this sector, particularly if urban forestry efforts are expanded as proposed (6).

The Colorado Front Range area is uniquely poised to take advantage of potential investments in its urban forests. A large and diverse coalition of partners in the Front Range have already begun working together on an ambitious long-term vision and practical short-term implementation approaches to equitably expand and protect the region's urban forests. Over 40 partners representing local businesses, nonprofits, municipalities and public agencies, and academic institutions have been engaged in a series of consensus-building meetings in the spring and summer of 2021. Key partners (shown in Figure 2, Engagement of Strategy Development Partners) have already contributed hundreds of hours and tens of thousands of dollars to establishing an effective collaborative strategy. Together these partners have the skills and expertise to dramatically and strategically expand the region's urban forest - and improve its long-term health. The strategy outlined here focuses on the most important near-term objectives with an eye to a transformative long-term equity-driven vision that can help ensure that the region is vibrant and livable far into the future.

Workforce development objectives

- Create and fill 100 new tree care jobs per year for three years (300 total over three years)
- At least 150 people (50%) hired will represent groups that will help diversify and promote equity in the tree care workforce, including people of color, women, and people facing challenges to accessing job opportunities

Forestry Objectives

- Plant 15,000 to 20,000 new trees per year (45,000 to 60,000 over three years) (7)
- Protect and maintain 25,000 trees per year (75,000 over three years)
- Mitigate risks from 4,000 hazard trees per year (12,000 over three years)

Community Engagement Objectives

- Ensure that there is equity-driven, culturally competent community engagement for all aspects of planning and implementation
- Work with at least 10 neighborhood/community groups and reach 70,000 residents to expand tree planting and stewardship; train 1,000 community members to be urban forest stewards

(6) 2017 Greater Denver Tree Care Sector Partnership Strategic Plan; Emsi Occupation Snapshot Report for Tree Trimmers and Pruners in Boulder, CO and Denver-Aurora-Lakewood, CO (2021 Q1)

(7) We assume that 80% of the trees would survive for 25 years. To promote survival, the cost of tree planting in this strategy includes support for tree establishment, including three years of watering.

- Create six community-based forestry opportunity assessments for high-need neighborhoods

STRATEGY DEVELOPMENT OVERVIEW

This strategy has been developed through a series of collaborative, consensus-building meetings. The strategy has four major components: 1. workforce development; 2. identification of priority forestry projects; 3. community engagement; and 4. research to support project siting, design, and assessment of benefits. Prioritizing social and environmental justice and equity is a focus of each aspect of the strategy, as is increasing resilience to climate change.

STRATEGY DESIGN PRINCIPLES

- Design for long-term expansion of the urban forestry sector
- Design for creating full-time, year-round employment with organizations offering family-sustaining wages, benefits, employee development, and upward mobility
- Prioritize social justice and environmental justice: focus both job development and local environmental benefits first in areas with the highest levels of socioeconomic vulnerability and environmental vulnerability
- Coordinate and integrate urban and community forestry actions with equity-based community and climate action initiatives
- Engage and involve impacted communities in all aspects of initiative development, including scoping, designing, implementing, and evaluation

Figure 1 shows the overall approach to developing the urban forestry expansion strategy.

