



@SJ\_Program  
#SustainableStateNJ

# Resilient Inland and Coastal Communities: Actions to Take Today!



2016 NEW JERSEY SUSTAINABILITY SUMMIT



# Sustainable Jersey Resiliency Program

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*“To help municipalities strengthen their resiliency to the impacts of climate change.”*

- Research and Analysis
- Develop New Tools, Resources and Standards
- Outreach and Education
- Municipal Technical Assistance
- Monitor and Track Municipal Progress
- Network and Collaboration with Partners and the SJ Climate Adaptation Task Force



# Resilient Coastal Communities Initiative



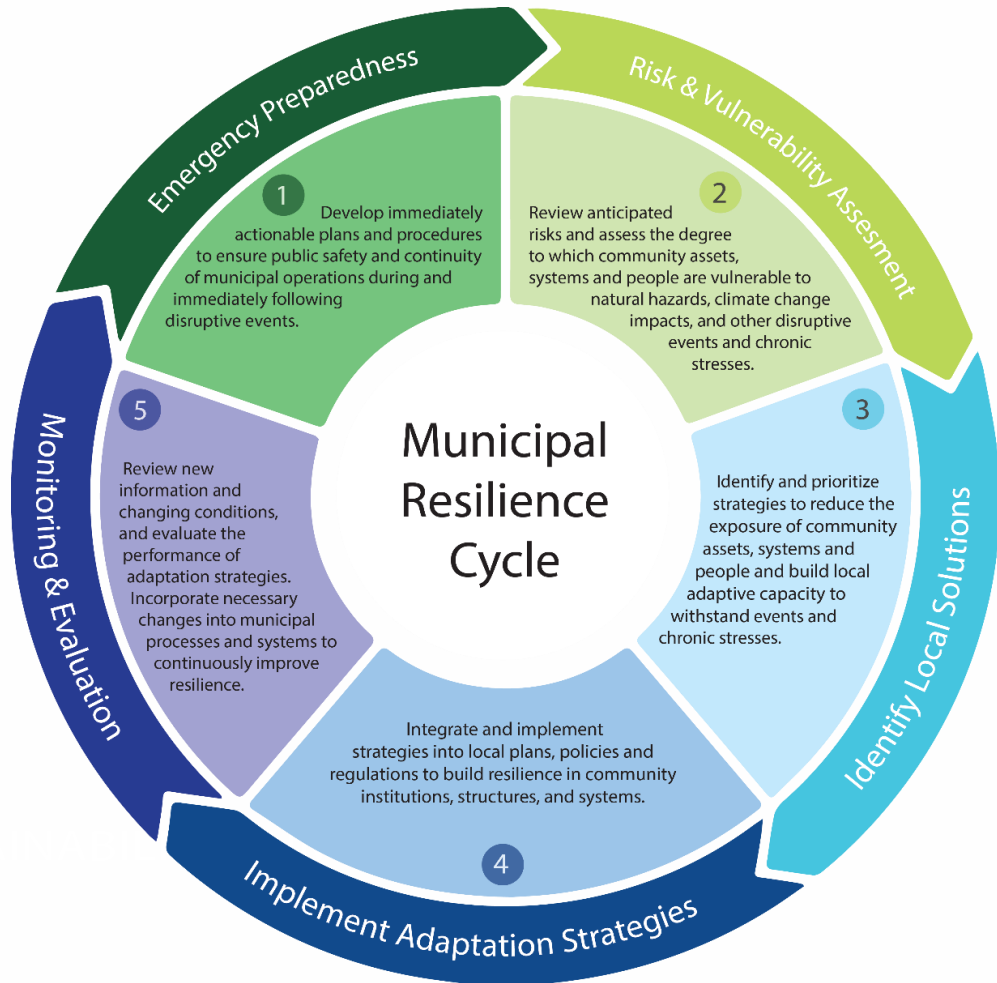
NJ Climate Adaptation Alliance





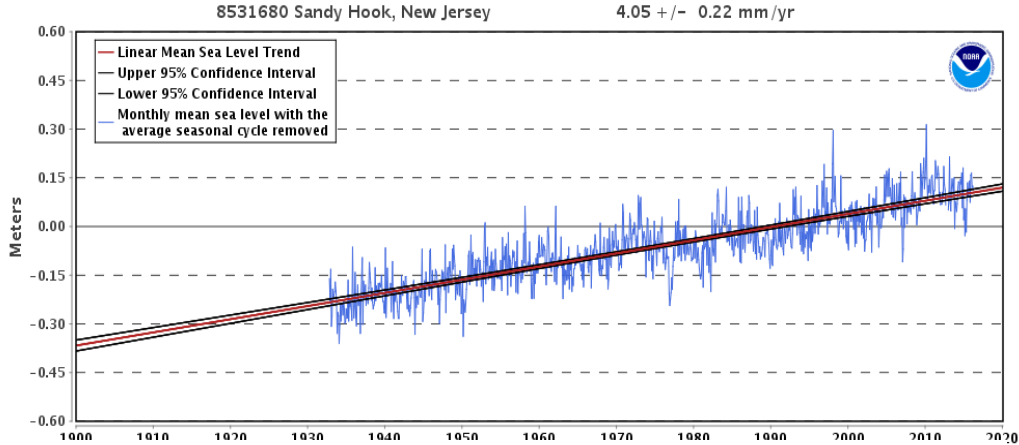
# Municipal Resilience Cycle

***Municipal resilience*** is the ability of a community to adapt and thrive in the face of extreme events and stresses.

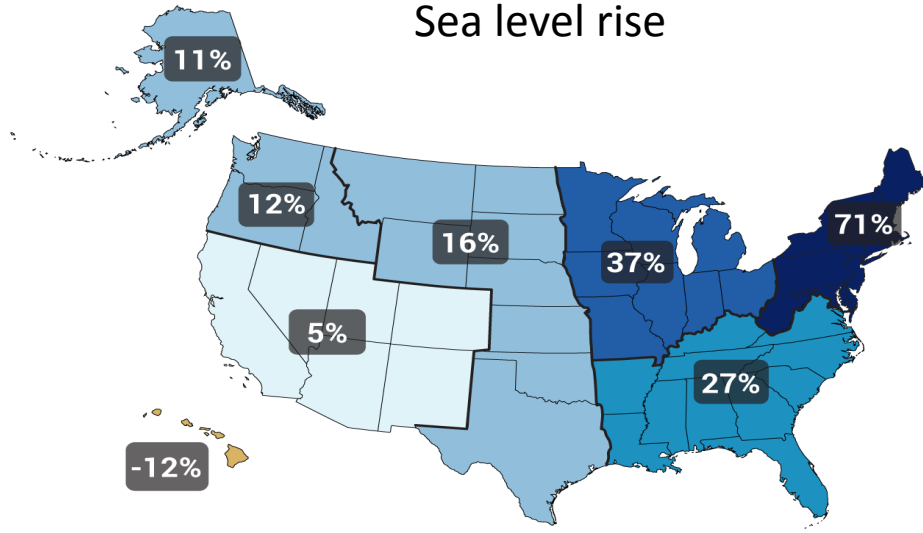




# NJ Climate Change Impacts



Sea level rise



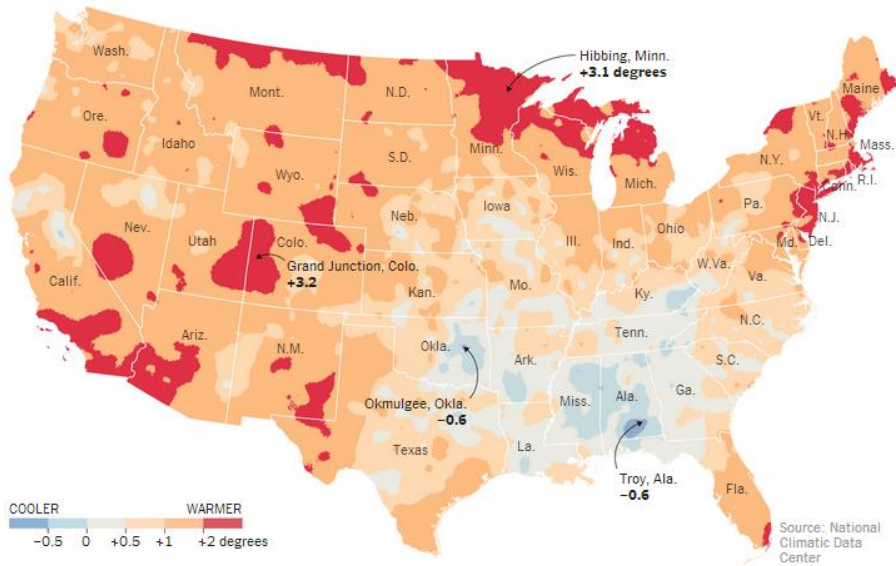
Extreme Seasonal Precipitation



Extreme Storm Events



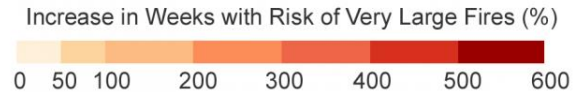
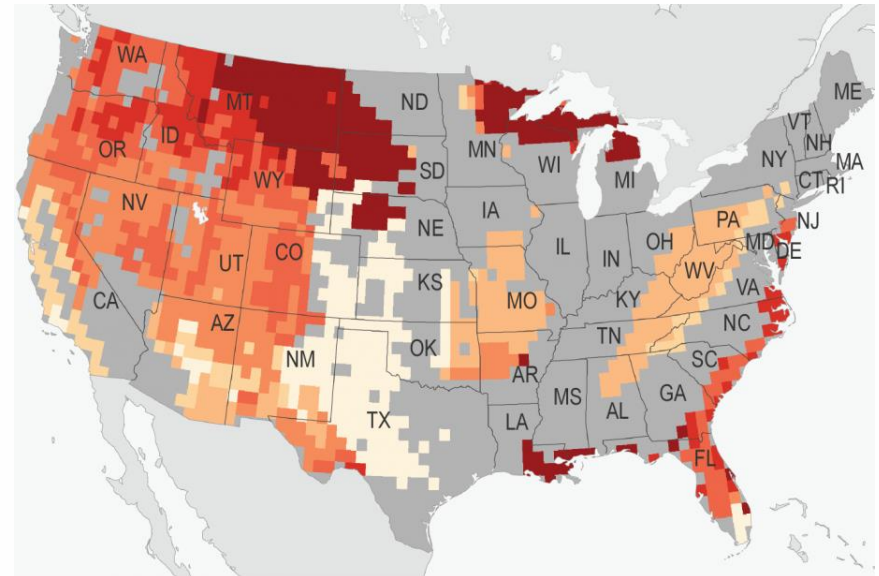
# NJ Climate Change Impacts



## Rising Temperatures

1991-2012 average temperature compared with 1901-1960 average

## Rising Temperatures



## Periods of Drought



# PRESENTERS

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**Nicholas Angarone**, AICP, PP, *Supervisor, New Jersey Coastal Management Program*, Office of Coastal and Land Use Planning, NJ Department of Environmental Protection

**Kelly Boyd**, *Access and Functional Needs Planner*  
New Jersey Office of Emergency Management

**Jason Grabosky**, Ph.D., *John and Eleanor Kuser Faculty Scholar in Urban Forestry*  
Rutgers School of Environmental and Biological Sciences

**Nathaly Agosto Filión**, *Resiliency Manager*  
Sustainable Jersey and Sustainability Institute at TCNJ

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**Linda Weber**, AICP, PP, *Director, Resiliency Program* (moderator)  
Sustainable Jersey and Sustainability Institute at TCNJ

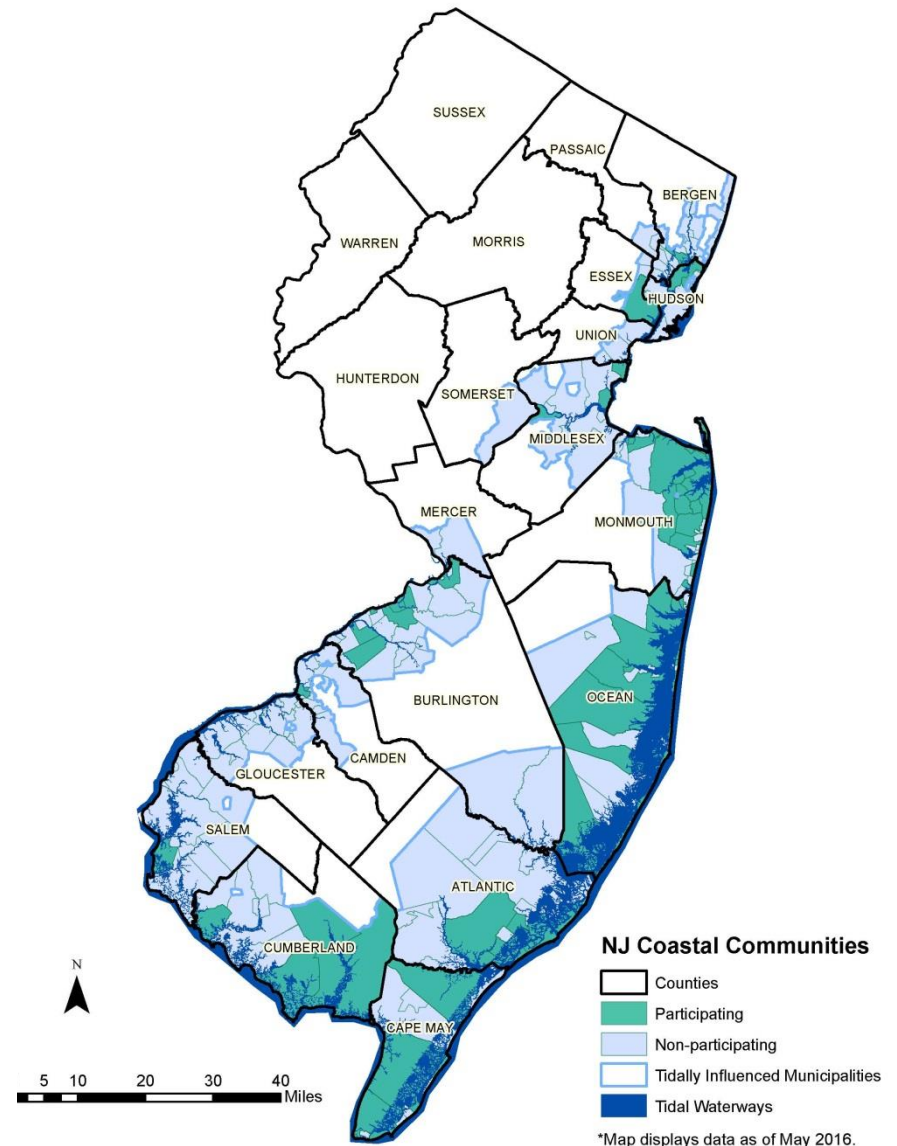
# **New Jersey Coastal Management Program Resiliency Planning Tools**



