Funding and Financing Adaptation

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CALIFORNIA ADAPTATION FORUM

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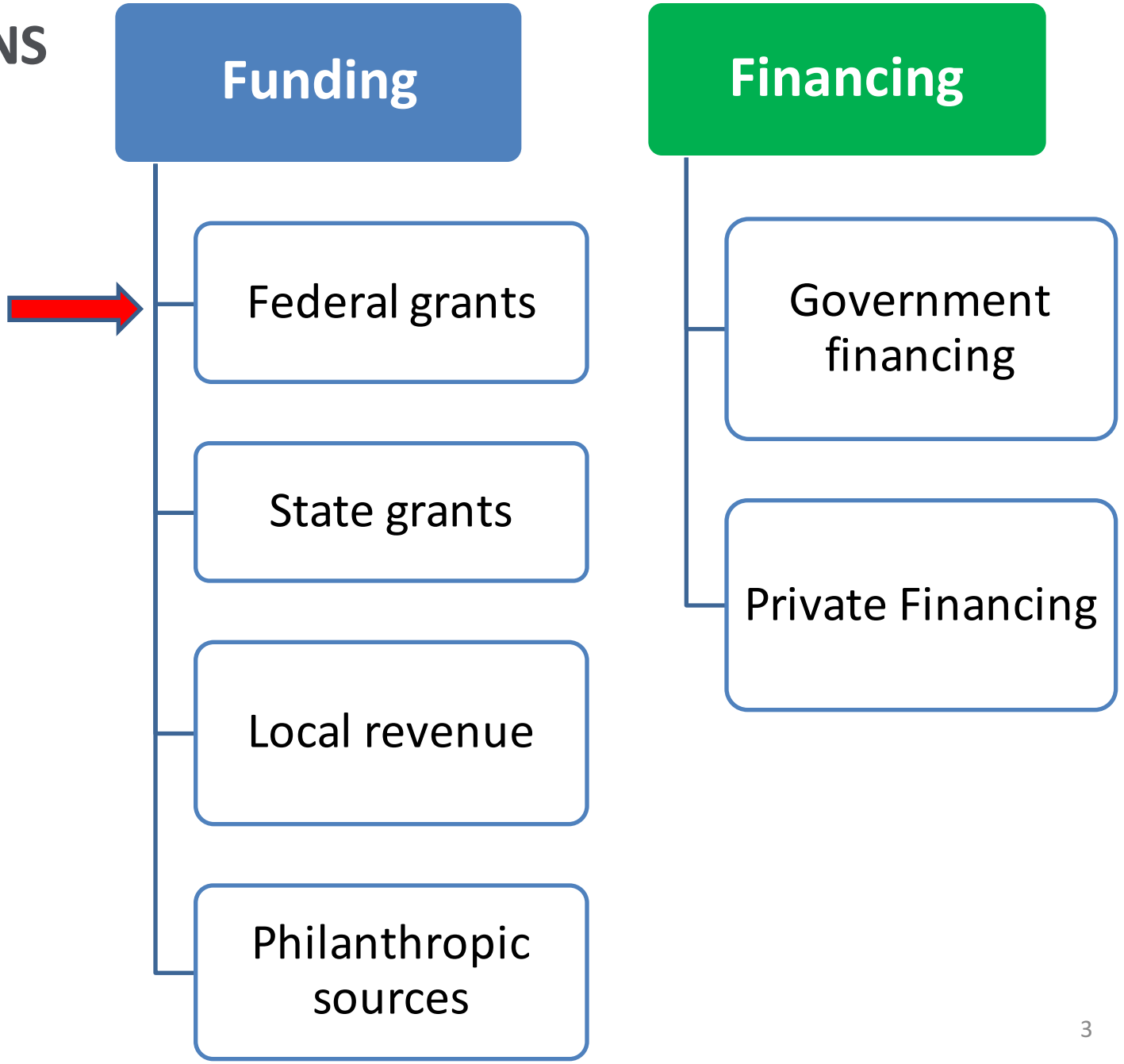
GEORGETOWN CLIMATE CENTER

