City of Covington
Low Impact Development

TOPICS:

What is Low impact Development?
Green Infrastructure and Storm Management Overview
Why is Low Impact Development Important?
Regional Approach

June 2020

Vision

The City of Covington is a thriving collection of communities where residents and businesses are blessed to live, work, and play in a healthy and productive environment that supports the historically unique natural, cultural, and creative assets of Louisiana.

Central to achieving this vision is working with natural resources, water being the most vital, abundant, and powerful force, and adapting human developments and activities to promote social, environmental and economic objectives.

What is Low Impact Development?

What is Low Impact Development?

- An approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible.
- Systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater to protect water quality and associated aquatic habitat.

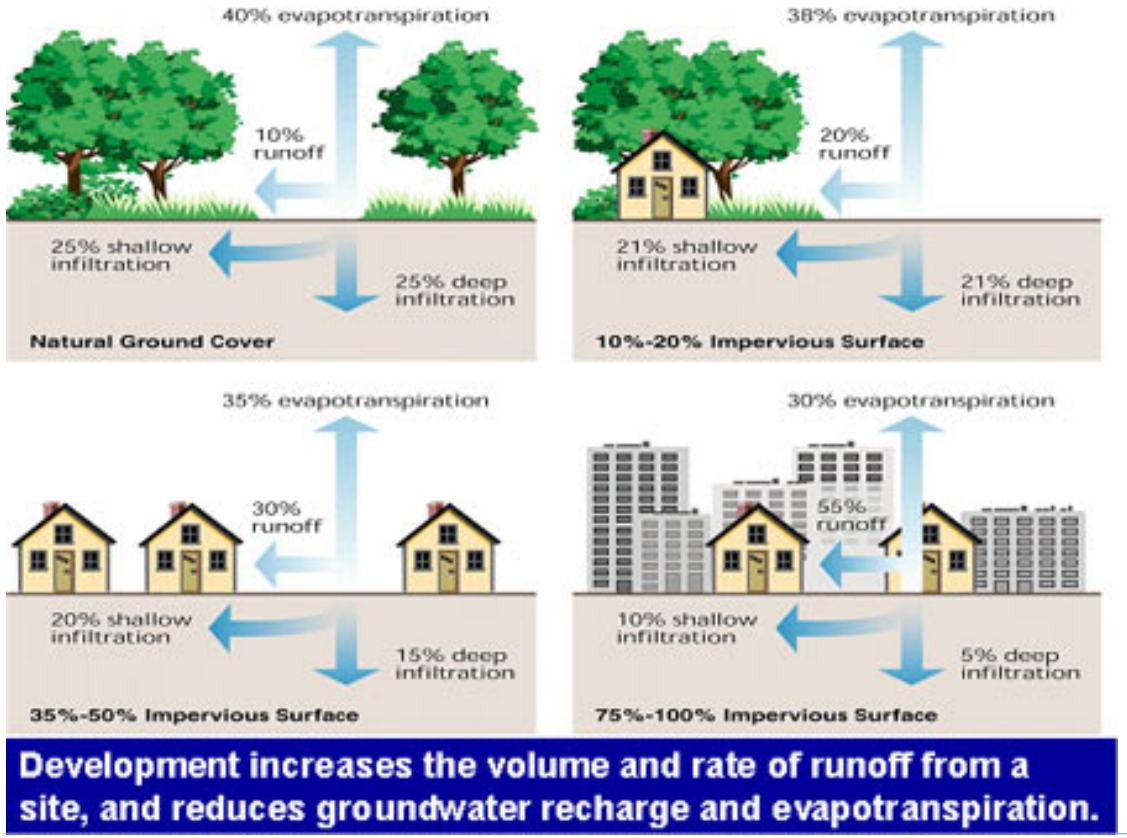
Rain Garden. Source: https://www.ces.ncsu.edu

Why Low Impact Development?

- Rainfall cannot soak through impervious surfaces; instead, the rainwater flows quickly across them—picking up pollutants along the way—and enters ditches or storm drains, which usually empty directly and without treatment into local waterways.
- Stormwater runoff accumulates pollutants such as oil, plastics, herbicides, sediments, metals, hydrocarbons, and nutrients from impervious surfaces and discharge these to surface waters. LID practices help reduce the amount of pollutants reaching local waters.

