



Mainstreaming Green Streets in New Jersey: Policy Recommendations for State Government

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Summary

Green streets use green infrastructure practices within the public right-of-way to manage stormwater, while preserving the primary function of a street as a conduit for vehicles, pedestrians, bicyclists, and transit riders. Streets comprise a significant proportion of impervious cover in most communities and are a major contributor to stormwater runoff. As the frequency of heavy precipitation continues to increase, the need to more effectively manage stormwater is critical. Creating green streets is an opportunity for municipalities, counties and the state to improve stormwater management, which improves water quality, minimizes localized flooding, and provides many other benefits that create attractive streetscapes.

This paper provides a conceptual framework for discussing the role of New Jersey state agencies in bringing green streets to the mainstream. A list of recommendations for the state is provided, classified into three categories: those that can be put into practice immediately, those that can be executed in a moderate amount of time, and others that require a longer implementation timeline.

The Issue

In a densely populated state like New Jersey, the management of stormwater runoff is an important consideration for developed areas as impervious surfaces like roofs, roads and parking lots prevent water from seeping into the ground. As of 2012, the state had the highest percent of impervious cover in the country at [12.1 percent of its total area. A substantial portion of the impervious cover is in the form of streets, which also collect stormwater from nearby impervious surfaces.](#) The expansion of impervious cover through development, coupled with the recent increase in the frequency and intensity of storm events [due to climate change](#), contributes to a rise in the volume of stormwater generated. The result is increased localized and severe flooding, polluted downstream waters, and increased [combined sewer overflows](#), which discharge untreated stormwater and wastewater directly to nearby streams and rivers.

In urbanized areas, stormwater runoff from impervious surfaces has traditionally been managed with gray infrastructure, including catchment basins, underground metal and concrete pipes, holding tanks, pumps, and treatment plants. Green infrastructure (GI) techniques are now being introduced, typically to complement gray approaches, because they offer substantial environmental benefits for water quality and groundwater recharge as well as community and public health benefits. Green Infrastructure is an approach to managing stormwater by enabling it to infiltrate into the ground where it falls or by capturing it for later reuse. GI can be located in many public and private places, e.g. —green roofs on top of apartment buildings or warehouses, rain gardens at schools, parks and libraries, etc.

Yet, the public right-of-way, which offers tremendous potential for an implementation technique called *green streets*, is too often overlooked. Green streets use green infrastructure practices installed within the public right-of-way to manage stormwater, while preserving the primary function of a street as a conduit for vehicles, pedestrians, bicyclists, and transit riders. Green Street installations are an important way to minimize the negative impacts of impervious cover. [Green streets include practices](#) such as permeable pavements, stormwater planters and tree pits, bioswales, rain gardens and curb bump-outs. These tools can be placed along sidewalks, bike lanes, vehicle lanes, road shoulders and in parking spaces.

Triple Bottom Line Benefits

In addition to managing stormwater, green streets deliver [multiple environmental, social and economic benefits](#). Streets were traditionally designed to convey stormwater to pipes as quickly as possible, but this increases the rate that stormwater runs off, which overtaxes infrastructure, causes downstream flooding, and transports pollutants from the streets into the stormwater system and the surface waters where the water is discharged. Green streets percolate stormwater back into the ground, using plant roots and layers of soil to filter and return clean water to groundwater aquifers. Green streets can also mitigate the urban [heat island effect](#) by reducing air temperatures through the use of shade trees.

Green streets can provide multiple economic benefits. The Somerset Community residential subdivision in Prince George's County, Maryland, used green infrastructure features such as rain gardens and grass swales along streets instead of conventional grey infrastructure, saving the developer approximately \$900,000 in construction costs.¹ Flooding from storms may be more severe in streets that are devoid of green infrastructure, which can limit accessibility and force businesses to shut down, resulting in economic loss. Green street features can help to reduce or prevent nuisance flooding, allowing streets to remain accessible and businesses to remain open during storm events. [Streets lined with trees](#) have also been shown not only to cool and clean the air, but also to [increase property values and foot traffic](#).

Lastly, green streets provide important [public health](#) and safety benefits. Green streets can improve mental and physical health through beautification, improved air quality and contact with nature, especially in places where there is an absence of parks and/or open space. They also can increase pedestrian safety by aiding in [traffic calming](#).

Realizing all these benefits, a handful of municipalities across the state of New Jersey are beginning to plan and build green streets as a preferred choice to address stormwater management; however this approach has not yet become mainstream. Currently, 143 municipalities in New Jersey have adopted complete streets² policies but most, if not all, have not incorporated green streets language. Complete streets are all the more complete when they are green streets.

Emerging best practices for green street installations are an opportunity for communities across the state to protect natural resources and foster healthy, sustainable and resilient neighborhoods. Yet, in order for communities to pursue these goals through green streets, they often need technical and financial assistance from the state.

The green streets approach warrants the same visibility and state support as complete streets, including policy guidance, funding sources, information and technical assistance. This paper analyzes the current state of green streets for various stakeholders and provides policy recommendations for how the state can encourage, support and incentivize municipalities, counties, and private developers to build green streets.