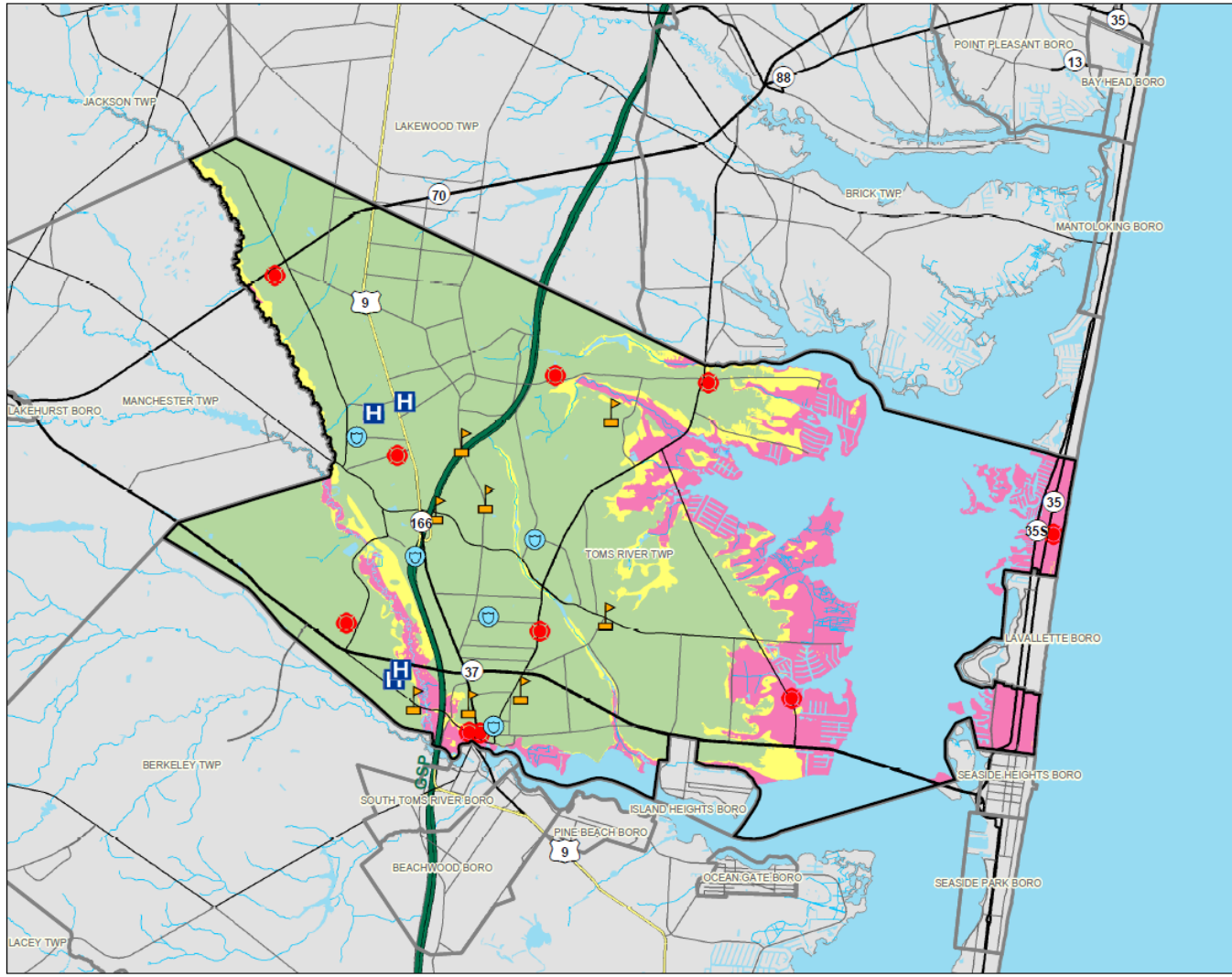


# Resiliency Planning Projects

- Coastal Community Vulnerability Assessment & Mapping Protocol (NOAA – CZM)
- NJ Resilient Coastal Communities Initiative (NOAA - CRest)
- Building Ecological Solutions to Coastal Community Hazards (DOI – NFWF)
- NJ Fostering Regional Adaptation through Municipal Economic Scenarios (NOAA - RCRG)
- Sustainable + Resilient Coastal Communities (NOAA – CZM)
- Municipal Coastal Vulnerability Assessments (NOAA – CZM)
- Regional Resiliency Grants Program (HUD – NDR)



# Pre-Sandy



## Coastal Vulnerability Index Toms River Township, Ocean County

The Coastal Vulnerability Index (CVI) was developed to help assess the vulnerability and resiliency of New Jersey coastal communities to natural hazards. While storm surge inundation and sea level rise are the primary factors influencing coastal flooding threats, those factors alone may not fully define the risk of coastal communities to both chronic and episodic hazards. As a layer combining data on flood zones, geomorphology, slope, soil erosion, soil drainage, soil flooding frequency, and ground elevation, as well as on storm surge inundation and water elevation changes, the CVI may provide a more complete picture of the flood hazard potential of coastal communities. In this map, the index is used to define three levels of relative vulnerability; Lower, Moderate, and Higher. More risk levels could be used, or break points between levels adjusted, as additional site specific data are examined. This process of fine tuning the CVI will be done by working with individual municipalities through a grant program aimed at improving the resiliency plans of New Jersey's coastal communities.

**Legend**

<b>CVI 2050</b>	<b>Facilities</b>	<b>Transportation</b>
Lower	Fire Stations	Interstates
Moderate	Law Enforcement	US Highways
Higher	Medical Facilities	NJ Highways
Major Water	Rail Station	Toll Routes
Water Features	Schools	500 Routes
Streams		County Routes
Waterbodies		Passenger Rail
Municipalities		

The CVI spatial data set is for informational purposes only. It is a preliminary screening layer for use in conjunction with other community specific data in the development of effective coastal management plans. It is not a final layer defining the actual vulnerability of any community to flooding or storm events, either for present day conditions, or those predicted under sea level rise scenarios. It was generated using the best available information, but has not had rigorous review of its use for modeling site specific coastal conditions. Those reviews may require additional contributing and final generated data sets to be edited to more accurately represent actual conditions. The review and refinement of the data set should be done in conjunction with a wide range of partners, including local municipal experts. Additional data sets not used to prepare the CVI will also be needed to refine the outputs and tailor the data to the specific characteristics of individual communities.

0 0.3 0.6 1.2 1.8 2.4 3 Miles

1 inch equals 1.5 miles

September 2014

# Getting to Resilience



<http://www.prepareyourcommunitynj.org>

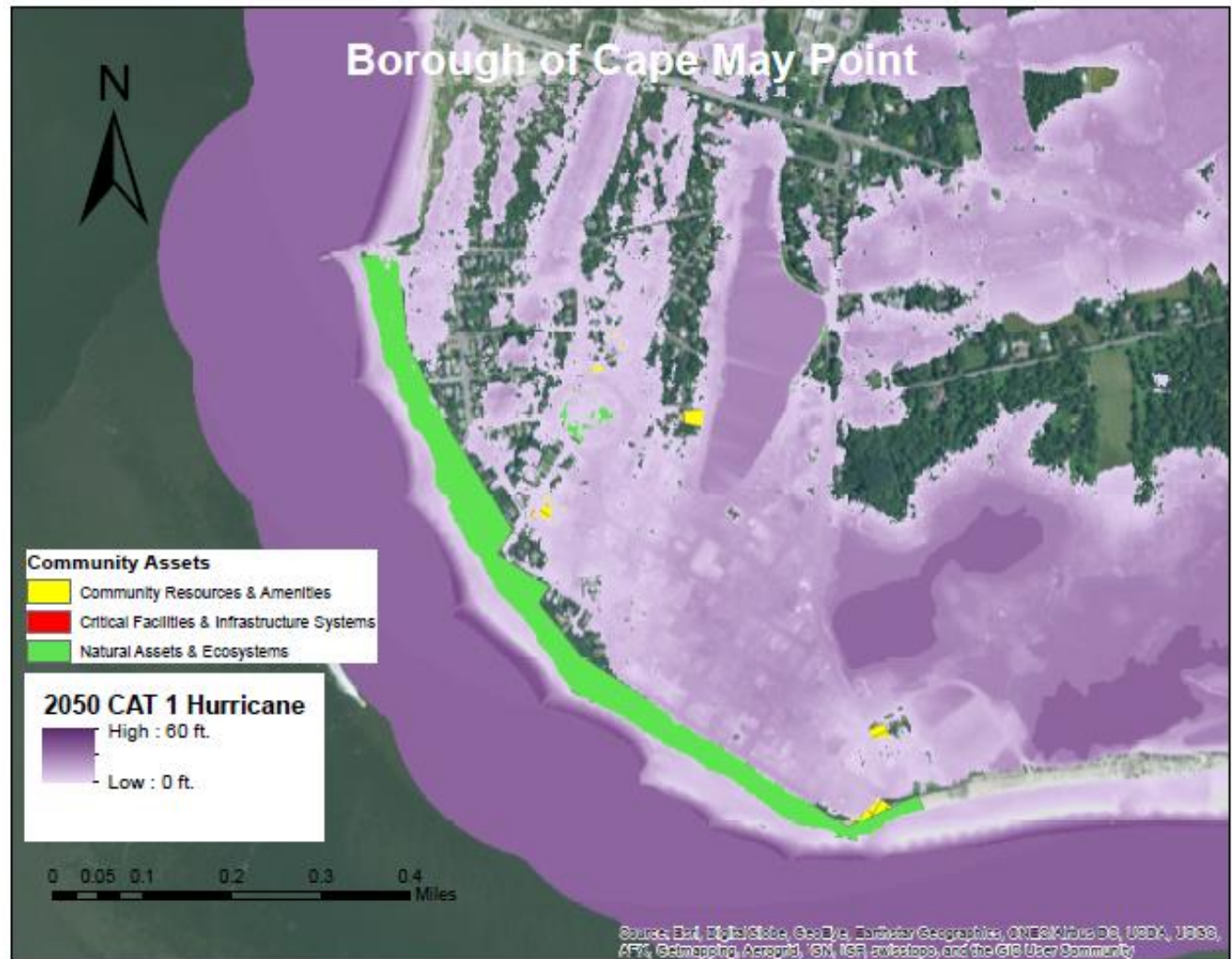
# NJ ADAPT

**RUTGERS**

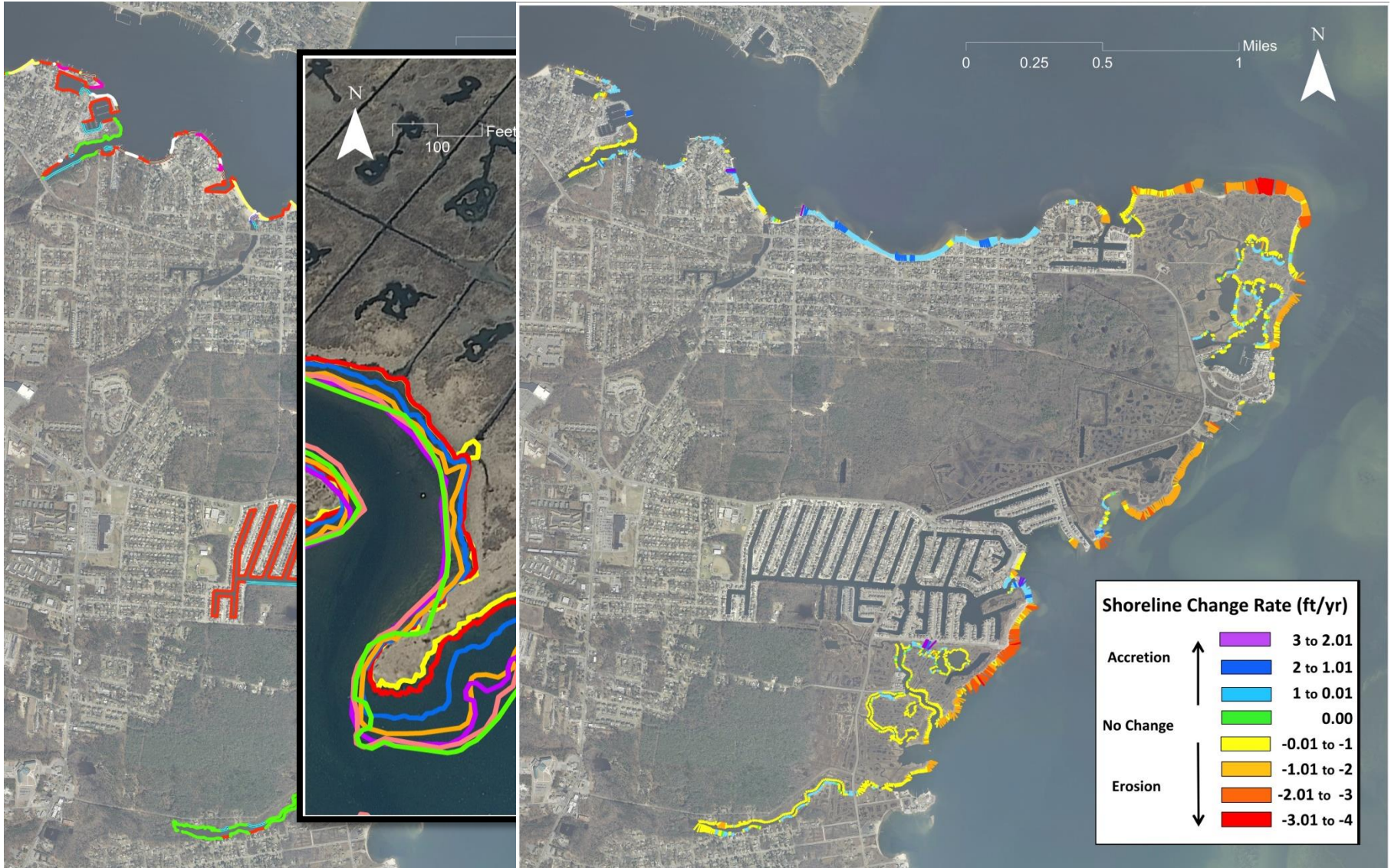
Edward J. Bloustein School  
of Planning and Public Policy

<http://www.njadapt.org/>

# Coastal Vulnerability Assessment



# Shoreline Inventory and Assessment



# Living Shorelines Program



Mitigating Shoreline Erosion along the Hudson River Estuary's Sheltered Coasts

Alternative 1

## Engineering Guidelines for Living Shorelines Projects

### What is a Living Shoreline?

A living shoreline is a shoreline stabilization or habitat restoration approach which involves the use of both natural and man-made materials to achieve its objectives. While originally applied only to marsh sill projects, the term "living shoreline" has evolved to take on a broader meaning which encompasses a wide variety of projects that incorporate ecological principles into engineering design.

### Why Develop Guidance?

This guidance was developed to provide engineering consultants, regulators, and private property owners with a consistent framework to ensure that living shorelines projects built within the State of New Jersey are designed, permitted, and construct-

ed in a consistent manner using the best available information. The guidance is being developed at a critical time when living shorelines projects are becoming an increasingly popular alternative for stabilizing shorelines and restoring natural habitat. In July 2013, the State of New Jersey officially adopted Coastal General Permit 29 (N.J.A.C. 7:27-7.29) which was written to encourage the use of innovative living shore-

### Approach

The approach taken in developing the engineering guidelines was to identify the set of factors which most frequently play a critical role in the success or failure of a living shoreline project, and then to outline a meth-



	Marsh Sill	Breakwater	Revetment	Living Reef	Reef Balls
System Parameters					
Erosion History	Low-Med	Med-High	Med-High	Low-Med	Low-Med
Sea Level Rise	Low-Mod	Low-High	Low-High	Low-Mod	Low-Mod
Tidal Range	Low-Mod	Low-High	Low-High	Low-Mod	Low-Mod
Hydrodynamic Parameters					
Wind Waves	Low-Mod	High	Mod-High	Low-Mod	Low-Mod
Wakes	Low-Mod	High	Mod-High	Low-Mod	Low-Mod
Currents	Low-Mod	Mod-High	Mod-High	Low-Mod	Low-Mod
Ice	Low	Low-Mod	Mod-High	Low	Low-Mod
Storm Surge	Low-High	Low-High	Low-High	Low-High	Low-High
Terrestrial Parameters					
Upland Slope	Mild-Mod	Mild-Steep	Mild-Steep	Mild-Steep	Mild-Steep
Shoreline Slope	Mild	Mild-Steep	Mild-Steep	Mod	Mild-Steep
Nearshore Slope	Mild	Mild-Steep	Mid-Steep	Mild-Mod	Mild-Mod
Offshore Depth	Shallow-Mod	Mod-Deep	Shallow-Deep	Shallow-Mod	Shallow-Mod
Soil Bearing	Mod	Mod-High	Mod-High	Mod	Mod-High
Ecological Parameters					
Water Quality	Poor-Good	Poor-Good	Poor-Good	Good	Poor-Good
Soil Type	Any	Any	Any	Any	Any
Sunlight Exposure	Mod-High	Low-High	Low-High	Low-High	Low-High

### Relevant Parameters

#### System Parameters

- Erosion History
- Sea Level Rise
- Tidal Range

#### Hydrodynamic Parameters

- Wind Waves
- Wakes
- Currents
- Ice
- Storm Surge

#### Terrestrial Parameters

- Upland Slope
- Shoreline Slope
- Nearshore Slope
- Offshore Depth
- Soil Bearing Capacity

#### Ecological Criteria

- Water Quality
- Soil Type
- Sunlight Exposure

#### Additional Considerations

- End Effects
- Existing Ground Conditions
- Debris Impact
- Project Monitoring



# Resiliency Solutions

## ▲ FLOOD DAMAGE PREVENTION ORDINANCE

**ACTION:** Local Planning and Land Use Regulations

**DESIRED OUTCOME:** Flood Hazard Risk Reduction; Reduced Vulnerability to Community Assets and Tax base



Figure X. Elevated home in Manasquan, Source: Patti Sapone, The Star-Ledger

All communities that wish to participate in or remain in good standing with the National Flood Insurance Program (NFIP) must adopt and enforce a flood damage prevention ordinance. The aim of this ordinance (and more broadly, the establishment of the federally backed insurance program) is to reduce future flood risks to new construction in flood prone areas and provide protection to property owners against potential losses (FEMA, 2011).

The New Jersey Department of Environmental Protection (NJDEP), Bureau of Dam Safety and Flood Control provides model flood damage prevention ordinances that are designed to meet the minimum standards established by the NFIP and tailored to meet the needs of an individual community. However, communities may incorporate more restrictive measures that go above and beyond the federal standards. Because of ever increasing coastal hazards and the uncertainty in the affordability of flood insurance premiums in the near future

(due to a gradual shift by the federal government away from subsidized to more risk-based insurance rates), communities should assess whether it is appropriate to incorporate more restrictive measures in their local flood prevention ordinances. By incorporating measures that exceed the federal standards and through participation in the Community Rating System (CRS), communities may qualify for reduced insurance premiums (NJAFM, 2015).