Source: https://www.neponset.org

Why Low Impact Development?



IMPERVIOUS SURFACES

- As cities grow, the natural landscape is replaced by roads, buildings, housing developments, and parking lots (impervious surfaces), reducing the area where infiltration to groundwater can occur.
- Impervious surfaces affect local water bodies, both in water quality, streamflow, and flooding characteristics.
- In a developed watershed, more water arrives into a natural water body, at a faster pace, resulting in an increased pollution and flood risk.

Source: epa.gov

Why Low Impact Development?

DRAINAGE AND FLOOD RISK

- In communities that rely on ditches and drains to divert runoff to local waterways, flooding can occur when large volumes of stormwater enter surface waters very quickly.
- Holistically incorporating LID practices can reduce the volume and speed of stormwater runoff and decrease flood risk to people and property

Flooding in the parking lot of Archbishop Hannon High School in Covington on May 15, 2020
Source: The Advocate

Why Low Impact Development?

WHAT DOES LOW IMPACT DEVELOPMENT INCLUDE?

- Maintenance or restoration of natural storage reservoirs and drainage corridors
- Buffer zones for natural water bodies
- Conservation of natural areas within the project footprint including existing trees, vegetation, and soils
- Construction of streets, sidewalks, or parking lot aisles to the minimum widths necessary, provided public safety is not compromised
- Minimization of the impervious footprint of the project
- Minimization of soil compaction to landscaped areas
- Disconnection of impervious surfaces through distributed pervious areas
- Landscaped or other pervious areas designed and constructed to effectively receive and infiltrate, retain and/or treat runoff from impervious areas, prior to discharging to the drainage system or water bodies
- Small collection strategies located at, or as close as possible to the source to minimize the transport of runoff and pollutants to receiving waters
- Use of permeable materials for projects with low traffic areas and appropriate soil conditions
- Landscaping with native water loving species
- Harvesting and using precipitation as a resource

Green Infrastructure and Storm Management Overview

Gray and Green Integrated Stormwater

“Gray" stormwater infrastructure is designed to move urban stormwater away from the built environment and includes curbs, gutters, drains, piping, and collection systems.

Gray infrastructure collects and conveys stormwater from impervious surfaces, such as roadways, parking lots and rooftops, into a series of pipes that ultimately discharges untreated stormwater into a local water body.

“Green" stormwater infrastructure is designed to mimic nature and capture rainwater where it falls.

Benefits of Integrated Stormwater Management

MULTIPLE BENEFITS from INTEGRATED STORMWATER MANAGEMENT

- Flood resilience for people, homes, businesses & infrastructure
- Evacuation routes shielded
- Reduced flood insurance rates
- Improved water quality & environment
- Social, recreational, and health benefits
- Job creation
- Economic Development

