



ROCK CREEK
CONSERVANCY

GREEN STREETS, BLUE PAPER

Recommendations for
Green Infrastructure
Community Engagement



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GREEN STREETS, BLUE PAPER

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INTRODUCTION

These 55 – 70-foot concrete projections (planters) will eliminate sections of the existing parking lane and narrow our roadways, making it more difficult for cars to pass and pedestrians to navigate. The burden of regular maintenance will fall to residents ... only a few 'affected residents' were notified and only after the project was finalized. [The local government agency]'s response to homeowners' objections at their public meeting held on [a day of religious observance]. The agency's message was, 'No alternatives, alterations, relocations or exemptions were allowed.'

This slightly edited synopsis from a local neighborhood listserv is just one example of the opposition to a green streets project. Similar concerns have also been voiced by other communities that are affected by green street installations without what they perceive to be, adequate or appropriate community engagement. These concerns prevail, but not in all cases.

Programs such as DC Water's Clean Rivers Project, for example, has received more positive feedback about its community engagement processes from the community.

This stark contrast in feedback begs the questions:

- What accounts for the differences in feedback from community members when green infrastructure projects are engaged?
- What community engagement processes are most effective when installing green infrastructure practices?
- What might be the long-term implications on maintenance in green infrastructure projects when the community is effectively engaged?

Given the significant investment made by local governments in green infrastructure, including green streets, understanding cost-effective methods to plan and construct them is critical to long-term effectiveness of these practices. This paper provides findings and recommendations aimed at helping agencies engage community members to advance green streets projects as an important part of their water quality efforts.

DISCUSSION

Although there is limited research to support or show a causal link between community engagement and long-term performance of green infrastructure, there are many indicators or associations that can be explored. Researchers from the University of the District of Columbia, in partnership with the Rock Creek Conservancy, conducted a review of relevant literature to determine the nature and strength of the relationship between differing levels of community engagement and long-term performance of green infrastructure practices, particularly green streets. The project partners also conducted focus groups and interviews with environmental and community engagement experts from various local government agencies to discuss their observations on this topic through field experiences.

The following themes emerged from the two-pronged approach:

- *Who* does the community engagement matters, particularly where trust in government is limited; nonprofits can be useful actors in these cases
- Choosing the appropriate type of engagement is important¹
- Upfront engagement is key to success²
- Engagement should be appropriately aligned with community needs and project goals:
 - Start early in the project's planning process
 - Start building relationships where there is common ground
 - Translate designs to formats that community members can understand
 - Only offer engagement where input will be used (be authentic)
 - Identify community champions to bridge between agencies and community members
- Maintenance matters
 - Community members often cite long-term maintenance issues as a concern when providing input on proposed Green Streets projects
 - Maintenance tends to be more effective when the agency accountable for water quality is responsible for asset management

¹ Reid 2008

² Head 2007

These findings are consistent with conversations Rock Creek Conservancy staff have had with relevant agencies' staff.

BACKGROUND

The Environmental Protection Agency (EPA) defines green streets as “a stormwater management approach that incorporates vegetation (perennials, shrubs, trees), soil, and engineered systems (e.g., permeable pavements) to slow, filter, and cleanse stormwater runoff from impervious surfaces (e.g., streets, sidewalks).” Green streets are designed to capture rainwater at its source, where rain falls, whereas, a traditional street is designed to direct stormwater runoff from impervious surfaces into storm sewer systems (gutters, drains, pipes) that discharge directly into surface waters, rivers, and streams³.”

In the Washington DC area, green streets are part of a comprehensive green infrastructure toolkit and are generally implemented in the Rock Creek watershed to advance water quality protection, as part of a jurisdiction’s regulatory mandated stormwater or combined sewer management practices (as well as part of the EPA consent decree with DC Water). Green streets may offer a number of co-benefits, including reduced energy costs, flood mitigation or minimization, pollinator and bird habitat, improvement to a community’s livability and/or appearance, and promotion of pedestrian and/or bicycle access on streets. This requirement creates a compelling reason to fund green streets projects.

Municipal separate storm sewer (MS4) permits are an important accountability mechanism for water quality protection. While there is little interest in reducing the water quality outcomes these permits create, their strict accountability targets and timelines and connection to associated funding, may create a fundamental tension with authentic and meaningful engagement. As municipalities plan projects, careful budget and timeline planning can account for public engagement in a green streets process.