GEORGETOWN CLIMATE CENTER

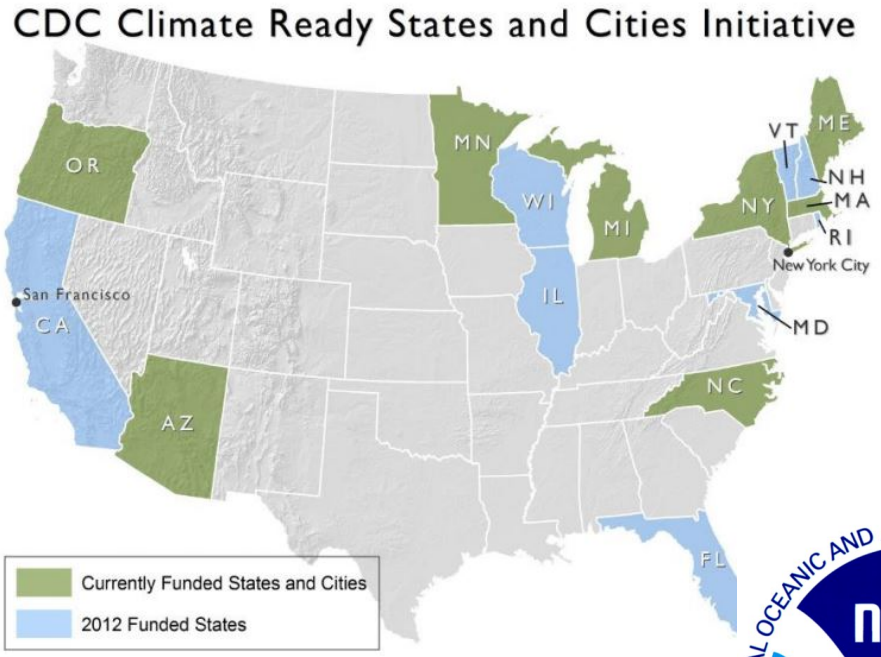
- Convenes and serves as resource to states and localities on climate and energy issues
- Brings together academics and policymakers to improve climate policy
- Informs the development of:
  - Legislation
  - Regulation
  - Transportation policy
  - Adaptation policy

DEFINITIONS



FEDERAL GRANT PROGRAMS

Funding



CDBG

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

USDOT
TIGER
DOT.GOV

CHALLENGES

Funding

- No dedicated adaptation program
- Siloed and piecemeal
- Competitively allocated
- Often require state or local match
- Sources over allocated and declining

Financing

- Can't finance all adaptation work (like planning)
- Technically difficult to leverage
- Must find source for repayment

EXAMPLES

STATE GRANTS | MASSACHUSETTS COASTAL RESILIENCE GRANT PROGRAM

Funding

STATE GRANTS | HAWAII HOTEL TAX

Funding

LOCAL REVENUES | CHARLOTTE, NC

Funding

Credit: Nancy Pierce; PlanCharlotte, UNC

LOCAL REVENUES| WASHINGTON DC

Funding

LOCAL PLANNING | MEMPHIS, TN

Funding

State Directed Federal Grants

Program	Organization	Description
Land and Water Conservation Fund	National Park Service	Acquisition and development of land and water for land protection and outdoor recreation facilities
Clean Water State Revolving Fund (CWSRF)	US Environmental Protection Agency	Loans for water quality improvements, traditionally used for wastewater treatment upgrades, though some funds have been used for land conservation
Drinking Water State Revolving Fund	US Environmental Protection Agency	Loans and other assistance to finance costs of infrastructure projects, including land acquisition
Nonpoint Source Program (Section 319)	US Environmental Protection Agency	Grants for projects that address nonpoint source pollution, such as BMPs implementation, restoration, and public education
CWSRF Innovations: Land Conservation	US Environmental Protection Agency	Assistance with purchase of watershed land, restoration of watersheds, and flood reduction
Forest Legacy Program	US Department of Agriculture	Matching grants to states to prevent the loss of private forestlands
Farm and Ranch Lands Protection Program	US Department of Agriculture	Assistance with purchase of development rights and conservation easements on productive agricultural land
North American Wetlands Conservation Act	US Fish and Wildlife Service	Matching grants for acquisition, restoration, and enhancement of wetland ecosystems for the benefit of waterfowl and other wetland associated migratory species
State Wildlife Grants Program	US Fish and Wildlife Service	Matching grants for conservation efforts to restore or maintain populations of native species