FIGURE 1. STRATEGY DEVELOPMENT PROCESS

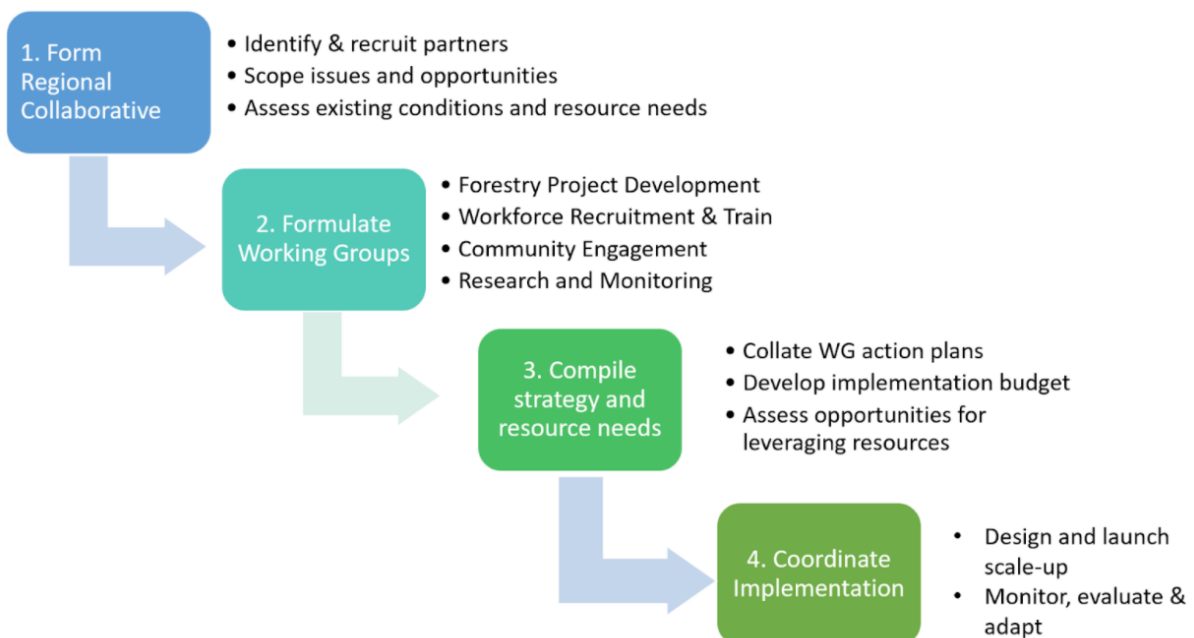
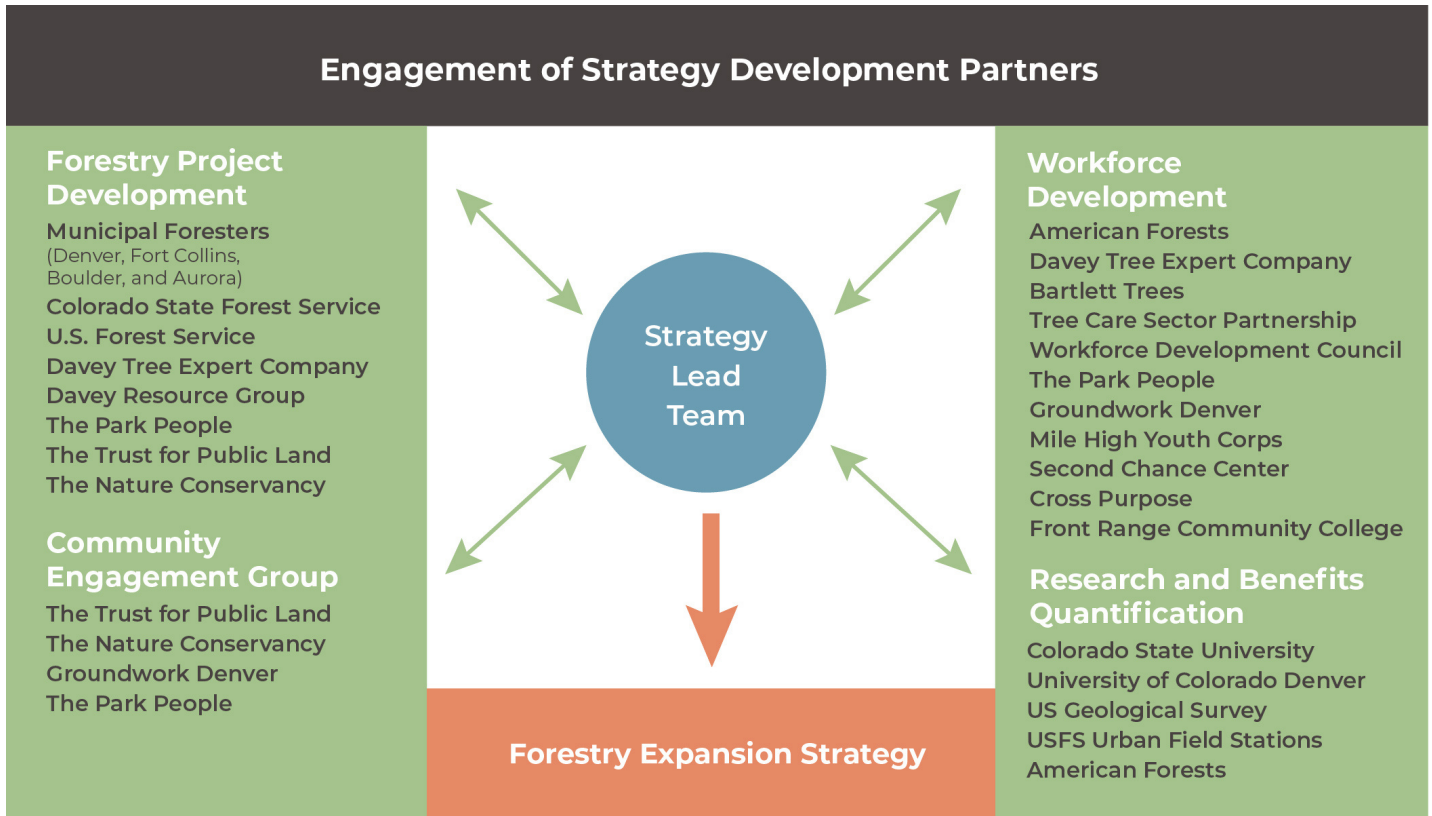


Figure 2 shows the engagement of key strategy development partners. In addition to gathering input from experts and leaders in the Colorado Front Range area, the development of the strategy was informed by ongoing collaboration with the national coalition for the [Trees for Community Recovery](#) effort and a series of meetings convened for developing a national workforce expansion strategy.

FIGURE 2. ENGAGEMENT OF STRATEGY DEVELOPMENT PARTNERS



STRATEGY ELEMENTS

There are four primary elements of this urban forestry expansion strategy: 1. Workforce Development; 2. Identifying Forestry Projects; 3. Community Engagement; and 4. Research. Each of these elements is described below.

