BUNDLED ENVIRONMENTAL SERVICES

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gtech

TREE PITTSBURGH

PREPARED BY

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Executive Summary

This report outlined a research effort led by GTECH Strategies in partnership with Tree Pittsburgh in 2016 - 2017 to determine how Pittsburgh region nonprofits can increase the impact, scale, efficiency, and community benefit associated with environmental programming. As outlined below, the goals of this planning and evaluation process were threefold. The results of Goals one and three are applicable to Environmental Finance Collaborative (EFC) partners and beyond, whereas, the result of Goal 2 is specific to a joint programming partnership between GTECH and Tree Pittsburgh.

- Goal 1: To establish a framework for standards of delivery (localized best practices),
- Goal 2: Application of the framework, resulting in a Model of Coordinated Environmental Service Delivery between GTECH and Tree Pittsburgh, and
- Goal 3: Analysis of alternative financing options, including options which increase and incentivize collaboration among nonprofit partners and beyond.

National and local benchmarking research identified a variety of beneficial impacts through bundling environmental services. These include:

- Improved process through partnerships,
- Diversification of funding sources,
- Increased capacity and impact,
- Reduction of cost,
- Improved communication,
- Resource sharing, and
- The development of common data and evaluation framework.

Eight case studies were developed as part of the benchmarking initiative; the full set of case studies can be found in Appendix A.

Next, an assessment of each organization's programming, process, and evaluation methods was conducted to determine where specific points of collaboration exist. Two programs from each organization were identified as the best potential opportunities for joint programming. These programs include GTECH's Ambassadors and Green Playces initiatives and Tree Pittsburgh's ReLeaf and educational initiatives. Outlines of these programs, including process, impact framework, and evaluation methodology were synthesized in order to identify points of synthesis. The locations of where these programs have occurred were mapped in GIS in order to better understand the potential alignment.

Findings of this analysis include opportunities to collaborate on multiple levels to advance efficiencies, bolster partner processes and outcomes, and ultimately maximize impact. The three tiers of collaboration, listed generally from lowest to highest level of implementation effort, include: a) process alignments, b) joint programming, and c) the creation of a Business Development fund. Potential process alignments include opportunities for joint training, resource sharing, and the creation of shared set of standards. The creation of a voluntary shared set of standards for regional nonprofits is an efficient way to promote coordination, minimize redundancy, and promote best practices for ensuring high quality place-based work.

For joint programming, a framework was developed for identifying specific opportunities between nonprofit organizations. The application of that framework to GTECH and Tree Pittsburgh identified Youth Programming as the best fit for joint programming between the organizations. The success of GTECH's Green Playces and Tree Pittsburgh's educational initiatives, the regional need for additional programming in these areas, the synthesis of each organization's strengths, and the alignment of organizational methodology and missions were critical factors in identifying youth-focused joint programming as a strong opportunity to increase the impact of programming through a bundled environmental services approach.

Additionally, application of the joint programming framework through the lens of GTECH and Tree Pittsburgh

yielded a variety of resources that can both support joint programming between the organizations as well as expand each organization's toolboxes. The steps that were taken included a) community prioritization to determine where joint programming is most needed in the City of Pittsburgh, b) development of a common evaluation framework to measure program impacts on community health and well-being, and c) a detailed outline of what the youth-focused joint programming would entail, including program outline and costs. The community prioritization analysis included 16 environmental health indicators that were developed based on best practice research and surveying GTECH and Tree Pittsburgh staff. Dr. Michelle Kondo (US Forest Services) and Dr. Bernadette Hohl (Rutgers University) were engaged to lead the development of a common evaluation framework to measure program impacts on community health and well-being. For this effort, a survey was developed along with best practices for survey delivery. The survey has two formats - one for delivery in person and one for delivery either by mail or electronically.

The Joint Youth Programming concept was developed as a six-stage process with an estimated cost of $52.5k - $80.5k depending on the scale of the initiative. The 6 stages include 1) Investigate, 2) Community Engagement and Education, 3) Site Selection and Community Design, 4) Project Implementation, 5) Educational Programming, and 6) Application of Common Evaluation Framework. Critical elements of each stage were developed along with approximate costs. Both GTECH and Tree Pittsburgh will continue to seek ways to make this concept a reality through joint fundraising.

Finally, alternative financing options were surveyed, summarized, and evaluated for opportunities to increase and incentivize collaboration among nonprofit partners and beyond. Key elements in this section include an overview of the alternative financing landscape, an assessment of relevant Instruments and mechanisms with Identified local applications, and an evaluation of linkages to bundled environmental services. This analysis identified a number of potential applications of alternative financing to Bundled Environmental Services, most notably the pay for success work being led locally by ESC. Further, the concept of developing a Collaborative Business Development Fund to increase the ability to pursue partnership opportunities by providing dedicated funds and time emerged as the most feasible and direct way to increase impacts through increased partnership. A fund that covers some of that administrative overhead to go deeper into projects and programs that support several groups is an ideal opportunity to advance opportunities to bundle environmental services.

Introduction

This report outlines a research effort led by GTECH Strategies in partnership with Tree Pittsburgh in to determine how Pittsburgh-region nonprofits with aligned missions can increase the impact, scale, efficiency, and community benefit associated with environmental programming. Our process included local and national benchmarking, an analysis of the region's programming and funding environment, and the development and application of a model which can be applied to specific environmentally-focused nonprofits to determine the best opportunities for joint programming. The results of our process include a framework that can facilitate greater partnerships, resource sharing, increased financial means for collaboration, and a methodology for environmental nonprofits to create effective joint programming.

Context

Regional Need

Throughout Allegheny County, environmental interventions to improve community health is a critical need. With over 45,000 vacant lots, a diminishing tree canopy due to pests and development pressure, federal and state mandates to mitigate the region's annual discharge of nine billion gallons of combined sewer overflow, and a variety of other local challenges, we must join together to take action. Increasing collaboration, identifying opportunities for and implementing efficiencies, and sharing resources represent approaches to increase the impact of environmental programming on community health.

Demonstrated Success

After six successful years of operational collaboration through the EFC, GTECH and Tree Pittsburgh seek to identify new approaches to layering and integrating programming and funding mechanisms associated with place-based partnerships and activities.

The most pronounced accomplishment of the EFC was the design and development of a Shared Chief Financial Officer (CFO) for organizations at a similar stage of capacity and need. Over the course of the last six years, the shared CFO has served as "embedded capacity" for EFC partners. This capacity has resulted in a standardization of financial planning and reporting, ultimately enabling increased sophistication in strategy and sustainability for each of the now five organizations.

Moreover, the collaboration has served as an ongoing platform for collaboration among organizational leadership extending to points of operational efficiency in the realm of Human Resources and Resource Development. However, increasing interest has been identified in both programmatic points of collaboration that would align strategy and project implementation as well as the development of financing mechanisms beyond traditional philanthropy, ultimately increasing organizational capacity to execute specific services.

National and Local Examples of Increased Impact

In addition to the successes experienced with the EFC, there are numerous local and national examples of increased impact and success through joint programming. To inform our planning process, a series of eight case studies were developed to better understand joint programming through the following lenses: process, funding mechanisms, outcomes, increased efficiencies, and shared data. The complete set of case studies can be found in Appendix A.

This benchmarking process further validated our hypothesis that increased collaboration can yield significant impacts. The following successful outcomes of joint programming were identified across the case studies:

- Improved process through partnerships
- Diversification of funding sources
- Increased capacity and impact

- Reduction of cost
- Improved communication
- Resource sharing
- Common data and evaluation framework

Outcomes of Joint Programming Identified in Case Studies

Case Study	Improved Process through Partnerships	Diversified Funding Sources	Increased Capacity & Impact	Reduction of Cost	Improved Commu-nication	Resource Sharing	Common Data and Evaluation Framework
TreeVitalize	x	x	x	x		x	x
Urban Ecostewards	x	x	x	x	x	x	x
Emerald City	x	x	x		x	x	
Save the Rain Vacant Lot Program	x		x		x	x	x
Green Seattle Partnership	x		x			x	x
Million Trees NYC	x	x	x			x	x
The Haven Project	x						x
Growing Green Initiative	x	x	x			x	

Goals

As outlined below, the goals of this planning and evaluation process were threefold. The results of Goals 1 and 3 are applicable to EFC partners and beyond, whereas, the result of Goal 2 is specific to a joint programming partnership between GTECH and Tree Pittsburgh.

- Goal 1: To establish a framework for standards of delivery (best practices),
- Goal 2: Application of the framework, resulting in a Model of Coordinated Environmental Service Delivery between GTECH and Tree Pittsburgh, and
- Goal 3: Analysis of alternative financing options, including options which increase and incentivize collaboration among nonprofit partners and beyond.

Each organization's programming, process, and evaluation methods were assessed to determine where specific points of collaboration exist. This was the starting point for the creation of a process, timeline, and collective strategy to stagger, layer, and implement the services offered by each organization.

Assessment

Organizational Outline

Organization	GTECH	Tree Pittsburgh
Purpose / Mission	Across Allegheny County, we mobilize residents, local policy-makers, and like-minded organizations to transform vacant spaces into thriving places everyone can enjoy. We improve the social, economic and environmental health of the whole community by ensuring underutilized land serves the greater good. GTECH invests in a process that equips motivated people to help create safe, green, resilient and livable spaces within their own communities.	Tree Pittsburgh's mission is to protect and restore our urban forest through tree planting and care, education, and advocacy. We believe that all people have the right to benefit from the many health, environmental, and social benefits that trees provide. Our vision is to support a more resilient urban forest for all by inspiring and engaging people to maintain, plant, and protect trees. A greener region will create more vital communities for generations to come.
Strategic Priorities	Our four strategic priorities as outlined in the 2016 - 2018 Strategic Plan are: • Continue a "People and Places" approach. • Target underutilized land as a starting point for a community health strategy. • Respect and be mindful of historical context - yet not be governed by it. • Invest in collaborative infrastructure.	Our 4 strategic priorities as outlined in the 2016-2018 Strategic Plan are: • Continue implementation of the Urban Forest Master Plan (UFMP) and increase tree planting and maintenance efforts. • Build volunteer capacity and relationships with other partner organizations. • Increase earned revenue and explore opportunities to provide service. • Increase awareness and outreach efforts.
Specialties	Policy & Advocacy, Data Collection & Analysis, Planning & Evaluation, Design & Implementation, Capacity Building, Education & Outreach, & Multi-organizational Collaboration	Urban Forestry, Policy & Advocacy, Data Collection and Analysis, Planning, Report Writing, Implementation, Education & Outreach
Staff	11 FTE + shared CFO + shared Project Coordinator + shared Administrative Coordinator	5 FTE + shared CFO + shared Communications + shared Office Manager
Geographic Focus	Allegheny County, with focus on areas of high vacancy and underutilized land	Allegheny County

Program Highlights

The following outlines two key program areas from each organization. This is a subset of each organization's overall programming; these programs were chosen as the focus of this analysis due to being the best potential fit for joint programming. Along with descriptions of the programs are an outline of the process and evaluation methodology.

Ambassador Programming (GTECH)

Overview

The goal of GTECH's Ambassador program is to engage, equip and empower individuals from selected communities as Ambassadors who participate in a targeted education and training program as it relates to reclaiming vacant land, ultimately resulting in the transformation of vacant lots into a community asset. Each Ambassador cohort is comprised of 10 - 12 active community citizens. Participants attend 10 vacant land reclamation and asset building education sessions on issues ranging from site assessment, community organizing, project design, and volunteer recruitment and management. Ambassadors, with the support of GTECH, then lead the process of making their vision for the vacant lot a reality. This phase of the program includes key elements such as community outreach, volunteer recruitment, and project implementation.

Ambassadors select their vacant lot and develop a design for the space with assistance from landscape architects.

Currently, GTECH has active Ambassador cohorts in Clairton and the Middle Hill. Over the past 5 years, there have been 6 additional Ambassador cohorts focused on reclaiming vacant land. These have been located in the Northside and Hilltop areas of the City of Pittsburgh and in the City of McKeesport.

Process

Residents apply to participate in the program. A cohort of 10-12 are chosen as Ambassadors. Each Ambassador participates in classes, designs and builds their own vacant lot project with the support of volunteers, and forms a support network for their project. Residents not selected as Ambassadors can participate in the program by attending events or volunteering at the vacant lot projects.

Phase 1: Vacant Land and Capacity Assessment

At program launch, a period of investigation is carried out to gain information about municipality size and vacant land availability, resident engagement and education on the subject matter, municipal staff enthusiasm, community capacity, private interest or business support, and a plan for sustainability and project maintenance.

With mini-grants provided as part of the program and support from neighbors and GTECH, Ambassadors transform their vacant lots into community spaces such as this community garden in the Hilltop.