Average household pays $18.49 per year

MID-SOUTH REGIONAL GREENPRINT

GOVERNMENT FINANCING |
CONNECTICUT SHORE UP PROGRAM

Financing

PRIVATE FINANCING | MTA CATASTROPHE BOND

Financing

Catastrophe
Investors lose principal and money helps with rebuilding

No Catastrophe
Between agreed upon date (3 years), principal returns to investor with interest

RESOURCES

Water

This page includes resources to help policymakers understand, plan, and prepare for impacts of climate change to the water sector including plans, policies, and tools.

If you are interested in adaptation efforts in the water sector (including efforts to adapt to changes in water supply, water quality, and impacts to water infrastructure), please sign up for email updates to receive monthly notifications about all the latest water resources.

READ MORE

TURN OFF EMAIL NOTIFICATIONS

Welcome Jessica Grannis

Adaptation Program Manager at Georgetown Climate Center

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SUBMIT A RESOURCE

Water Resources

POPULAR RESOURCES
WATER BASICS
SCIENCE & TOOLS
PLANS
PLANNING GUIDES
EDUCATION & COMMUNICATION
LAW & POLICY
FUNDING

Popular Water Resources (edit)

The resources below are popular among Clearinghouse users. Users may influence this list by rating resources. Just click on a resource and assign it a 1 (low) to 5 (high) star rating. The highest ratings (4 and 5) should be granted to resources that you have found useful in your own work.

16 results are shown below.

SORT BY

Resource

Planning and Drought

January 2014

Average Rating

"Planning and Drought" (PAS Report No. 574) presents best practices and case studies in

POPULAR RESOURCES
WATER BASICS
SCIENCE & TOOLS
PLANS
PLANNING GUIDES
EDUCATION & COMMUNICATION
LAW & POLICY
FUNDING
MONITORING
CLIMATE READY WATER UTILITIES
CLIMATE READY ESTUARIES
DROUGHT
GREEN INFRASTRUCTURE
ORGANIZATIONS
GEOGRAPHIC SEARCH

Visit EPA's Water Infrastructure and

Water Sector Funding Programs (edit)

This tab includes funding programs that support adaptation in the water sector.

Resources are automatically presented by date. Apply additional filters to narrow by state, impact, region, or jurisdictional focus.

14 results are shown below.

FILTER BY JURISDICTIONAL FOCUS
Filter results to show resources that are local, state, regional, or nationally focused.

☐ LOCAL ☐ STATE ☐ REGIONAL ☑ NATIONAL

SEARCH BY KEYWORD

Enter a keyword APPLY FILTER

APPLY ADDITIONAL FILTERS SORT BY

Resource

EPA Campus RainWorks Challenge

September 1, 2015

The U.S. Environmental Protection Agency has launched its fourth annual Campus RainWorks Challenge for undergraduate and graduate students to design green infrastructure systems to reduce stormwater pollution and increase resiliency to climate change. Registration for the 2015 Challenge opened Sept. 1 and ends Sept. 30. Registrants must submit their entries by Dec. 18, 2015, and winners will be announced on Earth Day, April 22, 2016.

Related Organizations: U.S. Environmental Protection Agency (EPA)

Resource Category: Funding

SEE RESOURCE ADD TO MY RESOURCE LIST

Green Infrastructure Toolkit [edit]

Broadly called "green infrastructure," this new set of strategies seeks to manage stormwater, reduce urban heat island effects, improve air quality, and promote economic development and other sustainability goals. Green infrastructure provides an attractive alternative to traditional concrete (or "gray") infrastructure by making paved and hard surfaces vegetated or permeable. Permeable pavements and green roofs both capture rainfall and retain it on site, keeping it out of the stormwater system. Green infrastructure also provides wildlife habitat and greenhouse gas reduction benefits. While vanguard communities are innovating, most others are struggling to know where to begin. And while the professional design community has explored a new generation of best design practices, municipal policy frameworks have not incorporated these practices appropriately. In addition, limited resources are available to help jurisdictions develop technical expertise and share best practices. This Green Infrastructure Toolkit was developed in collaboration with leading cities to help them identify and deploy green infrastructure approaches in their communities.