1. WORKFORCE DEVELOPMENT

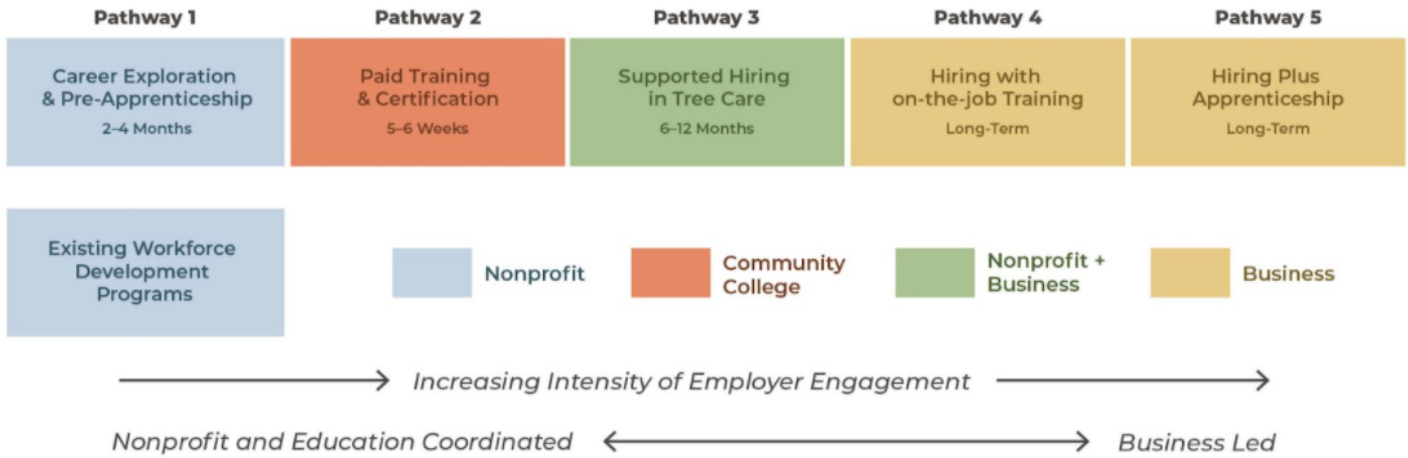
The workforce development approach is intended to create 100 new tree care jobs per year for three years. At least 50% of those hired should represent groups that will help increase equity in the tree care workforce, including people of color, women, and people facing challenges to accessing job opportunities. In addition to filling 100 new permanent tree care positions per year, another 30-40 people per year will receive career, life skills, and workforce readiness training.

Partners will work together to establish five pathways into full-time positions with tree care companies or municipal forestry programs. The pathways build on each other, and participants could move from one to another - or begin with Pathway 3, 4, or 5. All five pathways will prioritize: 1. Providing the training necessary for professional growth and long-term success in the tree care industry; and 2. Expanding equity and diversity in the tree care workforce by supporting career preparation and wraparound services as needed.

1. **Pathway 1: Career Exploration and Pre-Apprenticeship.** Participation in a 2-4 month paid nonprofit-run pre-apprenticeship program that provides wraparound services. (Potential program leads: Mile High Youth Corps, The Park People, Groundwork Denver)
2. **Pathway 2: Paid Training and Certification.** Enrollment in a 5-6 week program that leads to professional certification recognized by the Tree Care Industry Association.
3. **Pathway 3: Supported Hiring for Permanent Tree Care Jobs.** Hiring for permanent tree care jobs with 6-12 months of transitional support/wraparound services provided by nonprofits. (Potential program leads: Mile High Youth Corps, CrossPurpose, Second Chance Center, Lutheran Family Services, Goodwill, Activate Workforce Solutions)
4. **Pathway 4: Hiring for Permanent Jobs with On-the-job Training.** This pathway represents the typical existing hiring and training pathway for tree care companies; it could be supported through additional training for employers and supervisors to help improve recruitment and retention with a focus on increasing workforce equity and diversity.
5. **Pathway 5: Hiring for Permanent Jobs with Apprenticeship.** This pathway represents a commitment from employers to support educational expenses and one-on-one mentoring from a journeyworker. This pathway could be supported by additional training for supervisors and by funding for community college tuition.

Figure 3 shows the five workforce development pathways. The figure identifies the pathways that will be led by nonprofits (Pathway 1), community colleges (Pathway 2), nonprofits and businesses (Pathway 3), and business (Pathways 4 and 5). The figure also illustrates the increasing intensity of employer engagement from Pathway 1 through Pathway 5.

FIGURE 3. WORKFORCE DEVELOPMENT PATHWAYS



2. FORESTRY PROJECTS

The approach to forestry projects will prioritize tree planting and tree protection projects in areas with the highest need. Ideally, 75% of tree planting and tree protection work will be done in high-need areas. Over three years, 45,000 to 60,000 trees will be planted; 75,000 will be protected and maintained; and risks posed by 12,000 hazard trees will be mitigated.