Phase 2: Take Action through Project Implementation and Connect People with Resources and Education

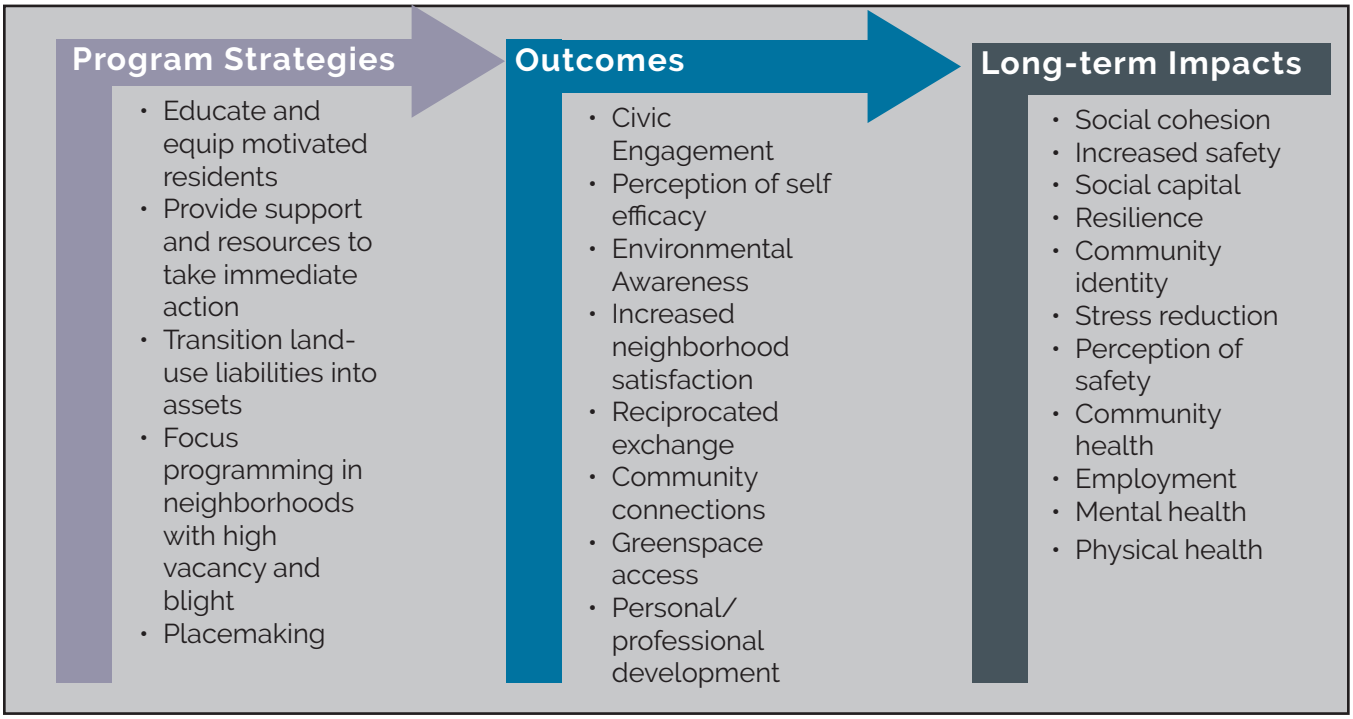
In the early Fall, GTECH releases a request for applications from residents in the location of focus. A cohort of 10-15 residents are chosen as Ambassadors for the program. Over the course of the fall and winter, the cohort participates in ten classes and workshops led by GTECH covering topics related to vacant land reclamation. Each Ambassador designs and plans for their own vacant lot reclamation project on a vacant lot in their neighborhood. Throughout the spring and summer, the Ambassadors work with volunteers and GTECH staff to build out their ideas on vacant lots. Each Ambassador receives a small grant (typically $3,000) from GTECH to cover the material costs for their vacant lot project. They are also given instruction on crowdfunding, grant-writing, and fundraising. Over the

course of the year, several events are held, including public presentations, community meetings, project build days, and a graduation ceremony.

Phase 3: Sustain via Partnerships
The sustain portion of the initiative varies based on Ambassador and community interest and available funding. For the Hilltop Ambassador cohort, GTECH followed up with a dedicated program two years after the initial Ambassador program. This dedicated programming, *South 2.0: Sustaining Momentum*, included more advanced training, networking opportunities, and financial resources and field support to improve Ambassador projects.

GTECH is currently offering a mini-grant for Ambassador site improvements through the Fed Ex Sustainability Fund. This opportunity is open for any currently active and maintained Ambassador project. Awards will be up to $500 and are accompanied by access to a mobile tool trailer.

Ambassador Programming Impact Framework



Evaluation Methodology

Evaluating the impact of the Ambassador program can be challenging due to the complexity of many of the outcomes and impacts. In 2016, GTECH worked with the consulting firm Real Worth to create a Sustainable Return on Investment (SuROI) model to better capture the full impacts of Ambassador programming. Instead of focusing on market-based outcomes, SuROI puts a value on the social and environmental changes experienced by the very people who are affected by policies, investments and development decisions. The following core factors were evaluated to determine impact: Wellbeing, Crime, Actualized Economic Gains, Employment, Ecosystem Services, and Health. In terms of value for money, for every dollar invested in the program, the wider economy will benefit from a return of $21.90 over a three-year period. SuROI has enabled GTECH to place a dollar value on the social and environmental changes experienced by the McKeesport community as a result of the Ambassadors Program. This not only helps to communicate the benefits in a language everyone understands, but it also enables a return on investment to be calculated showing why the Ambassadors Program adds value, in monetary terms, for the wider economy. The SuROI evaluation methodology enables stakeholders to understand both the overall

sustainable value, and the component factors that contributed to it such as health, crime, skills, employment, wellbeing and empowerment, and ecology.

Green Playces (GTECH)

Overview

Focusing on areas with high concentrations of vacant land and minimal environmental programming for youth, the Green Playces program utilizes a three-part strategy to increase collaboration, increase available services, and help transform liabilities into community assets. The program co-creates community green spaces for local service providers, while enhancing the environmental education opportunities available to youth in underserved communities. For each Green Playce, GTECH identifies an anchor organization that owns vacant land in close proximity to a community or youth facility to transform into an outdoor classroom, play space, or communal green space. Next, GTECH facilitates a community design process with youth, community organizations, and service providers. Partnering with the anchor organization, GTECH then transforms the vacant lot into the community vision with an emphasis on sustainable and re-used materials. Finally, GTECH works with partners such as Allegheny Partners for Out of School Time (APOST) to align existing youth program resources with needs at each Green Playce.

Each Green Playce is unique. Elements of the Hilltop Green Playce include a slide, a giant reading nest, a rain garden, edible gardening beds, and youth-designed art.

GTECH has implemented seven Green Playces and is currently pursuing partnerships and funding associated with creating more. The locations for the implemented Green Playces include the municipalities of McKeesport, Wilkinsburg, and Munhall and the City of Pittsburgh neighborhoods of Allentown, Central Northside, the Hill District, and Homewood. One additional Green Playce is currently underway in the City of Clairton; implementation is planned for Summer 2017.

Process

Phase 1: Investigate

Determine priority areas that have high amounts of vacancy and limited environmental education programming. For the City of Pittsburgh, GTECH conducted a detailed analysis of vacancy and environmental youth programming to determine where our efforts could be most impactful. The results of that analysis is published in the Youth In Green report. Currently, GTECH is employing a research-based approach to systematically look at how our Green Playces program can remain robust while developing strong youth partnerships at a county-wide scale.

The design of each Green Playce is customized based on input from youth and community partners who will use the space as well as conditions of the vacant lot.

Phase 2: Connect with the Community

Host community conversation to identify needs, stakeholders, and potential partners. Secure partnership with anchor institution that owns vacant land in close proximity to youth programming.

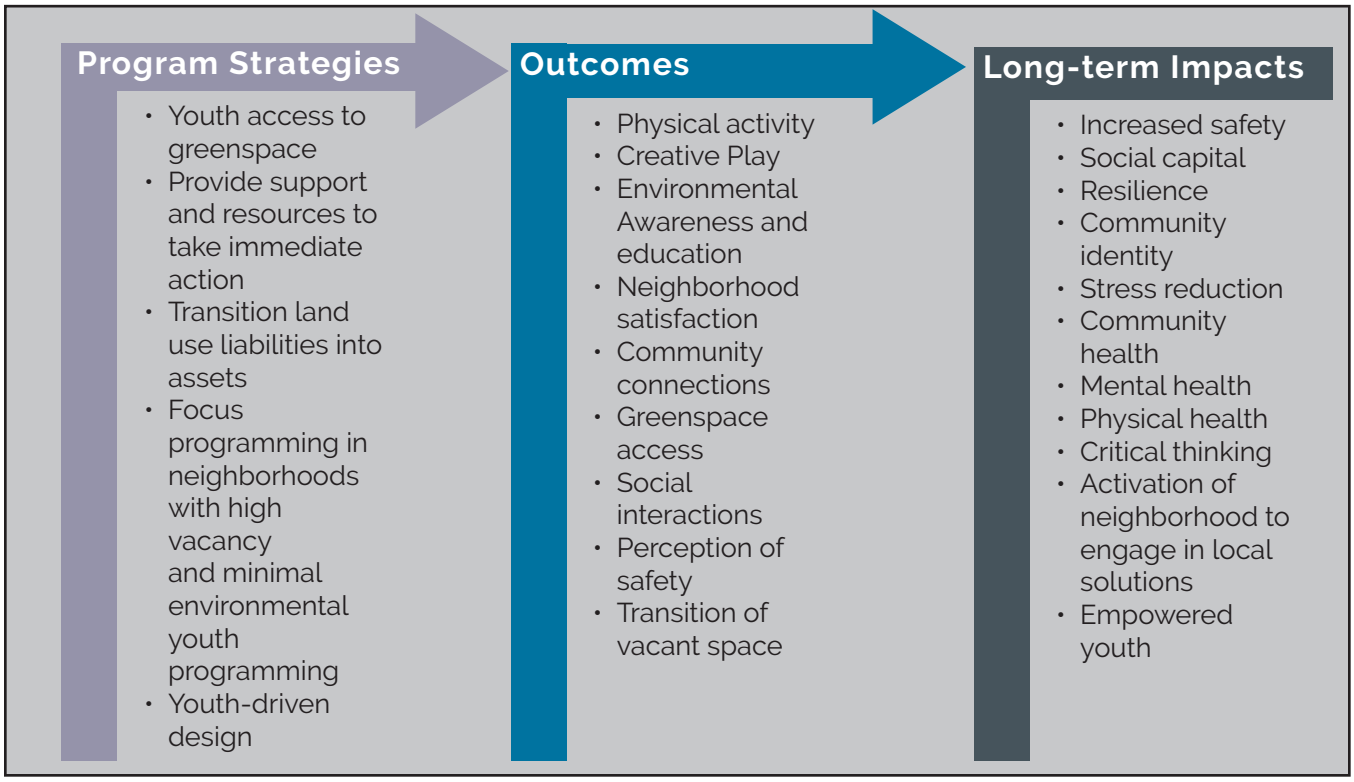
Phase 3: Inclusive Design

First, host youth design charette. Next, host design charette with community partners. This combination allows for a site design that meets community needs, inspires imagination, and offers learning opportunities for youth.

Phase 4: Take Action Through Implementation
Create final site design based on input received at design charettes and during other informal communications. Implement Green Playce with emphasis on re-used and sustainable materials.

Element 5: Connect via Educational Programming
Work with partners such as APOST to connect environmental programming to the Green Playce.

Green Playces Impact Framework



ReLeaf (Tree Pittsburgh)

Overview

Tree Pittsburgh initiated Releaf to create place-based urban forest plans to make the larger Pittsburgh Urban Forest Master Plan more accessible and achievable to neighborhood volunteers and advocates. Goals of the Releaf plans include: Increase tree canopy and improve existing canopy's health on a community-wide scale to positively impact human health, the economy, the environment, and neighborhood livability. Improve the condition of existing trees and remove hazardous trees in public spaces such as parks, parklets, playgrounds, along streets, and other community greenspaces to improve public safety. Increase awareness about the benefits of trees among residents in selected-community and increase their engagement in the planting and care of trees. Demonstrate the efficiencies and impact that can result from working at the neighborhood scale and create a model for replication.

A steering committee comprised of City and neighborhood stakeholders are engaged to create each Releaf plan. Releaf plans have been developed and are in implementation phases in Lawrenceville and Manchester/Chateau.

Process

Many of the recommendations in the Pittsburgh Urban Forest Master Plan revolve around increasing tree canopy in low-canopy neighborhoods through connecting and engaging the community. To better work with the unique challenges that exist in Pittsburgh's diverse neighborhoods, Tree Pittsburgh decided to focus on one neighborhood in 2014 to increase programming in that area and create an urban forest plan specific to the community's needs.