One opportunity for communities to incorporate more restrictive standards in their flood prevention ordinances is to increase elevation or "freeboard" standards for new and reconstructed structures within floodprone areas. Elevating homes above the base flood elevation (BFE) or providing freeboard often compensates for many of the unknown factors (such as wave action, debris-blocked culverts or bridges, or development in the floodplain) that could contribute to an increase in flooding levels within a community (FEMA, 2014).

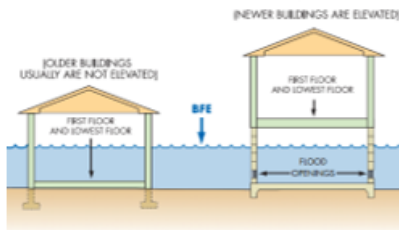


Figure X. Elevated structures and the BFE Source: NJAFM, 2015

Governor CHRIS CHRISTIE • Lt. Governor KIM GUARIGLIO  
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STATE OF NEW JERSEY  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 LAND USE MANAGEMENT

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 Contact OCLUP  
 Sustainable + Resilient Coastal Communities  
 Living Shorelines  
 Division of Land Use Regulation

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION - OFFICE OF COASTAL AND LAND USE PLANNING

The [Office of Coastal and Land Use Planning](#) reviews and administers New Jersey's Coastal Management Program and is responsible for development and implementation of various activities including sustainable and resilient coastal community planning, ocean planning, and municipal public access planning. The Office also coordinates the Department's Living Shoreline program. **Manager: Elizabeth Semple, Telephone: 609-984-0058**

### Coastal Management Program

The [Coastal Zone Management Program \(CZMP\)](#) is part of the [National Coastal Zone Management Program](#) which works to address some of today's most pressing coastal issues, including sustainable and resilient coastal community planning, climate change, ocean planning, and planning for energy facilities and development. It is a voluntary partnership between the federal government and U.S. coastal and Great Lakes states and territories authorized by the Coastal Zone Management Act (CZMA) of 1972 and administered by NOAA. In New Jersey it is comprised of a network of offices within the Department of Environmental Protection that serve distinct functions yet share responsibilities that influence the state's coast. An important aspect of the Program is ensuring that coastal resources and ecosystems are conserved as a vital part of local, state and federal efforts to enhance sustainable coastal communities.

NEW JERSEY RESILIENT COASTAL COMMUNITIES INITIATIVE

Planning Ocean Planning Public Access Assessments  
 Ecological Solutions Projects Coastal Atlas Environments



# TNC Resiliency Explorer



A screenshot of the TNC Resiliency Explorer web application. The browser address bar shows "maps.coastalresilience.org/newjersey/#". The interface includes a search bar, a "Restoration Explorer" panel with dropdowns for "Ocean County" and "Tuckerton Borough", and a "Which Shoreline Enhancement Techniques Apply Here?" popup. The popup lists: "Nature-Based Living Shoreline: No - 4 Parameters Met", "Living Reef Breakwater: Yes - 6 Parameters Met", "Marsh Sill: Yes - 6 Parameters Met", "Breakwater: Yes - 6 Parameters Met", "Ecologically Enhanced Revetment: Yes - 7 Parameters Met", and "Total Techniques: 4". The background is an aerial map of a coastal area with a shoreline highlighted in yellow.

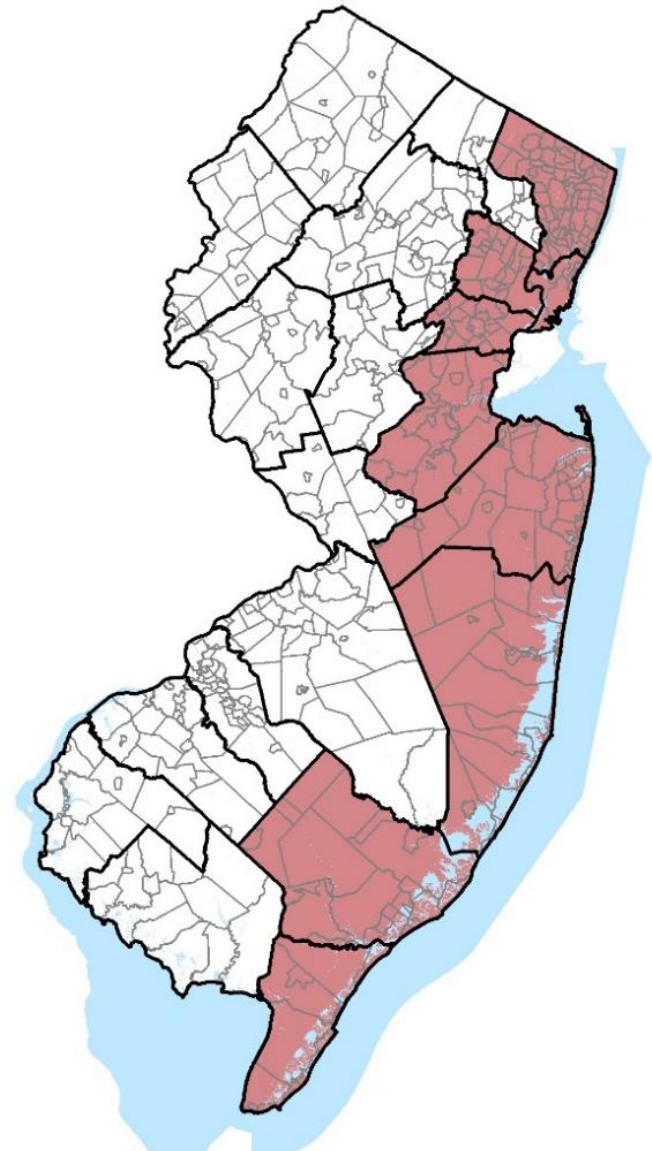
<http://coastalresilience.org/project-areas/new-jersey-introduction/>

A screenshot of the TNC Resiliency Explorer web application showing a map with a color-coded shoreline. The map legend indicates the number of tidal marsh shoreline edge techniques that are applicable, ranging from 1 (red) to 7 (dark green). The map shows a shoreline highlighted in yellow and green. The interface includes a "Risk Explorer" panel, a "Project Information" dropdown, and a "Map Legend" popup. The background is an aerial map of a coastal area with a shoreline highlighted in yellow and green.

# HUD Natural Disaster Resilience Competition

## NDR Regional Resiliency Grants Program

- 9 Sandy-impacted counties
- 2 Phase Program
  - Regional Planning
  - Implementation
- Based on protocol and tools





# **Resilient Inland & Coastal Communities:** ***Actions to Take Today!***

Presented by:  
Kelly Boyd, Access & Functional Needs Planner  
NJ Office of Emergency Management

# Overview of Register Ready

**Register Ready** enables New Jersey residents with disabilities or access and functional needs (DAFN) and their families, friends, caregivers and associates to enter relevant personal information into a database so emergency responders can enhance plans related to serving those with DAFN before, during or after a disaster or other emergency.



# Overview of Register Ready

- ▶ Register Ready is a free, voluntary and confidential web-based program designed to identify the needs of people who have disabilities or access and functional needs and may have difficulty getting to safety during an emergency.
- ▶ The information collected is not available to the public. It is held securely and only used for emergency response and planning.

# How to Register

People with disabilities or access and functional needs (or their caregivers) are encouraged to register by:

- going to [www.registerready.nj.gov](http://www.registerready.nj.gov)
- calling New Jersey's toll-free 2-1-1 telephone service.
  - Operators will register callers, offer free translation, and provide TTY services for those with hearing impairments.



# The Pros & Cons of Register Ready

- ▶ Emergency managers view DAFN registries from varying perspectives. Concerns include:
  - managing high consumer expectations
  - an increased sense of confidence about being able to track individuals who require specific assistance in their communities during adverse conditions

# The Pros & Cons of Register Ready

Registries can also serve as a starting point for:

- building a dialogue about emergency preparedness with individuals who have disabilities or access and functional needs.
- establishing a rapport with stakeholder groups who work with at-risk populations.





# Accessing Registry Data

- ▶ The State AFN Planner has access to the registry and can grant access.
- ▶ Each County has an AFN Coordinator who can access the registry.
  - This person can give permission to other county employees to assist with registry matters.



# Utilizing the Registry During Emergencies

Those who have access can search the registry and export data. Data can be used to create lists for:

- Reverse 911 alerts
- Emergency managers or CERT members to use to call or go door-to-door to warn residents of serious events or to conduct wellness checks
- Conducting follow up assessments/surveys

# Promoting Register Ready

Registry Ready has been promoted in a variety of ways:

- at events
  - on billboards
  - in PSAs (radio spots)
  - on social media and websites
  - in Township mailers/tax bills
- Brochures are available in English and Spanish at [http://www.ready.nj.gov/plan/special\\_needs7.html](http://www.ready.nj.gov/plan/special_needs7.html) or by calling NJOEM.



# Similar Registries



Some counties and municipalities have implemented DAFN registries to aide law enforcement and emergency services personnel.

# Similar Registries

## Monmouth County Special Needs Registry

- voluntary database open to all citizens with disabilities who reside, attend school or are employed in Monmouth County
- helps police officers and emergency services personnel better assist registrants with DAFN in the event of an emergency by providing first responders with vital information regarding the registrant's disability, emergency contact information, a physical description and a current photograph of the registrant

# Other Considerations

Registries are a great tool to help emergency managers enhance services to community members, but they are just part of the picture.

- ▶ Planning, emphasis on personal preparedness, and the engagement of stakeholder groups that work with disabilities or access and functional needs populations are all essential tasks when it comes to addressing the needs of vulnerable populations.

# QUESTIONS OR COMMENTS?



**Contact:**

***Kelly Boyd***

**(609) 963-6971**

**[lppboydk@gw.njsp.org](mailto:lppboydk@gw.njsp.org)**

# RUTGERS

New Jersey Agricultural  
Experiment Station

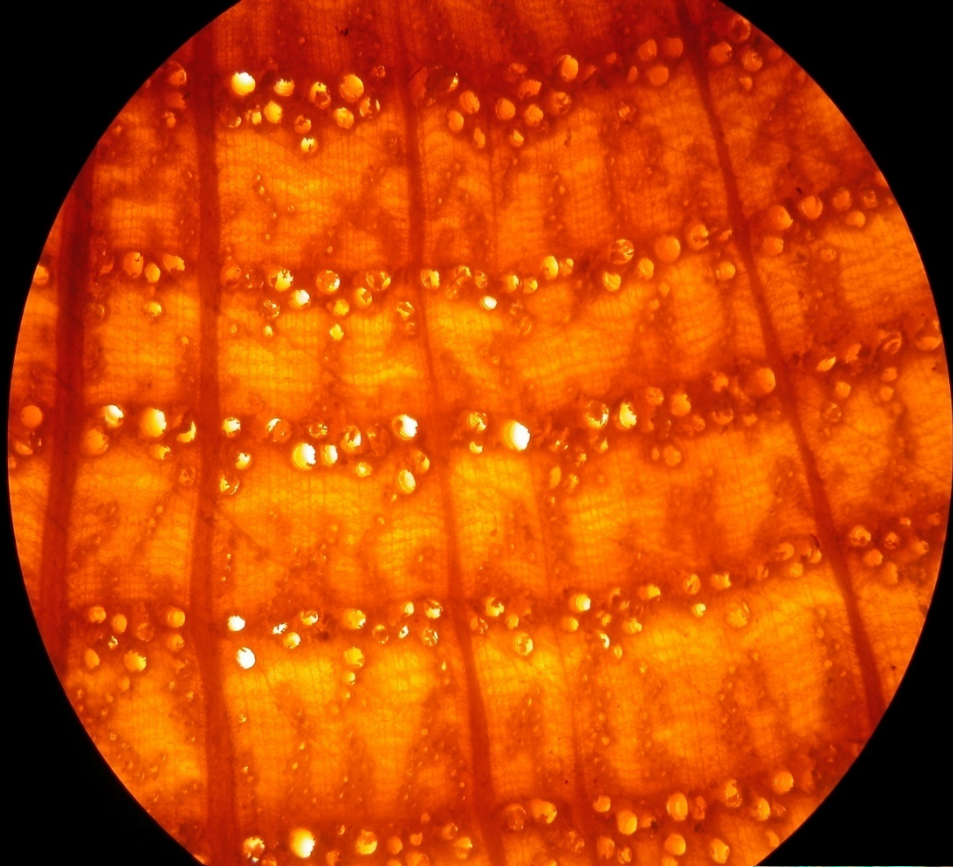
Actions to take today: Tree stuff

Jason Grabosky  
Urban Forestry Program

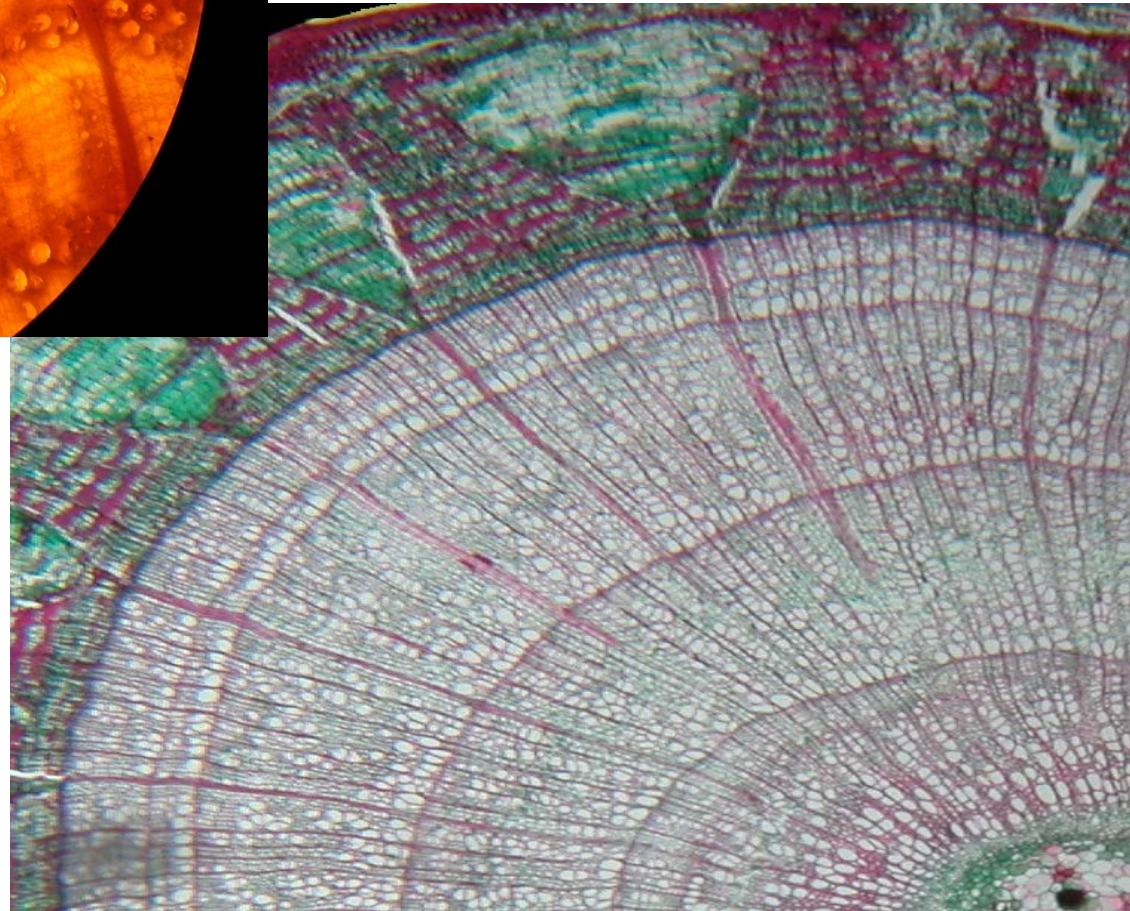


# SO, what are the challenges to a resilient urban canopy?

- Changing environments
- As environments change, fitness of species change
- Diseases and insect pests often move faster than natural plant migrations
- Pests hit stressed plants first
- Choosing the future plant community direction, or biasing to future fitness might be an option
- Forced, or synthetic, diversification to limit losses a strategy



The tree must constantly balance and adapt to its environment.  
STRESS is ANY time the environment changes faster than the plant can grow



The balance is reflected in anatomy, morphology and physiology within the limits of physical and chemical law.

