Assessing the Impact of NUCFAC-recommended US Forest Service Urban and Community Forestry Grants (2010-2015): A Summary of Results

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According to the 2010 US Census, approximately 82% of US residents live in urban and suburban areas, a 12% increase from 2000 to 2010. The 2016 United Nations Habitat Report provides further evidence that this trend of urbanization, or movement to urban areas, will continue to increase in the future. Ensuring the vitality of urban areas requires several measures and policies that protect economic resilience, including increased property value and tourism and decreased costs associated with energy, crime, public health, stormwater management, and more. At the same time, actions that protect environmental quality are essential for human health and well-being, including measures and policies that support clean air and water, temperature reduction, pollution mitigation, and reduced storm damage. Managed properly, urban trees and forests help ameliorate the economic and environmental challenges urban areas face, while also creating an aesthetically-pleasing environment where people can live, work, and recreate.

The value of urban and community forest benefits are well known. The approximately 3.8 billion trees in US urban forests, structurally valued at $2.4 trillion[1], provide numerous benefits to over 252 million US urban residents[2]. Some of the benefits of urban and community forests include $11.7 billion in avoided health care costs[3], up to a 37% increase in property value[4], storage of 700 million tons of carbon[5], temperature reductions of 10-20°F or more[6] , and up to a 50% decrease in energy bills[7]. Considering this significant impact, funding that advances research and projects focused on improving the efficiency and quality of urban and community forests is economically, socially, and environmentally imperative.

Since 1994, the National Urban and Community Forestry Advisory Council (NUCFAC), to the USDA Secretary of Agriculture, annually recommends close to $1 million in proposed projects that meet the goals and objectives of a National Urban and Community Forestry Action Plan (Plan) (https://urbanforestplan.org/). The Plan, developed in conjunction with thousands of stakeholders and the general public, provides specific goals, actions, and recommendations for improving the status of urban and community forestry for the US and its territories. The purpose of the Plan is to expand awareness of the benefits that urban forests provide communities, including benefits such as natural infrastructure, economic sustainability, and improvements in environmental quality. Communities are encouraged to increase investments in these urban forest

resources for the benefit of current and future generations. The urban forestry community, including the USDA Forest Service and other applicable Federal agencies, are to use the Plan as a guide to implement and expand urban and community forestry for the next ten years (https://urbanforestplan.org, 2016-2026).

Knowledge of the impact of the National Urban and Community Forestry competitive grant program is intricately tied to the nation's future health and well-being. Today, with shrinking federal resources, every dollar provided by the US government should be viewed as an investment with quantifiable returns. To demonstrate the value of NUCFAC-recommended grants in supporting the numerous benefits of urban and community forests, the Forest Service supported an online and phone interview assessment of the impact of these grants. Twenty-six grants, awarded during years 2010-2015, were assessed for a number of impact indicators, including:

- How project products are utilized by stakeholders;
- An estimated number of individuals reached through the project;
- How the project has been promoted;
- Whether the project was replicated;
- If the project was used in the establishment of a business, policy, process, or other;
- Continued work on the project following grant closure;
- Additional funding beyond the grant period; and
- Unexpected project outcomes.

Impact data were collected from primary and secondary grant partners as well as individuals who directly benefited from the project, for example a graduate student involved in the project or a non-profit who used research results from a project. It is important to note that this assessment estimates the project reach based on a snapshot in time and from only one or more project partner's perspective. It can take years following the end of the grant period to publish project results and disseminate these results to the broader community. It is assumed that the actual reach of the projects in this report is much greater than presented here. It is well known that NUCFAC-recommended grant projects have laid the foundation for our understanding of the value and function of urban forestry, even as far back as grants awarded in 1994. Esteemed University of Washington researcher, Kathleen Wolf, Ph.D., reinforces the value of these grants by stating,

> *"NUCFAC has been on the exploratory edge. Because it is a council representing communities of all sizes, places all over the country, and diverse stakeholder interests, it puts money into supporting emerging ideas that later become mainstream. I would not be where I am now had I not received my first NUCFAC grant. In fact, I am still getting questions from people and requests to give conference presentations concerning the work that NUCFAC recommended funding for over 10 years ago. I hope the council can continue to be on top of new ideas that have value, whether program or research."*

The twenty-six NUCFAC-recommended USDA Forest Service funded projects that were part of this assessment included innovative projects focused on several key areas, including:

- Integrated planning;

- Human health and wellness;
- Cultivating diversity, equity, and leadership;
- Long term resilience;
- Management, maintenance, and stewardship;
- Increased public awareness and environmental education; and
- Diversity, leveraging, and increased funding.