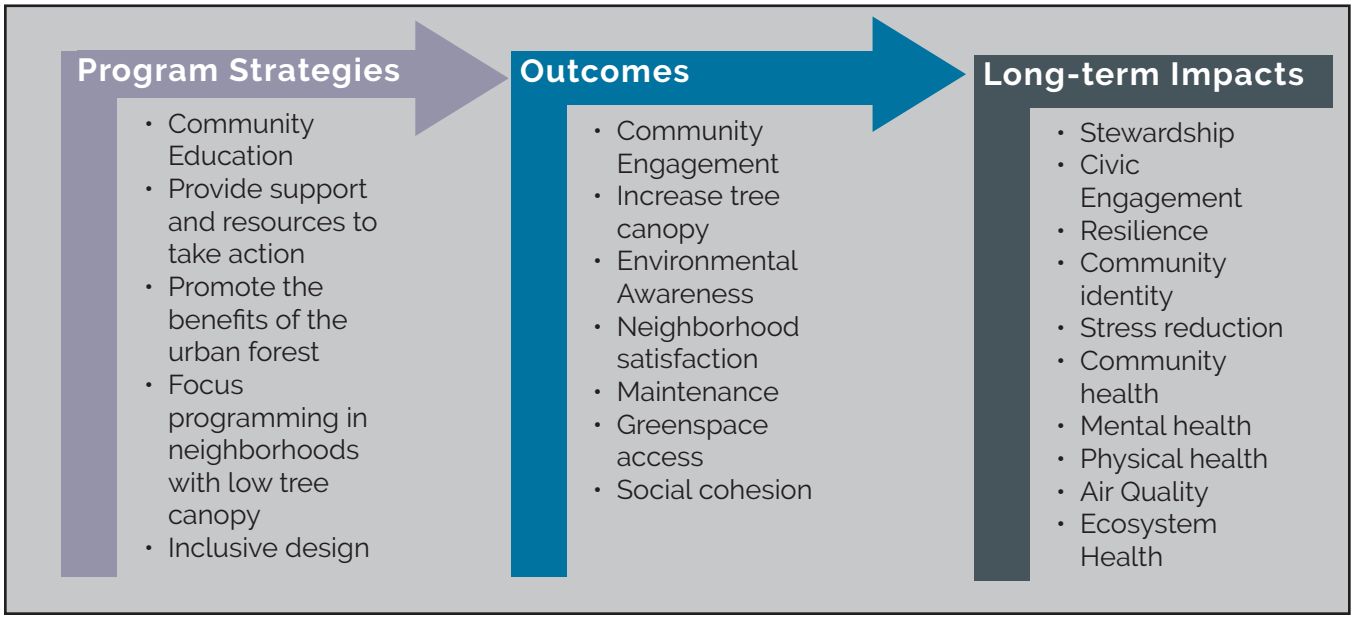
ReLeaf plans are developed in close partnership with residents. For the Lawrenceville ReLeaf plan, over 1000 residents gave input as part of the planning process.

Tree Pittsburgh staff developed a set of criteria to select a neighborhood for the pilot, place-based urban forest planning initiative. The starting point for the decision was need, which in this context means low tree canopy – enabling the pool to be narrowed to twenty neighborhoods with the lowest tree canopy. Second, the staff measured potential for impact. Key questions included: Does the neighborhood offer a variety of land-types with a variety of uses and owners, such as: riparian areas, parks, vacant lots, a business district, hillsides, residential areas, institutional properties, cemeteries, etc. Additionally, is the neighborhood densely populated, indicating a high potential for impacting the greatest number of people. Finally, staff analyzed what existing greening efforts were underway and the level of citizen engagement in community greening.

Lawrenceville, comprised of Lower, Central, and Upper Lawrenceville, rose to the top of the list with a greatneed to increase tree canopy from the current 26%. The community has a strong volunteer base of 80 Tree Tenders who meet monthly and engage in regular tree care and planting activities. This group nearly doubled the neighborhoods number of street trees since 2005 from 939 to 1,665. Moreover, there are multiple active greening committees and community organizations that provide resources and infrastructure for their efforts. Given the topography of the neighborhood and the diverse land-use types that comprise the neighborhood, they are faced with many environmental and quality of life challenges that can be alleviated through tree planting.

After completing the Lawrenceville ReLeaf planning initiative, Tree Pittsburgh repeated the process in the Manchester / Chateau neighborhoods in 2015. There are no currently active ReLeaf planning initiatives. ReLeaf plans for Lawrenceville and Manchester/Chateau are currently in the implementation stage; both are being led by community partners with support from Tree Pittsburgh.

ReLeaf Impact Framework



Evaluation Methodology

The Relaf plan includes "How are we Doing - Evaluation and Monitoring" as part of the plan strategy and report. This approach allows for revision and maintaining a dynamic management approach. Each year for five years after plan creation, an assessment of the plan's success is conducted. After 5 years a reassessment will be occur. The following metrics will be used to assess the plan:

- # of trees planted,
- Survival rates,
- Overall tree canopy cover change,
- Tree canopy cover change by land type,
- # of Tree Tenders,
- # of trees pruned,
- # of trees mulched and weeded, and
- An assessment of annual tree benefit using *itree* software.

Educational Initiatives (Tree Pittsburgh)

Overview

Tree Pittsburgh's education programs build the organization's capacity to impact the understanding of urban forest benefits, tree biology and forest ecology, and environmental stewardship by developing and promoting resources for educators and developing and delivering direct programming for schools, afterschool and out-of-school programs, summer youth programs, and adult courses.

Tree Tenders

One of the strongest examples of Tree Pittsburgh's educational initiatives is it's Tree Tender program.Tree Tenders is a certification training program that empowers concerned residents to make dramatic strides towards restoring and caring for the tree canopy in their communities. This training course was developed by the Pennsylvania Horticultural Society (PHS) in 1993 in collaboration with Penn State Extension Urban Foresters in southeast Pennsylvania. The course is designed for all levels of knowledge.

Tree Pittsburgh has trained and certified over 1,700 Tree Tenders since 2007. The training includes classroom and field education.

In 2007, Tree Pittsburgh adapted the course for the Pittsburgh and Allegheny County region and began offering certification to Southwestern Pennsylvania Residents. The acclaimed Tree Tenders® program is at the forefront of an urban tree movement across the country and is one of the oldest, most respected volunteer urban-tree care programs. It offers affordable training in tree planting and care and affiliated trainings take place across the city of Pittsburgh and throughout Allegheny County.

Tree Tenders training covers tree biology, identification, planting, maintenance, community engagement, the Pittsburgh urban forest, pests and disease, and the many health and environmental services provided by trees. Tree Tenders work alongside local tree agencies, leveraging resources and extending the impact of municipal tree stewardship. In addition, trees planted by Tree Tenders have a high survival rate, as dedicated and trained volunteers remain focused on their care, reducing the cost of maintenance. The program has been replicated in communities across the nation. Instruction is provided by Tree Pittsburgh, and other local urban forestry experts.

Since 1993 PHS has trained over 4,000 Tree Tenders in 150 Pennsylvania neighborhoods. Locally, Tree Pittsburgh has trained and certified over 1,700 Tree Tenders since 2007 from 68 City of Pittsburgh neighborhoods and 96 outside municipalities. These numbers indicate the pride and sense of purpose that people feel as a result of helping their environment.

Process

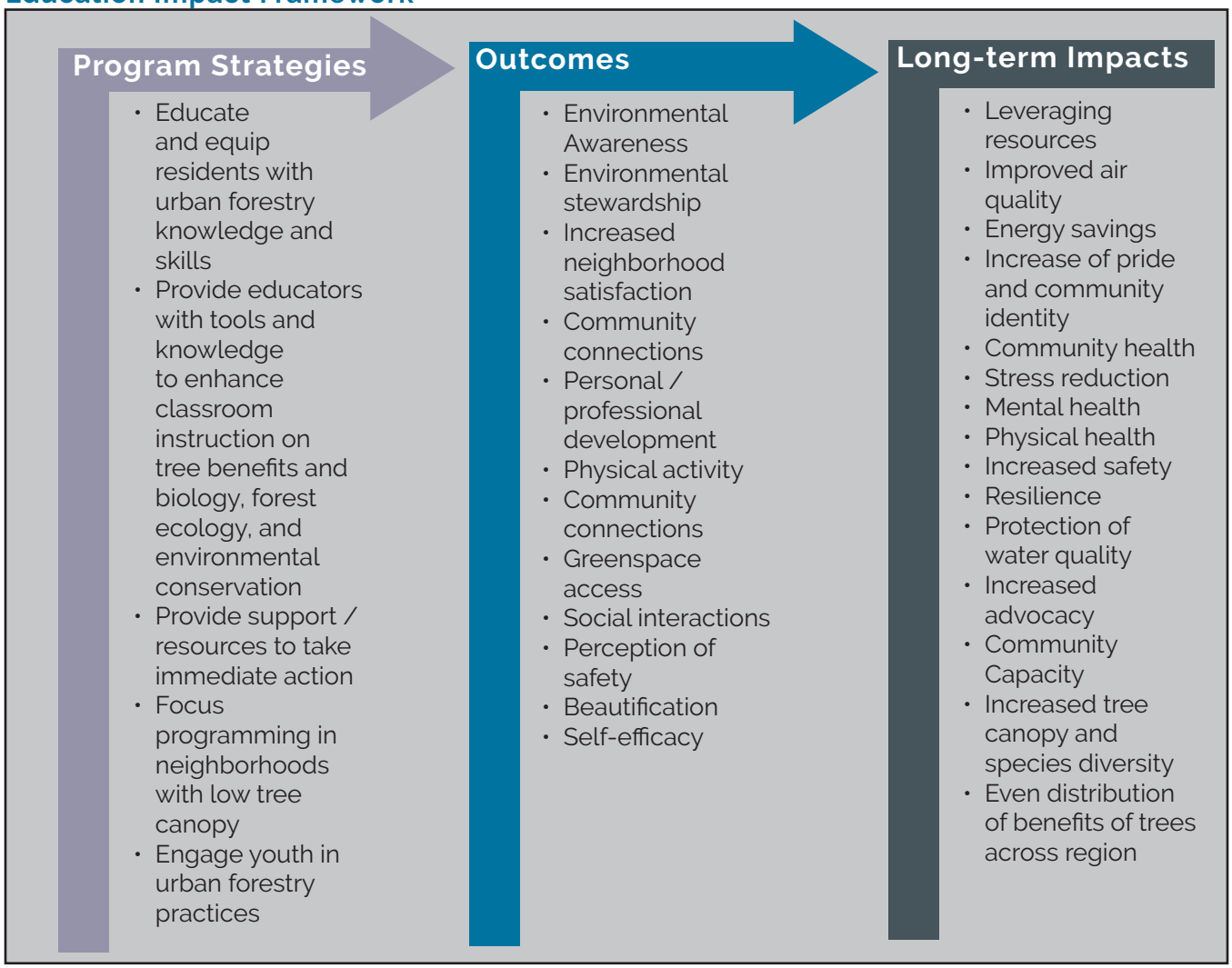
Fundamental elements of Tree Pittsburgh educational initiatives include:

- *Urban forestry knowledge and participation transcends the educational classes offered:* Programs of Tree Pittsburgh enable participants to make connections and apply their learning in real world situations while being able to see the interconnectedness of social, ecological, economic, cultural, and political issues.
- *Communities are strengthened:* There is a conscious effort to promote a sense of place and connection through community involvement. When residents decide to learn more or take action to improve their community environment, they reach out to community experts, donors, volunteers, and local facilities to help bring the community together to understand and address environmental issues impacting their neighborhood.
- *Responsible action is taken to better the environment*: Programs provide an understanding on how decisions and actions affect the urban forest and local community. This strengthens the knowledge and skills necessary to address complex community and environmental issues, as well as ways one can take action to keep the environment healthy and sustainable for the future.
- *Students and teachers are empowered*: The aim is to promote active learning, citizenship, and student leadership. Programs empower youth to share their voice

Tree Pittsburgh-certified Tree Tenders represent 68 Pittsburgh neighborhoods and 96 municipalities.

and make a difference at their school and in their communities. It also helps teachers build upon their own environmental knowledge and teaching skills.

Education Impact Framework



Evaluation Methodology

Tree Pittsburgh educational program evaluation follows the five objectives of successful environmental education:

- *Awareness:* to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.
- *Knowledge*: to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems.
- *Attitudes:* to help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection.
- *Skills:* to help social groups and individuals acquire the skills for identifying and solving environmental problems.
- *Participation:* to provide social groups and individuals with an opportunity to be actively involved at all levels in working.

Ways that program evaluation occur include metrics to measure partnership health, tracking of certified Tree Tenders including geography, diversity, and engagement. Tree Pittsburgh also creates tracking records of interns and volunteers engaged to support staff. Participants of our educational programs complete surveys at the end of the each session. Follow-up is conducted on a regular basis through email, social media, and newsletters to increase engagement, gauge interest, and create new educational program themes.

Youth-focused educational activities are conducted in partnership with schools and community-based organizations as well as through special events such as Gingko Fest and Arbor Day.