The usual currencies are carbon and water

USDA United States Department of Agriculture Forest Service Northern Research Station

Forest Service Home About the Agency Contact the National Office

You are here: Northern Research Station Home / Tools & Applications / Climate Change Atlas

### Climate Change Atlas

Explore the Climate Change Tree Atlas

Explore the potential habitat shifts for 134 tree species

Search for Trees & Birds:  
Enter a common or scientific name  
[List of Trees](#) | [List of Birds](#)

**About the Climate Change Atlas**  
The Climate Change Atlas documents the current and possible future distribution of **134 tree species** and **147 bird species** in the Eastern United States and gives detailed information on environmental characteristics defining these distributions. Please be sure to read the **warnings, cautions and questions**. You can also **browse and view the previous version of the Tree Atlas**.

**Climate Change Atlas Videos**  
Quick Start Guide  
An Introduction to the Climate Change Atlas: How does it work?  
An Overview of the Climate Change Atlas

## Future Climate Change for the Northeast ([www.climatechoices.org/ne](http://www.climatechoices.org/ne))

California . Northeast  
**Climate Choices**

A project of the Union of Concerned Scientists

**IMPACTS** ▶ Dramatically Changing Climates

- ▶ Rising Temperatures
- ▶ Dramatically Changing Climates
- ▶ Extreme Heat in Our Cities
- ▶ Consequences Across the Region

**SOLUTIONS**

- ▶ Reducing Emissions
- ▶ Regional Greenhouse Gas Initiative

**ACTION**

- ▶ Take Action
- ▶ Tell a Friend
- ▶ My Climate Choices

**RESOURCES**

- ▶ Northeast Report
- ▶ News & Updates
- ▶ Links

Higher Emissions  
Lower Emissions  
YEAR: 2010-39 2040-69 2070-99

**Summer in the Tri-state Region**, which includes parts of New York, New Jersey and Connecticut, could feel like the typical summer in Savannah, Georgia by the end of the century unless we take action to reduce heat-trapping emissions today.

**Lower-Emissions Scenarios:** a shift away from fossil fuels in favor of clean energy technologies, causing heat-trapping emissions to decline by mid-century

**Higher-Emissions Scenarios:** continued heavy reliance on fossil fuels, causing heat-trapping emissions to rise rapidly over the century

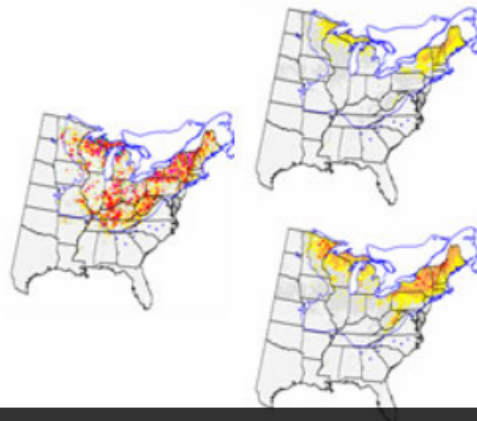
- Temperature highs and lows
- Seasonality and natural ranges within species
- Moisture
- Soils
- Providing context of the urban within the selection based on exaggerated abiotic filters
- Designed wide diversity with a structured evenness in occurrence, with hopes for age stratification over time



You are here: [Northern Research Station Home](#) / [Tools & Applications](#) / Climate Change Atlas

## Climate Change Atlas

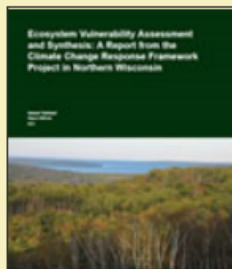
# Explore the Climate Change Tree Atlas



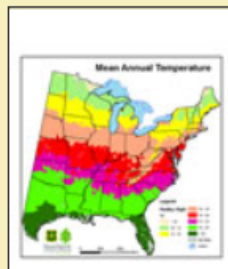
Explore the potential habitat shifts for 134 tree species



### Featured Research



### Combined Species Outputs



### Search for Trees & Birds:

Enter a common or scientific name

[List of Trees](#) | [List of Birds](#)

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### Climate Change Atlas Videos

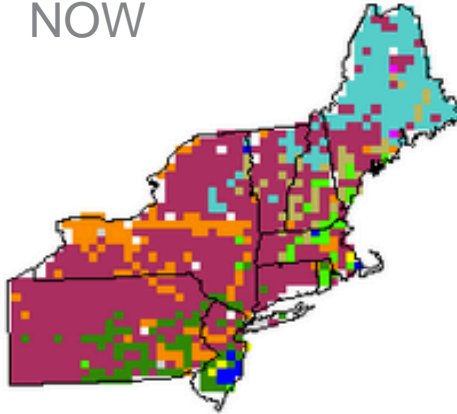
[Quick Start Guide](#)

[An Introduction to the Climate Change Atlas: How does it work?](#)

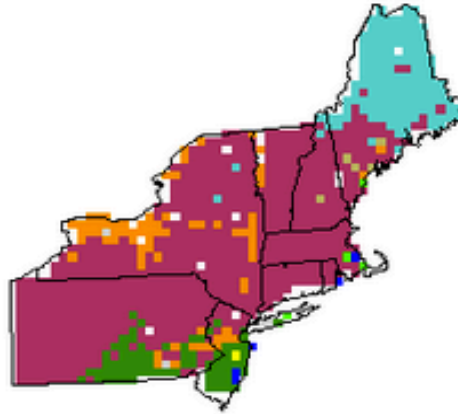
[An Overview of the Climate Change](#)

## Forest Type Changes (4 models)

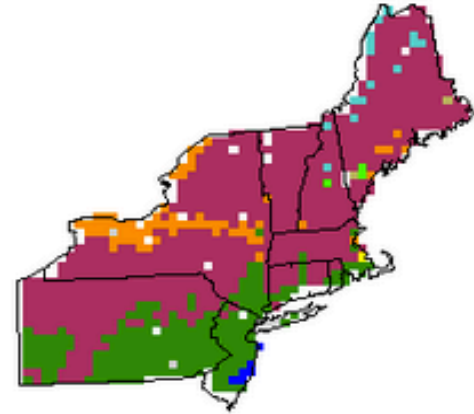
NOW



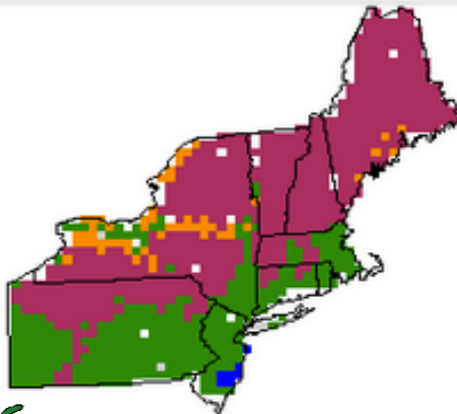
**FIA-Current**



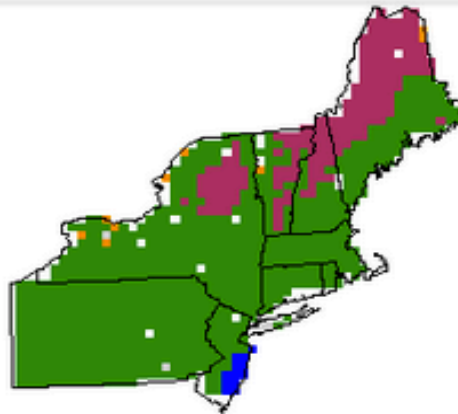
**RF-Current**



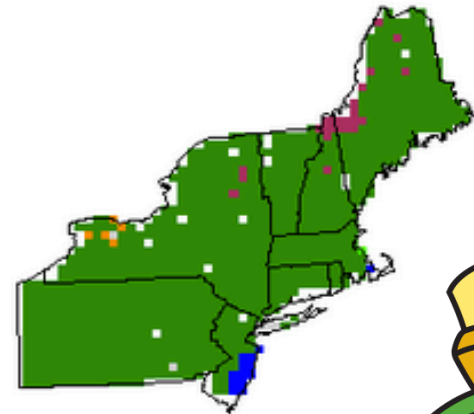
**PCM Lo**



**GCM3Avg Lo**



**GCM3Avg Hi**



**HADLEY HI**

**Forest Types**



# SO, what are the challenges to a resilient urban canopy?

- Changing environments
- As environments change, fitness of species change
- Diseases and insect pests often move faster than natural plant migrations
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- Choosing the future plant community direction, or biasing to future fitness might be an option
- Forced, or synthetic, diversification to limit losses a strategy

# Trees Don't Live Forever

- Replanting for urban canopy in the wake of SPB; EAB; ALB; BLS; SOD.....EIEIO
- Who makes the selection decisions?





- What is the best species for the site?
- How big should trees get?
- What are the sizing/canopy numbers based on?
- How do you design for the future unknowns?
- Is this for the environment, aesthetics, or sales?



**If it was that easy, I'd still have hair**

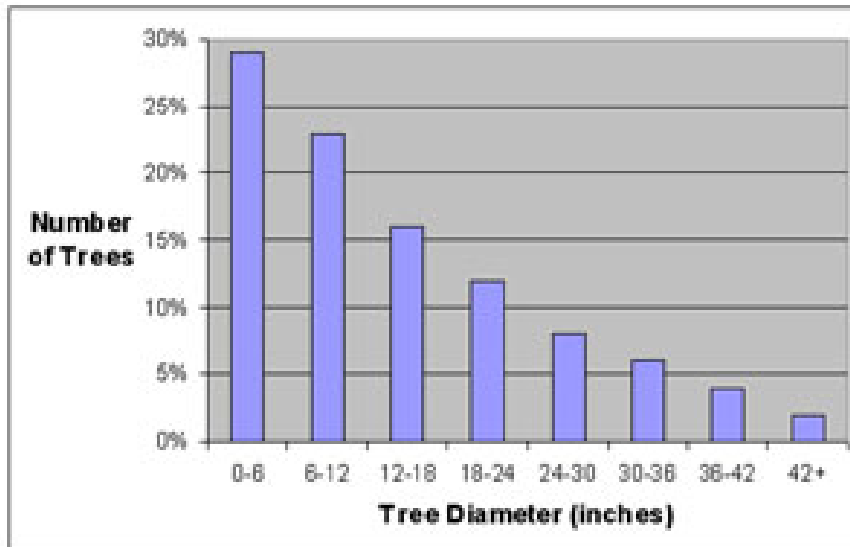


## A series of steps

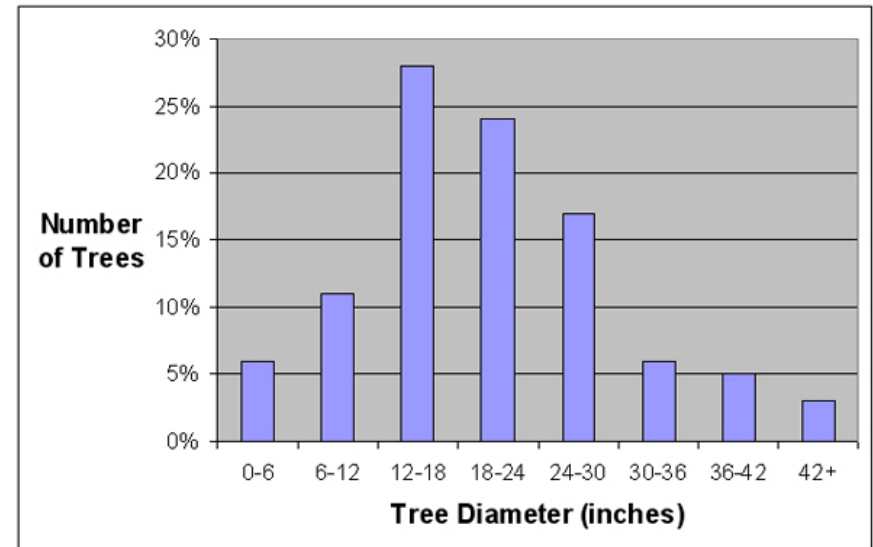
- You cannot manage/plan/communicate effectively without an inventory
- So go out and define what you want to manage// and count them.
- Genus/species
- Location
- Size
- Gaps

# The many uses of inventory data

## Relative Age Distribution (Cornell University)



If you are planting trees regularly, the trend line should be relatively even, tapering off at the larger (older) sizes.



If your inventory shows few small diameter trees you may want to concentrate on planting new trees until size classes even off.

# The many uses of inventory data

i-Tree Streets - Sample Project

File Input View Reports Tools Help

Report By:  Species (Citywide)  Zone  Street

Report Type: Summary

Export Print

Public Private All

1 /2

Main Report

Business Objects

Davis Page 1 of 2

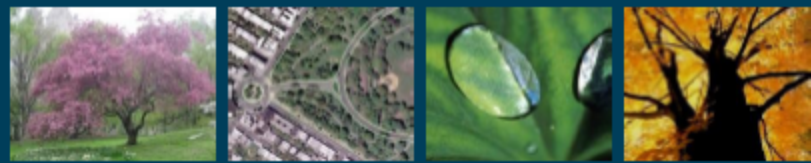
**Population Summary of Public Trees**

10/20/2014

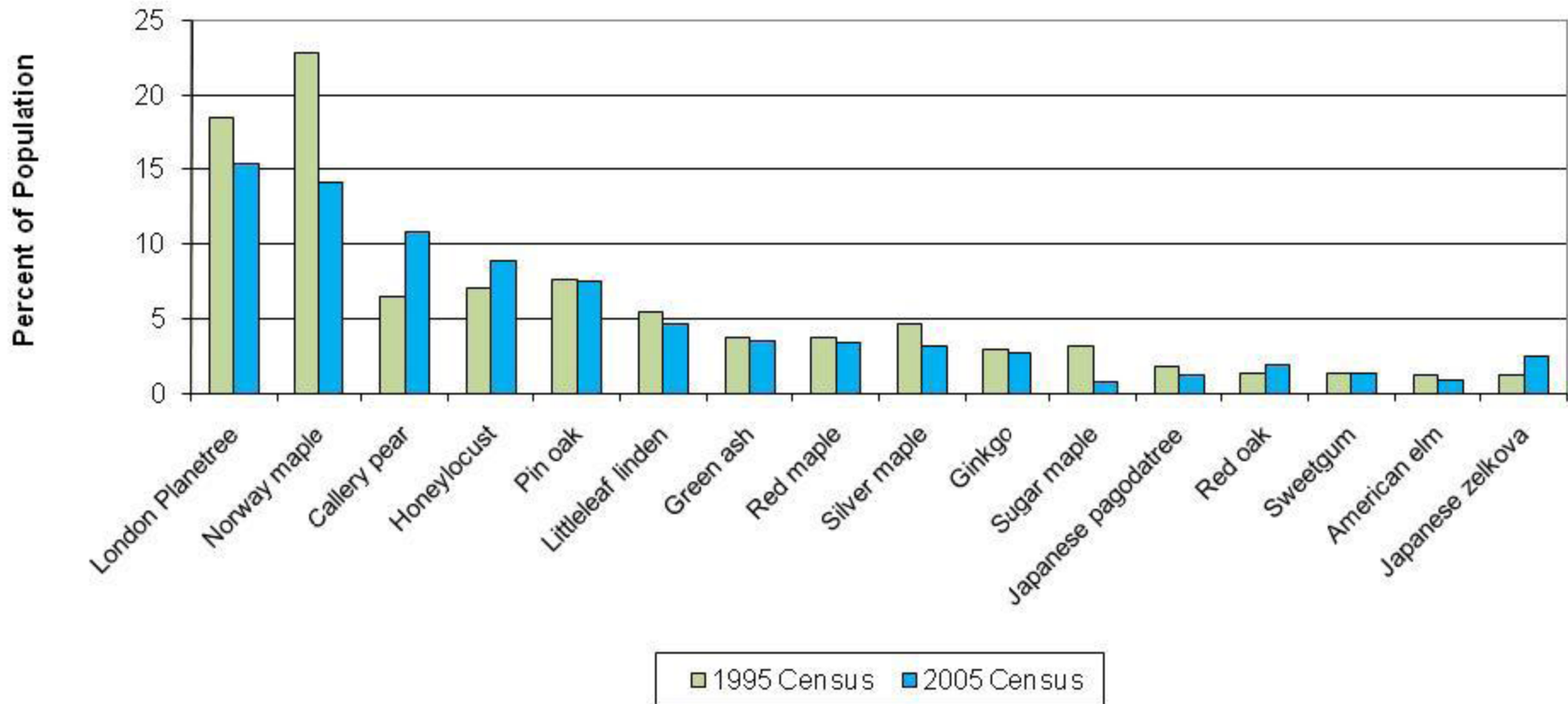
Species	DBH Class (in)									Total Standard Error
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42	
<b>Broadleaf Deciduous Large (BDL)</b>										
London planetree	507	597	1,253	358	60	70	20	0	20	2,884 (±465)
Chinese hackberry	149	209	189	229	318	249	80	0	0	1,422 (±295)
Hind walnut	109	139	50	30	0	20	159	179	129	815 (±525)
Honeylocust	20	10	40	269	209	10	0	0	0	557 (±191)
Modesto ash	10	0	0	0	90	159	90	30	0	378 (±141)
Hackberry	60	60	109	80	50	0	0	0	0	358 (±91)
Walnut	0	0	269	80	0	0	0	0	0	348 (±312)
Velvet ash	0	0	0	50	169	109	10	0	0	338 (±214)
California white oak	70	60	80	10	30	0	0	0	0	249 (±78)
BDL OTHER	269	129	249	269	60	80	50	10	10	1,124 (±202)
<b>Total</b>	<b>1,193</b>	<b>1,203</b>	<b>2,238</b>	<b>1,372</b>	<b>985</b>	<b>696</b>	<b>408</b>	<b>219</b>	<b>159</b>	<b>8,473 (±840)</b>
<b>Broadleaf Deciduous Medium (BDM)</b>										
Chinese pistache	457	507	418	308	30	0	0	0	0	1,720 (±330)
Tallowtree	50	99	358	457	199	10	0	0	0	1,173 (±366)
Callery pear	160	208	208	180	60	0	0	0	10	1,104 (±277)