³ <https://www.epa.gov/G3/learn-about-green-streets> EPA. 2020. Learn About Green Streets

METHODS

The team employed a four-pronged approach to determine the relationship between community engagement and long-term maintenance:

- I. Community engagement professionals with local experience (District and/or Montgomery County) who engage communities on a range of environmental and other topics were selected for interviews
 - Josh Lasky, LINK Strategic Partners
 - Jason Gershowitz, Kearns Williams
 - Ruby Stemmler, EcoLatinos
 - Steve Raabe, OpinionWorks
- II. Green infrastructure professionals from a number of cities with well-established green streets or green infrastructure programs were interviewed:
 - Fritz Schroeder, Director of Urban Green Planning, Marketing & Development, City of Lancaster, PA Save It! Program
 - Adam Woodburn, Program Coordinator, Stormwater Management, Onondaga County Department of Environment Protection (Syracuse, NY)
 - Barbara Cushing, Engineering Specialist Green Stormwater Operation and Megan Malloy, Environmental Scientist Specialist Green Stormwater Operations, Philadelphia Water Department (Philadelphia, PA)
 - Ivy Dunlap, Environmental Specialist, Bureau of Environmental Services Sustainable Stormwater Division, City of Portland
 - Tracy Tackett, Green Infrastructure Program Manager, City of Seattle

Throughout this paper, specific references to practices in these cities were identified through these conversations.

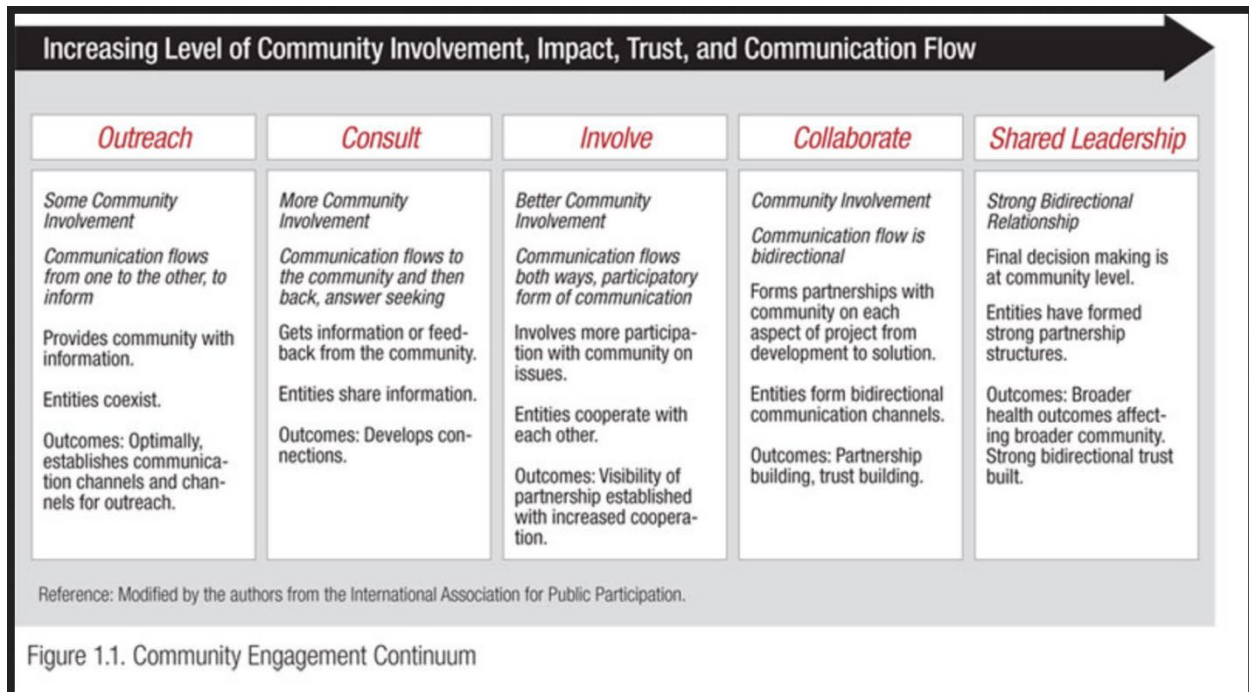
- III. A literature review was conducted using the search terms: community engagement, stakeholder engagement, environmental maintenance, green infrastructure, green streets, and stormwater management.
 - At the outset of the project, input was solicited from staff at the agencies that implement or manage green infrastructure in the Rock Creek Watershed: District Department of Transportation (DDOT)
 - DC Water