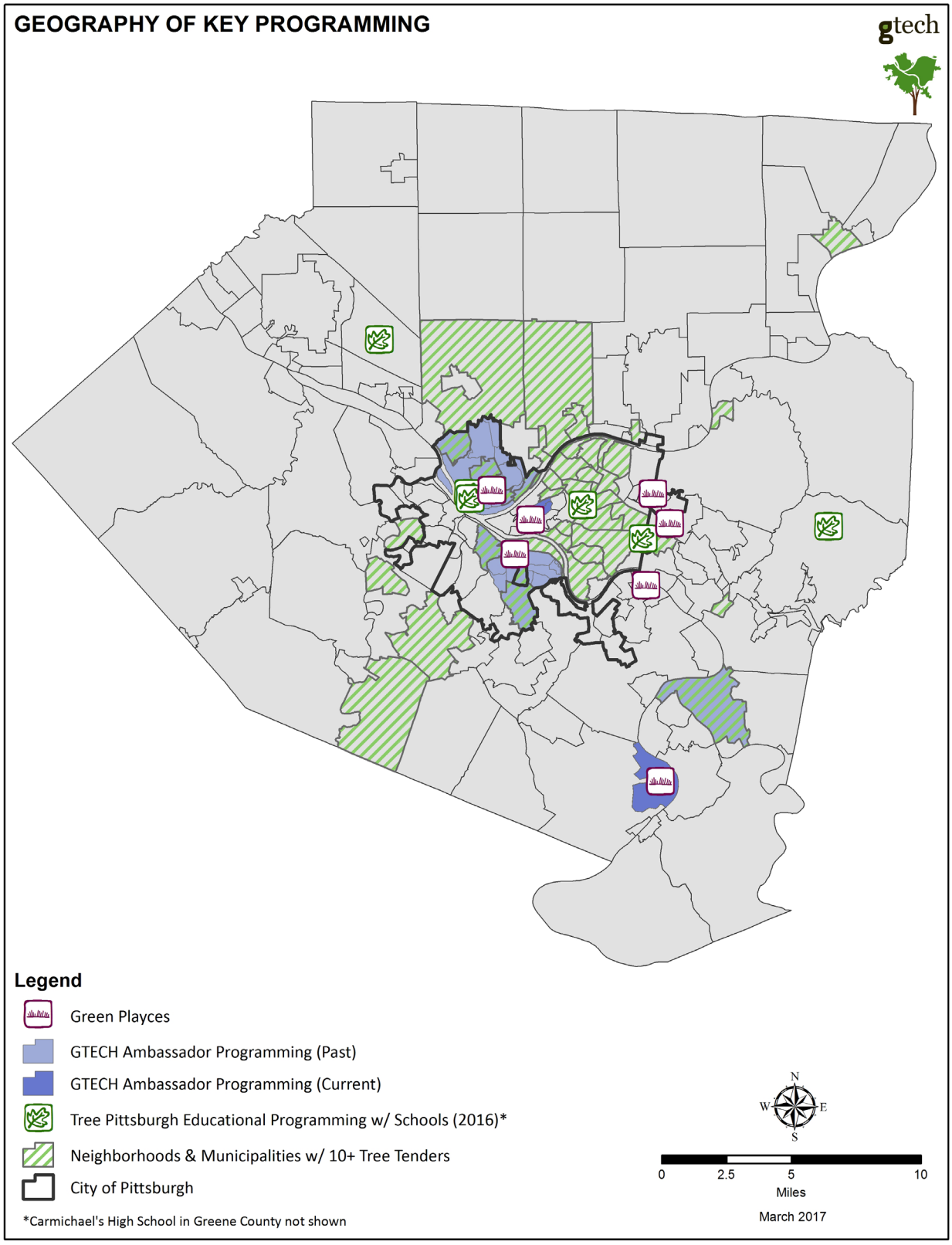
Geography of Key Programming

The following outlines the locations of key programming from each organization:

- **Green Playces:** The seven Green Playces locations include the municipalities of McKeesport, Wilkinsburg, and Munhall and the City of Pittsburgh neighborhoods of Allentown, Central Northside, the Hill District, and Homewood. An additional Green Playce is currently underway for the City of Clairton; implementation is slated for summer 2017.
- **Ambassador Programming**: Currently, GTECH has active Ambassador cohorts in Clairton and the Middle Hill. Over the past five years, there have been six additional Ambassador cohorts in the Northside and Hilltop areas of the City of Pittsburgh and in the City of McKeesport.
- **ReLeaf:** ReLeaf plans have been created for Lawrenceville, Manchester, and Chateau.
- **Tree Tenders:** Tree Pittsburgh has trained Tree Tenders throughout the City and County. The following neighborhoods have at least 10 Tree Tenders: Bloomfield, Brighton Heights, Carrick, Central Lawrenceville, Central Northside, Central Oakland, East Allegheny, East Liberty, Friendship, Garfield, Greenfield, Hazelwood, Highland Park, Lower Lawrenceville, Manchester, Morningside, Mount Washington, Perry Hilltop, Point Breeze, Polish Hill, Shadyside, South Oakland, Southside Flats, Squirrel Hill North, Squirrel Hill South, Stanton Heights, Troy Hill, and Upper Lawrenceville. Municipalities in Allegheny County with at least 10 Tree Tenders include Aspinwall, Carnegie, Crafton, East Pittsburgh, Edgewood, Etna, McKeesport, Millvale, Mount Lebanon, Millvale, Mount Oliver, Ross, Shaler, Swissvale, Tarentum, and Upper St. Clair.
- **Educational Programming with Schools (2016):** In 2016, Tree Pittsburgh conducted educational activities in eight schools, five of which fall within the City of Pittsburgh (Shadyside, Manchester (2), Central Northside, and Regent Square), 2 which fall in municipalities in Allegheny County (Avonworth and Monroeville), and one in Greene County (Carmichael).

The geography of these initiatives is represented on the following map.

Geography of Key Programming



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Opportunities

Opportunities to collaborate on multiple levels to advance efficiencies, bolster partner processes and outcomes, and ultimately maximize impact were identified through this process. The three tiers of collaboration are outlined below, organized generally from lowest to highest level of implementation effort. Each tier represents significant opportunities to advance the impact of environmental service delivery and beyond.

Process Alignments

Intentionally sharing resources, data, and lessons learned is one very simple way to maximize efficiencies in the Pittsburgh environmental nonprofit sector. Aligning processes through partnering for ongoing training and awareness of best practices as well as a shared set of standards and through are low-input, high-output opportunities

Joint Training and Resource Sharing

Sharing resources to meet common needs such as management training is an effective way to cut costs while ensuring regional nonprofit staff are current on best practices in core areas. For example, both GTECH and Tree Pittsburgh identified management training and staff cultural competency training as critical needs for 2016. By joining together, we were able to engage experts outside of the organization to lead and facilitate workshops on these critical topics at a significantly reduced rate (50%) of what it would've cost had we not collaborated. Lisa Tannenbaum from Best Practices in HR was engaged for the Management workshop and Just Collaboration was engaged for a two-part training on Cultural Competency.

Shared Standard of Work

The creation of a voluntary shared set of standards for regional nonprofits is an efficient way to promote coordination, minimize redundancy, and promote best practices for ensuring high quality place-based work. This relatively simple method of strategic partnering offers the opportunity for more informed and higher quality projects, which will result in a variety of benefits such as increased project outcomes. Beyond project and organizational efficiencies and increased impact, such strategic partnering creates an ongoing mechanism to enable broader systems change.

This proposed set of standards would formalize and enhance the types of partnerships and collaboration that already occur across the region. This initiative would start with a baseline agreement that includes optional modifications based on situational specifics such as the types of organizations involved. The opportunity to intentionally partner with other organizations through this shared set of standards agreement could be promoted during partner meetings and more formally through groups such as the Greenspace Alliance.

Utilizing a shared set of standards amongst regional nonprofits offers many benefits. Some of those benefits are outlined below:

- Cost savings
- Improved data quality
- Stronger or expanded impacts / outcomes
- Improved coordination
- Identification of shared agendas, leading to higher collective impact efforts
- Continuous learning & sharing of best practices
- Opportunities to invest in shared resources such as data collection platforms and impact measurements
- Organizational efficiency
- Improved quality of project design and implementation
- Stronger networks and credibility
- Ability to drive systems change at a higher level

Sample agreement content includes:

General Practices

- Share datasets (share data to Western PA Regional Data Center where appropriate, maintain list of unique datasets that can be shared with partners upon request),
- Regular communication and updates to partners,
- Transparency of process,
- Identify and share opportunities for increased efficiencies, notification if redundancies are identified,
- Commitment to environmental justice, resident-driven change, and resource sharing, and
- Publicly acknowledge this partnership commitment and continue to explore opportunities for collaboration.

When working in a community:

- Work closely with community based organizations (CBOs) & other community partners,
- Utilize an investigative process which helps to ensure that prior planning efforts are taken into account, avoid redundancy → reach out to other nonprofits that have worked there, gather existing data, meet with community stakeholders, reach out to City Planning & other appropriate agencies,
- Partner where efficiencies can be obtained by partnering,
- Prioritize local contractors and small businesses, and
- Follow sound ecological principles such as Integrated Pest Management (IPM), avoidance of invasive species, and minimization of chemical use.

Next steps for incorporating this shared set of standards into the Pittsburgh nonprofit network include distribution to Environmental Finance Collaborative partners, distribution to the Greenspace Alliance, and incorporation into new projects and partnerships.

Joint Programming

Developing and implementing joint programming between organizations provides an opportunity for program improvements, efficiencies, knowledge sharing, and increased outcomes. National and local benchmarking revealed that joint programming can be successful in instances where the programs are well designed, there are shared values and a natural synthesis between the organizational initiatives, and a regional need is present.

Through this planning process, we had the opportunity to develop a framework for identifying specific joint programming opportunities between nonprofit organizations. We then applied that framework to GTECH and Tree Pittsburgh to identify what type of joint programming amongst the organizations would be the strongest and where the greatest need for that programming exists. Further, this planning process allowed us to enhance each organization's toolbox for identifying priority areas and measuring the impact of our programming.

Community Prioritization

A two-tiered community prioritization process was conducted to help identify where the greatest need for joint programming exists. First, we developed a list of key indicators to identify where our programming has the potential for impact and then applied the indicators to City of Pittsburgh neighborhoods. Via national benchmarking and a survey of GTECH and Tree Pittsburgh staff, indicators we developed help guide the geographic prioritization of where we should focus our joint programming initiatives.
Key indicators include:

- Vacant land acreage
- Number of vacant lots
- Plantable space

- Current tree canopy cover
- Urban heat islands
- Priority stormwater management areas
- Stewardship network
- Median household income
- CBO relationship, interest, & capacity
- Impervious surface
- Parks
- Road density
- Senior population
- Youth population
- Minority population
- Crime

In addition to the key indicators above, staff outlined secondary factors to consider when determining project priority locations. These represent an important additional level of consideration to help maximize project results, impact, and sustainability by ensuring alignment with existing momentum, initiatives, and partners. The key secondary factors developed by staff include:

- Other past and current planning efforts including community plans
- Existing and planned projects and initiatives
- Funding
- Partners working in area

Methodology and Analysis

The following process was utilized to conduct the prioritization of neighborhoods based on the key indicators outlined above:

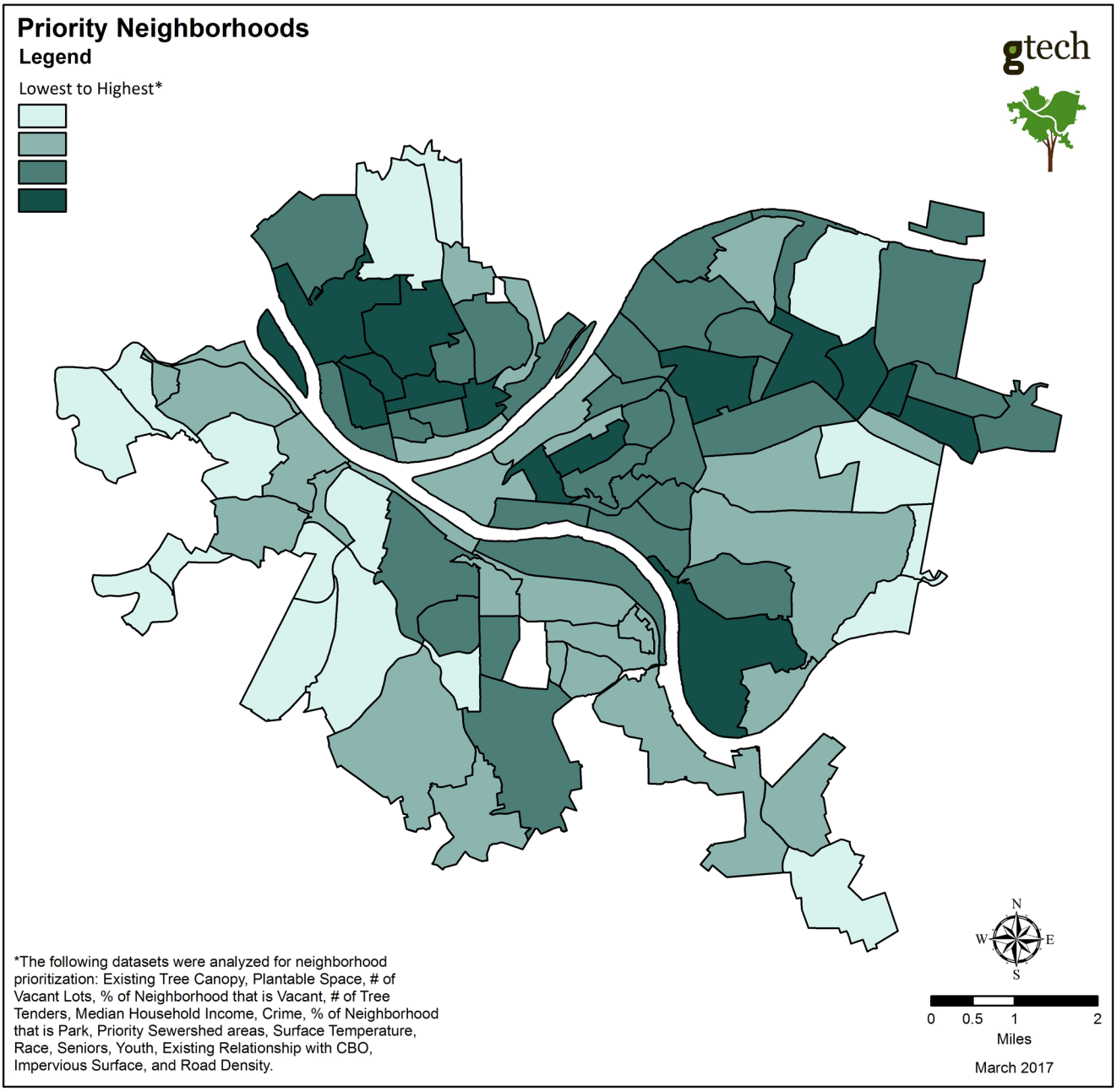
1. For each indicator, gather latest available dataset.
2. Determine average value of each indicator's dataset.
3. For indicators where being above average represents a greater distance from the desired state (such as vacant lot acreage or urban heat island) or having a greater amount of vulnerable population (such as youth), neighborhoods with above average values were prioritized. Prioritized neighborhoods (those with above average values) were assigned a value of 1 and neighborhoods below average were assigned a value of 0.
4. For indicators where being above average represents the desired state (such as tree canopy cover or percentage of neighborhood that is a park), neighborhoods with below average values were prioritized. Prioritized neighborhoods (those with below average values) were assigned a value of 1 and neighborhoods with above average values were assigned a value of 0.
5. Once that process was repeated for each indicator, results were added to generate a total for each neighborhood. Higher overall values represent areas that represent the greatest need for joint programming. General characteristics of priority neighborhoods include those that have high amounts of vacant lots, lower than average tree canopy, below median household income, high senior, youth, and minority populations, and a dense road network.