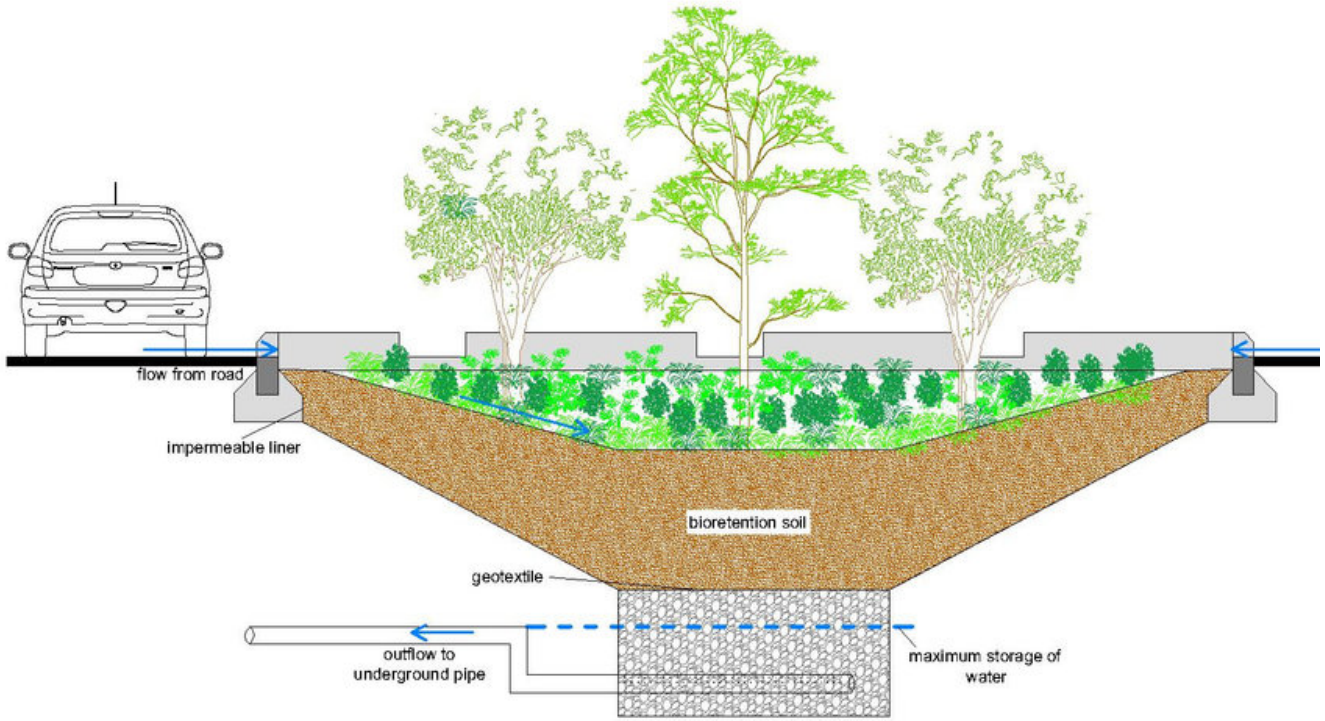
Green Infrastructure Examples

Green Infrastructure Example
Source: https://www.nrdc.org

GREEN INFRASTRUCTURE

- *Green Infrastructure (GI)* refers to the built features that mimic natural processes to manage stormwater runoff and reduce pollutants
- At both the local and regional scale, Low Impact Development and green infrastructure practices aim to preserve, restore and create green space using soils, vegetation, and rainwater harvest techniques.

Green Infrastructure Examples

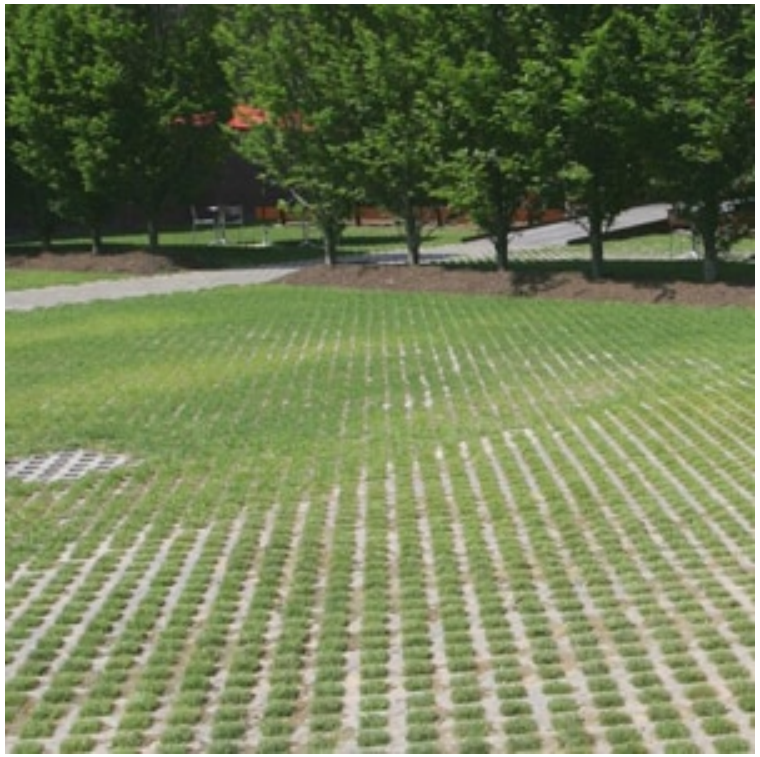


BIORETENTION / BIOSWALES

- Natural areas for absorbing rain
- Slow the flow of and filter pollutants from runoff
- Most common form of green infrastructure
- Used for urban flood control, rainwater harvest, water quality improvements, and ecological restoration

