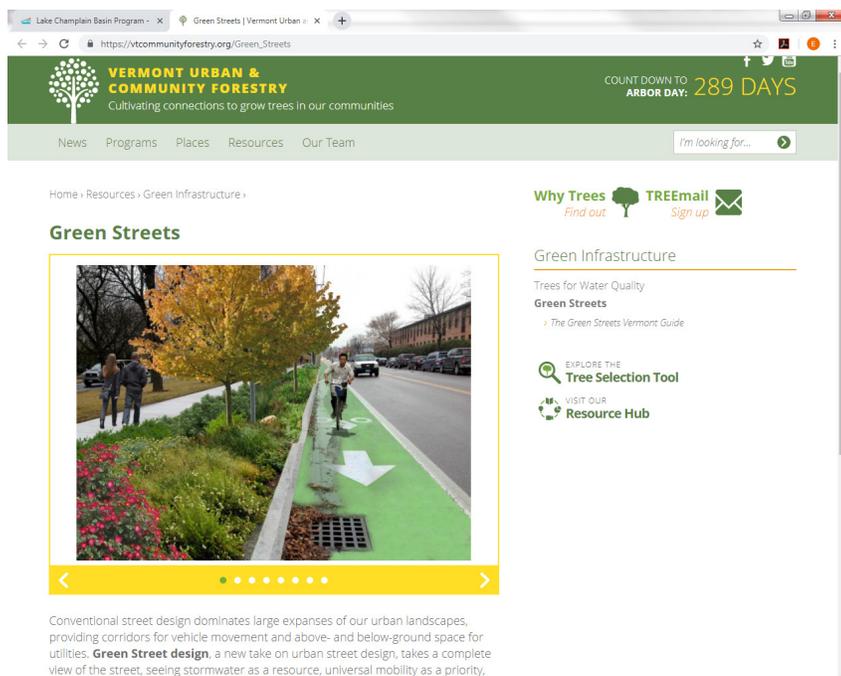


Green Streets Vermont Training Materials



July 2018

Final Report

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For:

The Lake Champlain Basin Program and

New England Interstate Water Pollution Control Commission

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Final Report

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Executive Summary

Municipal officials would benefit from guidance on how to incorporate cost effective, green infrastructure in urban roadside environments. Adherence to green infrastructure principles, practices, and the adoption of new technologies has proven to be effective at providing a suite of community benefits including stormwater management, energy savings, wildlife habitat, social and health values, and economic benefits. Of particular importance is the use of green stormwater infrastructure (GSI) in urban roadside environments to address drainage and stormwater runoff issues that are too common along traditional streets. Optimal stormwater management looks beyond simply removing rainfall as quickly as possible, which risks negative environmental impacts associated with both stormwater quality and quantity, increased polluted runoff, sedimentation, and bank erosion. Instead, GSI focuses on efforts to retain and treat – or even eliminate – runoff at the source and improve water quality.

To meet this need we developed a comprehensive green street guidance document, Vermont Green Streets Guide, and associated training materials that provide practical information and advice on how to incorporate trees, landscaping, and other green infrastructure techniques to create high quality urban roadside environments in Vermont. The guidance document includes primarily Vermont and regional examples of green infrastructure and identifies specific practices based on cost-effectiveness, maintenance needs, benefits, and public appeal. Some examples include replacement of closed drainage with grass swales, tree planting, replacement of existing raised islands in parking lots with sub-grade islands or rain gardens, and other landscaping solutions.

The Vermont Green Streets Guide is a resource for community leaders, community planners, and policymakers wishing to advocate for and implement Green Streets throughout Vermont. It serves as a step-by-step document for communities to identify why Green Streets are relevant, where and how they can be implemented, and who will implement and maintain them.