The following table outlines details of the indicators including data source and year, average values, and data ranges.

Indicators Used for Neighborhood Prioritization

Indicator	Units	Ranges	Ranking	Source
Plantable Space	% of neighborhood	12-47% Average = 33.4%	1=above average 0=below average	Tree Pgh Urban Tree Canopy Data (2010)
Current Canopy Cover	% of neighborhood	4.5 - 81.4% Average = 38.78%	1=below average 0=above average	Tree Pgh Urban Tree Canopy Data (2010)
Urban Heat Islands	^{0}F	89-102^{0}F Average = 99.2	1=above average 0=below average	Tree Pgh Urban Tree Canopy Data (2010)
Stormwater Data	% of neighborhood in priority shed	0% - 100% Average = 32.3%	0 = below average 1 = above average	PWSA Data (2016)
Stewardship	# of Tree Tenders	0-90	1 =10+ TTs 0 = <10 TTs	Tree Pgh Data
Median Household Income	$	$9,417 - $150,250 Average=$37,777	1=below average 0=above average	WPRDC PGH Snap Data (2010)
CBO Relationship	n/a	Relationship or no relationship	1 = existing 0 = not existing	Internal Data
Vacant Land Acreage	% of neighborhood	0.3%-77.5% Average = 11.5%	1 = above average 0 = below average	Allegheny County Assessment Data (2016)
# of Vacant Lots	# of vacant lots	4 - 1006 Average = 243	1 = above average 0 = below average	Allegheny County Assessment Data (2016)
Impervious Surfaces	% of neighborhood that is impervious	7.9% - 83.6% Average = 37.9%	1 = above average 0 = below average"	Tree Pgh Urban Tree Canopy Data (2010)
Parks	% of neighborhood that a Park	0 - 51.6% Average = 13.28%	1 = below average 0 = above average"	WPRDC PGH Snap Data (2010)
Road Density	Street miles / area square miles	5.6 - 71.8 Average = 29.0	1 = above average 0 = below average	WPRDC PGH Snap Data (2010)
% Youth	% children (ages 0 - 19)	0% - 54.95% Average = 23.23%	1 = above average 0 = below average	WPRDC PGH Snap Data (2010)
% Senior	% senior (over 65)	1.2% - 32% Average = 14.3	1 = above average 0 = below average	WPRDC PGH Snap Data (2010)
Race	% non-white	0% - 98.04% Average = 40.4%	1 = above average 0 = below average	WPRDC PGH Snap Data (2010)
Crime Rate	Total of part 1 and part 2 crimes	9 - 1439 Average = 294.96	1 = above average 0 = below average	WPRDC PGH Snap Data (2010)

Results of Neighborhood Prioritization Analysis



Final neighborhood values ranged from 1 - 14, with higher total scores representing neighborhoods with the greatest need for joint programming. A total of 14 neighborhoods fell within the highest range of priority, with scores of 11 - 14. Clusters of priority neighborhoods fall within the Northside, Homewood / Larimer /East Liberty area, and Middle Hill / Crawford-Roberts area. Bloomfield and Hazelwood are priority neighborhoods that aren't connected to other priority areas. A total of 31 neighborhoods fell within the next highest range of priority, with scores of 8 - 10. These second tier priority neighborhoods are generally adjacent to and linking the highest priority neighborhoods described above. Additionally, there is a cluster of second tier priority neighborhoods in the South Hilltop area that are not adjacent to any top priority neighborhood.

Development of a Join Evaluation Framework

Shared understanding and ability to measure success is critical for joint programming. To move GTECH and Tree Pittsburgh towards that goal, two national experts were engaged as consultants to develop a survey and survey protocol to help us measure program impact on community health and well-being through a lens of joint programming.

The experts we engaged to support us in increasing our ability to measure our impacts on community health and well-being include:

- Michelle Kondo, Ph. D. is a scientist with the USDA-Forest Service, Philadelphia Field Station. She completed doctoral training in Urban Design and Planning at the University of Washington , and postdoctoral training in Environmental Health and Epidemiology at the University of Pennsylvania. Dr. Kondo's general research interests include a) Environmental strategies for violence, injury, and disease prevention, b) environmental strategies for violence, injury, and disease prevention, c) environmental health and environmental justice, and d) geospatial and community-based research methods
- Bernadette Hohl, Ph.D. is an Assistant Professor at Rutgers University in the Department of Epidemiology. She completed her doctoral training in Public Health at Temple University and postdoctoral training in Epidemiologic Methods, Urban Health and Safety at the University of Pennsylvania. Dr. Hohl's research focuses on physical and social environmental factors that affect health and safety.

We worked with Dr. Kondo and Dr. Hohl to develop a survey to measure programmatic impacts to the following measures of community health and well-being:

- Social capital
- Neighborhood disorder
- Collective efficacy
- Perceptions of safety
- Neighborhood engagement and participation
- Neighborhood satisfaction

In order to maximize the survey's utility, Dr. Kondo and Dr. Hohl developed one version for in-person use and one version for digital use. Additionally, a survey protocol and an interview training manual were also developed to help ensure best practices for data collection are consistently utilized.

The tools developed as part of this initiative better position GTECH and Tree Pittsburgh to embark upon joint programming as well as to better measure our impact separately. Both organizations have made great strides to understand and evaluate program impacts. This common evaluation framework which was developed by national experts further advances our capabilities to ensure that we are meeting community needs and investing in ways that maximize impact.

Joint Programming: Youth-Focused Initiatives

Based on the alignment of our processes, shared values, regional need for additional environmental services, and both organization's commitment to utilizing shared evaluation frameworks, we determined that a strong opportunity for joint programming exists. By evaluating GTECH and Tree Pittsburgh's existing programming, it was determined that the most suitable type of joint programming initiative would focus on youth.

Joint Program Overview

The following is a description of key program elements and what they may entail once a specific geographic area of focus has been determined.

Investigate - The following investigate process would be utilized to ensure that our project is community-driven and our decision-making process is robust.

Shared investigative and community engagement processes would save time and cost while ensuring a comprehensive approach.

- *Catalog related planning efforts* - Gather and catalog related planning efforts; transfer relevant information to GIS.
- *Analysis of existing conditions* - Gather and analyze available data to understand existing conditions and geographic pockets of environmental need
- *Determine key partners* - Develop a list of community based organizations (CBOs), community leaders, youth-focused organizations, and other key stakeholders. Host meeting(s) with each organization to understand their needs and how our work can help support their goals.
- *Understand neighborhood needs with Community Health and Well-Being Survey (*CHWB Survey) - To ensure maximum program impact and establish baseline metrics, we will utilize the Community Health and Well-being survey developed by Dr. Kondo and Dr. Hohl (full version available upon request).
- *Determine optimum project location(s)* - Building upon knowledge gained during previous steps, identify what underutilized space(s) and associated community anchor organization is most suitable for project implementation.
- *Conduct analysis of potential related greening opportunities* - After the project location is determined, an analysis of opportunities to improve conditions in close proximity to the site will be conducted. CHWB Survey data will be used to guide this process. This may include the identification of locations and partners to green corridors or gateways to the site or restoration opportunities.

Community Engagement and Education - Multiple approaches would be utilized for community engagement and education to ensure broad participation and impact.

- *Utilize local communication networks* - We will work closely with CBOs and other partners to distribute project information through existing networks such as community meetings, newsletters, local newspapers, and community events.
- *Host educational workshops* - In order to build environmental literacy across age groups, we will host educational workshops for adults throughout the project. Potential topics include Tree ID walks, Introduction to Seed Collection, Crowdfunding 101, and Low Cost Options to Improve Vacant Lots.
- *Host Tree Tender course* - Hosting a local Tree Tender course will build urban forestry knowledge and community connections. This will support the success of our project and also help establish a mechanism to protect and grow the urban forest locally.

Utilizing a variety of traditional and non-traditional community engagement strategies will help to ensure wide community reach and participation.

Site Selection and Design - In order to maximize impact, site selection and design will be based on what best meets community needs and a partner willing and able to maintain the site.

- *Determine project partner and site* - Based on findings from the CHWB survey and analysis of existing conditions, we will select a youth partner who owns vacant land.
- *Potential project elements* - The following are some examples of potential site elements. This list would be expanded based on CHWB and other community-identified needs.
    - Outdoor classroom
    - Orchard
    - Natural playspace
    - Wildlife-friendly gardens
    - Landscape restoration
    - Green stormwater infrastructure (GSI)
    - Sensory gardens
    - Play trails
    - Art
- *Design Charrettes* - Host one youth design charrette and one stakeholder design charrette to ensure site meets youth and community needs.
- *Develop final design* - Develop final design based on charrette findings.
- *Design related greening opportunities* - Make final plan for related greening opportunities such as greening corridors or vacant lots in close proximity to main project site.

The combination of expertise and knowledge between organizations will allow for an even more robust project that can include features such as an orchard, sensory gardens, play trails, and landscape restoration.

Project Implementation - Project implementation would be done in partnership between the organizations and utilize additional partners where needed. For example, Stormworks would be contracted if the final site design calls for GSI.

- *Utilize local contractors and small businesses* - Our implementation would focus on utilizing local contractors, small businesses, and local workforce development cohorts.
- *Emphasize sustainable and recyclable materials* - Where possible, we would use recycled materials, native plants and trees, and locally-sourced goods.
- Maximize Community Involvement - Identify opportunities to work with volunteers, integrate with existing community activities, and coordinate with local groups to implement the project.

Education - The partnership between GTECH and Tree Pittsburgh would enable a robust set of educational programming and the development and distribution of a variety of educational modules to our youth partner. The following is a selection of potential topics:

- Environmental stewardship
- Junior Tree Tender Course
- Site maintenance
- Watersheds and GSI
- Local ecology
- Soil health
- Birds
- Insects
- Edible gardening
- Civic engagement

Common Evaluation Framework - To understand program impacts, identify opportunities for improvement, and share results with partners, the following common evaluation framework would be used.

- *CHWB Survey* - Survey community members and program participants with the CHWB Survey. Post-survey results would be compared to the pre-survey results to help quantify changes related to the program.
- *iTree* - For trees that were planted, use *itree* to understand ecological benefits and the economic value of those impacts.
- *SuROI* - Apply SuROI methodology to understand financial impacts associated with improvements to community health and well-being.
- *Share results* - Package our methodology and findings to help inform local partners and the broader environmental and community development field.

Outcomes and Efficiencies

A variety of increased efficiencies and outcomes are possible through a joint youth-focused program. For example, the investigative and community outreach and engagement processes would be conducted once rather than twice, resulting in reduced time and costs. Joint site selection and design, project implementation, education, and evaluation will not only reduce time and costs but will also result in a more comprehensive and robust effort. The number of residents and community partners engaged will increase, site selection and design will be developed based on multiple expert perspectives, educational offerings will be expanded, presence in the community will be expanded as will available knowledge and resources to support residents and the project. Best practices for project implementation can be shared between staff from each organizations, resulting in greater organizational efficiencies beyond this project. Project evaluation will be signficantly more robust through the application of each organization's evaluation methodologies as well as the CHWB survey. Additionally, Dr. Kondo and Dr. Hohl have volunteered to donate their expertise to analyze data collected during the CHWB survey based on the relationship developed with them during the developed of the CHWB survey. This partnership and available expertise will magnify our ability to measure program impact.

Estimated Cost

The following is an estimated cost for conducting this joint programming. Actual costs may vary based on project scope and location. The estimated total program cost range from $52.5k - $80.5k.

- Investigate - $7.5k - 10k
- Community Engagement and Education - $8k - $10k
- Site Selection and Design - $5k - $7.5k
- Project Implementation - $25k - $40k
- Education - $4k - $8k
- Evaluation - $3k - $5k

Next Steps

The major hurdle to making this program a reality is securing funds. As both organizations continue to develop our financial resources, we will seek opportunities to support the joint youth programming concept. The combination of each organization's approaches, successful track records, and robust evaluation methodologies should enable us to broaden our funding opportunities. We will continue to identify and seek (where appropriate) resources from local foundations, national foundations, corporate partners, state and national sources, and alternative financing mechanisms.