Each local jurisdiction will lead the development and implementation of their projects. Supporting them will be an advisory group made up of the Colorado State Forest Service, regional government organizations, municipal foresters and municipal planning or sustainability/resilience staff, along with key nonprofit organizations. The overall process for identifying and implementing forestry projects will involve several elements:

1. Convening an advisory group
2. Developing a preliminary approach for priority-setting with available data for year 1 projects
3. Coordinating with additional jurisdictions and partners (including Xcel Energy)
4. Developing a regional approach for priority-setting once new regional LiDAR data is available (in fall 2021) for year 2 and 3 projects
5. Collaboration to leverage additional funding and resources to implement projects
6. Implementation of projects by municipalities, nonprofits, and tree care companies

Local jurisdictions and the advisory group will identify the highest need areas based on where there is:

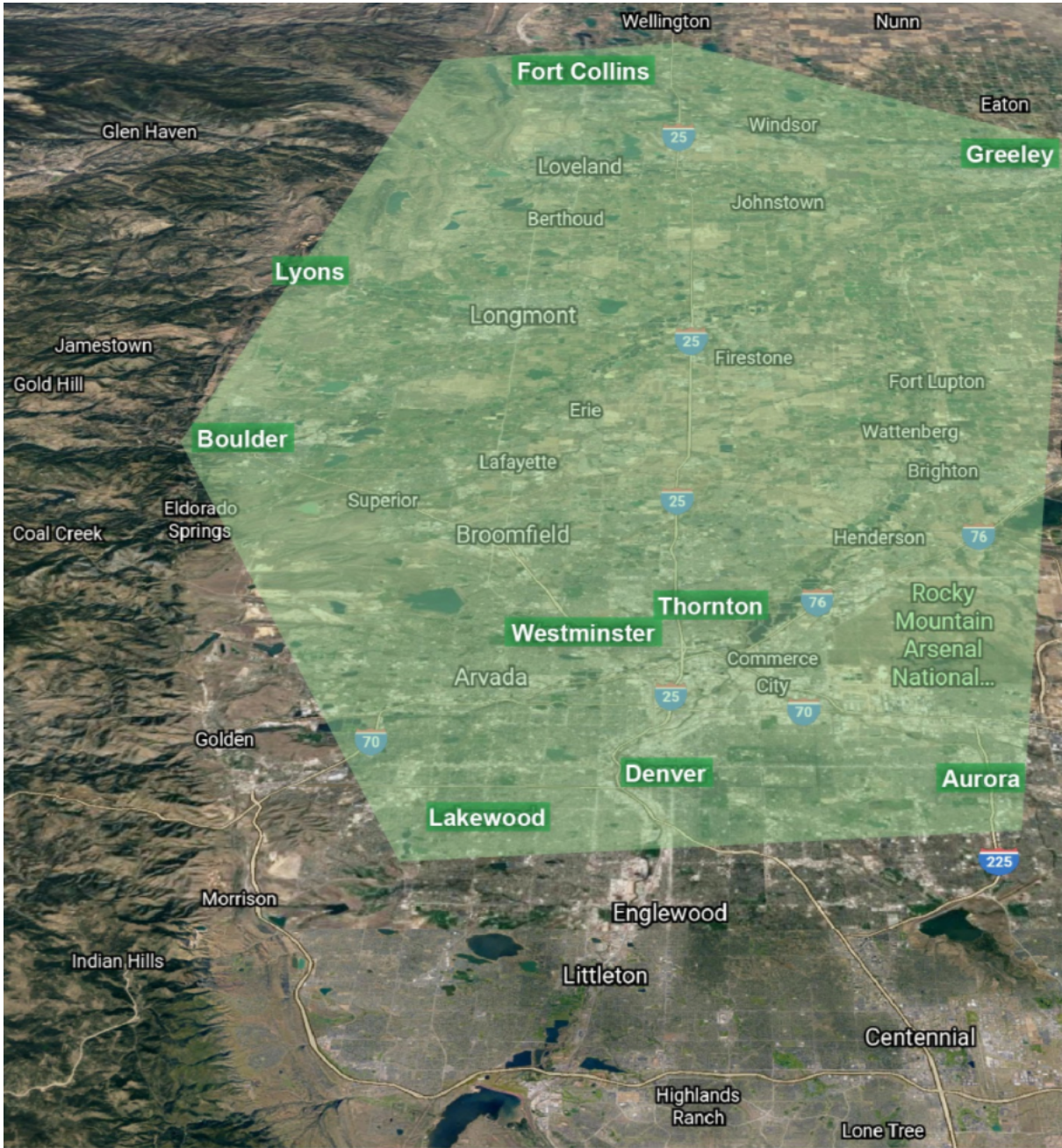
1. Relatively low canopy;
2. High socioeconomic vulnerability (including health inequity); and
3. High environmental vulnerability (poor air quality, high risk from heat and flooding)

High-priority areas for concrete/asphalt removal will be identified in areas with limited plantable space. Tree planting will involve diverse environmentally-adapted tree species. Native species will be included, but would not be sufficient to provide species diversity for a healthy, resilient forest in the long-term. Tree planting and protection work will be done by crews from nonprofit organizations, private tree care companies, and municipal forestry teams in coordination with workforce development efforts. Nonprofit crews will focus on tree planting, hand pruning, and other less technical stewardship work such as watering and mulching. Tree care companies and municipal teams will do more technical maintenance, including work requiring tree climbing and removal of large hazard trees. There will be targeted recruitment of residents in high-need areas for available positions with nonprofits and tree care companies.