The Guide is also a tool to help community leaders evaluate the role of their streets and parking lots in the environmental, economic, and social networks of their communities. It offers a framework for intentional design that incorporates natural systems into the urbanized contexts of streets and parking lots under local or state jurisdiction. It is intended for new developments, retrofits, redevelopments, and anywhere Green Streets opportunities exist within and adjacent to the public right-of-way or parking lots.

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1 Project Introduction

Purpose

The Vermont Urban & Community Forestry Program (VT UCF), with the assistance of its project partners, developed a comprehensive green street guidance document, Vermont Green Street Guide, and associated training materials that provide practical information and advice on how to incorporate trees, landscaping, and other green infrastructure techniques to create high quality urban roadside environments in Vermont.

Project Background

Municipal officials would benefit from guidance on how to incorporate cost effective, green infrastructure in urban roadside environments. Adherence to green infrastructure principles, practices, and the adoption of new technologies has proven to be effective at providing a suite of community benefits including stormwater management, energy savings, wildlife habitat, social and health values, and economic benefits. Of particular importance is the use of green stormwater infrastructure (GSI) in urban roadside environments to address drainage and stormwater runoff issues that are too common along traditional streets. Optimal stormwater management looks beyond simply removing rainfall as quickly as possible, which risks negative environmental impacts associated with both stormwater quality and quantity, increased polluted runoff, sedimentation, and bank erosion. Instead, GSI focuses on efforts to retain and treat – or even eliminate – runoff at the source and improve water quality.

Project Goals

The goals were to develop a “green street” guidance document and associated training materials for Vermont municipal officials and design professionals to maximize opportunities for trees and other landscaping to create high quality urban roadside environments. The guidance document includes primarily Vermont and regional examples of green infrastructure and identify specific practices based on cost-effectiveness, maintenance needs, benefits, and public appeal. Some examples include replacement of closed drainage with grass swales, tree planting, replacement of existing raised islands in parking lots with sub-grade islands or rain gardens, and other landscaping solutions

The Guidance Manual includes the following components:

1. Why Green Streets: An overview of the value of integrating trees and other vegetation into urban roadside environments and parking lots, and how green streets compliment complete streets, economic development in our historic downtowns and villages, and resiliency.
2. Planning and Design Considerations: An overview of all necessary considerations in the right-of-way, including but not limited to: policies, operations and maintenance, control, users, amenities, and pollution prevention. A thoughtfully designed and maintained green street shall include trees and other vegetation that provide a suite of functions and services to the public and thrives into the future.
3. Sustainable Maintenance: Understanding both routine and long-term maintenance tasks and carefully considering them throughout the design process to reduce life cycle maintenance costs and promote sustainability of the practice, and how to plan and integrate the cost and time needed to plan based on local capacity. The techniques should also explicitly consider how vegetation will be managed over time to maintain functions and minimize maintenance costs.
4. Green Street Opportunities: Creatively using vegetation not only greens up the site, but also utilizes vegetation to effectively promote cooling, shading, screening, habitat, and enhanced pollutant removal functions as well as myriad social economic community benefits, including improving pedestrian experience, creating a sense of place, and increasing sales in local businesses. An

inspiring overview of green streets opportunities in downtown, village and neighborhood environments should be included.

5. Decision Support Matrix: A visual overview of green infrastructure practices, costs, maintenance requirements, benefits, and appropriate context.
6. Other Resources: A listing of other relevant documents and how they complement the principles and techniques introduced in the guide.
7. Implementation: A process to help communities move from inspiration to implementation, including an overview of available information on potential partnerships, funding and technical resources.
8. Case studies: Three Vermont case studies that tell the story of how a community has planned for, built, and are maintained green infrastructure. The case studies are supported with high quality photographs and illustrations.