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Financing Analysis

Alternative Financing Linkages

A key component to achieve the integration and collaboration of activities as described in this report is the identification and application of new financial resources to both incentivize as well as sustain activities. If a 'bundled environmental services' approach is to utilize common investigative or evaluation processes, or any other level of shared programming, then a common set of outcome and impact indicators may allow for the application of non-traditional impact oriented funding sources to serve as an upfront investment, allowing for a more robust and diverse set of program implementation.

Simply put, if multiple organizations are effectively coordinating evaluation of programming and sharing outcome data - than a higher order of impact (projects with multiple interventions and demonstrable impacts) can be demonstrated. This, in theory, can offset a range of externals costs such as crime, stormwater run-off, decreased property value, public maintenance of vacant space, etc. Through shared outcomes - and the ability to demonstrate decreased costs - the development of a non-traditional financing source such as Pay for Success (Social Impact Bonds) or Program Related Investments may be applicable. Such a concept is complicated requiring a clear "collective impact strategy" including multiple levels of coordination, partner alignment, time, public-private partnership, and demonstrated impacts reducing a known social or environmental cost. Step 1 is to better understand to general spectrum of alternative financing.

To this extent a thorough evaluation of alternative finance (or "impact investing") was conducted to both inform GTECH, Tree Pittsburgh and other EFC partners as to the distinction, viability, accessibility and implications of existing alternative financing opportunities. Diligence conducted for this report is intended to orient each staff to the general landscape of alternative financing, provide linkages to best practices and current resources as well as lay the groundwork for the development of an appropriate financing strategy in the future.

Concept	Definition
Social Finance	An approach to managing money to deliver a social dividend and an economic return –often used to describe the lending and investment into social enterprises, charities, co-operatives, and other impact-focused organizations - as defined by Social Finance, the umbrella agency for the international Social Finance Network." - *source: socialfinance.org*
Impact Investments	The Global Impact Investing Network (GIIN) - the largest international network charged with establishing the standards, resources and best practices for impact motivated investors defines Impact Investing as: "investments made into companies, organizations, and funds with the intention to generate social and environmental impact alongside a financial return. Impact investments can be made in both emerging and developed markets, and target a range of returns from below market to market rate, depending on investors' strategic goals." - *source: thegiin.org*
Mission Investments	"Investments made by foundations and other mission-based organizations to further their philanthropic goals. ... Below-market mission investments, also known as 'program-related investments,' are designed to achieve specific program objectives while they may earn a below-market financial return" according to the The Mission Investors Exchange." - *source: missioninvestors.org/mission-investing*

Overview of Alternative Finance Landscape

As with traditional financing mechanisms there are a range of financing instruments within the social finance or

impact investing domain. These instruments are intended to maximize a *triple bottom line* outcome of social, environmental and economic returns on investment. *Traditional* financing (such as an equity investments or pure loans) are regarded as seeking purely a financial return on investment with a range of terms and interest rates.

Social Finance, Impact Investing, and Mission Investments

For the purposes of this report, alternative financing, social finance, impact investing and non-traditional financing are to regarded as synonymous. Though for the fact that there are increasing trends that social finance mechanisms can be applied to environmental impacts such as *environmental impact bonds* the term Alternative Finance serves as the master umbrella for the sake of this report's commentary.

Alternative Finance for the social sector is growing and substantial investment area due to the ability to reduce a tangible public or social costs - often reflected in governmental spending. Recent estimates forecast the value of potential investment opportunities to provide social services to the base of the economic pyramid at $4 billion to $1 Trillion over the next decade. Conversely, investments in ventures that produce tangible biodiversity, conservation, or pure environmental co-benefits are a small fraction of the growing amount of private (and public) capital being mobilized to do 'good'. Investments primarily are sector specific, targeting responsible or sustainable business practices for businesses with a clear revenue generation model. Eco-tourism and sustainable growing methods for goods like forestry products, coffee and cocoa are the quintessential examples.

For this reason there are relatively few financial instruments within the Alternative Finance landscape that are structured to be cross-sector and/or interdisciplinary addressing social, physiological, and environmental outcomes.

The following table is a sampling of mechanisms that address a range of outcomes along the asset class / return rate spectrum.

Demand			Supply	
Impact-Seeking Investors	**Impact-Driven Organizations**	**Forms of Finance**	**Channels of Impact Capital**	**Sources of Impact Capital**
Government procurement services	Grant-reliant organizations	Secured loans	Social banks	Government investment
Government as commissioners of outcomes	Grant-reliant organizations with trading activities	Unsecured loans	Community development finance institutions	Social investment wholesaler
		Charity bonds		Charitable trusts and foundations
Foundations as commissioners of outcomes	Social-enterprises/ profit-constrained organizations	Social impact bonds	Impact investment fund managers	Local funds
		Quasi equity		Institutional investors and banks
Socially minded consumers of goods and services	Profit with purpose businesses	Equity	Impact investment intermediaries	Corporates
Socially minded corporate purchasers of goods and services	Businesses setting significant outcomes objectives	Grants	Crowd-funding platforms	High net worth individuals
				Mass retail

Entities that are most interested in Alternative Finance are predominantly oriented towards impact and are oriented towards "below market" investment or finance options. This includes everything from a corporate social responsibility initiative to non-profit and social ventures to designated "Benefit Corporations" (B-Corps). Depending upon the nature of a funding mechanism, the interests of the investor, and the form of outcome, exist a spectrum of finance supply exists for a range of organization type.

A detailed assessment of select specific and relevant instruments and mechanisms with identified local applications is outlined in the following table.

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Table of Relevant Instruments and Mechanisms with Identified Local Applications (continued on next page)

Type	Issues Addressed / Sector Services	Overview	Investor Expectations	Return Mechanism	Standardized Reporting / Evaluation	Localized Trends
Corporate Social Responsibility	Any and all	Businesses with dedicated and public social and environmental responsibility goals and practices. Investments are institutional ranging from big to small - often for marketing returns	Investments in alignment with goals and values	Quantifiable fulfillment of goals, values and priorities, brand reputation, and internal sustainability	In general there are no standards for reporting. Guidelines do exist	B-Corp Certification is rapidly becoming global standard for company self accountability and responsibility certifications
Crowdfunding	Any and all - often targeting entrepreneurial endeavors for non traditional investments	The use of small amounts of capital from a large number of individuals (via social media) to finance a new business or community ventures. Can increase entrepreneurship by expanding the pool of investors from whom funds can be raised beyond the traditional circle of owners, relatives and venture capitalists. Estimated $34B global market (2015) - $17B in US.	Dependant upon platform. Range from nominal interest rate, to direct payback, to no payback	There are multiple types: Peer to Peer Lending (blurs with Microfinance), Reward (payback), Donation, Equity, Royalty, and hybrids.	Unique to each investment via each platform.	Numerous examples of Kickstarter, Razoo, GoFundMe, Indigogo, RocketHub, Crowedrize, KIVA, and IOBY
Microfinance	Entrepreneurial, small business	Financial services such as savings accounts, insurance funds and credit provided to poor and low income clients so as to help them increase their income, thereby improving their standard of living.	Like conventional banking microfinance lenders charge interest on loans, and they institute repayment plans with regular payments. Default risk the and the terms of the loans for which the borrowers are applying are factored into loans	Direct payback + nominal interest to either institution, individual or membership group	Dependant upon lender terms.	KIVA.org
Tax Credit Funding	Community reinvestment (housing, workforce development, quality of life, etc)	2016: over $30M in PA allocations. Authorized State agencies to provide tax credits to private corporations to encourage community reinvestment in distressed communities or under-resourced public needs (ie, education). Unique public - private partnership to incentivize community benefit	Award of tax credits by an approving state agency	Reduced tax liability	Subject to parameters of sponsoring agency. Often standardized reports reflecting proposal criteria to be reported by community organization receiving funds	PA Housing and Finance Authority Mixed Use Fund, DCED Neighborhood Assistance program, and Education Improvement Tax Credit (EITC) programs
Green Bonds	Clean energy, energy efficiency, low carbon transport, smart grid, agriculture & forestry, green infrastructure, brownfield remediation	2016: $50B market. Fixed-income financial instruments that fund environmental improvements or projects. Typically fund large-scale, capital-intensive green infrastructure projects such as energy efficiency projects, transit, or renewable power, among others, that can be repaid from steady, modest, long-term cash flows	Green bonds are well suited for large-scale sustainability projects such as wind and solar development, which often require capital investment ahead of revenues, and which generate modest revenue over a longer investment horizon.	They provide institutional investors with a means of accessing sustainable investments in the fixed income market in a familiar, low-risk vehicle.	Voluntary guidelines exist for issuing green bonds	----

Table of Relevant Instruments and Mechanisms with Identified Local Applications (continued)

Type	Issues Addressed / Sector Services	Overview	Investor Expectations	Return Mechanism	Standardized Reporting / Evaluation	Localized Trends
Conservation Trust Funds	Land use, biodiversity	Conservation trust funds provide sustainable financing that can be used to finance conservation program costs through debt swaps, grants or donations, or other financing mechanisms such as earmarked taxes and fees. Funding can be used for the acquisition, development, and maintenance of new conservation sites or for capital improvements or maintenance for recreational purposes on any public site	Funds invested to achieve Conserved land and/or functional ecosystem services	Often government to government or government to NGO	Non standard - terms negotiated by local governance	Active land trust throughout PA. Minimal conservation trust funds
Mission Related Investments	Any and all	Investments that seek to achieve specific social and/or environmental goals while targeting market-rate financial returns comparable to non-mission focused investments. Market rate mission investments are not an official IRS designation and are distinguished through the targeting of social/environmental benefits. Opportunities for market rate mission investments exist across asset classes and issue areas.	Market return on investment (often with higher risk)	Payback	Investments is that they are made from the institution's corpus, and are subject to the appropriate level of financial review by investment decision makers	----
Program Related Investments	Any and all - payback required	Below-market mission investments eligible to count against the 5% payout that foundations are required to make each year to retain their tax-exempt status - defined by the IRS tax code and must be made primarily to further the foundation's charitable purpose, must lack any significant investment purpose and may not being used for electioneering or lobbying.	Modest, risk adjusted rate of return - and clear social / or environmental returns	The IRS requires rates to be below market on a risk adjusted basis, but the actual rate of return or earnings on PRIs can vary. While PRIs are often made with the expectation of a rate of return between 0 and 3 percent, the rate may be higher depending on the level of risk involved. The rate is generally based on the borrower's ability to make principal and interest payments over a specified period of time.	Non-standard - terms to be confirmed by lending institution	McCune Foundation via Bridgeway Capital and Birmingham Foundation residential and commercial real estate
Social Impact Bonds - Pay For Success	Predominately social services, education, workforce development and health. Growing environmental interventions	Social Impact Bonds (SIBs) are a mechanism by which to shift financial risk from service providers to investors, with investors underwriting service providers' based on their ability to deliver on positive social outcomes. Private investors provide upfront capital for the delivery of services and are repaid by a back-end, or outcomes payer (usually a government), if contractually agreed upon outcomes are achieved.	Achieved outcomes (verified by third party) and payback with moderate, risk adjusted interest	Public private partnership, payback to institutional investor	Evaluation established by investors, government, service provider and codified by designated broker.	Enviro Social Capital is exploring in context of green stormwater infrastructure.

Evaluation of Linkages for Bundled Environmental Services

For the purposes of this study - the methodology embedded in financing mechanisms that provide the necessary upfront capital to achieve a higher order of impact via collaborative planning implementation are to be considered more thoroughly. The impetus to include an evaluation of Alternative / Social finance mechanisms within the context of Bundled Environmental Services was to both incentivize and enable the time and dedicated staff capacity for coordinating and aligning various programs and services across multiple organizations in the local Pittsburgh environmental community. Through increased collaboration, projects and interventions may be implemented more efficiently, increase co-benefits, and utilize a common evaluation methodology such that it is easier to identify and track outcomes.

Concentrating community and environmental development activities within a focused geography (Placemaking) is an increasing trend nationally and locally. Consequently, the ability to invest in a collaborative, commonly evaluated series of environmental interventions may allow for not just more efficient coordination among service providers - but the ability to better predict outcomes and link impacts to adjacent domains of health, economic development, and education. If more diverse outcomes can be attributed to "upstream" environmental interventions than new pools of capital and investors may also become available to spur such interventions.

Each Alternative Finance mechanism examined in this assessment, while not exhaustive has unique benefits and trade-offs, necessary considerations for implementation, and an array of local and international expertise. That said, a few fundamental trends, commonalities, and constraints have been identified to inform how an appropriate AF strategy might be built out.

Pros

- Most mechanisms enable access to capital to expand, scale and implement targeted strategies.
- Most mechanisms are targeted towards multiple bottom lines, allowing financial returns to have lower expectations than typical purely financial investments.
- There is a growing market for impact investing and alternative financing with estimates above $80B for a range of vehicles.