Bioretention System
Source: https://www.kurtz-bros.com

Green Infrastructure Examples



PERMEABLE PAVERS

- Stormwater infiltrates through the surface into the soil, allowing natural filtration and pollutant removal
- Erosion prevention and longer lifespan
- Applications
  - Driveways
  - Parking lots
  - Patios
  - Spillways
  - Embankments
  - Emergency access areas

Permeable Pavers
Source: https://www.kurtz-bros. com

Green Infrastructure Examples

GREEN ROOFS

- Reduce energy consumption and stormwater runoff
- Protect structural integrity and the roof's lifespan
- Reduce pollution
- Offset the urban heat effect

Green Roofs
Source: https://www.klausinggroup.com

Green Infrastructure Examples

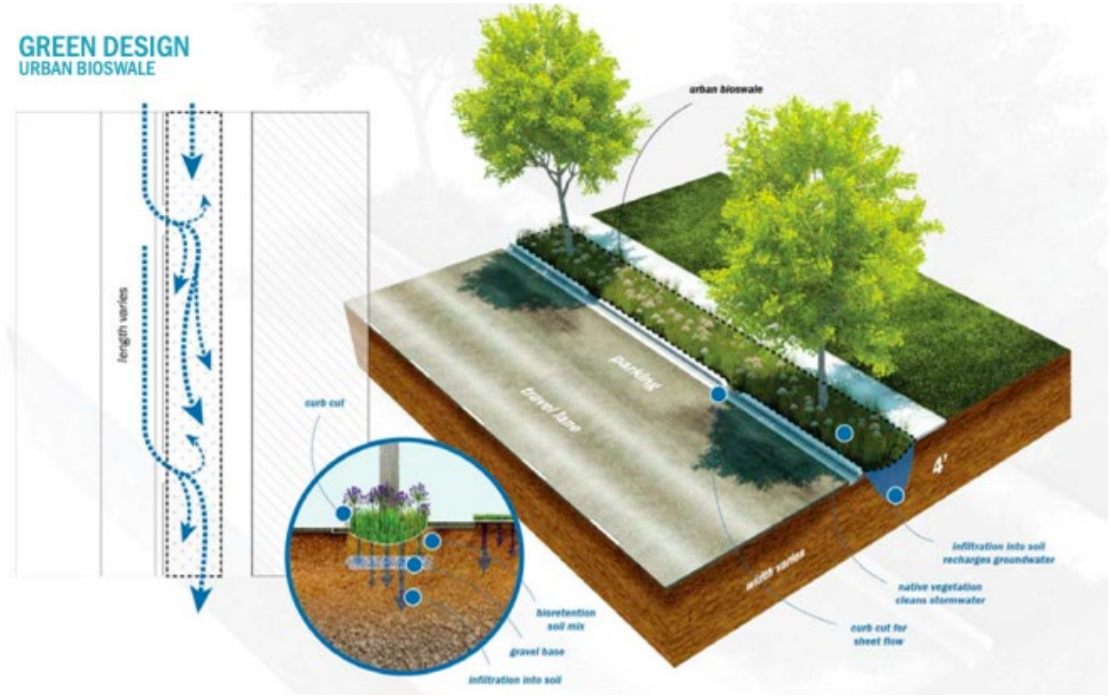
RAIN GARDENS

- Absorb rainwater and allow it to percolate
- Filter contaminants
- Remove debris/sedimentation from rainwater
- Reduce/eliminate flooding
- Create natural habitats

Rain garden:
Source: https://www.klausinggroup.com

Green Infrastructure Examples

EXAMPLES OF GRAY INFRASTRUCTURE AND GREEN INFRASTRUCTURE WORKING TOGETHER TO ADDRESS STORMWATER



Source: Dana Brown & Associates

Green Integrated Resources

MORE RESOURCES ON GREEN INFRASTRUCTURE:

- Animated video on green infrastructure in New Orleans
  - https://vimeo.com/151548702
- A compendium of stormwater management projects from around the Greater New Orleans region
  - https://louisianastormwater.files.wordpress.com/2015/06/stormwater-compendium_2015-06-05_sm.pdf
- The Joy of Water, A homeowner's guide to water management
  - https://louisianastormwater.files.wordpress.com/2011/02/cookbook_v5_sequential.pdf
- The Center for Watershed Protection
  - https://www.cwp.org/

Why Low Impact Development is important to our city and economy

Why Low Impact Development?