TABLE 1. KEY PARTNERS BY SECTOR

| PUBLIC | NONPROFIT | BUSINESS | ACADEMIC |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> - City of Denver - City of Boulder - City of Aurora - City of Fort Collins - CO Workforce Development - CO State Forest Service - US Forest Service Region 2 - US Forest Service Urban Field Station - US Geological Survey | <ul style="list-style-type: none"> - The Park People - The Nature Conservancy - The Trust for Public Land - Groundwork Denver - Mile High Youth Corps - Second Chance Center - Cross Purpose - Lutheran Family Services - CO Youth Corps Association - American Forests - Urban Drawdown Initiative | <ul style="list-style-type: none"> - Tree Care Industry Association - Davey Tree Expert Company - Davey Resource Group - Camber - We Love Trees - Utility Arborist Association - Bartlett Trees | <ul style="list-style-type: none"> - Front Range Community College - University of CO Denver - University of CO Boulder - Colorado State University - Hunter College (NY) - Butte Community College (CA) |

FIGURE 4. COLORADO FRONT RANGE INITIATIVE PARTICIPATING MUNICIPALITIES



3. COMMUNITY ENGAGEMENT

Equity-driven community engagement will be central to both the workforce development and forestry project efforts.

An equity-focused workforce development task force will be convened, including paid representatives from community organizations. Specific community engagement and outreach will be done to help ensure that residents in high-need areas are aware of job opportunities and feel welcome applying for positions associated with the workforce development program.

Increasing tree canopy in high-need areas will require tremendous sustained community engagement to ensure that residents are involved in and supportive of designing and implementing forestry projects. While this strategy outlines resource needs over three years, much longer-term investments in community engagement are needed to achieve equity-focused goals over the next several decades.

Community engagement for forestry projects will include: 1. Community-driven opportunity assessments in priority high-need areas; 2. Extensive education and outreach related to planting sites on private land; and 3. Outreach and training for community participation and leadership in tree stewardship. Opportunity assessments would require a focused effort over 6 to 9 months and will help identify community concerns, priorities, and potential sites for thousands of trees.

Key elements of equity-driven engagement will include:

1. Working with forestry advisory group and municipalities to identify highest-need areas with a focus on socioeconomic vulnerability, health equity, and environmental justice
2. Convening an equity-focused workforce development task force with paid community representatives
3. Identifying and funding at least 10 culturally-competent community organizations and individual community liaisons to help lead engagement with support of experienced local nonprofits
4. Investing resources in translation and language justice to reduce language barriers in outreach
5. Using initial investments to work toward sustained, long-term engagement to support community empowerment and tree stewardship

Engagement efforts will involve collaboration of nonprofit staff, municipal forestry staff, and community liaisons. Because of legitimate concerns about legal and financial liability for trees, in some areas it may be difficult to identify large numbers of residents willing to plant trees on their property. Groups such as The Nature Conservancy, Trust for Public Land, Park People, and Groundwork Denver have been working with community leaders to identify strategies to address these issues and build community trust and ownership over these types of projects. Long-term expansion and stewardship of the urban forest, especially in high-need areas, will be very time and resource intensive and will require strong partnerships among municipalities, nonprofits with green infrastructure and community engagement expertise, and culturally-competent community organizations.

4. RESEARCH

Public investment in urban forestry is needed at a national scale. However, insufficient attention has been directed to generating critical scientific knowledge or to coordinating the work of local urban forestry managers and planners. Improving urban forest management through enhanced research will not only mitigate potential ecological disasters, but also lead to cost-saving and health-improving benefits for the country's millions of urban residents (Figure 5). Urban scientists and practitioners have shown that establishing collaborative teams and co-producing a design and planning process maximizes the benefits a diversity of urban residents experience in cities (8). Furthermore, fostering strong working relationships across research and applied disciplines will allow us to effectively address the complexity of balancing tradeoffs and synergies among ecosystem services and disservices, as well as accounting for varying social-cultural norms and perceptions of different communities and stakeholders (9).

Description of the Proposed Approach

Our proposed approach uses the lessons learned from these past examples and expands them with transdisciplinary methods in the Colorado Front Range region that directly integrate researchers, local stakeholders, and communities to develop applied research and address critical issues of urban forestry. Using process-oriented methodologies, our goals are to:

1. Synthesize the current knowledge in urban forest research and applications, and establish baselines of present-day urban ecosystem services;
2. Develop methods informed by current knowledge and modern technological advancements to create urban forest actions to best prepare for future urban climates;
3. Establish a hub of usable, modifiable, and open-source resources of experimental data and analysis--reproducible research that is replicable across cities using today's best open-science practices.
4. With proper baseline data, appropriate use of new sensor technology, we will develop data streams and tools that move toward dynamic, real-time management or green infrastructure in cities and the diverse benefits it provides.

(8) Pataki, D. E., Alberti, M., Cadenasso, M. L., Felson, A. J., McDonnell, M. J., Pincetl, S., Pouyat, R. V., Setälä, H., & Whitlow, T. H. (2021). The Benefits and Limits of Urban Tree Planting for Environmental and Human Health. *Frontiers in Ecology and Evolution*, 9(March), 1-9.