The Current Status of Green Streets in New Jersey

¹ The Economics of Low-Impact Development: A Literature Review, ECONorthwest, November 2007

² Complete Streets are streets designed to enable safe access for all users so that pedestrians, bicyclists, motorists and public transportation users of all ages and ability are able to safely move along the street.

The number of green streets projects implemented across the US is on the rise as cities like [Portland and Chicago](#), counties like [Prince George's](#) in Maryland and state agencies like the [Pennsylvania Department of Transportation](#) are embracing green infrastructure. In New Jersey, a handful of communities have begun to install and plan for green streets. The following sections explore the role, opportunity and potential for municipalities, counties, and the state to improve neighborhoods, public health outcomes and resiliency with green streets.

Municipal Role

Municipalities own and maintain local roads. Most roadways in New Jersey are local roads, many of which were built by developers and then turned over to the municipality. Municipalities may adopt plans, ordinances, and policies that promote or require green streets. A key place to begin green streets implementation is the municipal capital improvement plan. Municipalities can use the plan to review existing streets in need of retrofit or plan new streets with the intent of integrating green infrastructure into the design.

Municipalities looking to incorporate a green streets strategy as an essential element of their development goals may take advantage of the [Building Blocks for Sustainable Communities Program](#) facilitated by Environmental Protection Agency (EPA). Through this program, EPA helps communities learn about a given topic and create an action plan to move toward implementation. The City of Camden participated in a series of Building Blocks workshops focused on green streets that helped identify several [challenges](#) to implementation, including lack of funding, lack of awareness and technical knowledge from agencies and institutions, as well as interdepartmental coordination issues. Workshop participants drafted [recommendations](#) to improve streets by incorporating green infrastructure into complete street design.

As communities like Camden have pointed out, securing adequate and sustainable funding for the planning, design, construction, and maintenance of green streets can be especially challenging. Some municipalities have found that they can secure funding for the design of a green street, but ongoing funding to maintain it can be elusive. Therefore, some communities have delayed constructing green streets until a plan for maintenance is certain, as proper maintenance is necessary to sustain well-functioning green streets.

Funding for existing green streets projects have come from programs such as New Jersey Department of Transportation (NJDOT)'s Transportation Alternatives Program (TAP), the Department of Law and Public Safety's Pedestrian Safety, Enforcement and Education Fund Grant Program, and New Jersey Environmental Infrastructure Financing Program, among others.

Municipalities have managed to cleverly leverage a combination of funds from grant and aid programs where a connection between the goals of the program and the benefits of green streets could be drawn. For example, Hoboken financed part of its [Washington Street green street](#) (Hoboken's main street corridor) from the [Pedestrian Safety, Enforcement and Education Fund](#) grant program by demonstrating the installation of green streets would increase pedestrian safety by aiding in traffic calming. In the Washington Street project, Hoboken found that identifying contractors with the appropriate expertise in green streets design and construction was a real challenge. The dearth of qualified New Jersey contractors prompted Hoboken to hire contractors from New York State. Nevertheless, Hoboken is determined to incorporate green streets into all projects, given its tremendous value in addressing chronic stormwater flooding and coastal surges. After examining and learning from Washington Street streetscape improvements, Hoboken plans to revise its complete streets ordinance to incorporate green streets language. Both Hoboken and the City of Camden also leveraged the TAP for green infrastructure improvements as community-based "non-traditional" surface transportation projects.

County Role

Some counties in New Jersey provide support to municipalities who seek model ordinances and codes. Passaic County is developing a green infrastructure plan—set to be released by 2018—that is aimed at creating a comprehensive strategy for implementation and offer best management

practices for municipalities to implement their own green infrastructure strategies. In addition to making green streets a focus in the green infrastructure plan, Passaic County is also evaluating green streets design in its county capital improvement plan. These efforts follow the county's 2013 revision of its Master Plan [transportation element](#) to include GI. The county is vigorously pursuing green infrastructure in a variety of ways including a green street demonstration project on [Haledon Avenue](#) in Paterson.

State Role

At the state level, NJDOT; New Jersey Department of Environment Protection (NJDEP); and the three metropolitan planning organizations – North Jersey Transportation Planning Authority (NJTPA), the Delaware Valley Regional Planning Commission (DVRPC) and the South Jersey Transportation Planning Organization (SJTPO) – play a crucial role in the implementation of all streets – traditional and green alike. While the missions of these agencies are distinct, they can complement each other at the intersection of green streets implementation as stormwater is an issue that each agency has to address in some capacity.

Some communities in New Jersey are building green streets locally despite gaps in financial and human capacity through clever funding mechanisms. Many cities and towns have adopted complete streets policies and are using the complete streets framework to make their streets safe; yet, few specifically include green infrastructure in their policies. State agencies could expedite the local adoption of green streets policies through targeted, sometimes-modest changes to rules, standards and funding mechanisms, and through public outreach, education, and engagement.