This toolkit is powered by the Georgetown Climate Center's Adaptation Clearinghouse. For a full list of resources on green infrastructructure in the Adaptation Clearinghouse click here.

Introduction

Local governments across the country face serious challenges in managing urban stormwater (surface water runoff resulting from rainfall or snowmelt). Aging infrastructure, changes in precipitation patterns, watershed deforestation, and impervious surfaces such as roadways and parking lots cause urban flooding that pollutes waterways. Climate change will exacerbate these flood risks in many places due to more intense storms that could overwhelm existing infrastructure systems. If we fail to adapt these systems, severe repetitive flooding will increasingly affect

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- About This Toolkit

Getting Started: Pilot Projects

Scaling Up: Integrating Green Infrastructure into Existing Processes

How to Pay for Green Infrastructure: Funding and Financing

Communication Strategies for Green Infrastructure

Equity and Environmental Justice

Printer-Friendly Toolkit

Summary

New from the Adaptation Clearinghouse

Identification and Engagement of Socially Vulnerable Populations in the USACE Decision Making Process

Green Infrastructure Toolkit [edit]

How to Pay for Green Infrastructure: Funding and Financing

Introduction

Communities are increasingly turning to green infrastructure as a vital tool to help manage stormwater and improve climate resilience. However, many local governments seeking to establish green infrastructure programs face budget constraints that may limit the scope or effectiveness of program implementation. Fortunately, local governments have the opportunity to draw upon a wide range of funding sources, revenue models, and financing strategies to support green infrastructure programs. This Funding and Financing Chapter provides strategic guidance on how to pay for green infrastructure.

Stormwater management is increasingly becoming a major expense for local governments addressing persistent flooding or responding to legal and regulatory mandates, such as combined sewer overflow (CSO) consent decrees,[1] total maximum daily load waste load allocations,[2] or municipal separate storm sewer system (MS4) permits.[3]

Investing in green infrastructure can cost-effectively help communities manage stormwater while also producing significant co-benefits. Examples of co-benefits include improvements in air quality and public health, increased climate resilience, opportunities for community recreation, and

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- Communication Strategies for Green Infrastructure
- Equity and Environmental Justice