Baton Rouge, 2016

Image from NOAA Article: ***"Climate change increased chances of record rains in Louisiana by at least 40 percent"***

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2019 STUDY ON CHANGING PRECIPITATION IN LOUISIANA

- Today's showers on the average are more intense and deposit their rain loads in a shorter period than they did in the early 1960s.
- "As everything warms, water vapor in the atmosphere goes up and the precipitation rate goes up," Harold Brooks, National Severe Storms Laboratory
- "The risk of flash flooding and soil runoff is growing, water quality is impacted, and infrastructure as well as urban planning may have to be rethought," Vinny Brown, LSU Assistant Professor.

Source: https://www.theadvocate.com

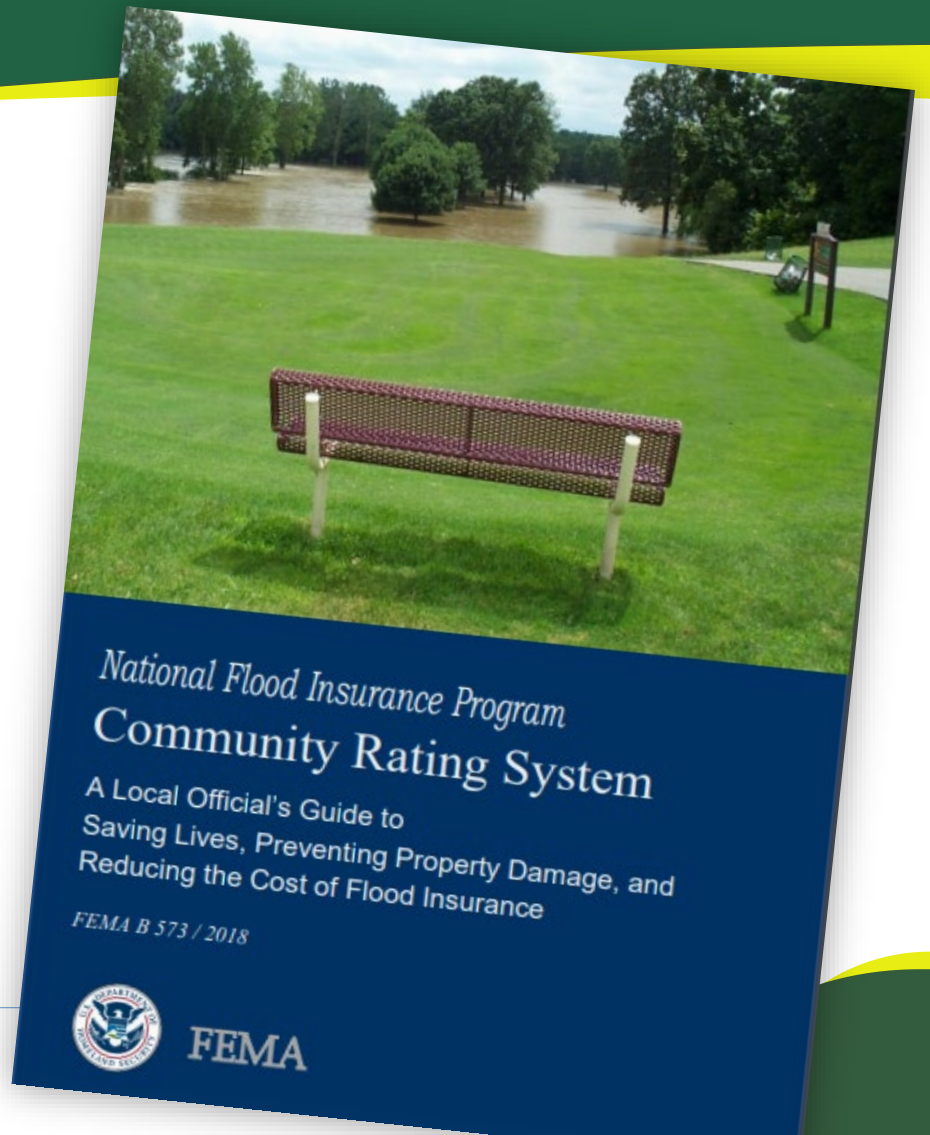
Current Covington Drainage Challenges

- In the past 10 years, multiple storm events and surge events have exceeded 1% annual chance scenarios.
- Frequent flooding in Covington results from intense rainfall in the upper reaches of the Tchefuncte and Bogue Falaya rivers combined with the inadequate channel system for runoff conveyance.
- Flooding will intensify as development increases along Lake Pontchartrain and interstates.