Current Page No.: 1 | Total Page No.: 2 | Zoom Factor: Page Width

# NYC Street Trees--Structure



## Street Tree Species Distribution



# The many uses of inventory data

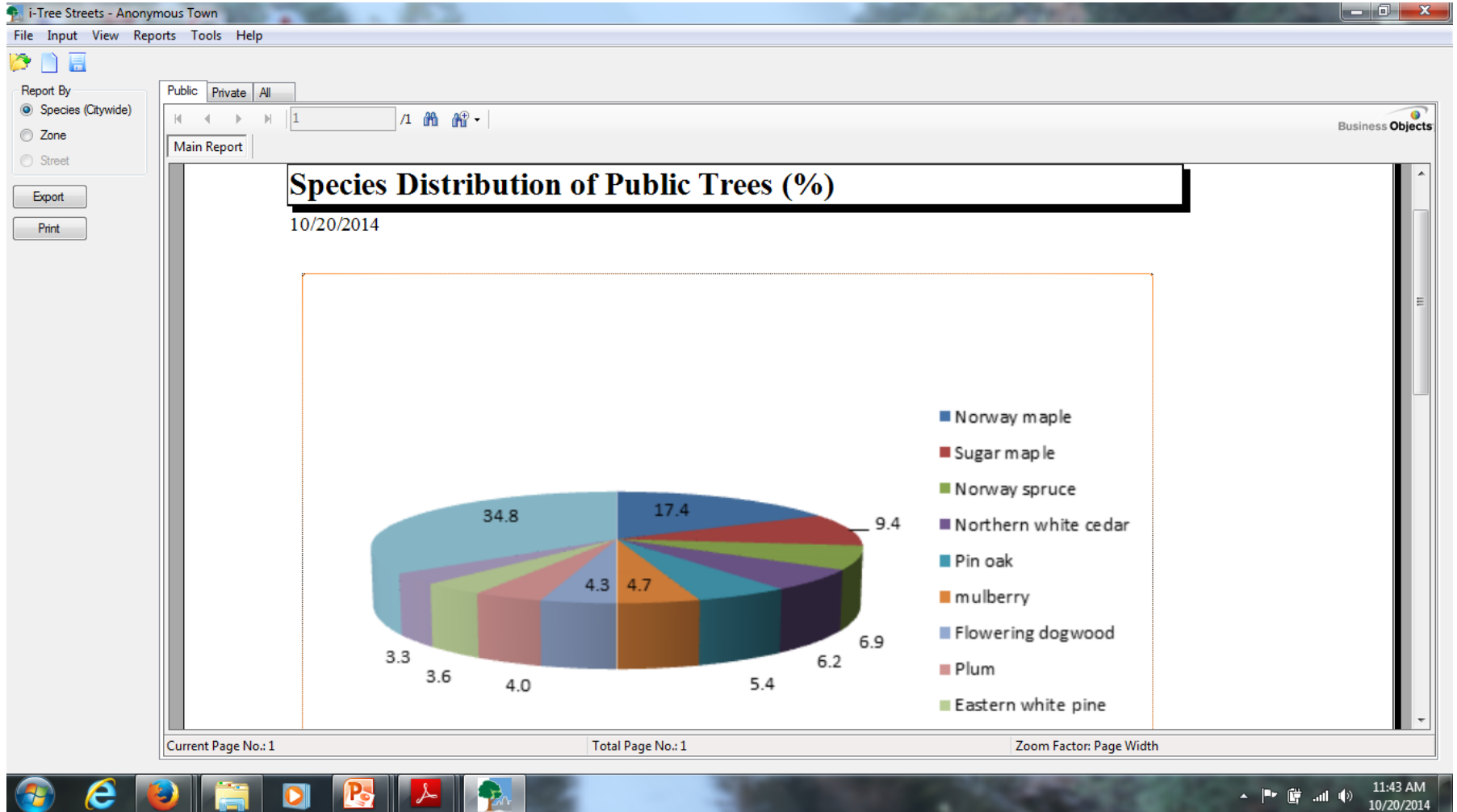


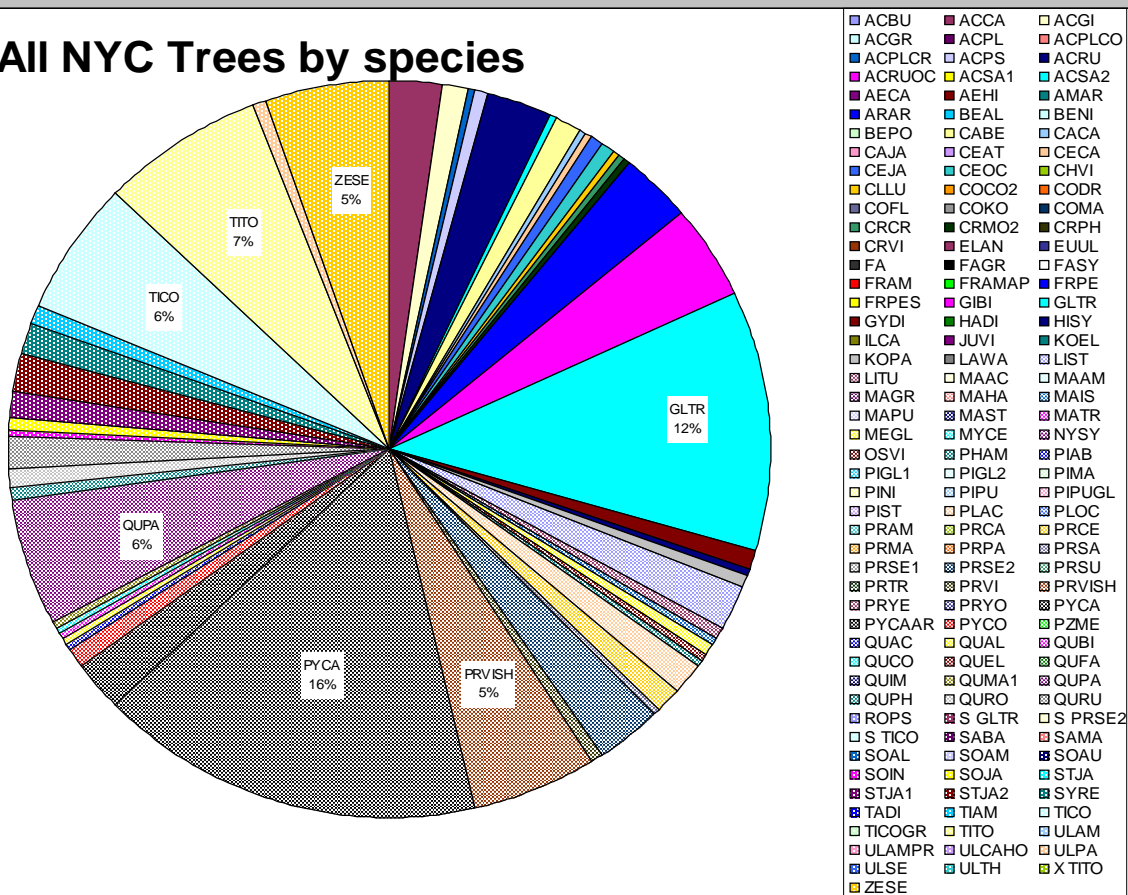
Table 1 Species levels in NYC study area which comprise over five percent of the total study population (trees planted on request by contract from NYC DPR) 1995-2006

Species	population percentage	mortality percent
ZESE	5.17	7.93
TITO	6.78	10.81
TICO	5.87	9.09
GLTR	11.51	6.59
PRVISH	5.13	6.77
PYCA	16.31	7.28

Six species comprise 50.77 of the total test population

Average mortality  
7.95

Figure 1: All NYC Trees by species



**CAUTION**

**THIS SIGN HAS  
SHARP EDGES**

**DO NOT TOUCH THE EDGES OF THIS SIGN**



ALSO, THE BRIDGE IS OUT AHEAD





# The Questions to answer depends on who asks the questions

- What a mayor wants is different than what a planner might request.
- Of course that information is likely different than the land manager-forester would choose or develop.
- Data to be used for research is often not identical to what is useful or practical in management (a difference in precision and resolution for inference and modeling)

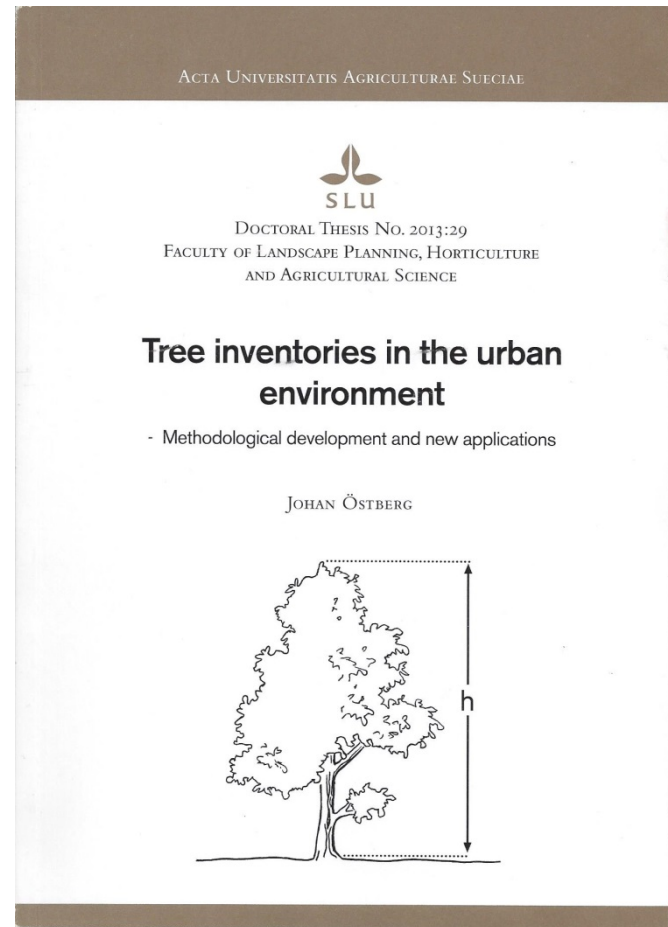
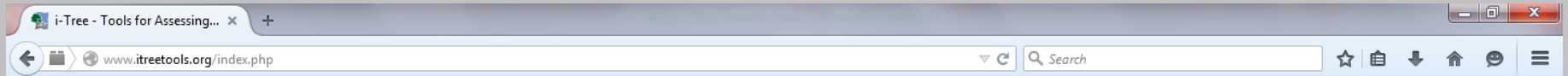




PHOTO CREDIT: AMY SULLIVAN

# i-Tree



i-Tree

Tools for Assessing and Managing  
Community Forests

Get the Tools.



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Northern Research Station Guide

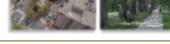
*A Guide to Assessing  
Urban Forests*

#### INTRODUCTION

This guide provides information on how to use i-Tree to assess urban forests. It includes information on the benefits of urban forests, how to use i-Tree, and how to interpret the results.

For more information, visit the i-Tree website at [www.itreetools.org](http://www.itreetools.org).

The guide is available in both print and digital formats. For more information, visit the i-Tree website at [www.itreetools.org](http://www.itreetools.org).



Featured Report: Plano, Texas  
Urban Forest Ecosystem Analysis

Plano Urban Forest  
Ecosystem Analysis

This report provides a detailed analysis of the urban forest ecosystem in Plano, Texas. It includes information on the benefits of urban forests, how to use i-Tree, and how to interpret the results.

For more information, visit the i-Tree website at [www.itreetools.org](http://www.itreetools.org).



## What's New?

i-Tree  
Forest  
assess  
streng  
quantif  
service

- Applications
- i-Tree Eco
- i-Tree Streets
- i-Tree Hydro (beta)
- i-Tree Vue
- i-Tree Design
- i-Tree Canopy
- System Requirements

## ee?

Since the initial release of the i-Tree Tools in August 2006, numerous communities, non-profit organizations, consultants, volunteers and students have used i-Tree to report on individual trees, parcels, neighborhoods, cities, and even entire states. By understanding the local, tangible ecosystem services that trees provide, i-Tree users can link urban forest management activities with environmental quality and community livability. Whether your interest is a single tree or an entire forest, i-Tree provides baseline data that you can use to demonstrate value and set priorities for more effective decision-making.

i-Tree Tools are in the public domain and are freely accessible. We invite you to explore this site to learn more about how i-Tree can make a difference in your community.

## What's New?

**an i-Tree Conference, 12th, Alnarp, Sweden**  
A conference website for more details >>

**Trees p  
econon  
Article :  
Sarniat**

**e Easy: Urban Forests  
nan Health**  
A webinar featuring  
d ACT featuring  
owak>>

**App of  
inform:  
A Pou  
article>**

**Study in using i-Tree at  
cale: Minneapolis, MN**  
root.com case study>>

**Millions  
Dying,  
Headac  
A Natio**

**it of Not Maintaining  
ymposium**  
gram in Tampa, FL -  
18th & 19th >>

**Concre  
Article :  
Australi**

**Provides 360 Energy  
Trees to Baltimore City**  
by Foundation and BGE


**Barrell  
trouble  
Hortcul**

# i-Tree

i-Tree - Tools for Assessing... x +

www.itreetools.org/index.php



Search

Get the Tools. 


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Tools for Assessing and Managing Community Forests



Home About Applications Utilities Resources Support News

## What is i-Tree?

i-Tree is a state-of-the-art, peer-reviewed software tool developed by the U.S. Forest Service that provides urban forestry assessment tools. The i-Tree Tools help communities strengthen their urban forest management by quantifying the structure of community trees and the ecosystem services that trees provide.

Since the initial release of the i-Tree Tools in 2002, thousands of communities, non-profit organizations, consultants, and students have used i-Tree to report on their urban forests, neighborhoods, cities, and even entire states. i-Tree provides baseline data that you can use to demonstrate the value of trees and set priorities for more effective decision-making.

i-Tree Tools are in the public domain and are freely accessible. We invite you to explore this site to learn more about how i-Tree can make a difference in your community.

### Resources

- Manuals & Workbooks
- Video Learning
- Archives
- Reports
- Project Profile
- Academic
- Presentations
- Workshops
- Marketing i-Tree
- IUFRO Directory

### What's New?


- Trees provide surprising economic value**  
Article appearing in [Sarniathisweek.com](#)>>
- App offers wealth of information on urban forests**  
A Poughkeepsie Journal online article>>
- Millions of Ash Trees Are Dying, Creating Huge Headaches for Cities**  
A National Geographic article>>
- Concrete city tag shock**  
Article discussing recent Australian canopy findings>>
- Barrell on ... Trees: more trouble than they're worth?**  
Horticulture Week article by

A US Forest Service Northern Research Station Guide

### A Guide to Assessing Urban Forests


**Introduction**

Urban forests provide a wide range of benefits to communities, including improved air quality, reduced energy costs, and enhanced property values. This guide provides information on how to assess the structure and health of your urban forest, and how to use the i-Tree Tools to quantify the value of your trees.



**Featured Report: Plano, Texas Urban Forest Ecosystem Analysis**

**Plano Urban Forest Ecosystem Analysis**



www.itreetools.org/resources/index.php

# i-Tree Design

The screenshot shows a web browser window with the address bar displaying [www.itreetools.org/design.php](http://www.itreetools.org/design.php). The browser's menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. The page header features the i-Tree logo, the text "Tools for Assessing and Managing Community Forests", and a "Get the Tools." button with a CD icon. To the right is a Google Custom Search box with fields for Username and Password, and buttons for Search, Login, Register, and a link for "Forgot Username or Password?". A "UAS" logo is also present. Below the header is a navigation menu with buttons for Home, About, Applications, Utilities, Resources, Support, and News.

## i-Tree Design v6.0\*

i-Tree Design allows anyone to make a simple estimation of the benefits provided by individual trees. With inputs of location, species, tree size, and condition, users will receive an understanding of tree benefits related to greenhouse gas mitigation, air quality improvements, and stormwater interception. With the additional step of drawing a building footprint – and virtually "planting" or placing a tree – tree effects on building energy use can be evaluated.