The projects assessed in this analysis (current and completed) were awarded a total $4,733,330 in federal dollars, which were supplemented with $5,538,459 in matching funds and $13,016,155 in additional awarded funding, totaling $23,287,944. **This equates to a return of $4.92 for every $1 of federal funds invested.** The nine grants that were awarded additional funding received funds from federal ($1.585 million), state ($1.85 million), nonprofit ($86K), or private ($10 million) funding sources. Of the additional federal funds, three projects were recommended for additional funding from NUCFAC ($505K). Additional funds are being used to advance or continue initial project objectives and outcomes and address new research questions that arose from the initial project.

Project products, or deliverables, are used to communicate or assist stakeholders in utilizing project results. Project partners chose their stakeholders based on maximum impact for utilization of the results. Most common stakeholders included urban and community forestry practitioners (including arborists), urban planners, elected officials or policy makers, the public, educators, researchers, utilities, engineers and landscape architects, and county, city, and local managers. In all, numerous project products were or will be developed through the 26 projects represented in this assessment, including 44 peer-reviewed and 38 non-peer reviewed publications, 23 webinars and 208 conference presentations, 8 websites and 30 workshops, 7 geospatial mapping tools and 13 guidelines or Best Management Practices, 96 fact sheets and 41 case studies, 15 assessments and 4 technical reports, and 9 demonstration sites and 39 public outreach events.

Promoting project products is essential to their potential utilization and, therefore, their impact. Total approximate individuals reached during the course of all projects include 47,840 at conferences, workshops, webinars, or other face to face events; 151,420 through websites; 583,600 through printed brochures and publications; 740 through YouTube videos; 18,250 through social media, 144,120 through e-newsletters and blogs; and 36,485,700[8] through radio or television. Twenty-two graduate student theses were funded through these projects and 540 college students were introduced to the project through a class. Approximately 12,080 children and youth (early childhood to high school) were exposed to the project through a school activity or community event and approximately 6,300 Citizen Scientists or volunteers provided project support. Peer-reviewed publications have been viewed 2,700 times on Google Scholar and are estimated to receive approximately 600 citations. **In conclusion, several million people were reached through these projects.**

When inquiring how stakeholders will or have utilized the results from these projects, 77% of projects reported that results support a change in practice and 69% report stakeholders will

directly implement project findings. Additionally, stakeholders were reported to utilize the results from the projects to develop workshops (23% projects reported this end use) and technology (15%), provide support for policy change (23%), use in new publications (85%), and/or develop new research projects (46%).

Popular press (public newspapers and journals) and trade journal (ex., Arborist News, Parks and Recreation, City Trees, etc.) articles are a direct way to reach urban and community forestry practitioners and the public. Project partners were asked if they published in or plan to publish in popular press or urban and community forestry journals and over 46% of projects reported that they have or plan to publish through these outlets, with approximately 44 articles written or in process.

As previously mentioned, these figures represent a fraction of the actual impact these projects have made or will make over time; the actual impact is much greater than we have reported here. Several grant recipients interviewed for this assessment indicated that NUCFAC-recommended projects have laid the foundation for urban and community forestry research and have advanced public understanding of the many benefits of urban trees and forests. Several grant recipients also expressed appreciation for NUCFAC's emphasis and support of applied research projects, whose research results can be readily implemented by communities, practitioners, and the public.

In conclusion, this assessment utilized current survey and interview techniques to evaluate some of the quantifiable impacts of NUCFAC recommendations to the USDA Forest Service's National Urban and Community Forestry grant program over a 5-year period. From our analysis, we conclude that the grant program has been very effective in delivering products and services that have had a very large impact. If these survey techniques were applied to the review of the entire program from 1994 to present, (212 grants and $20 million) the result, from a very conservative perspective, would be in the range of over $86 to $100 million dollars. Moreover, the NUCFAC-recommended USDA Forest Service grants program has provided for countless other benefits, including education of youth and the public, improved aesthetics and livability, and a better understanding of the value and importance of nature's infrastructure.

References:

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[8]This figure represents the number of radio and TV impressions. Impressions are the number of exposures to an advertisement. An individual can receive more than one exposure.