Tchefuncte Flooding
Source: https://ssl.c.photoshelter.com

Community Rating System (CRS)

- A FEMA flood insurance program that incentivizes integrated floodplain management by offering a flood insurance premium discount to communities based on activities that earn points.
- City of Covington is rated a Class 9 community which means residents are earning a 5% discount on their flood insurance premiums.
- Additional points and savings are available for the following activities:
  - Public Information
    - *Elevation Certificates, Map Information Services, Outreach Projects, Hazard Disclosure, Flood Protection Information and Assistance, Flood Insurance Promotion*
  - *Mapping and Regulations*
    - *Floodplain Mapping, Open Space Preservation, Higher Regulatory Standards, Flood Data Maintenance and Stormwater Management*
  - *Flood Damage Reduction*
    - *Floodplain Management Planning, Acquisition and Relocation, Flood Protection and Drainage System Maintenance*
  - *Flood Preparedness*
    - *Flood Warning and Response, Levee Expansion and Maintenance, High Hazard-Potential Dams*

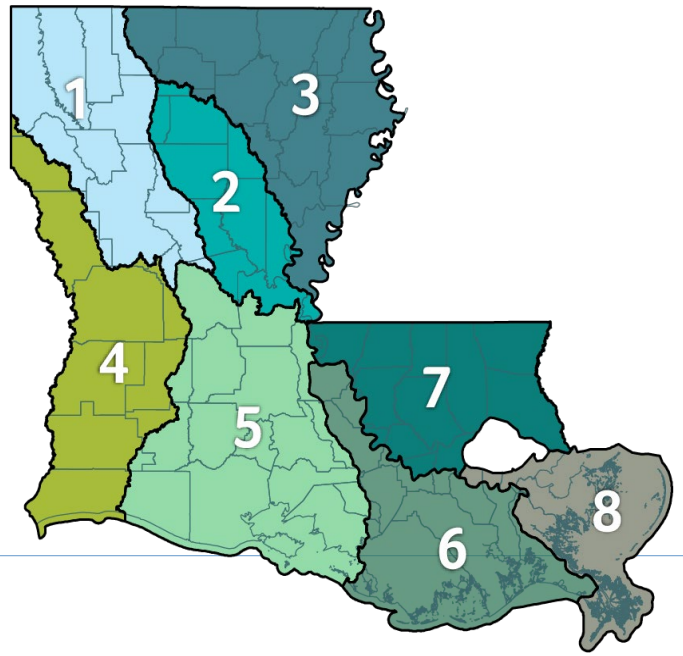


Source: FEMA.GOV

Regional Approach

Louisiana Watershed Initiative (LWI)

LOUISIANA WATERSHED INITIATIVE



- Building on the efforts and methodologies of both the Coastal Master Plan and LA SAFE, the LWI takes a statewide approach to ***watershed-based floodplain management to reduce flood risk vulnerabilities*** through pre-disaster mapping, modeling, and watershed management planning – backed by large-scale investments in projects and programs that directly mitigate risks.
- The LWI combines the Coastal Master Plan's focus on data, science and engineering with the community engagement lessons learned through LA SAFE to work across all sectors of government.
- The state commits to working in partnership with local communities statewide toward an integrated, watershed-based approach to floodplain management that combines physical, biological, ecological, socioeconomic, and policy-based solutions emanating from a comprehensive scientific understanding of the state's hydrologic processes.

Louisiana Office of Community Development's LA SAFE Adaptation Strategy

Covington is part of the St Tammany LA SAFE plan which includes regional solutions for adapting to change in Southern Louisiana's communities

Several key recommendations of the plan include:

- Manage flooding and subsidence through updated water management programs and policies
- Create safe and vibrant communities that attract and retain residents of all ages
- Improve mobility throughout the City by promoting multiple modes of transportation
- Strengthen and diversify local economies by enhancing coordination among schools and local industry;
- Protect and promote historic and cultural assets of the City