Cons

- Most social and environmental interventions are unable to monetize strategies such that upfront investments can be repaid. Repayment of funds (either borrowed or invested) represents a paradigm shift in traditional non-profit strategy and capability.
- Most social and environmental impact strategies are not able to quantify outcomes sufficiently to demonstrate a clear mitigation of public costs enabling a public private partnership and pay back of investments. An alternative way of stating this is that the mitigation of public costs requires the identification of a clear public expense that can be tracked.
- The market place for easier to access capital such as crowdfunding or micro-finance is increasingly saturated and funding is heavily skewed towards peer to peer lending.

Overall Observations

- Mid-level investment access tends to be more elusive. Small investment opportunities exist via crowdfunding or micro-finance while larger capital investments are possible through green bonds and PRIs, yet medium scale mechanisms $50k-$100k don't appear to be as common other than traditional CSR grants.
- The role of impact measurement is critical. Measurement of outcomes becomes one of the most difficult elements of an alternative financing deal. Pure loans or investments utilize monetary return as the measure of effectiveness. Social and environmental investments often have outcomes, effects or impacts that are difficult to measure and quantify - making "pay back" difficult to determine. A concrete, agreed upon evaluation standard that all parties agree to is essential to tie interventions, cost reductions, and interventions. Hence a culture of multi-organization, public private collaboration is required with the backbone and infrastructure to sustain efforts.

- The platform, infrastructure, and capacity to broker investments, manage funds, and facilitate repayment needs to be a dedicated role either internally or externally to any intervention strategy.

At the onset of this evaluation it was hypothesized that Program Related Investments and Social Impact Bonds would make for relevant instruments to examine further through the lens of the "bundled environmental service" evaluation due to: 1) upfront capital provided for interventions; 2) established and agreed upon outcome framework, and 3) multi-organizational orientation. Each element has been identified as necessary condition to increase the potential of bundled environmental services.

Program Related Investments can serve as a tool for philanthropies to increase the value of prior investments while achieving a clear impact on social or environmental impact. Whereas Social Impact Bonds are structured to reduce a known cost to public systems depending upon a unique public private partnership.

Program Related Investments

Program Related Investments represent one tool that philanthropies can employ when either trying to achieve charitable goals within IRS parameters - as well as sustain and grow funds for further grantmaking. Program Related Investments are below-market mission investments eligible to count against the 5% payout that foundations are required to make each year to retain their tax-exempt status - defined by the IRS tax code and must be made primarily to further the foundation's charitable purpose, must lack any significant investment purpose and may not being used for electioneering or lobbying.

Pay for Success / Social Impact Bonds

Social Impact Bonds (SIBs) are an investment vehicle in which private sector works with governments and philanthropies to fund critical prevention focused social programs that help address the world's most pressing problems. In this public-private partnership, investors are only repaid if and when improved social outcomes are achieved. SIBs have the potential to open new funding sources for prevention-oriented programs that deliver measurable social benefits, saving taxpayer dollars in the process.

Pay For Success is the process that encompasses a social impact bond as a results driven process that requires a complex and elaborate public private, multi-organizational partnership managed by a designated intermediary and establishes the methodology and framework for quantifiable mitigation of an existing (single stream) public cost.

Pay for Success Applied Locally

The Enviro-Social Capital (ESC) Initiative is a Pay For Success strategy developed by Ethos Collaborative and currently incubated at The Green Building Alliance designed to address the region's stormwater management needs via scaled green stormwater infrastructure. Modeled after a similar initiative with Washington DC's Water Authority - ESC has designed an environmental SIB with dedicated planning funds from BNY Mellon and The Hillman Foundation to establish a model leveraging PWSA's *Green First Plan* designed to address the City's aging, degrading, and inadequate sewer infrastructure. In ESC's PFS model, private investment (from an entity such as BNY Mellon) would provide capital for the purpose of implementing select portions of the *Green First Plan* with repayment of the principal and interest conditioned upon how well the planned green infrastructure investment achieves the desired outcomes of reducing wet weather flows. While the primary outcome represents mitigated stormwater run-off gallons there exists the opportunity to stack and align multiple co-benefits including workforce development for project installation and maintenance, quality of life, and other place-based development metrics.

Through support provided for the Bundled Environmental Services evaluation, GTECH has been able to participate in the ESC planning via an Advisory Board. To this extent GTECH is coordinating with the ESC team to incorporate Bundled Services into the Pay For Success program design as a means of achieving coordinated environmental interventions with a common evaluation process and framework as well as integrating GTECH's efforts with the

Sustainable Return on Investment into the ESC as a primary evaluation methodology to address the intended co-benefits.

Collaborative Business Development Fund

The following is a customized solution that was developed from this analysis to serve as one mechanism to maximize alignment opportunities amongst various programs and partners that would result in efficiencies in delivery as well as maximized impact. A Collaborative Business Development Fund would increase the ability to pursue these opportunities by providing dedicated funds and time. A fund that covers some of that administrative overhead to go deeper into projects and programs that support several groups is an ideal opportunity to advance the idea of bundled environmental services.

The concept is to establish a pool of funds to be administered by GTECH in order to incentivize partnership in opportunity development. When three or more environmental service come together to pursue a proposal that would extend the reach and impact of their collective programs, they would be eligible for up to $2500 of funds to be able to have dedicate time to coordinate and collaborate to identify maximum alignment of the opportunity. This coverage should enable deeper conversations – beyond a quick email for a letter of support – and ensure alignment up front, rather than notification at the end with a hope that it results in action. In order to extend the life of this fund at minimum organizations that are successful in their development pursuits would pay back some portion of the secured funds back into the pool. By pursuing this effort, 'bundled environmental services' can become the default as groups that come together on a new project or program will need to align timelines, delivery efforts, outreach and relationships, and evaluation metrics. The acceptance of these funds becomes an agreement to abide by a set of shared practices and outcomes to maximize impact- it is not simply money to be divided by the number of groups participating to do what they want with it.

Next Steps

Next steps to advance the Collaborative Business Development fund include pitching the concept to the Greenspace Alliance (or a subset of) and identifying those items to be included in the agreement around the funds – timing, scope, scale, and intended impact should all be discussed. In addition, an amount needs to be determined for each award as well as the amount to be paid back into the fund if successful. Based on interview of partner organizations, it will be helpful to understand the number of potential proposals throughout a fiscal year that would benefit from this additional support and therefore estimate the size of the pool that would be needed for a pilot year or two. Finally, determination of what success looks like.

Recommendations

Bundled environmental services is a mechanism for alternative financing and collective impact yielding more sustainable funding for impact agencies, a collaborative approach via common evaluation, more efficient interventions, economic bargaining power, improved quality of life and a vehicle for investment by institutional investors. The Collaborative Business Development Fund represents a mechanism that could quickly expand collaboration amongst the region's nonprofits and there maximize impacts for an overall reduced cost. Additionally, we will continue to coordinate with the ESC as they advance their research and applications.

Conclusion

This research and planning initiative identified multiple opportunities for Pittsburgh-region nonprofits with aligned missions to increase the impact, scale, efficiency, and community benefit associated with environmental programming. The following briefly summarizes each opportunity and outlines next steps for pursuing those opportunities.

Pursuit of Youth-Focused Programming with Tree Pittsburgh

- *Summary:* Youth-focused programming was identified as the strongest opportunity for joint programming between GTECH and Tree Pittsburgh. The Joint Youth Programming would be a six-stage process with an estimated cost of $52.5k - $80.5k depending on the scale of the initiative. The six stages include 1) Investigate, 2) Community Engagement and Education, 3) Site Selection and Community Design, 4) Project Implementation, 5) Educational Programming, and 6) Application of Common Evaluation Framework. Multiple efficiencies would be gained through this partnership including reduced time and cost, deployment of more robust programming, real-time sharing of best practices, and increased ability to evaluate program impact.
- *Next steps:* As both organizations continue to develop our financial resources, we will seek opportunities to support the joint youth programming concept. The combination of each organization's approaches, successful track records, and robust evaluation methodologies should enable us to broaden our funding opportunities. We will continue to identify and seek (where appropriate) resources from local foundations, national foundations, corporate partners, state and national sources, and alternative financing mechanisms.

Creation of the Business Development Fund

- *Summary:* The concept of a Collaborative Business Development Fund is a customized solution that was developed from this analysis to serve as one mechanism to maximize alignment amongst various programs and partners. It would increase the ability to pursue these joint initiatives and stronger partnerships by providing dedicated funds and time. The concept is to establish a pool of funds to be administered by GTECH in order to incentivize partnership in opportunity development. When three or more environmental service providers come together to pursue a proposal that would extend the reach and impact of their collective programs, they would be eligible for up to $2500 of funds to be able to have dedicate time to coordinate and collaborate to identify maximum alignment of the opportunity.
- *Next steps:* There are two primary next steps in order to make the Business Development Fund concept a reality. First, a comprehensive set of standards for program administration need to be developed in order to ensure clarity for participants, determine program management costs, and ensure that the fund will be able to meet it's intended needs. Once these standards have been set, the next step will be to secure the initial funds to trial the concept for a two year period.

Expanded pursuit of Process Alignments

- *Summary:* Sharing resources to meet common needs such as management training is an effective way to cut costs while ensuring regional nonprofit staff are current on best practices in core areas. By joining together for management training and cultural competency training, GTECH and Tree Pittsburgh were able to engage experts outside of the organization to lead and facilitate workshops on these critical topics at a 50% discount. This practice of intentionally partnering on common needs represents an opportunity to continue to expand the expertise of staff and the overall organizations.
- *Next steps:* GTECH will continue to explore these opportunities with Tree Pittsburgh, EFC partners, and other partner organizations. Potential topics include social justice, conflict resolution, public presentation best practices, and first aid and CPR.

Promotion of Shared Standard of Work

- *Summary:* The creation of a voluntary shared set of standards for regional nonprofits was identified as an efficient way to promote coordination, minimize redundancy, and promote best practices for ensuring high quality place-based work. This relatively simple method of strategic partnering offers the opportunity

for more informed and higher quality projects which will result in a variety of benefits such as increased project outcomes. Beyond project and organizational efficiencies and increased impact, such strategic partnering creates an ongoing mechanism to enable broader systems change. This initiative would start with a baseline agreement that includes optional modifications based on situational specifics such as the types of organizations involved.

- *Next steps*: Promotion of the shared standard of work could be done formally through the Greenspace Alliance and also introduced at partner meetings. The draft standards developed during this process should be finalized with input from initial partners and reviewed bi-annually.

In addition to pursuing these opportunities, GTECH will also continue to utilize and expand upon some of the additional tools that were developed as part of this planning initiative. This includes the CHWB survey developed by Dr. Kondo and Dr. Hohl as well as the community prioritization methodology.

Appendix A: Case Studies

TreeVitalize Pittsburgh

Pittsburgh, PA

Treevitalize partners working together with volunteers to plant street trees.

TreeVitalize Pittsburgh is a public-private partnership between Allegheny County, the City of Pittsburgh, PA Department of Conservation and Natural Resources (DCNR), Tree Pittsburgh, and the Western Pennsylvania Conservancy (WPC). Working with community groups and volunteers, this partnership allows communities to plant trees on public property throughout Pittsburgh and the greater metropolitan area. Planting trees in publically accessible spaces allows this partnership to bring all of the benefits of trees to Allegheny County communities, empowering people to improve the quality of life and the environment in the Pittsburgh region.

This program places emphasis on planting trees in lower income communities with lower tree canopy coverage. Funding is received from the DCNR with matching funding from foundations in the Pittsburgh area. Furthermore, as part of the program, municipalities are required to have a tree ordinance or Shade Tree Commission to support and protect trees planted through the TreeVitalize program. Program data is represented in a point GIS shapefile for all sites assessed and trees planted with updates occurring on a seasonal basis.

The WPC acts as the managing agency for the partnership. Together, the WPC and City Forestry assist with initial project site assessments as educated Tree Tenders submit applications requesting trees for their communities. Tree Pittsburgh and the WPC then provide technical site assessments. Next, sites are approved or denied as everyone reviews the community applications in light of the site assessments. If project sites are approved, then the community helps set-up and execute tree plantings with follow-up maintenance tree care to ensure tree survival.

This partnership created shared vision and goals for increasing tree canopy cover in Pittsburgh and the greater metropolitan area. It created a consistent and streamlined process, allowing communities to apply for public street or park trees that will be planted according to the City code.

Urban Ecosteward Program

Pittsburgh, PA

The Urban EcoSteward program is centered in Pittsburgh and focuses on engaging and equipping citizens to become long-term stewards of public parks and greenspace. Program partners include Pittsburgh Parks Conservancy, Nine Mile Run Watershed Association, Allegheny Cleanways, Tree Pittsburgh, Allegheny Land Trust, and Mount Washington Community Development Corporation. EcoStewards adopt and care for areas in their communities to improve and protect their parks and greenspace.

Urban EcoStewards managing invasive plants on their site.

The Pittsburgh Parks Conservancy acts as the lead organization.

Each partner organization recruits volunteers (EcoStewards) and trains and supports them as they adopt and care for dedicated sites in their community. Site care may include removing invasive plants, caring for trees, planting native plants, controlling erosion, and removing trash. Participating organizations each lead workshops for the EcoStewards throughout the year, and the EcoStewards commit to visiting their sites to conduct maintenance at least 3 times each year. Each organization then coordinates with their volunteers, visiting EcoSteward sites with the assigned volunteer once per year to develop an annual maintenance plan.