The following recommendations capture some ideas for how the state can play a more active role in expediting green streets implementation in New Jersey. These recommendations are grouped into those that can be acted upon quickly, vs. mid-term and longer-term implementation timeframes.

Recommendations

Immediate:

- NJDOT Paradigm Shift: In the past, NJDOT has explored initiatives and pilot projects that went beyond its mobility mission. NJDOT should look to those initiatives as models for reimagining their mission to go beyond transportation – to adopt transportation policy and funding criteria that contribute to vibrant communities and promote health, environmental, and equity outcomes. The department can do this in several ways:
 - Embrace green infrastructure as a beneficial approach to stormwater management for roads, sidewalks and other elements of the transportation system.
 - Expand NJDOT's Complete Streets policy and program to include Green Streets.
 - Help municipalities build local capacity for the design of green streets by providing direct or indirect departmental technical assistance in the form of a) on-call consultants the department hires and/or b) funds allocated from the [State Planning and Research Fund](#) to third party nonprofits or colleges and universities to guide communities.
- Prioritize Green Streets in Local Aid Program (NJDOT): NJDOT should incentivize communities to build green streets by prioritizing green infrastructure in the selection criteria for its Local Aid Grant Program. Communities with an adopted green streets policy (or existing complete streets policy that includes green streets) that apply for funding for a green streets projects could be given extra points, increasing their chances of receiving funding. Realizing this opportunity to improve their applications, communities will be more inclined to include green infrastructure in their applications.
- Update NJDEP Stormwater Best Management Practices Manual (NJDEP): NJDEP's Stormwater Best Management Practices Manual should include a section specific to green streets, with features such as tree trenches/boxes, permeable pavement and curb bumpouts, and with guidance for selecting the right green-street BMP based on site conditions and objectives.

- Provide Education and Training (NJDOT & NJDEP):
 - NJDOT should provide in-depth green streets education and training to its staff who design and review projects, and to contractors who construct and maintain transportation projects suitable for green infrastructure. Currently, local contractors and staff lack technical knowledge about green streets.
 - NJDEP should provide more in-depth green infrastructure training for its staff who review NJDOT permits.
 - Many of the state's green streets exemplars have received EPA's [Building Blocks](#) grants to participate in green streets workshops facilitated by the agency. NJDOT and NJDEP should participate in these workshops as well to increase their understanding of green streets.
- Enable Stormwater Utility Fee for Maintenance (State Legislature & Governor): All types of infrastructure have ongoing maintenance expenses. Sources of capital funding typically pursued for constructing green infrastructure projects, such as state and federal grants and loans, cannot be used for ongoing maintenance. Local funding from utility fees could provide a stable source of funding for maintenance of green infrastructure practices. Currently, the state does not explicitly authorize a municipality to create a separate fee for stormwater utility services, but neither does it prohibit the creation of a stormwater utility. This ambiguity in existing statutes has resulted in municipalities waiting for clarifying legislation or regulatory guidance. The state should enable municipalities by adopting legislation to authorize creation of a stormwater utility fee by local or regional utilities and/or local governments.
- Endorse National Association of City Transportation Officials (NACTO) Urban Street Design Guide (NJDOT): NJDOT should endorse NACTO's [Urban Street Design Guide](#) as a valuable toolkit for designing, and implementing safe, and livable green and complete streets. The NJDOT should join a [growing group of transportation departments across the United States](#) in endorsing this manual to bolster its commitment to sustainable transportation.

Mid-Term:

- NJDOT Demonstration Project (NJDOT): NJDOT should show leadership through an engineering exercise that adds green stormwater infrastructure to a high-profile road project. The Pennsylvania DOT, with design advice of experts from Temple University and Villanova, recently rebuilt a portion of I-95 through Philadelphia using green infrastructure and dramatically reduced the volume of polluted runoff from the highway into the Delaware and Schuylkill Rivers.
- Update Roadway Design Manual (NJDOT): The Roadway Design Manual, NJDOT's guidelines to assist engineers in roadway design, should incorporate design guidelines for green streets infrastructure. This design manual is an opportunity to educate engineers at all levels as it is extensively used by NJDOT engineers, NJDOT's consultants, and engineers at the local level.
- Support Municipal and County Capital Improvement Plans (NJDOT): Provide planning support to municipalities and counties that commit to green streets capital planning.
- Engage in Mapping and Monitoring (NJDOT): NJDOT should develop the capacity to map and monitor the performance of the green streets it constructs. This will demonstrate that the need for green streets is not just an urban/big city issue, and will make it possible to systematically recognize and highlight success stories.

Long-Term:

- Fund Workforce Development (Governor): The state's workforce development programs should include green infrastructure, as a way of meeting the maintenance needs of green streets. This is an opportunity to train members of the community to maintain green streets and build long-term stewardship over them.
- Update Municipal Land Use Law: Sections on stormwater and streets in the Municipal Land Use Law should be amended to encourage and facilitate green infrastructure including green streets.

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