- District Department of Energy and the Environment (DOEE)
- Montgomery County Department of Environmental Protection (DEP)
- National Park Service

ENGAGEMENT

Community engagement takes many forms and should be selected based on goals the goals of the project and community needs. The chart below demonstrates a progression of engagement beginning with outreach in the community working towards the apex of shared leadership as a means of categorizing various degrees of community participation. Outcomes of each of the five categories speak to the effectiveness of engaging communities in these different manners. Agencies should calibrate their engagement along the continuum.

Regardless of type of engagement, placing engagement at the front end of a green streets process can increase support from residents. By engaging community members early in the planning phase and prior to design, an agency demonstrates respect and consideration for the needs and interests of those



impacted by the project. Ongoing engagement is also important to maximize stakeholder (resident) satisfaction⁴.

CULTURAL RELEVANCE

In addition to more relational considerations, agencies should ensure that engagement includes a clear understanding of community members' cultural context, as well as awareness of the culture of those undertaking the engagement (i.e., the agency). This may be multidimensional in nature, as communities continue to increase in diversity. The culture of the individuals leading engagement shapes all aspects of engagement from the goals of that work, how the agency perceives the community, and barriers that may be encountered during engagement.

Agencies may be motivated to engage communities by a desire to share responsibility (or blame) for project outcomes or to improve trust in government⁵. There may also be a desire to maintain control of the green streets process.

FINDING

The concerns of most community members differ from those of managing agencies. While most agency staff are focused on reducing stormwater runoff or construction logistics, community members' concerns center on issues such as sidewalk access, changes to parking availability, or project aesthetics. Everett and Lamond note that community members may appreciate the "added green space, biodiversity, and stormwater function" but that the related tradeoffs, include the "loss of use of space, maintenance costs or burdens, or new/unwanted flora or fauna."

⁴ Everett and Lamond 2018.

⁵ Head 2017.

RECOMMENDATION

Recognition and acknowledgement of community priorities and norms should figure prominently into each project. Social gratification at a neighborhood level can lead to good neighbor stewardship. Where there is common ground with community members' concerns, agencies have been effective in using that goal to build relationships. Flood management is an issue that both community members and agencies prioritize, so may be an effective co-benefit to highlight.

Portland has found that offering community scientist monitoring programs (i.e., Stream Teams) has successfully aided in public education and increased acceptance of GI and Green Streets initiatives⁶.

Preliminary outreach activities at the neighborhood scale are critical to gain the trust of and build relationships with local citizens who will be impacted by green street initiatives. "Meet them where they are - and early on" was a recommendation offered by Seattle's GI Program Manager and echoed by each municipal management level staff person interviewed from the cities of Philadelphia, Portland, and Lancaster. Portland staff noted they often begin with a focus group and subsequent public survey to understand residents' preferred methods of communications and areas of interest. The findings are used to develop specific project information that describes in non-technical language at a neighborhood location why and how the project will be constructed, in contrast to presentations of finalized plans shared without input or understanding at a municipal or faraway setting.

In addition, most residents do not have a significant design background and may have little experience reading design schematics.

FINDING

Suggestions from both Philadelphia and Seattle involved the use of accurate renderings illustrating the appearances of GI facilities at various stages - at installation, full maturity and during winter dormancy. Visuals will set the stage for expectations and prepare residents for the realistic appearance of

GI facilities in both optimal and in less than favorable conditions. On site mock ups of projects midway through the design phase with the use of temporary marking paint has proven very effective in Portland and Seattle as a means to mitigate post construction citizen complaints. This approach provides a window of opportunity to address concerns through design modifications prior to, as opposed to during the construction phase, saving time and dollars.

Another practical consideration is ensuring that community members know who and how to reach with questions or ideas about the project throughout the process, from planning to maintenance.