Printer-Friendly Toolkit

Summary

New from the Adaptation Clearinghouse

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Related Resources

Sort Resources

DOT TIGER Grant Program

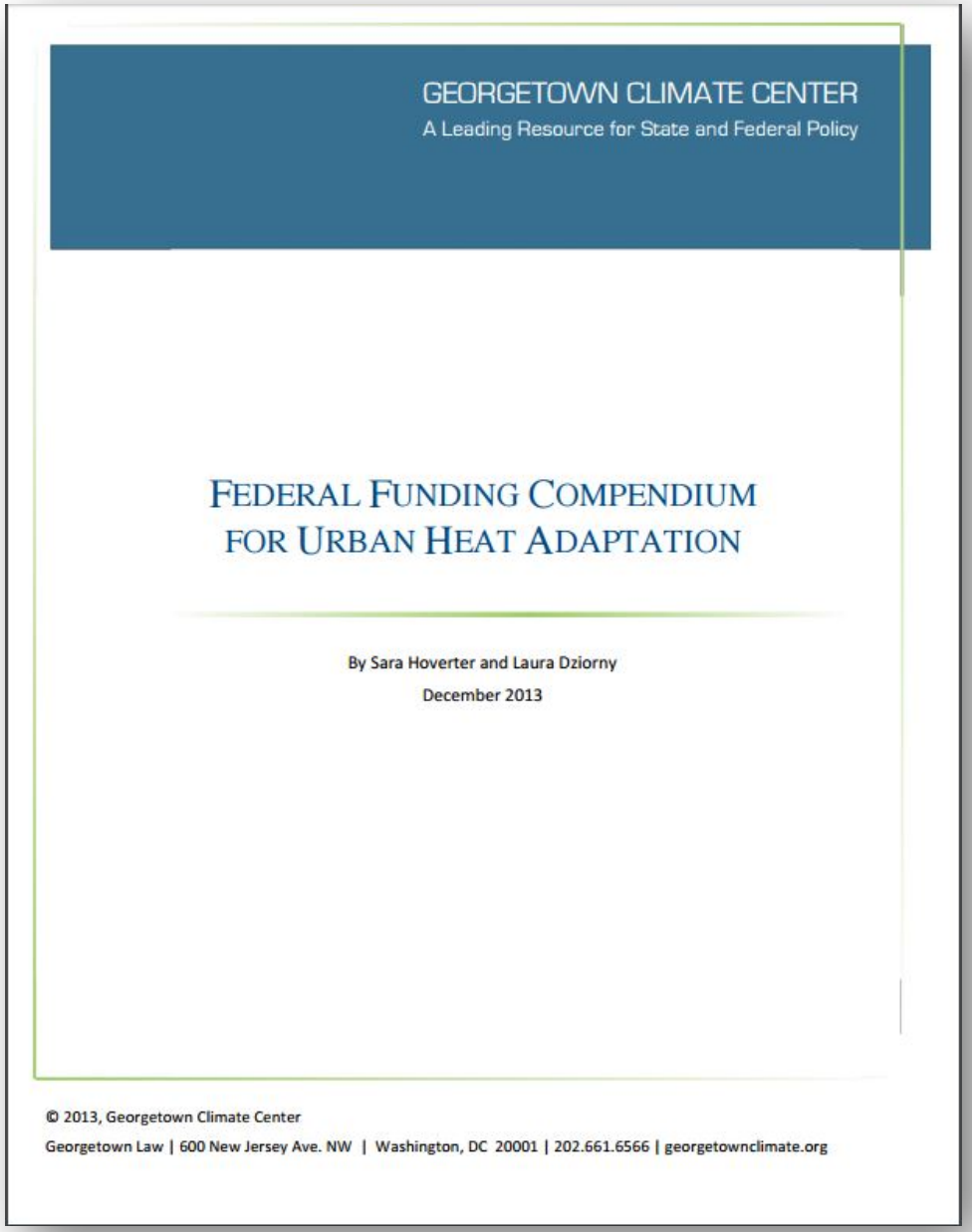
The Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program, administered by the U.S. Department of Transportation (USDOT), has been used to fund green infrastructure projects as part of transportation improvements. TIGER provides funding for investments in road, rail, transit and port projects. TIGER grants have been awarded to projects that included green stormwater management components, including a project in Syracuse, NY.[13] The Connective Corridor project in Syracuse created more bikeable and walkable streets to encourage active transportation and reduce greenhouse gas emissions, and incorporated green infrastructure elements such as tree trenches and porous pavements.