Tree benefits are estimated for (a) the current year, (b) a user-specified forecast year sometime in the future, (c) the projected total benefits across that future timespan, and (d) the total benefits provided to date (based on estimated tree age). Multiple trees and buildings can be added to compare benefits or to provide a full accounting of a property's trees.

This tool is intended as a simple and accessible starting point for understanding the value of individual trees or a small population of trees to a community. For more detailed information on urban and community forest assessments, please explore more of the [i-Tree](#) website. To learn more about the i-Tree Design model, click [here](#).



**Enter an address below to get started:**

-or-

The browser's taskbar at the bottom shows icons for Windows Explorer, Internet Explorer, Firefox, and Photoshop. The system tray in the bottom right corner displays the time as 7:06 PM and the date as 9/21/2014.

# i-Tree Design

i-Tree Design v6.0

Tools for Assessing and Managing Community Forests

Get the Tools.

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Home About Applications Utilities Resources Support News

Rutgers–New Brunswick, Rutgers University, 80 Nichol Avenue, New Brunswick, NJ 08901, USA

Start Over Save Progress About

1. Draw Structures ?

2. Place Trees ?

**Describe your tree:**

- Tree species: Oak, Northern red
- Tree diameter: 28 Inches or circumference: 88
- Tree condition: Poor
- Tree exposure to sunlight: Partial sun

**Tree benefit zones:**

- The colored zones surrounding the structure, which appear as you describe your tree, illustrate the relative monetary value of energy savings that the tree would provide in each zone.
- Hover over each zone to see that energy benefit information displayed below the map.

**To place a tree:**

- Drag this icon to the location on the map where you would like to place your tree.
- Repeat to place additional trees.
- Hover over any tree you have placed on the map to display its benefits.

**Model the tree(s) future crown growth over time:**

Click this button to toggle tree benefit zones

Map Satellite

YOUR TREES YOUR STRUCTURES

Corwin B Center for European Studies

Dudley Rd

Corwin Residence Hall - D

Google

Map data ©2015 Google Imagery ©2015 DigitalGlobe Terms of Use Report a map error

Lat: 40.48187  
Lng: -74.43977

Less desirable More desirable

Preferred planting zones to maximize tree benefits are shown around the structure.

# i-Tree Design

i-Tree Design x +

www.itreetools.org/design.php

Google Custom Search Search

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Forgot Username or Password? Register

UAS

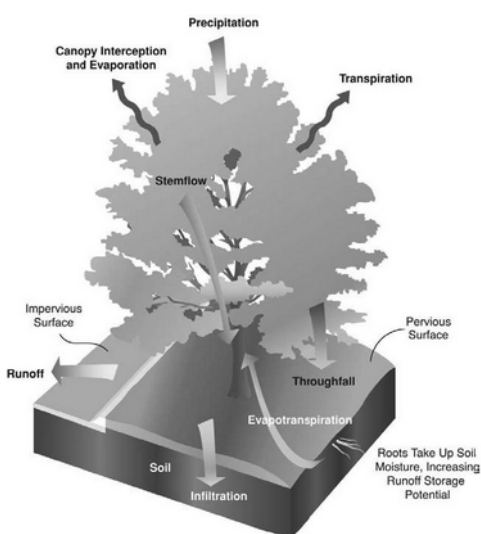
Home About Applications Utilities Resources Support News

**i-Tree Design v6.0** Rutgers–New Brunswick, Rutgers University, 80 Nichol Avenue, New Brunswick, NJ 08901, USA

Start Over  
Return to Setup  
View Report  
Print  
Save Result  
About

Display results for: All Trees

Overall Benefits Stormwater Energy Air Quality Carbon Dioxide



**Your selected trees will intercept 66,057 gallons of stormwater this year.**

Urban stormwater runoff (or "non-point source pollution") washes chemicals (oil, gasoline, salts, etc.) and litter from surfaces such as roadways and parking lots into streams, wetlands, rivers, and oceans. The more impervious the surface (e.g., concrete, asphalt, rooftops), the more quickly pollutants are washed into our community waterways. Drinking water, aquatic life, and the health of our entire ecosystem can be adversely affected by this process.

Trees act as mini-reservoirs, controlling runoff at the source. Trees reduce runoff by:

- Intercepting and holding rain on leaves, branches, and bark
- Increasing infiltration and storage of rainwater through the tree's root system
- Reducing soil erosion by slowing rainfall before it strikes the soil

Total to Date  
Total (2015-2025)  
Future Year (2025)  
Current Year (2015)

# i-Tree Design



i-Tree Design v6.0

Tree Benefit Report - 02/24/2015

Rutgers–New Brunswick, Rutgers University, 80 Nichol Avenue, New Brunswick, NJ 08901, USA

Trees Evaluated: 15

## Total Projected Benefits (2015-2025) - Over the next 10 years, based on forecasted tree growth, i-Tree Design projects total benefits worth \$8,024:

- \$5,387 of stormwater runoff savings by intercepting 673,435 gallons of rainfall
- \$610 of air quality improvement savings by absorbing and intercepting pollutants such as ozone, sulfur dioxide, nitrogen dioxide, and particulate matter; reducing energy production needs; and lowering air temperature
- \$144 of savings by reducing 14,846 lbs. of atmospheric carbon dioxide through CO<sub>2</sub> sequestration and decreased energy production needs and emissions
- \$735 of summer energy savings by direct shading and air cooling effect through evapotranspiration
- \$1,148 of winter energy savings by slowing down winds and reducing home heat loss

■ Stormwater ■ Air Quality  
■ CO2 ■ Winter Savings  
■ Summer Savings ■ Total

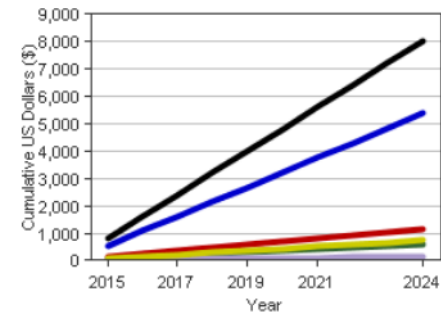


Figure 1. Tree benefit forecast for 10 years

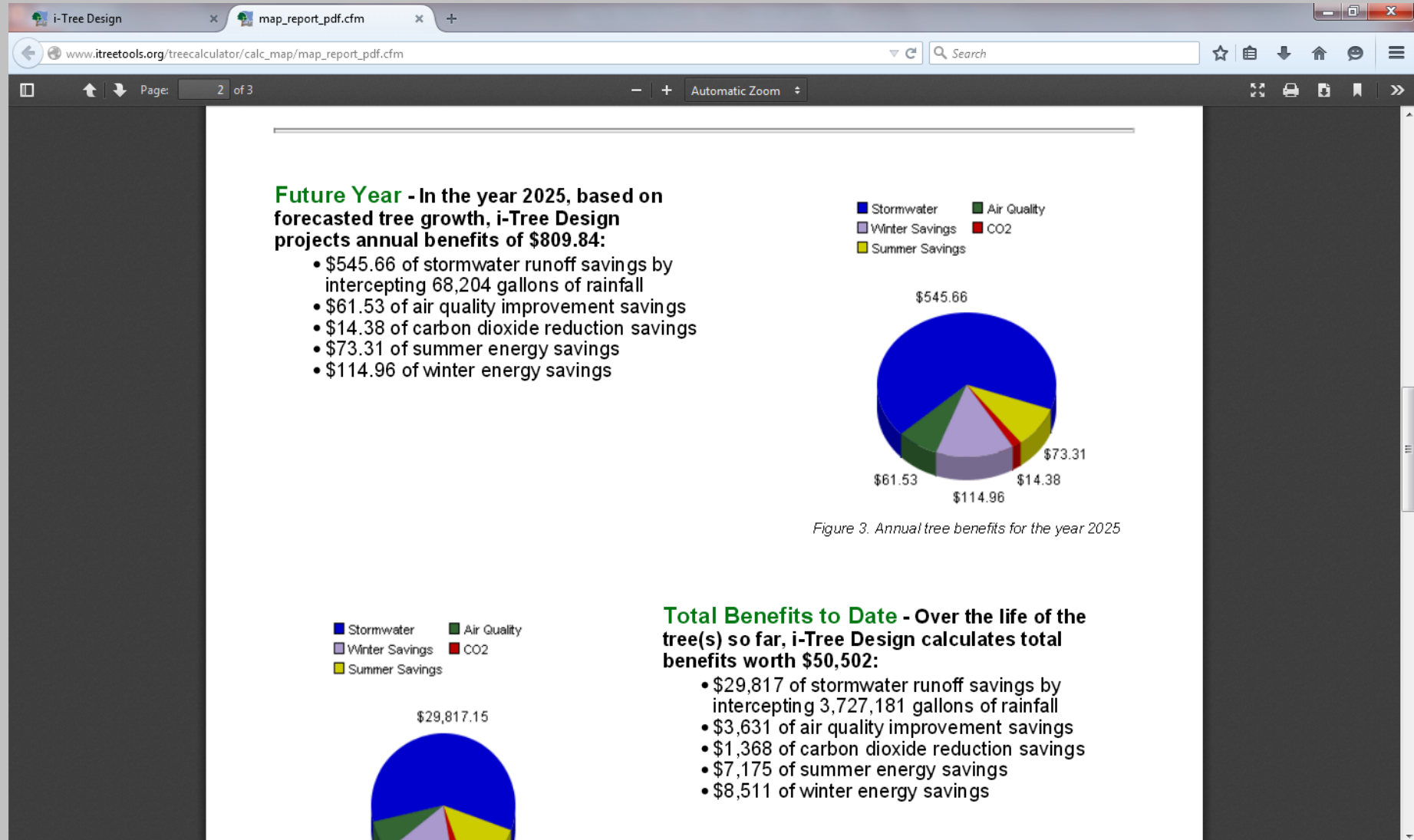
■ Stormwater ■ Air Quality  
■ Winter Savings ■ CO2

**Current Year - For 2015, i-Tree Design estimates annual tree benefits of \$791.53:**

• \$528.48 of stormwater runoff savings by

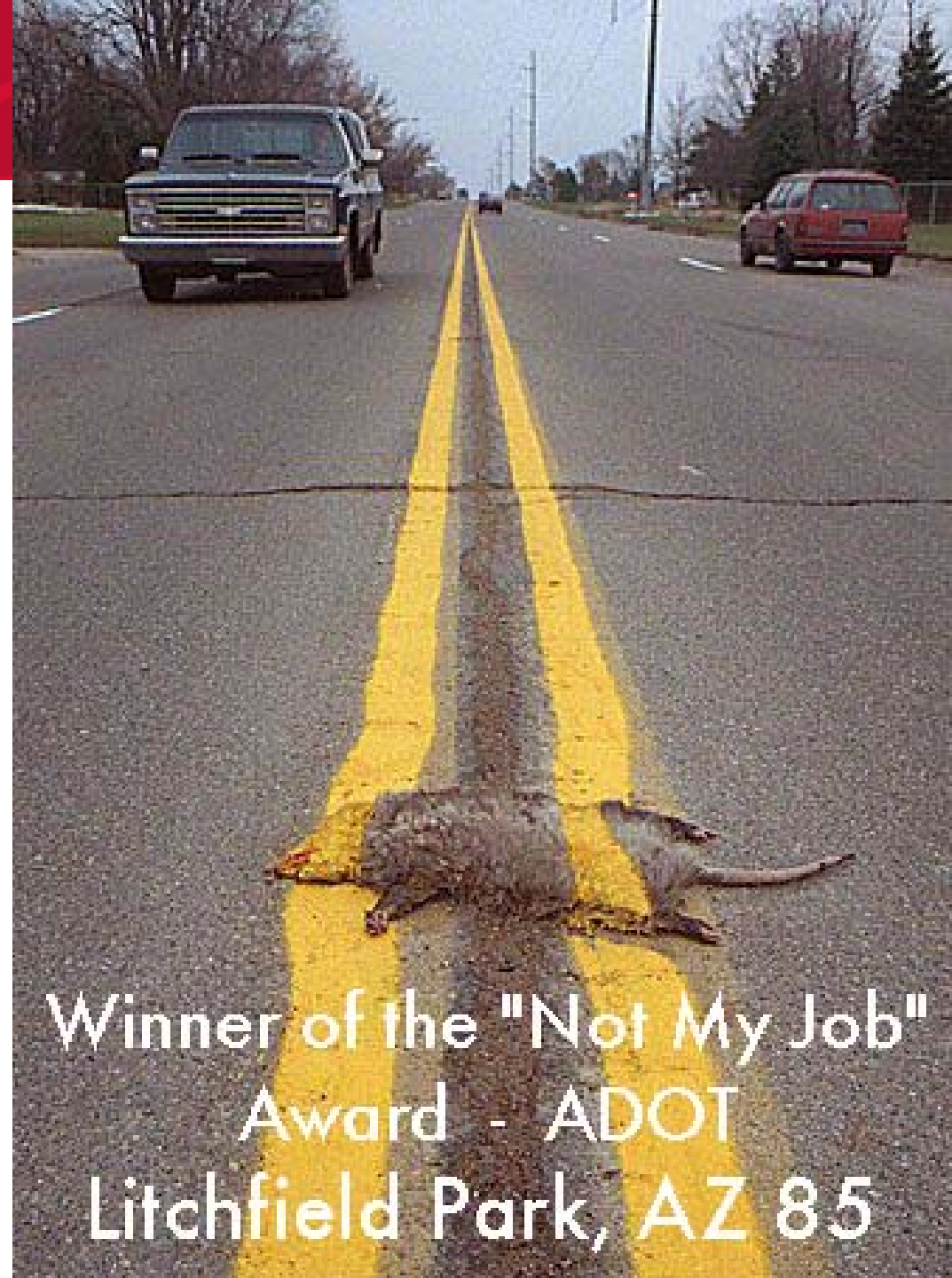


# i-Tree Design



I am not the  
planner, I am  
the designer....

Tools for me?



Winner of the "Not My Job"  
Award - ADOT  
Litchfield Park, AZ 85



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College of Agriculture and Life Sciences : Department of Horticulture : Urban Horticulture Institute : Outreach : Recommended Urban Trees



# Urban Horticulture Institute Recommended Urban Trees Site Assessment and Tree Selection for Stress Tolerance

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**Table of contents:**  
[links to .pdf files]

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- [Cover, acknowledgments](#)
- [Introduction](#)
- [Using this book](#)
- [Site assessment checklist](#)
- [Completing the site assessment checklist](#)
- [USDA plant hardiness zone map](#)

## Recommended urban trees for USDA plant hardiness Zone 6 and colder:

- I. [Small trees](#) (less than 30') suitable for city environment plantings under low overhead utility wires or in restricted spaces
- II. [Medium to large trees](#) (greater than 30') suitable for city environment plantings

## Trees grouped by site or planting conditions:

- I. [Soil moisture and pH chart](#)
- II. [Trees that tolerate partial shade](#)
- III. [Trees observed to have some salt tolerance](#)
- IV. [Trees sensitive to salt](#)

**Scientific Name:** *Fraxinus pennsylvanica*

**Common Name:** Green Ash

**Environmental Conditions:**

**Hardiness Zone:** 2a

**Soil Moisture:**

VERY WET

VERY DRY

occasionally saturated or very wet soil	consistently moist, well drained soil	occasional periods of dry soil	prolonged periods of dry soil
2	3	4	5
6	7	8	9
10	11	12	

**Sun/Shade:** full sun

**Salt:** some observed tolerance

**pH:** ≤ 8.2

**Insect/Disease Factors:** Ashes are susceptible to a number of insect and disease problems, ash borer (in hot dry environments) may be serious, *F. pennsylvanica* is fairly resistant to ash yellows (a problem for *F. americana* in the Eastern and Midwestern United States)

**Growth Characteristics:**

**Height:** 40'-60'

**Width:** 30'-50'

**Form/Habit:** pyramidal in youth, variable with age, oval to rounded and often irregular

**Rate:** fast

**Ornamental Characteristics:**

**Flower:** not ornamentally important

**Fruit:** not ornamentally important, samaras on female trees

**Seasonal Foliage Color:** glossy medium to dark green in summer, typically inconsistent yellow in fall, some of available cultivars turn bronze-red, burgundy, or purple in fall

**Bark:** gray to gray-brown, narrow interlacing ridges create diamond shaped furrows

**Transplant Issues:** easy to transplant B&B or < 2" caliper bare root

**Management Issues:** may require frequent pruning as storm damage prone, fruit litter can be a problem, non-fruiting cultivars available

**Suggested Uses:** narrow or wide street tree lawns/pits, parks, suitable for CU-Structural Soil™

**Cultivars:** see chart on following page, selections made for growth form/habit, seedless character of male trees, and foliage characteristics (specifically dark green and shiny leaves in summer and attractive fall color)



'Palmore'