(9) Roman, L. A., Conway, T. M., Eisenman, T. S., Koeser, A. K., Ordóñez Barona, C., Locke, D. H., Jenerette, G. D., Östberg, J., & Vogt, J. (2020). Beyond 'trees are good': Disservices, management costs, and tradeoffs in urban forestry. *Ambio*.

These four methodologies interact, informing and adapting each other with newly developed data and results, creating an overarching framework for the total research initiative. Moreover, at all stages there is opportunity for collaboration between researchers, urban planners, city landscapers, data analysis, and local community actors.

Figure 5 shows the integral role research can play in bridging the space between our current and approaching conditions and a more resilient and sustainable future condition, particularly in the face of continued intensification of climate change.

FIGURE 5. COLLABORATIVE RESEARCH BRIDGES KNOWLEDGE/SYSTEMS GAPS



MEASURING SUCCESS

Table 2 shows the metrics for measuring success for each strategy element.

TABLE 2. METRICS FOR MEASURING SUCCESS

| WORKFORCE DEVELOPMENT | FORESTRY PROJECTS |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> - Certification, educational attainment, apprenticeship progress and completion - Program completion - ROI for businesses for investing in training - Placement in permanent jobs - Job retention - Earning family-sustaining wages (wage progression) - Job postings and demographic targets for BIPOC and women - New partnerships created - Qualitative: trainee experience, changes in workforce culture | <ul style="list-style-type: none"> - Number of trees planted, maintained, removed - Number of trees planted, maintained, removed by workers hired as part of workforce development programs - Number of trees planted and maintained in high-need areas - Number of trees planted and maintained in focal neighborhoods in conjunction with neighborhood-level opportunity assessments - New partnerships created |

| COMMUNITY ENGAGEMENT | RESEARCH |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> - Number of community members reached through outreach (including social media) - Number of community members who participated in engagement activities (meetings, focus groups, interviews, interactive tabling) - Number of neighborhood-level forestry plans developed - Number of forestry plans developed that are being used by community groups to advocate for change - New partnerships developed - Increased awareness about the benefits of urban tree canopy (before and after surveys) - Qualitative: experience of community leaders and community members who participated in engagement activities | <ul style="list-style-type: none"> - Number of urban foresters/ local residents/ BIPOC community members/ local jurisdictions actively engaged in defining and designing research - Rapid assessment of critical issues completed within 12 months - 3-5 short-duration research initiatives fully underway in collaboration with 4-6 different communities across the Front Range within 12 months - A Residents Science Team (RST) formed, trained and deployed within 12 months - Ecosystem/ climate sensor networks established in 6 communities within 12 months - Science training integrated into the urban landscape workforce training programs being established to grow the ecosystems stewardship employment sector - particularly within BIPOC/ lower income communities |

RESOURCE NEEDS AND TIMEFRAME

Table 3 shows the proposed budget for the Colorado Front Range Urban Forestry Expansion Strategy. Table 4 shows a potential breakdown for strategy funding, including funding leveraged from local, state, federal, business, and philanthropic sources.

TABLE 3. BUDGET FOR COLORADO FRONT RANGE URBAN FORESTRY EXPANSION STRATEGY (1-YEAR AND 3-YEAR COSTS)

| EXPENSES | COST (1 YEAR) | COST (3 YEARS) | POTENTIAL PARTNERS | POTENTIAL FUNDING/ EXISTING RESOURCES |
|-----------------------------------------------------------|------------------|------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Oversight and Administration | | | | |
| Overall Coordinator | \$100,000 | | | |
| Admin Support for Lead Organization (Metro DNA and DRCOG) | \$60,000 | | | |
| Oversight Sub-Total | \$160,000 | \$480,000 | | |
| Workforce Development | | | | |
| Workforce Development OVERALL | | | Tree Care Sector Partnership, ISA-RMC, TCIA, Colorado State Forest Service, municipal forestry programs | Federal, state, local, philanthropic, tree care companies, Xcel Energy |