View Resource

Clean Water Act Section 319 Grant Program

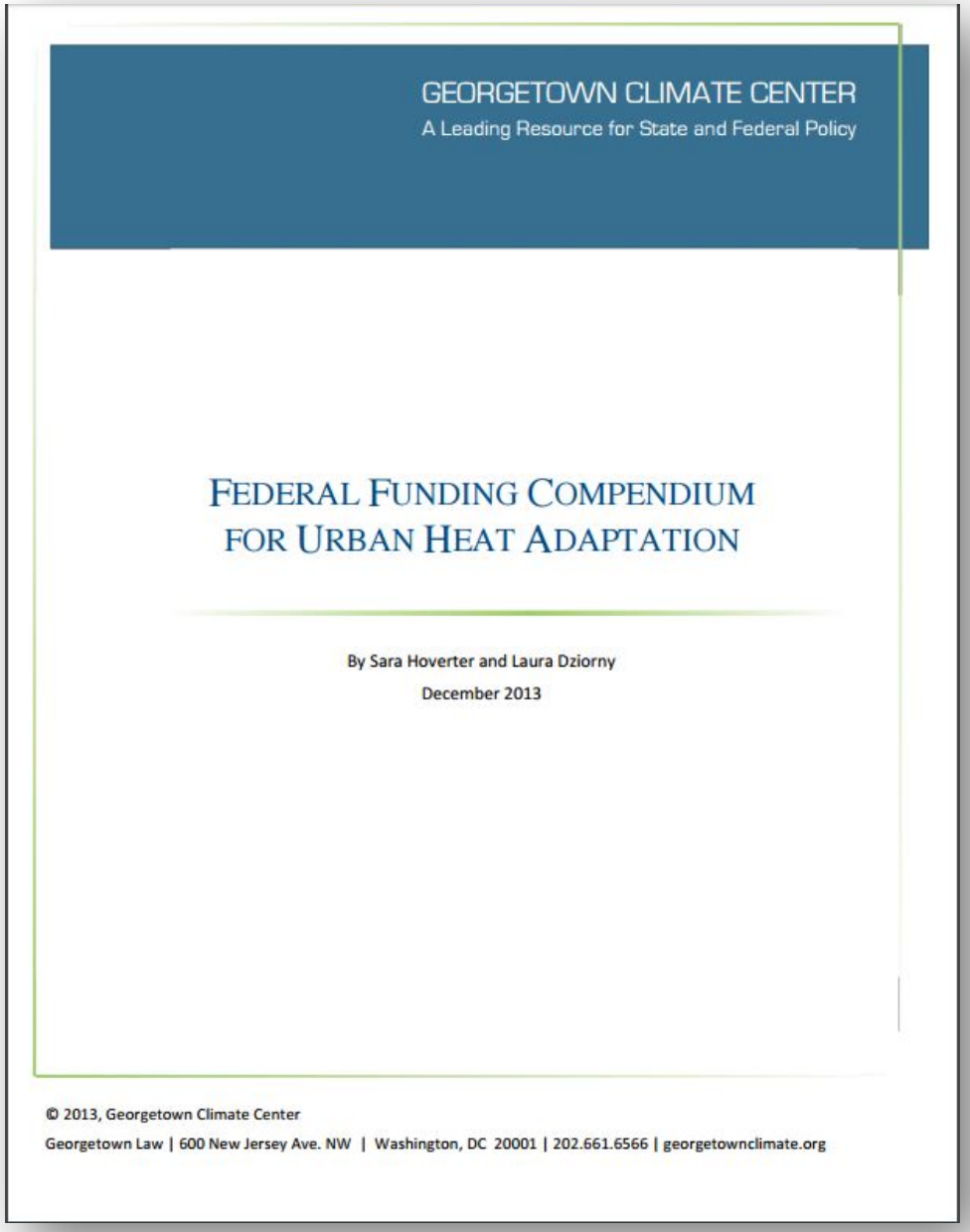
EPA Clean Water Act Section 319 grant funding goes to states to reduce nonpoint source pollution (pollution caused by rainfall running over the ground and carrying pollutants including trash, oil and grease, and fertilizers into nearby waterways). EPA's most recent program guidance[14] recognized the "importance of green infrastructure … in managing stormwater" and supported awarding funding to green infrastructure projects. The District of Columbia Department of Energy and Environment (DOEE) used Section 319 funding to partially fund remediation of the Watts Branch watershed in northeast D.C. Watts Branch suffered from severe erosion and sediment pollution due to frequent flooding. DDOE led a project to restore the stream bed and control flooding using tree and shrub plantings, regrading of the stream bed, and upstream low-impact development practices to manage impervious surface runoff.[15]

View Resource



- Cool roofs
- Green roofs
- Cool pavements
- Urban forestry
- Planning and training

- **Economic Development Programs**
- **Energy Programs**
- **Environment Programs**
- **Public Health Programs**
- **Transportation Programs**



- **Economic Development Programs** (e.g., CDBG, HOME)
- **Energy Programs** (e.g., Weatherization Assistance Program, LIHEAP)
- **Environment Programs** (e.g., Brownfield Cleanup Grants, State Revolving Funds, Wildlife Restoration Program)
- **Public Health Programs** (e.g., National Public Health Improvement Initiative)
- **Transportation Programs** (e.g., Transportation Alternatives)

Thank You!

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www.adaptationclearinghouse.org
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