*Fraxinus pennsylvanica* (Green Ash) cultivars:

Common:					
Cultivar	Zone	Form/Habit	Foliage	Fruit	Other
Cimarron® ('Cimarron')	4	upright-oval, 30' wide, straight central leader, good branch structure	thick, glossy, dark green in summer, burgundy changing to orange in fall, leaf-out late, holds leaves late	non-fruiting	
'Marshall'	3a	broadly oval, irregular at times	glossy dark green in summer, bright yellow in fall	usually but not always non-fruiting	fewer insect and disease problems than species
'Palmore'	3a (2b)	oval to broadly pyramidal, straight trunk, good branch structure, symmetrical	glossy, dark green in summer, long-lasting yellow in fall	non-fruiting	relatively pest free
'Summit'	3b	upright, oval to pyramidal, 25'-35' wide straight trunk, good central leader, symmetrical	semi-glossy, excellent golden yellow in fall	light and infrequent crops	thicker bark, more resistant to mechanical damage
Urbanite®	5b	broadly pyramidal to oval	thick, leathery, lustrous dark green in summer, bronze-red in fall	none observed	thicker bark appears more sun- and cold resistant
Available					
Cultivar	Zone	Form/Habit	Foliage	Fruit	
'Bergeson'	3 (2)	upright, oval, dense, rapid grower	lustrous dark green in summer, yellow in fall	non-fruiting	
Centerpoint™	4	broadly oval to rounded, symmetrical	very glossy, yellowish in fall	non-fruiting	
Champ Tree™ ('National 1999')	4	rounded, upright spreading branches	glossy, yellow in fall	non-fruiting	
Dalton/Centennial™ ('Walpaton')	3	oval to broadly pyramidal, tends to maintain central leader, good branch structure	glossy, bright green changes to dark green in summer, deep yellow in fall	non-fruiting	
Georgia Gem™ ('Oconee')	6	upright-oval	larger leaves, glossy, dark green in summer, yellowish in fall	non-fruiting	
Newport™ ('Bailey')	3b	oval, straight trunk, good branching	glossy dark green in summer, yellow in fall	non-fruiting	
Prairie Spire™ ('Rugby')	3	upright-oval to narrow pyramidal, 20' wide, dense branching	glossy, bright green changes to dark green in summer, golden yellow in fall	non-fruiting	
Skyward™ ('Wandell')	5b	narrowly pyramidal, 20' wide, dense	thick, semi-lustrous, bronze-red to purple in fall	non-fruiting	
var. <i>lanceolata</i>	3	oval to rounded	lanceolate, golden yellow in fall		

## Name (Quick Search):

Genus (i.e. - *Homo* or *Acer*):  [Help...](#)

Species Name (i.e. - *sapiens* or *rubrum*):  [Help...](#)

Common Name (i.e. - human or red maple):  [Help...](#)

Family:  [Help...](#)

## Basic Traits:

Plant Form & Size:  [Help...](#)

Foliage Character:  [Help...](#)

USDA Hardiness Zone:  [Help...](#)

Native/Non-native:  [Help...](#)

## Ornamental Traits:

### A. Flowers

Flower Display:  [Help...](#)

Flowering Period:  [Help...](#)

Flower Color:  [Help...](#)

Flower Fragrance:  [Help...](#)

### B. Foliage and Bark

Fall Foliage Color:  [Help...](#)

Stem/Bark Texture:  [Help...](#)

Stem/Bark Color:  [Help...](#)

### C. Fruit

Fruit Quality:  [Help...](#)

Stem/Bark Color:  [Help...](#)

### C. Fruit

Fruit Quality:  [Help...](#)

Fruit Color:  [Help...](#)

## Site Characteristics:

Sun Exposure:  [Help...](#)

Soil pH:  [Help...](#)

Soil Moisture and Drainage:  [Help...](#)

## Cultivar Availability:

Foliage: cut-leaf, purple leaves, etc.:  [Help...](#)

Form: dwarf, weeping, etc.:  [Help...](#)

Ornamental: flower/fruit/bark color, etc.:  [Help...](#)

## Special Qualities:

Invasive Tendency:  [Help...](#)

Deer Resistance:  [Help...](#)

Salt/Sea Spray Tolerance:  [Help...](#)

Urban/City Tolerance:  [Help...](#)

Juglone (Walnut) Tolerance:  [Help...](#)

Wildlife Value:  [Help...](#)

Butterfly Adult Attractant:  [Help...](#)

Butterfly Larvae Attractant:  [Help...](#)

Edible Fruit/Medicinal Value:  [Help...](#)



# STREET TREE FACTSHEETS



### EDITORS

Henry D. Gerhold  
Norman L. Lacasse  
Willet N. Wandell

Summit Green Ash



Edward R. Hasselkus, University of Wisconsin



William Hendricks,  
Klyn Nurseries



Donald R. Selinger, Bailey Nurseries

These are also  
available on  
CD Rom

	1	2	3	4	5	6	7	8	Common name; Scientific name Page code Cultivar name
	4	●	N	□	▲	R			Hophornbeam, American; <i>Ostrya virginiana</i> Usa no cultivars
	3	●	N	■	▲	S			Hornbeam, American; <i>Carpinus caroliniana</i> Caca no cultivars
	5	●	W	□	○	S			Hornbeam, European; <i>Carpinus betulus</i> CabeFa Fastigiata
	4	●	N	■	▲				Horsechestnut; <i>Aesculus hippocastanum</i> AehpBm Baumann
	5	●	N	■	▲	R			Horsechestnut, Red; <i>Aesculus x carnea</i> AexCR Ruby Red D
	4	●	N	■	▲	R			Katsura Tree; <i>Cercidiphyllum japonicum</i> Cajp cultivars rare
	3	●	N	■	▲				Lilac, Japanese Tree; <i>Syringa reticulata</i> SyrtIS Ivory Silk
	4	●	N	■	▲				SyrtRe Regent
	3	●	N	■	▲				SyrtSS Summer Snow
	4	●	W	■	▲				Linden, American; <i>Tilia americana</i> TiamLg Legend
	3	●	W	■	▲				TiamRd Redmond
	3	●	W	■	▲	○			Linden, Littleleaf; <i>Tilia cordata</i> TicoCh Charlesbor
	3	●	W	■	▲	○			TicoCo Corinthian
	3	●	W	■	▲	○			TicoFa Fairview
	3	●	W	■	▲	○			TicoGl Glenleven
	3	●	W	■	▲	○			TicoGr Greenspire
	4	●	W	□	○	S			Linden, Silver; <i>Tilia tomentosa</i> TitoGM Green Mountain
	4	●	W	□	○	S			TitoSt Sterling
	4	●	W	■	▲				Magnolia, Cucumber tree; <i>Magnolia acuminata</i> Mgac cultivars rare
	6	●	N	■	▲	R			Magnolia, hybrid; <i>Magnolia hybrids</i> MgxoGa Galaxy D
	4	●	N	■	▲	R			Mgmla Merrill
	4	●	N	■	▲	R			Magnolia, Star; <i>Magnolia stellata</i> Mgst cultivars rare
	3	●	W	□					Maidenhair Tree—see Ginkgo
	3	●	W	□					Maple, Amur; <i>Acer ginnala</i> Acgi cultivars rare F
	5	●	W	■	▲				Maple, Black; <i>Acer nigrum</i> AcnGr Greencolumns
	4	●	N	□	○	S			Maple, Freeman Hybrid; <i>Acer x freemanii</i> AcxAr Armstrong L
	4	●	N	□	○	S			AcxRAB Autumn Blaze L
	4	●	N	□	○	S			AcxSD Celebration L
	4	●	N	□	○	S			AcxSS Scarlet Sentinel L
	5	●	W	□	○				Maple, Hedge; <i>Acer campestre</i> AccmOE Queen Elizabeth





## COMPATIBLE TREE

# FACTSHEETS

for Electric Lines and Restricted Spaces  
including Evergreens for Screens



SECOND EDITION

### EDITORS

**Henry D. Gerhold**  
**Norman L. Lacasse**  
**Willet N. Wandell**



# STREET TREE

## FACTSHEETS



### EDITORS

**Henry D. Gerhold**  
**Norman L. Lacasse**  
**Willet N. Wandell**

# NORTH AMERICAN PLANTFILE



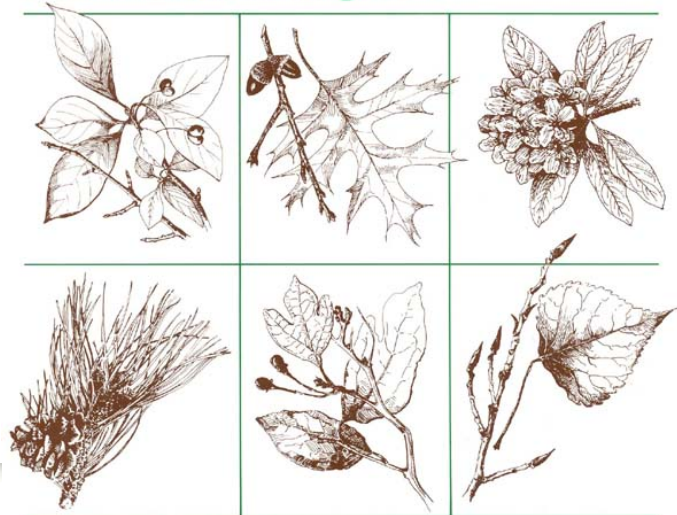
"The  
NORTH AMERICAN  
PLANTFILE  
is an excellent addition  
to any serious gardener's  
library."  
—The Horticultural Society  
of New York

Gary L. Hightshoe  
harlen d. Groe

<p>Evodia hupehensis Hupeh Evodia</p>	<p>patio garden naturalizing specimen / accent street canopy</p> <p>China 5-8 L1908</p>
<p>Fraxinus ornus Flowering Ash</p>	<p>patio garden shade specimen / accent street canopy</p> <p>S. Europe / W. Asia 6-8</p>
<p>Fraxinus oxycarpa 'Raywood'</p>	<p>patio garden seascost shade specimen canopy windbreak</p> <p>S. Europe / W. Asia 6-7</p>
<p>Fraxinus velutina Velvet Ash Arizona Ash 'Fan-Tex' 'Von Orm' glabra</p>	<p>espalier screen shade windbreak</p> <p>S.W. U.S. 8-10 L1991</p>
<p>Griselinia littoralis Kupuktree</p>	<p>espalier screen shade windbreak</p> <p>New Zealand 8-10</p>

# Native Trees, Shrubs, and Vines for Urban and Rural America

A Planting Design Manual for  
Environmental Designers



Gary L. Hightshoe

Illustrated by Gregg A. Coyle, Gretchen F. Harshbarger,  
and Craig D. Ritland.

Basics Features **Canopy** ID & Details

**Density**  
dense  
moderate  
open

**Texture**  
coarse  
medium  
fine

**Symmetry**  
uniform  
irregular

Latin  
Common

Gear

4684

- A
- Abelia x 'Edward Goucher'
- Abelia chinensis
- Abelia x grandiflora
- Abelia longituba
- Abelia schumannii
- Abelia zanderi
- Abeliophyllum distichum
- Abies alba
- Abies arizonica
- Abies balsamea
- Abies bracteata
- Abies cephalonica
- Abies cilicica
- Abies concolor
- Abies firma
- Abies fraseri
- Abies grandis
- Abies holophylla
- Abies homolepis
- Abies koreana
- Abies lasiocarpa
- Abies lasiocarpa ssp. arizonica
- Abies nordmanniana
- Abies pindrow
- Abies pinsapo 'Glauca'
- Abies procera
- Abies sachalinensis

**Woodies**

Herbaceous

**Exposure**

**Soil Type**

**Soil pH** acid neutral alkaline

**Hardiness**

1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		

A B

# RUTGERS

## Questions....



[grabosky@aesop.rutgers.edu](mailto:grabosky@aesop.rutgers.edu)

848-932-0050



@SJ\_Program  
#SustainableStateNJ

# *Sustainable Jersey* Actions To Take Today!

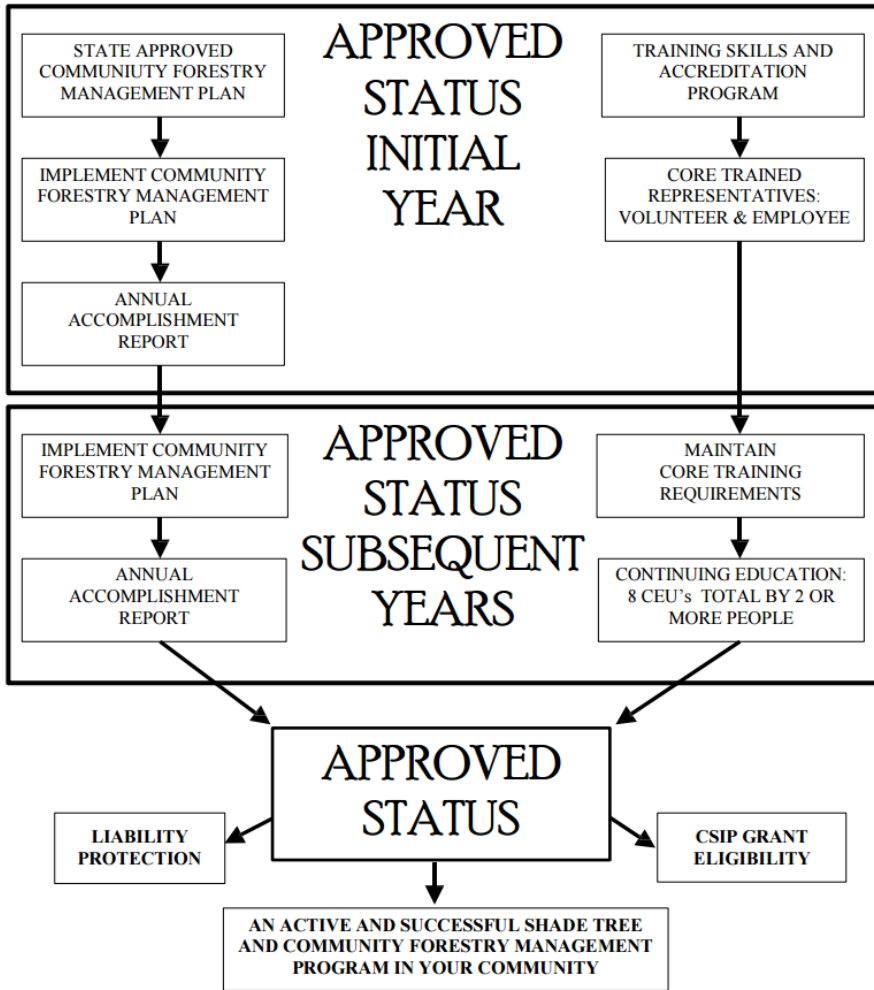
Nathaly Agosto Filión



2016 NEW JERSEY SUSTAINABILITY SUMMIT



# Community Forestry Plan and Tree Cover Goal





# i-Tree Assessment of Municipal Trees



## Ironbound Community Corporation East Side Environmental Club East Ward (Ironbound)



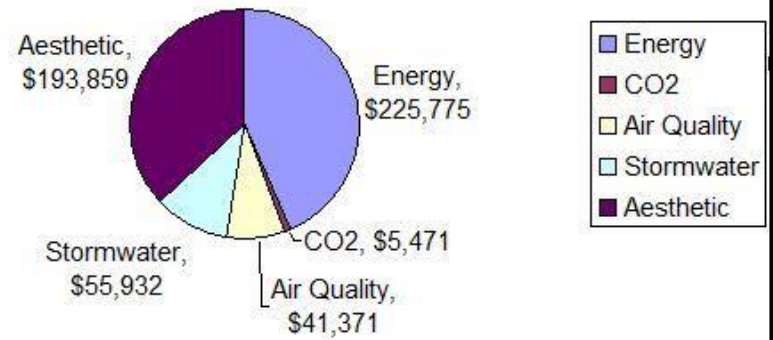
### Streets covered:

- South St
- Chestnut St
- Oliver St
- Walnut St
- Market St
- Jefferson St
- Adams St



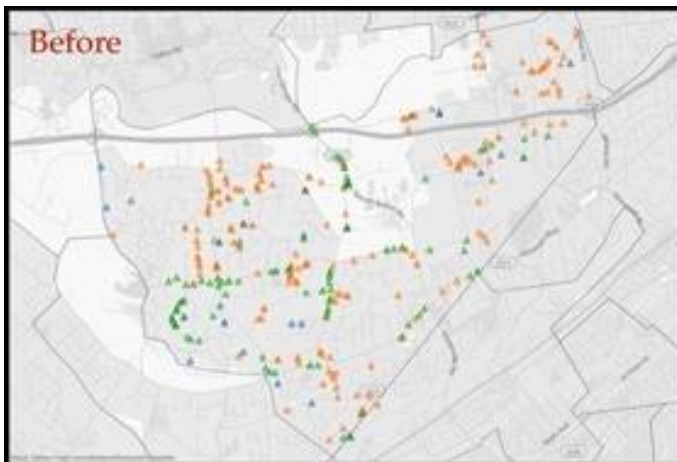
Total Youth Participants: ESH: 5, ICC: 10  
End Date: ESH: Aug 30th, ICC: Nov