2 Tasks Completed

Phase 1: Project Initiation, Coordination and Engagement

Task 1: Coordination with Working Group

Project Initiation: 1 meeting

Update Meetings with Interagency Working Group: 3 meetings

Task 2: Partner Engagement

Vermont Urban & Community Forestry Council & Green Infrastructure Roundtable: 1 meeting

Regional Planning Commissions, Transportation Planners: 1 meeting

Task 3: The Green Streets Stories in Vermont

Community research and interviews: 3 communities

Task 4: Research and Documentation

Research on implementing green streets in Vermont

Phase 2: Develop Guidance Document

Task 5: Guidance document development to include the following sections

- Why Green Streets
- Planning and Design Considerations
- Sustainable Maintenance
- Green Street Opportunities
- Decision Support Matrix
- Identify Other Resources
- Implementation
- Case Studies

Phase 3: Final Document and Training Material

Task 6: Develop Final Products

Final guidance document

3 Methodology

Phase One: Project Initiation, Partner Engagement, and Research Phase

The Vermont Urban & Community Forestry Program was committed to a high level of transparency and participation in developing the guidance document and training materials. Participation was sought in three forms through: 1) involvement with an established interagency working group; 2) two facilitated meetings with partner advisory groups to include a combined meeting of the Vermont Green Infrastructure Roundtable and Vermont Urban & Community Forestry Advisory Council, as well as a meeting with the state's Regional Planning Commission (RPC) transportation planners; 3) interviews with key stakeholders in at least three communities, identified with the working group; and 4) a review of existing resources.

Phase Two: Guidance Document and Training Materials Development and Refinement

Produce the guidance document and training materials to support municipalities to advance the use of green infrastructure in urban roadside environments in Vermont. The deliverables addressed the expectations set forth and described under the Project Description discussed above. The consultant team shall develop preliminary and final drafts of the guidance document that should be laid out in a concise chronological and graphical manner. In addition, the guidance document shall be formulated into an editable training presentation that will be used to transfer information to the target audience.

Phase Three: Final Guidance Document and Training Materials

Produce final guidance document and training materials that addresses the expectations identified with the working group, the Green Infrastructure Roundtable, the Vermont Urban & Community Forestry Advisory Council, transportation planners, and representatives from at least three communities, identified with the working group. The deliverables are in a user-friendly, graphically-rich illustrative manner to share with municipalities and design professionals.

4 Deliverables Completed

1) Guidance Document: The Green Streets Vermont Guide (Guide) is web-based, PDF version, complete with embedded bookmarks, available for download and printing. The Guide is 124 pages long and includes 11 sections that range from why greens streets are important and practices to maintenance and case studies. The Guide is rich with real life examples and visualisations. It also includes Vermont specific physical and environmental considerations and maintenance needs.

The guide took much longer than anticipated. Working with various partners was extremely valuable but added another layer of coordination particularly with review and writing.

Completed: May 2018.

2) Training Materials: The Green Streets Vermont training materials for the guidance document are ready to use for in-person and web-based learning and include a series of narrated presentations based off the Guide. Both the Guide and training materials are available on https://vtcommunityforestry.org/Green_Streets

Completed: June 2018.

5 Conclusions

The project provided for the creation of a robust and highly visual Green Streets Vermont Guide and supporting training materials. These tools will be used by our project partners to influence adoption in Vermont. During the stakeholder process it was identified that the guide should serve as a gateway document to encourage use and adoption of green stormwater infrastructure practices, and to provide specifics for Vermont for maintenance and implementation. It was also determined that the guide should not be a technical resource for designers, but a tool for them to use to influence adoption. During the development we identified that maintenance is a barrier to implement and success. Any future effort should focus on providing more detailed maintenance practices and in person training specific for public works staff.

The documents strength lies in the collaborative effort between the Agency of Natural Resources, Agency of Commerce and Community Development, and Agency of Transportation. The guide includes priorities, opportunities, and challenges from each of the organizations, and in the end, it is a comprehensive tool to help Vermont move towards thoughtful and sustainable green streets.

6 Appendices

Electronic Data: Vermont Green Streets Guide and Training Materials have been loaded to a Dropbox for download by the project officer.