Funding for the Urban EcoSteward program comes from various local foundations and funding sources. Data is tracked over time as participants collect a standardized set of data from each site. Data includes metrics such as site conditions (native plants, invasive plants, erosion, etc.) and number of visits. Outcomes of this partnership include Urban Ecosteward resources being shared among organizations, minimized costs to develop and conduct educational initiatives, and opportunities for volunteers to be exposed to a variety of training opportunities and topics. The partnership also creates diverse funding sources for the program.

Emerald City

San Francisco, CA

Youth in the Bayview Hunters Point area learn about permaculture, investing in their community by greening their neighborhood.

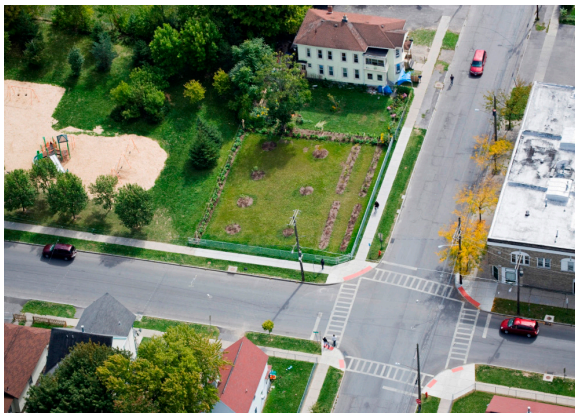
Emerald City is a collaboration between Hunters Point Family (HFP) and Earth Activist Training (EAT) in San Francisco, CA. HFP is a non-profit whose programs focus on supporting at-risk youth and young adults in Bayview Hunters Point, San Francisco. Their programs center on issues of youth development, employment, youth-run enterprises, and organic farms. EAT is a nonprofit focused on permaculture and ecological design in communities who most need these services. Together, these organizations are working towards integrating and implementing concentrated programming in Bayview Hunters Point, a public housing community. Emerald City has a variety of initiatives, including: providing advanced permaculture training to cohorts of young adults, enhancing existing organic farming initiatives, implementing new community gardens, paid workforce development programs, and organizing food production and distribution.

This partnership between HFP and EAT began with the goal of advancing a shared vision—held by Executive Directors of both organizations—to respond to a community need. The executive directors of both partner organizations manage the programing of Emerald City and guide decision-making processes. Programming is further developed and actively implemented by managerial staff from both organizations. Funding for Emerald City is primarily provided through grants from various agencies, gained both together and separately by the partner organizations.

The partnership between HFP and EAT results in a variety of increased efficiencies, including diversified funding sources, knowledge and administrative resource sharing, and increased communication and outreach strength. The quality of programming was increased as each organization brought their strengths and resources together.

Save the Rain Vacant Lot Program

San Francisco, CA



The Save the Rain Vacant Lot program focuses on improving stormwater capture in Onondoga County while also improving vacant lots.

The Save the Rain Vacant Lot Program (STR-VLP is a partnership between Onondaga County, City of Syracuse, Atlantic States Legal Foundation (ASLF), Greater Syracuse Land Bank, a forthcoming urban land trust, and local communities. IThe program focuses on improving stormwater capture in the Onondaga Lake watershed. As part of the Vacant Lot Program, Onondaga County is working to install Green Infrastructure (GI) on vacant lots within the city limits of Syracuse. The vacant lots are planned to incorporate other benefits beyond stormwater management, and may include urban orchards, vegetable gardens, ornamental gardens, and urban forests.

The ASLF is a nonprofit organization with a mission to provide technical, legal, and organizing services on a wide variety of environmental issues, produce research on these issues, and bridge the gap to real implementation. Acting as project leaders of STR-VLP, ASLF performs program development, outreach, site analysis and selection, and conceptual design of the projects. ASLF works closely with the City Bureau of Planning and Sustainability to plan and implement GI improvements on City vacant lots. There is an Intermunicipal Agreement between the County and the City, such that the County maintains GI, utilities, and manages all things below ground while the City mows, maintains trees, and manages all things above ground. The program also partners with community groups, who are able to adopt and care for a specific green project. The Land Trust assists with overcoming some of the challenges (i.e. who manages, how are projects administered, who owns the lots, etc.), as they assist by fundraising as well as administration, operations and maintenance involving GI projects.

Funding is provided by the Onondaga County's Green Improvement Fund for projects inside the City and the Onondaga County's Suburban Green Infrastructure Program funds projects outside the City of Syracuse. Data is collected for each project and monitored for stormwater capture (gal/yr). Outcomes of this project include increased capacity to transform vacant lots, focused site selection leading to a more consistent approach to transforming vacant land, and improved communication among different players involved in vacant lot care.

Green Seattle Partnership

Seattle, WA

The Green Seattle Partnership (GSP) works to restore and actively maintain Seattle's forested parklands. Together, the City of Seattle, Forterra (formerly Cascade Land Conservancy), Seattle Parks and Recreation, Seattle Public Utilities, and Seattle Office of Sustainability and the Environment (OSE) use a comprehensive management approach to maintain a sustainable and beneficial urban forest with community wide support.

Forterra is primarily responsible for the administration of the partnership (planning, reporting, facilitating meetings, and coordinating outreach programs and the Forest Steward Program) and is also the fiscal agent for all donations to the program. OSE is the liaison with the Mayor and provides leadership, tools, information, and ideas to help others use natural resources efficiently. Seattle Parks and Recreation is ultimately responsible for the maintenance and restoration of the City's forested parklands, providing technical expertise and also funding crews of contracted professionals to supplement this work. Seattle Public Utilities provides funding for

The Green Seattle Partnership works to restore and actively maintain Seattle's forested parklands. Restoration projects are conducted in partnerships with nonprofits, volunteers, schools, and community groups.

restoration activities near streams.

Together, the partnership coordinates restoration projects with volunteers and contracted professionals by partnering with nonprofits, schools, and community groups. Their tasks include removing invasive species, increasing diversity by planting native plants, controlling erosion, and removing trash. The program plans were created based on data collected by the Seattle Urban Nature Project (SUNP, now called EarthCorps Science). GSP updates this data to reflect restoration progress and evaluate changes in acreage.

Funding sources for GSP's work are diverse, including: corporate sponsorships, foundation support, private donations, and funding from City agencies (Parks and Recreation and Seattle Public Utilities). The largest amount of funding is contributed by Forterra and received from the US Forest Service. The partnership results in a shared vision and goals, shared resources, greater capacity to improve the urban forest, and a streamlined and consistent process for managing over 2,500 acres of forested parklands.

Seattle does not have a pressing vacant lot problem, and the GSP focuses exclusively on Parklands. However, GSP does some programing on forested Seattle Department of Transportation (SDOT) and private property. Seattle struggles with SDOT unimproved right of ways, which are mostly unattended. They are under the jurisdiction of the DOT but are not actively managed. Therefore, these spaces are overgrown with weeds and sites for illegal dumping. Due to insufficient funds, Seattle does not have a system in place to address these spaces, though conversations surrounding the problem are common.

Million Trees NYC

New York City, NY

MillionTreesNYC is one of the 132 initiatives of PlaNYC, which was designed to combat foreseen issues in New York City's future revolving around population increases, climate change, evolving economy, and aging infrastructure. To create a more sustainable City, MillionTreesNYC aimed to plant and care for one million trees throughout New York City's five boroughs over the course of a decade (to be completed by 2017). The goal was successfully reached two years early (on November 20, 2015). Planting a million trees was projected to increase New York City's tree canopy by 20%, in which roughly 70% of the trees were to be planted in parks and other public spaces and 30% were to be planted by private organizations, homeowners, and community organizations. In addition to planting and caring for trees, the program involved education, community outreach, and public awareness efforts.

Million Trees NYC met it's goal of planting 1 million trees 2 years early through diverse partnerships.

Through the program, NYC residents could request street trees by calling the City's 311 hotline or submitting an online form. Trees for private property could also be obtained during tree giveaways. Once planted, trees were registered as part of the program so their number could be added to the count of one million.

The main project partners were the NYC Parks Department and the New York Restoration Project (NYRP). A private partner with the goal of enhancing the quality of life in NYC through a comprehensive approach to urban land management, NYRP is the project lead of MillionTreesNYC. NYRP focuses on the needs of communities in need, working with public parks, housing projects, vacant lots, schools, sidewalks, the waterfront, and community gardens. Also in this partnership is the NYC Parks Department, the historical caretakers of public trees in NYC.

The partnership also includes various public and private partners, including nonprofits such as TreesNYC (provide expertise and resources) and NYC Service (assist with recruiting volunteers for planting and tree care events). Natural Areas Conservancy is now joining into the mix to help maintain the more than one million trees planted over the last nine years. The partnership of MillionTreesNYC also includes an advisory committee, which is broken down into subcommittees for tree plantings, education, public policy, research, and green jobs. These committees are diverse, including representatives from various sectors within the City.

MillionTreesNYC is largely funded by lead sponsors TD Bank and Toyota. Supporting sponsors also include Con Edison and Jetblue Airways. Funding is also received from other public and private grants and donations. Data was largely tracked by showing how many trees were planted and through what outreach style: direct planting in public areas or through public giveaways.

Outcomes of this partnership include increased funding for the implementation of the program as well as increased capacity to complete the work (as demonstrated by achieving the goal two years early). There is also continued support from the partnership as focus shifts towards maintaining more than a million trees.

The Haven Project will track data related to health, safety, and social resilience using a mixed-methods approach.

The Haven Project

New York City, NY

The Haven Project is based in New York City with the goal of improving quality of life by providing public green space and waterfront access to underserved communities within South Bronx. The project team includes New York Restoration Project (NYRP), Montefiore Medical Center, HealthxDesgn, Healthfirst, Columbia University Mailman School of Public Health, Columbia University Spatial Information Design Lab, Civitas, TreesCharlotte, South Bronx Overall Economic Development Corporation (SoBRO), and South Bronx Unite.

Currently in its beginning phases, The Haven Project was kick-started with nine months of public community meetings and project development based on resident feedback. Included in the community meetings were 16 local businesses, six elected officials' offices, 14 City and state agencies, and 31 community-based organizations. This planning phase was funded by the John S. and James L. Knight Foundation and the Doris Duke Charitable Foundation. The project partners are currently fundraising for project implementation.

The NYRP acts as the project lead and is committed to implementing the full scope of the project. NYRP is a suitable project lead, as they are actively involved in the South Bronx area and have been for over 15 years. Their work is also in conjunction with SoBro's Brownfield Opportunity Area, which works with property owners, real estate developers, and local community and government stakeholders to identify challenges and opportunities in South Bronx. Another key role is provided by the Montefiore Medical Center, who will act as the link between public space and public health to evaluate the impact of public space improvements. Aiding in this data collection and analysis are HealthxDesign and Healthfirst.

Indicators such as physical activity and vehicular accidents involving pedestrians will be used in the evaluation of public space improvement impacts on quality of life. Overall, the project will track data related to health, safety, and social resilience using a mixed-methods approach. One of their first goals in this beginning phase is to capture baseline health data and quality of life indicators, which will be tracked concurrently with and beyond project implementation.

Though the Haven Project partnership is only in its beginning phases, the collaborative partnership has resulted in numerous positive outcomes. Together, the diverse project team was able to develop a Master Plan drawing together their varied expertise. Furthermore, the partnership expands the capacity to impact the project area and also provides key players who will collect data for scientific analysis.

Growing Green Initiative

Baltimore, MD

The Growing Green Initiative is a city-led effort to use sustainable, innovative, and cost-effective practices for stabilizing vacant land.

The Growing Green Initiative (GGI) is part of the Urban Waters Federal Partnership, which works to reconnect urban communities with their waterways to become stewards for clean urban waters. Focused in Baltimore, GGI is a City-led effort to use sustainable, innovative, and cost-effective practices for stabilizing and holding land for redevelopment. GGI focuses on reusing vacant land to green neighborhoods, reduce stormwater runoff, increase food capacity, and create community spaces that mitigate the negative impacts of vacant properties. GGI is a partnership between the Baltimore Office of Sustainability and the Parks & People Foundation. The partnership also works with Vacants to Value, the Mayor's Office, TreeBaltimore (Department of Parks & Recreation), Homegrown Baltimore (Department of Planning), and Baltimore Green Space. The initiative works to: improve City policies and processes turning demolished buildings and vacant land into green spaces; develop a vacant lot maintenance strategy; foster inter-agency collaboration; use investment and partnerships to leverage resources; and use the Green Pattern Book as a guide. The Green Pattern Book covers various land-use options, including maintenance expectations, site selection, and more.

The Growing Green Initiative was created in 2014 to improve collaboration, develop procedures, and provide support to groups working towards a more sustainable Baltimore. The City through the Office of Sustainability acts as the overall project lead. The Parks & People Foundation is also a key player in the partnership, working to help clean and green city vacant lots.

The greatest outcome from this partnership was the creation of a Growing Green Community Organizer position, funded jointly by the Baltimore Office of Sustainability and the Parks & People Foundation. This staff member splits time between the two organizations, allowing the City to really connect to communities on a different level.

Funding for GGI is from the Blight Elimination Funds from the City, which focuses on vacant lots. The initiate started with a two-time fiscal year funding of $640,000 and now operates on $350,000. NGOs also provide funding assistance and support. Data was tracked and visualized by a hired consultant based on the square feet of vacant lots greened. There are different categories for the type of greening performed, and the partnership already resulted in around 600,000 square feet of greened space.