COMMUNITY CHAMPIONS

Enlisting community champions to cultivate social capital has proven effective in clean water campaigns. An example is the SAVE-IT campaign, a positive marketing plan born from the LIVE GREEN urban greening conservancy program in Lancaster, PA. Preliminary education and outreach regarding the collective benefits gained from stormwater fees proved helpful in avoiding community pushback. Messaging was shared via social media and one-on-one meetings with the Mayor and City Council members were offered. As a result, citizens came to embrace the idea that the benefits would far outweigh the addition of a small fee included in their monthly utility bill. Residents may influence peers' views of proposed projects by leading with their enthusiasm.

Where trust in government is limited, non-governmental organizations (NGOs) are positioned to take on the role of intermediary between communities and city hall, resulting in more effective messaging than government staff are able to provide. For example, research by OpinionWorks in the Aspen Hill (MD) neighborhood suggested this was the case for communities of recent immigrants. Community-based organizations are often used for direct outreach before and after construction in Seattle and in additional ways in Portland.

METHOD OF ENGAGEMENT

Agencies can overcome some of these obstacles by interacting with residents on a more on-going basis and in forums that are more equitable. Whereas a public meeting suggests an inherent power imbalance, more social or celebratory formats of interaction may not. For example, the city of Lancaster hosts an

annual Water Week event takes place concurrently with Chesapeake Bay week during the month of June. This week-long festival celebrates clean water and green stormwater management accomplishments through educational outreach and public awareness. Local agencies participate as well as area beer breweries. Numerous events include public art, stream monitoring education and demonstrations, litter clean-ups, and native plants education. The goal is to build local pride for area streams and to drive the message home that the water quality damage caused by dumping and stormwater is a solvable problem. The purpose of a full week is to build momentum which seems to be working, based on attendance and vocalized enthusiasm. In its fourth year, the festival builds unity around the common goal of water quality. Seattle has had success with community events such as pop-up tent information events at proposed project locations during times convenient for residents' participation. End of construction activities may involve ribbon cutting and maintenance schedule and service level handouts to encourage ongoing engagement and communication.

AUTHENTIC ENGAGEMENT

RECOMMENDATION

Where possible, agencies should develop joint decision making on areas of projects that have flexibility, rather than seeking input on aspects of projects where input will not be utilized. While the specific factor will vary by project, particularly as relates to project timelines, some that seem likely include the plant palettes, other aesthetic characteristics, and siting or order of local impacts.

In conversations with agencies, many note the challenge of inviting public input to design process. Agencies like Montgomery County DEP have attempted to overcome this by offering residents input on more aesthetic components, such as choosing between a few plant palettes (all compatible with the bioretention needs of the proposed facilities) so neighbors can feel as though their concerns about 'curb appeal' and aesthetics are taken seriously. Success with this approach may be limited, however, if the full community does not feel as though they have input.

RECOMMENDATION

Agencies should manage expectations for community members. As noted previously, effective communications provide relevant information in a format that is meaningful to residents.

For example, during the design phase, the City of Portland creates temporary markings on roadways that allow residents to gauge the project’s impact on their daily movement or views. This type of action often provides an opportunity for discussions of possible project changes prior to construction, saving time and money. Several stormwater professionals interviewed noted challenges with public expectations for the appearance of plants in bioretention facilities. Particularly in areas with yards filled with annuals, dormant plants over winter may suggest to residents that the project has failed rather than being a phase of a natural cycle. Philadelphia has used 3d renderings that accurately depict the appearance of green infrastructure facilities at various stages of development, including several intervals post-construction, to increase awareness of project specifics. As bioretention facilities become more common, the standard for aesthetics will become more families.

MAINTENANCE

RECOMMENDATION

As seen above, maintenance is often an issue pointed to by community members who oppose a green streets project. Many municipalities have struggled to properly fund and staff maintenance. In scanning other cities’ approaches to maintenance, results tend to be more effective in cases in which the agency that is accountable for water quality holds responsible for asset management and maintenance.

Facilities are often on land managed or owned by agencies that do not have regulatory responsibility for water quality. In some cases, as in the District, maintenance of city land may be managed or implemented by a separate agency.