### Net Annual Benefits of Trees in Berkeley Heights





# Tree Hazard Inventory



PoHaz Attachment.xls

5/22/2013

## POTENTIALLY HAZARDOUS TREES - BOROUGH OF BERNARDSVILLE

<u>House Address</u>	<u>Pole #</u>	<u>Wires</u>	<u>Status 2013</u>	<u>Comments</u>
Mount see 96B, 96C	?	Yes	Cut 13??	3 Maple stems, behind wall, Terri Reynolds 766-9430
bell Road	opp BT 186 BVB	No	Cut13	11" Ash,
bell Road	opp BT 186 BVB	No	Cut13	18" Ash,
, Shadowbrook side	no poles	No	Cut13	23" Ash some loose bark, Pat & Pete Dragunas Cell 208-9066
	>NJ205BVB	Yes	Cut13	24" Maple, big cavities, @ backline of 20 Old Army
y Hollow Road	"@ NJ 617 BB	Yes?	Cut13	19" Ash, 1 cavity & 10 woodpecker holes about 3' up,
y Hollow Road/ opp. Drive	<BT 1182 BVB	Yes	Cut13	Twin 20" Black Cherry, lots of fungus
ain Top	none	No	Cut13	22" Maple, dead 30' beyond drive
Av.	opp NJ 153 BB	No	Cut13	24" Maple, already has lost 2 big branches
olony	opp NJ 402 BB	No	Cut13	23" Maple, dead branches, Cut '13 House numbers
ect Street	opp 70177 BVB	No	Cut13	21" Maple, Graham Macmillan 201- 738- 7798
ect Street	BVB 70035	Yes	Cut13	38" Maple
è Lake, 200' below gate	No	No	Cut13	23" Maple, dead, in front of electrical box
è Lake, 250' below gate	No	No	Cut13	16" Ailanthus, 2' behind wall
è Lake, 60' below gate	No	Wires	Cut13	Twin Ash, 12" & 10" - dead - behind wall
è Lake, 60' below gate	No	No	Cut13	One Maple, 14" [the other 15" Maple is down behind wall]
ng	>NJ977BB	No	Cut13	4 stem Hickory,, 20", 17" = OK; in '13 - CUT 13" & 8"
ng	>NJ977BB	No	Cut13	22' Hickory, left after other rotted stem fell, Andrea Ziegler
l Top Road, near #20	BT 1422 BVB	No	Cut13??	Ash, 2 stem, 14" & 20", leaning, [cut #3stem in '10
unhardt Road	opp NJ 305 BB	No	Cut13	12" Black birch, rooting, leaning over road,
ect St. @ Condit		No	Trim13	26" mature Silver Maple, TRIM dead wood, including on center stem, Bajan Mitrovic, 908-872-2462!
e Av behind 17 Lakeview	>>BT1045BVB	No	Trim13	1 dead Ash Stem 19", cut down to height of lowest wire, leave totem, leave firewood in 18-20" lengths, leave chips - Fred Ausschlager
e Av behind 17 Lakeview	>>BT1045BVB	No	Trim13	5 stem Ash, leave 2 live, CUT 3 dead - 13", 14", & 14" - below lowest wire, leave totem, leave firewood in 18-20" lengths, leave chips
vs Avenue	BT 10196 BVB	No	Watch	40" Silver Maple, falling branches,
bell Road	NJ 638 BB	Yes	Watch	Two trees ASH & 38" 4 stem Horse Chestnut, opp Skyline Drive





# Climate Adaptation: Flooding Risk

Review present and future flood risks (NJFloodMapper)

“Getting to Resilience” self-evaluation:

- Risk and Vulnerability Assessments
- Public Engagement
- Planning Integration
- Disaster Preparedness and Recovery
- Hazard Mitigation Implementation

**Getting to Resilience**  
A Community Planning Evaluation Tool

This online self assessment process is a tool to assist communities to reduce vulnerability and increase preparedness by linking planning, mitigation, and adaptation. Through this assessment you will find out how your preparedness can be worth valuable points through FEMA's Community Rating System and Sustainable Jersey.

Plan for your community's future in the face of climate change [Get Started Now](#)

ENABLING COMMUNITIES TO BE PREPARED AND MORE RESILIENT.





# Extreme Temperature Event Plan

## Convene

- Multi-stakeholder committee
- Public Health and Emergency Mgm't participation required

## Discuss

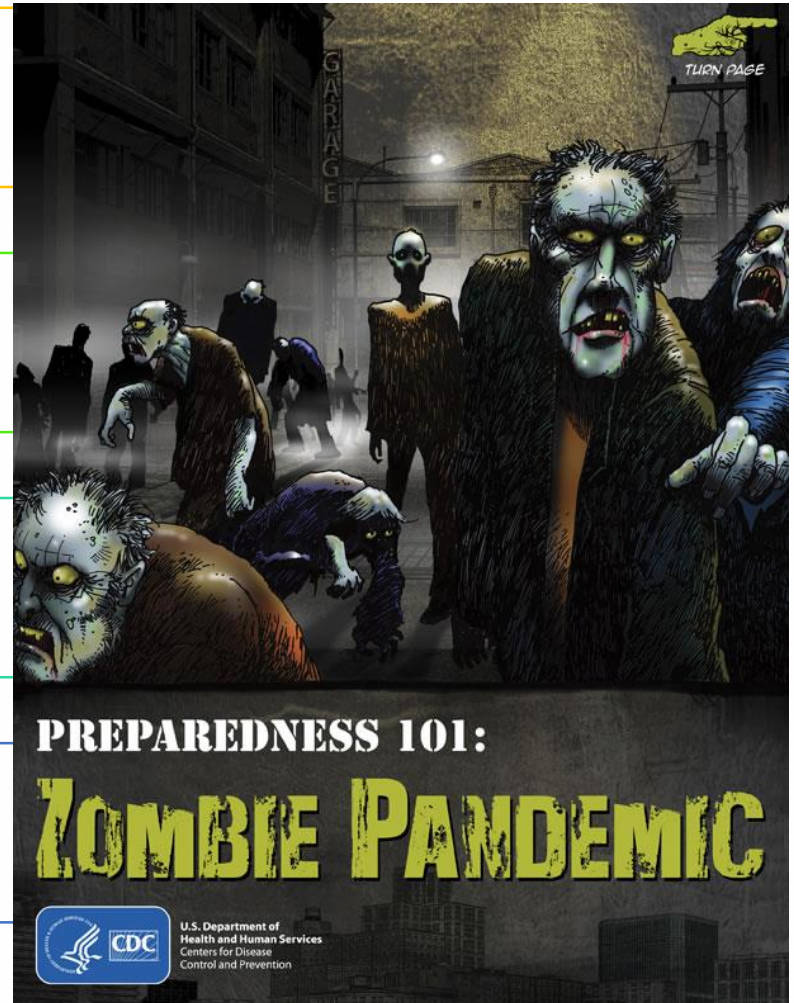
- Discuss challenge
- Identify interventions

## Plan

- 7 core plan components
  - Who decides? Resources? Comms?

## Evaluate

- How successful was the plan?
- How do you know?



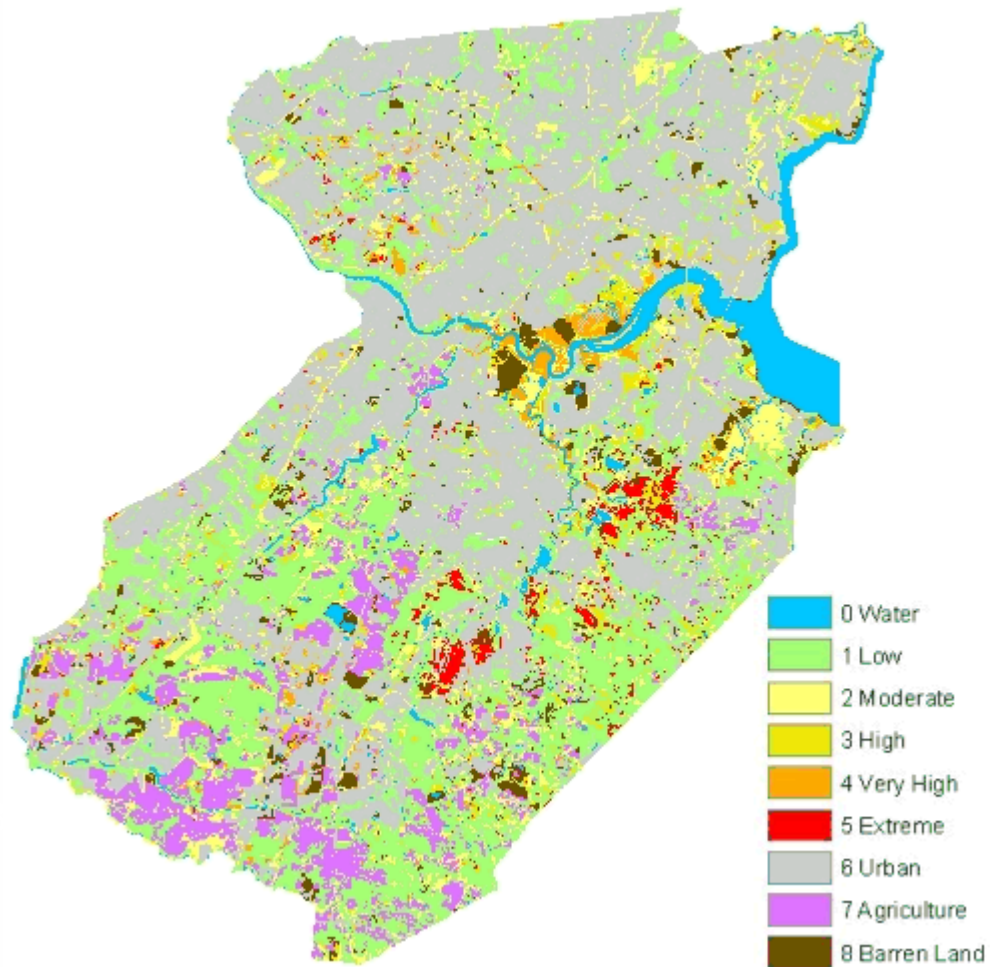


# Suite of Wildfire Actions

- ✓ Community Wildfire Protection Plans
- ✓ FireWise Community
- ✓ Ready, Set, Go! Fire Company



Wildfire Fuel Hazard for Middlesex County





# Community Wildfire Protection Plans

[http://www.nj.gov/dep/grantandloanprograms/nhr\\_wildfire.html](http://www.nj.gov/dep/grantandloanprograms/nhr_wildfire.html)

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STATE OF NEW JERSEY  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
GRANT & LOAN PROGRAMS



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## Community Wildfire Protection Plan Grants (CWPP'S)

### Purpose of Funding

To provide municipalities and communities a cost-share incentive to implement wildfire hazard mitigation practices, as prescribed in a CWPP.

### Source of Funding

USDA Forest Service- through the National Fire Plan.

### Statutory Citation

P.L. 93-288, "Robert T. Stafford Disaster Relief and Emergency Assistance Act; and N.J.S.A. 13:9 et seq.

### Who is Eligible

NJ municipalities and communities within municipalities.

### Qualifications Required for Consideration

Approved and adopted a Community Wildfire Protection Plan.

### Grant Limitations

Funding is limited to half of the project cost, up to \$5,000.

### Application Procedures

Application procedures are explained in the CWPP template.

### For More Information or to Request an Application, Contact

Gregory McLaughlin, Division Firewarden  
NJ Department of Environmental Protection  
State Forestry Services  
Mail Code: 501-04  
PO Box 420  
Trenton, NJ 08625-0420  
(609) 649-3611 or 609-292-2977  
[gregory.mclaughlin@dep.state.nj.us](mailto:gregory.mclaughlin@dep.state.nj.us)

<b>Application</b>	Email <a href="mailto:gregory.mclaughlin@dep.state.nj.us">gregory.mclaughlin@dep.state.nj.us</a>
<b>Application Deadline</b>	The funding period runs for one year from the adoption of an approved CWPP.
<b>Notification Date</b>	Applicants will be notified within 30 days of receipt of an application.





# Vulnerable Populations Identification for Emergencies

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- Identify the location of vulnerable populations
- Promote “Register Ready”
- Keep a list of community stakeholders that can connect to at-risk & vulnerable populations
- Use alternative communication formats for public announcements





# Emergency Communications Planning

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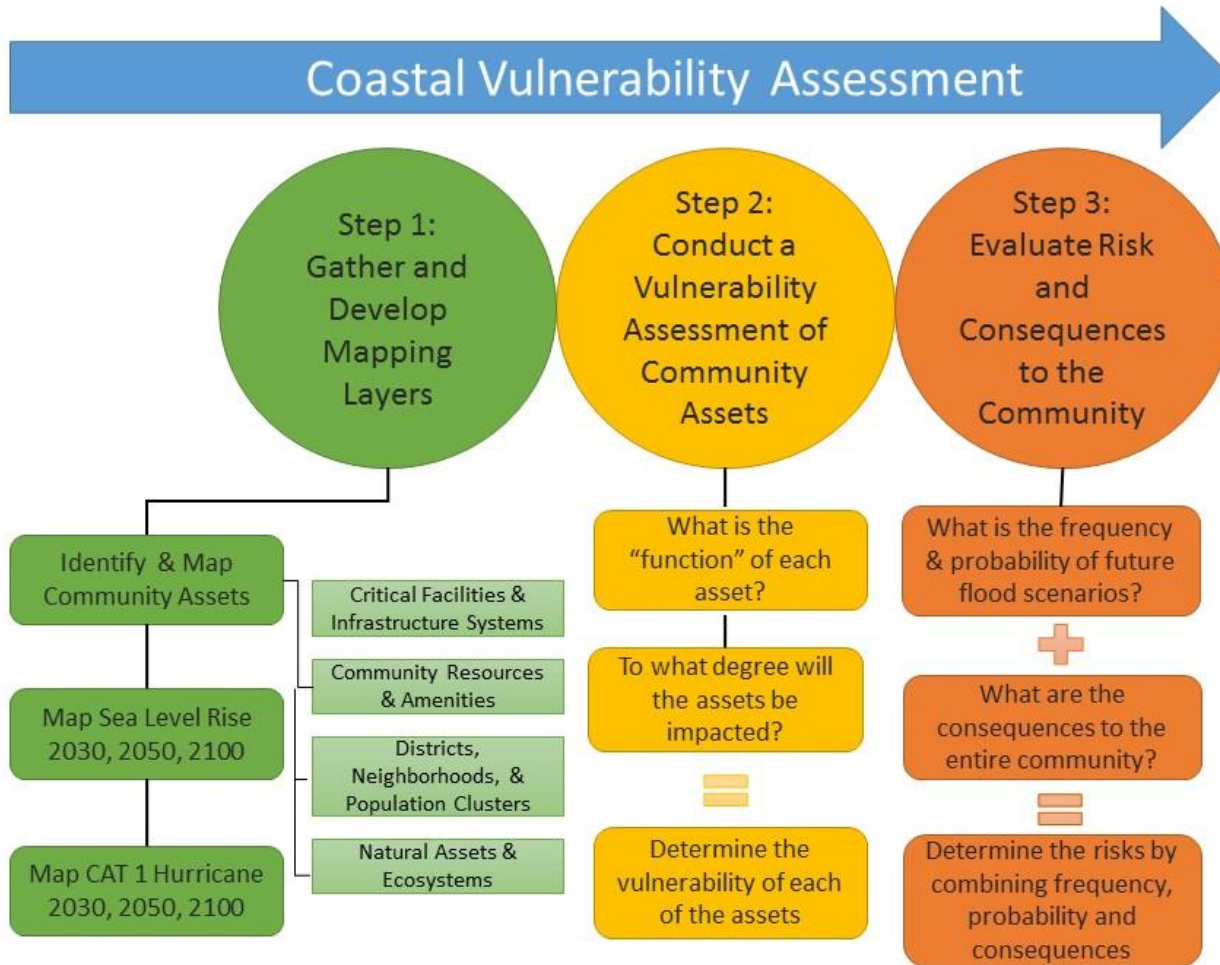
Develop a plan that outlines the steps your town will take to disseminate important information during emergencies:

- Utilize varied communications channels to disseminate important updates
- Establish an emergency notification system





# Upcoming Action: Coastal Vulnerability Assessment





# ***Upcoming Action:*** Natural and Nature-Based Flood Mitigation Strategies

- Enhanced existing actions to promote public awareness of the mitigating properties of natural areas, e.g. wetlands, forested areas, etc.
- Embed into existing actions case studies and resources on living shorelines and coastal and inland green infrastructure projects.