| | | | | |
|-------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Support for Nonprofit Pre-Apprenticeship Career Exploration | \$1,000,000 | \$3,000,000 | The Park People, Groundwork Denver, Mile High Youth Corps, Second Chance Center, CrossPurpose | Colorado Tree Care Sector Partnership, High-Road Workforce Guide for Climate Action, Career pathways resources and pre-apprenticeship resources from American Forests |
| Development of Urban Forestry Certification Program | \$200,000 | \$200,000 | Front Range Community College and other community colleges, partners from CA utility arborist training program | FRCC/TCIA Apprenticeship Program, CA utility arborist training program |
| Stipend for Certification Program Participants | \$150,000 | \$450,000 | | |
| Stipend for Certification Program Participants | \$300,000 | \$900,000 | | |
| Transitional Support for Certification Program Participants | \$337,500 | \$1,012,500 | Mile High Youth Corps, CrossPurpose, Second Chance Center, Lutheran Family Services, Goodwill, WorkNow, Bayaud Enterprises, Activate Workforce Solutions | Tazo Tree Corps template |
| Training for Tree Care Companies (DEI, supervisor training) | \$100,000 | \$300,000 | Activate Workforce Solutions, Camber, DEI consultants | |
| Tuition Support for Apprenticeship | \$60,000 | \$360,000 | | FRCC/TCIA Apprenticeship Program + competency-based apprenticeship |
| Grants for Workforce Development Partners | \$200,000 | \$600,000 | | Roots to Re-Entry (PA), Branches 2 Chances (DE) |
| Workforce Sub-Total | \$2,347,500 | \$6,822,500 | | |
| Forestry Projects | | | | |
| Forestry Projects OVERALL | | | Colorado State Forest Service, municipal planners (parks/open space/forestry/sustainability), tree care companies | Federal, state, local, philanthropic, tree care companies, Xcel Energy |
| Support for Mapping and Identifying Focal Areas | \$100,000 | \$100,000 | Advisory group including academic partners (CSU, UC, USGS, USFS), The Nature Conservancy | DRCOG, USFS, Denver Game Plan, Denver Climate Smart Cities tool, BeASmartAsh interactive map, Treeport Cards, American Forests Tree Equity Score, Colorado Tree View, 2013 Denver Tree Canopy Assessment |

| | | | | |
|------------------------------------------------------|---------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Trees + Materials for Planting | \$5,000,000 | \$15,000,000 | Nonprofit partners, community groups, municipalities, tree care companies | Municipalities, CTC, Xcel Energy Foundation |
| Support for Tree Establishment (3 years of watering) | \$15,000,000 | \$45,000,000 | Nonprofit partners, community groups, municipalities | Municipalities, CTC, Xcel Energy Foundation |
| Support for Tree Protection Projects | \$6,250,000 | \$18,750,000 | Nonprofit partners, tree care companies | Municipalities, CTC, Xcel Energy Foundation |
| Support for Hazard Tree Mitigation | \$3,000,000 | \$9,000,000 | Tree care companies | Municipalities, CTC, Xcel Energy |
| Support for Expanding Local Nursery Capacity | \$500,000 | \$1,500,000 | Nurseries | |
| Forestry Sub-Total | \$29,850,000 | \$89,350,000 | | |
| Community Engagement | | | | |
| Community Engagement OVERALL | | | The Park People, Groundwork Denver, The Trust for Public Land, The Nature Conservancy, Colorado State Forest Service, municipal forestry programs, community/ neighborhood groups | Federal, state, local (park and resilience funding), philanthropic, matching funds from nonprofit partners |
| Neighborhood Canvassing | \$200,000 | \$600,000 | Nonprofit partners and community groups | Groundwork USA Resources for Inclusive Community Engagement, Whole Measures for Urban Communities |
| Support for Community Leadership | \$210,000 | \$630,000 | Nonprofit partners and community groups | |
| Support for Municipal Staff | \$60,000 | \$180,000 | | |
| Support for Nonprofit Intermediaries | \$300,000 | \$900,000 | | |
| Workforce Outreach in Focal Areas | \$55,000 | \$165,000 | Mile High Youth Corps, CrossPurpose, Second Chance Center, Lutheran Family Services, Goodwill, WorkNow, Bayaud Enterprises, Activate Workforce Solutions | |

| | | | | |
|--------------------------------------------------------------|---------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Stewardship Outreach in Focal Areas | \$55,000 | \$165,000 | Mile High Youth Corps, CrossPurpose, Second Chance Center, Lutheran Family Services, Goodwill, WorkNow, Bayaud Enterprises, Activate Workforce Solutions | |
| Stewardship Outreach in Focal Areas | \$60,000 | \$180,000 | Youth crews from nonprofits and community organizations | |
| Forestry Project Opportunity Assessments | \$150,000 | \$300,000 | Planning and landscape architecture firms | |
| Engagement Sub-Total | \$1,035,000 | \$2,955,000 | | |
| Research | | | | |
| Multi-party Research Initiative (Denver Urban Field Station) | \$500,000 | \$1,500,000 | USGS, CU Boulder, CSU, CU Denver, USFS | USFS National Research Initiative |
| Research Sub-Total | \$500,000 | \$1,500,000 | | |
| OVERALL TOTAL | \$33,892,500 | \$101,107,500 | | |

TABLE 4. POTENTIAL FUNDING BREAKDOWN

| Funding Source | 1 Year | 3 Years |
|-----------------------------------|---------------------|----------------------|
| Municipal | \$5,000,000 | \$15,000,000 |
| County | \$3,000,000 | \$10,000,000 |
| State Support | \$5,000,000 | \$15,000,000 |
| Utility Infrastructure Protection | \$3,000,000 | \$15,000,000 |
| Philanthropic Support | \$1,000,000 | \$5,000,000 |
| Community Investment | \$500,000 | \$2,500,000 |
| USFS National Research Initiative | \$500,000 | \$1,500,000 |
| Additional Federal Funding | \$15,892,500 | \$37,107,500 |
| Total | \$33,892,500 | \$101,107,500 |

APPENDIX A. LIST OF PARTNERS ENGAGED

The people listed below participated in calls or working group meetings as part of the development of this strategy. People who participated in meetings as part of multiple groups are shown in [blue](#). Forty-one people provided input for the Colorado Front Range strategy and many more (not listed here) were engaged as discussions related to the national Trees for Community Recovery effort.