For example, the City of Seattle has come to fully realize that the constructed GI facilities are stormwater assets that are solving a core mission; and that ultimately the City should be responsible for both the funding of maintenance and the overall sustainability of the facilities. In turn, this has impacted their approach to sustainable maintenance practices and strategies:

“Even though roadside bioretention facilities have been installed in the City’s right of way over the last 20 years, this infrastructure is relatively new to the field of public works maintenance and

as such, it is recommended to define a base level of skills and a training regime to support the expanding GSI program in the context of the regulatory requirements. While it is often noted that landscape maintenance skills support GSI requirements there are distinctions in approach that require training or orientation. As these are public facilities meeting a prescribed function the field crews should be trained in this regard. Currently the program sponsored by the Washington Association of Landscape professionals (WALP) ecoPRO Certified Sustainable Landscape Professional Program may be the most well-rounded training for maintenance staff however agency specific GSI training will still be required.” (Seattle’s GI Program Manager) Workforce development could be a co-benefit of the investment of maintenance to a municipality (skilled labor force, increased tax revenues), but does not seem (from comparison cities) to be a major factor/benefit for most jurisdictions (in terms of community support for projects)

Some cities have aimed to blend community engagement and maintenance by enlisting community members in maintenance. Such stewardship activities may foster the development and maintenance of social networks, support, and cohesion⁷. However, the ethics of asking for community involvement in maintenance can be complicated⁸.

In Portland’s Tabor to River project, neighbors indicated a greater likelihood to volunteer if provided with how-to tutorials, financial incentives, and seeing neighbors care for green streets⁹. Volunteer maintenance or upkeep of other public assets is uncommon. This is evident, for example, in the number of unshoveled sidewalks after each winter storm. Residents are not asked to mow park lawns or fill potholes; this suggests an undervaluing of the green streets assets.

Across the board, long-term maintenance of GI facilities continues to be a challenge, first and foremost with budget constraints and provider capacity, and secondly with trained and well-qualified maintenance providers. Citizens are concerned with who will be held responsible for carrying out timely and quality maintenance. Each municipality included in the interview process is dealing with maintenance in various

⁷ Svendsen. 2018.

⁸ Jerome, Mell, and Shaw, 2017.

⁹ Shandas, Nelson, and Arendes. 2010.

ways. The most encouraging and consistent results involve dedicated in-house staff in a supervisory role over contracted maintenance providers whose employees have completed training specific to that particular region's GI facilities. DC Water utilizes the National Green Infrastructure Certification Program for training and certification of new employees that includes not only landscape skills specific to GI maintenance, but also tool skills, familiarity with utilities encountered in the field, and various soft skills. A paired requirement that contractors use NGICP-certified staff ensures consistent technical expertise among those implementing the maintenance.

Philadelphia has learned from years of experience that educating staff from all departments touched by GI facilities with awareness and basic knowledge of the purpose and normal functioning of GI facilities reduces costly errors that impacts maintenance schedules and budgets, such as a water main break occurring within range of a GI facility. Educated public works staff are vigilant of the potential damage or negative impact on the GI facility's functions that can occur in this situation and are proactive in addressing the situation in a timely manner. Seattle, being an early adopter, shares a similar view.

Each city has adopted extensive maintenance guidelines that are very specific to their region. Developing site and project specific maintenance plans for short and long-term upkeep, prior to construction phase is essential. The specificity of different facilities can be a further challenge to maintenance. Municipalities that have less variety in facility type tend to be more successful at maintenance as more staff are more familiar with more of the assets.

Maintenance plans should consist of the who, what, when, how and why approach to GI facility maintenance; and, communication plans for keeping both impacted citizens and municipal departments informed. Onandaga County's (Syracuse, NY) Stormwater Program Coordinator recommends that a full understanding of long-term maintenance requirements by the engineers and landscape architects during the design phase will mitigate future maintenance issues. A novel but effective approach has been the inclusion in the design services agreements for mandatory volunteerism for GI facility cleanups and minor maintenance events performed by employees of the design firm.

MOVING FORWARD

These recommendations are meant to inform and strengthen the efforts of local jurisdictions to improve water quality through green streets installations. More research could strengthen the understanding of the specific relationships between engagement programs and long-term outcomes of green streets. In the short-term, building these ideas into the timeline and budget for permitted activities is strongly recommended.



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Rock Creek Conservancy is a 501(c)(3) organization and an official philanthropic partner to Rock Creek Park.

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