Core Team

[Adrian Camacho](#), Forestry and Parks Superintendent, City of Aurora

[Austin Troy](#), Professor of Urban and Regional Planning, University of Colorado Denver

[Brett KenCairn](#), Urban Drawdown Initiative, City of Boulder

[Brigitte Orrick](#), Director of Recruiting and Employee Development, The Davey Tree Expert Company

[Christopher Hawkins](#), Urban Conservation Program Manager, The Nature Conservancy of Colorado

[Cindy Chang](#), Executive Director, Groundwork Denver

[Dana Coelho](#), Urban and Community Forestry Program Manager, Colorado State Forest Service

[Dana Karcher](#), Area Manager/Project Developer, Davey Resource Group

[Jacque Chomiak](#), City Forester, City of Aurora

[Jim Petterson](#), Colorado and Southwest Region Director, The Trust for Public Land

[Kathleen Alexander](#), City Forester, City of Boulder

[Kendra Boot](#), City Forester, City of Fort Collins

[Kim Yuan-Farrell](#), Executive Director, The Park People

[Lance Davisson](#), The Keystone Concept

[Lindsay Cutler](#), Urban Forestry Program Associate, The Park People

[Mike Swanson](#), City Forester, City and County of Denver

[Sherry Fountain](#), US Forest Service Region 2

Workforce Development

[Annie Rafferty](#), Director of Contract Education, Training, and Development, Butte Community College

[Antonio Barreiro](#), Deputy Director, Mile High Youth Corps

[Bob Rouse](#), Senior Vice President, Programs and Services, Tree Care Industry Association

[Brigid McRaith](#), CEO, Mile High Youth Corps

[Brigitte Orrick](#), Director of Recruiting and Employee Development, Davey Tree Expert Company

Candice Sporhase-White, Director of Career Pathways, Second Chance Center
[Cindy Chang, Executive Director, Groundwork Denver](#)
Cindy Schwab, Recruiting Manager, Davey Tree Expert Company
Dan Kaskubar, Spur LLC and Activate Workforce Solutions
Emily Newman, CEO, Camber
Jamie Koehler Blanchard, Lutheran Family Services
Jim Skiera, Former Executive Director of International Society of Arboriculture
Josh Morin, Acting Chair, Tree Care Sector Partnership, We Love Trees
[Kim Yuan-Farrell, Executive Director, The Park People](#)
Larry Abernathy, liaison with Utility Arborist Association
[Lindsay Cutler, Urban Forestry Program Associate, The Park People](#)
Lynn Vosler, Director of Workforce Development, Front Range Community College
Meredith Stricker, Career Services Manager, Cross Purpose
Nicole Belhumeur, Recruitment Manager, Bartlett Trees
Renise Walker, Colorado Workforce Development
Sarah Anderson, Director of Career Pathways, American Forests
Scott Segerstrom, Executive Director, Colorado Youth Corps Association

Forestry Projects

[Adrian Camacho, Forestry and Parks Superintendent, City of Aurora](#)
[Christopher Hawkins, Urban Conservation Program Manager, The Nature Conservancy of Colorado](#)
[Cindy Chang, Executive Director, Groundwork Denver](#)
[Dana Coelho, Urban and Community Forestry Program Manager, Colorado State Forest Service](#)
[Dana Karcher, Area Manager/Project Developer, Davey Resource Group](#)
[Jacque Chomiak, City Forester, City of Aurora](#)
[Jim Petterson, Colorado and Southwest Region Director, The Trust for Public Land](#)
[Josh Behounek, Business Development Manager, Davey Tree Company](#)
[Kathleen Alexander, City Forester, City of Boulder](#)
[Kendra Boot, City Forester, City of Fort Collins](#)
[Kim Yuan-Farrell, Executive Director, The Park People](#)
[Mike Swanson, City Forester, City and County of Denver](#)
[Sherry Fountain, US Forest Service Region 2](#)

Community Engagement

[Christopher Hawkins, Urban Conservation Program Manager, The Nature Conservancy of Colorado](#)
[Cindy Chang, Executive Director, Groundwork Denver](#)
[Jim Petterson, Colorado and Southwest Region Director, The Trust for Public Land](#)

Emily Patterson, Parks for People Program Director, The Trust for Public Land
Chandi Aldena, The Trust for Public Land
[Kim Yuan-Farrell, Executive Director, The Park People](#)
[Lindsay Cutler, Urban Forestry Program Associate, The Park People](#)

Research

[Austin Troy, Professor of Urban and Regional Planning, University of Colorado Denver](#)
Chris David, Vice President of GIS and Data Science, American Forests
Jay Diffendorfer, US Geological Survey, Geosciences and Environmental Change
Science Center
Kenneth Bagstad, Research Economist, US Geological Survey, Geosciences and
Environmental Change Science Center
Laura Dee, University of Colorado Boulder
Mehdi Heris, Hunter College
Melissa McHale, Colorado State University
Travis Warziniack, US Forest Service Denver Urban Field Station