



OFFICE OF SUSTAINABILITY

STAR Communities & office update

Columbia City Council pre-Council
January 3, 2017

The Office of Sustainability works with all City departments and the community to optimize resource use efficiency and improve economic, environmental, and social well-being.

Office of Sustainability mission

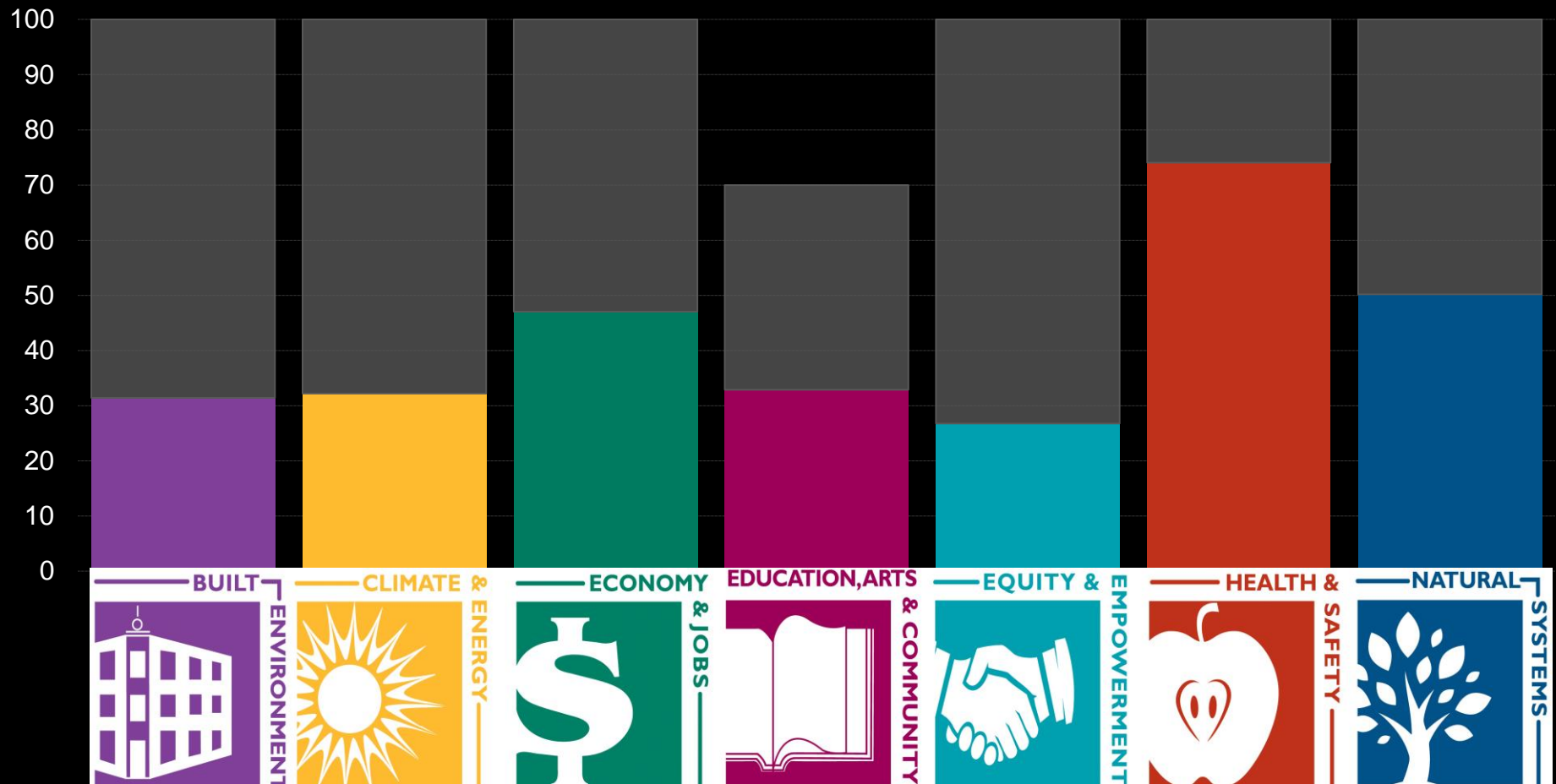
Benchmarking Sustainability

STAR Rating System



Benchmarking Sustainability

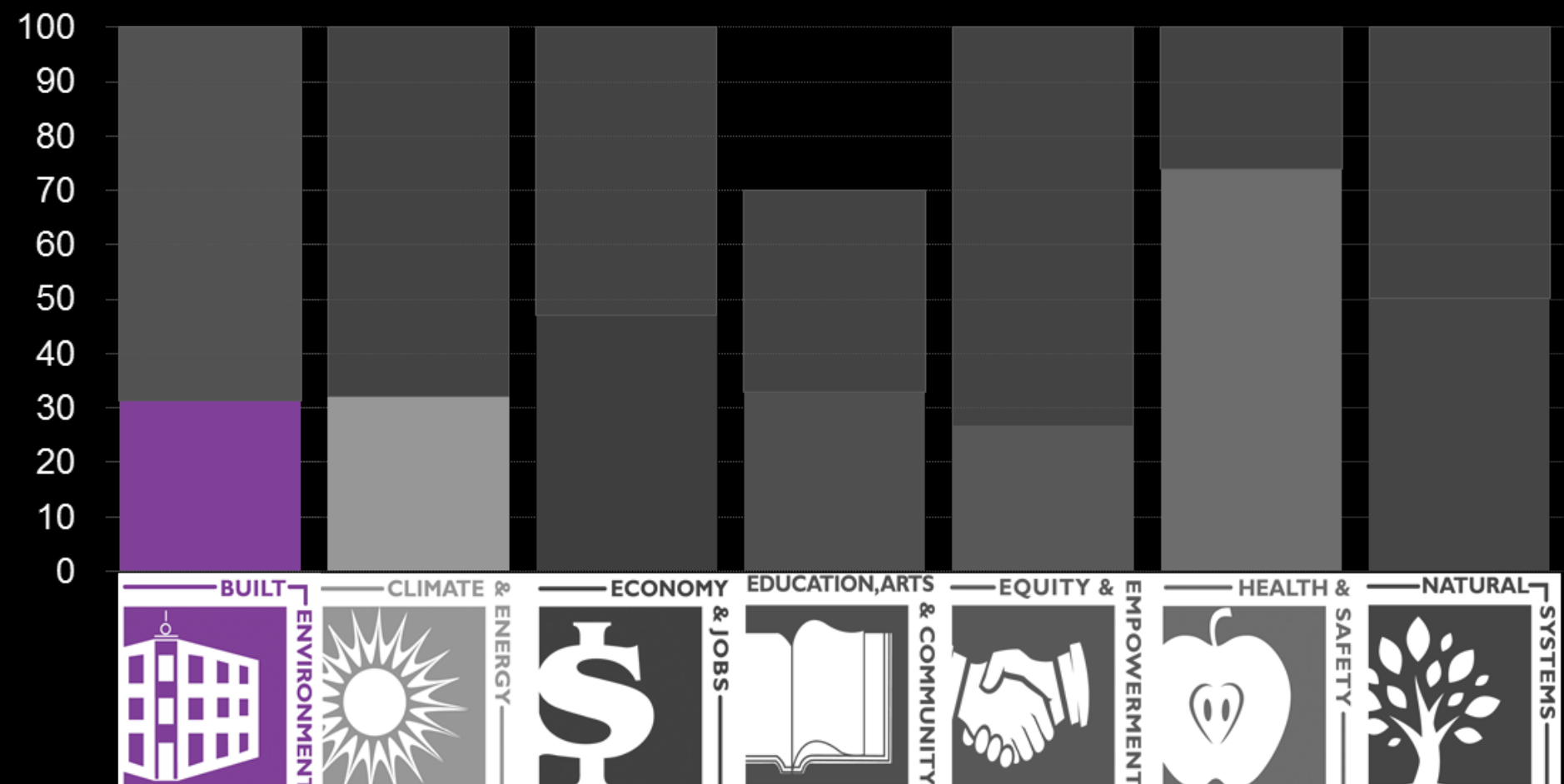
STAR Rating System



Benchmarking Sustainability

STAR Rating System

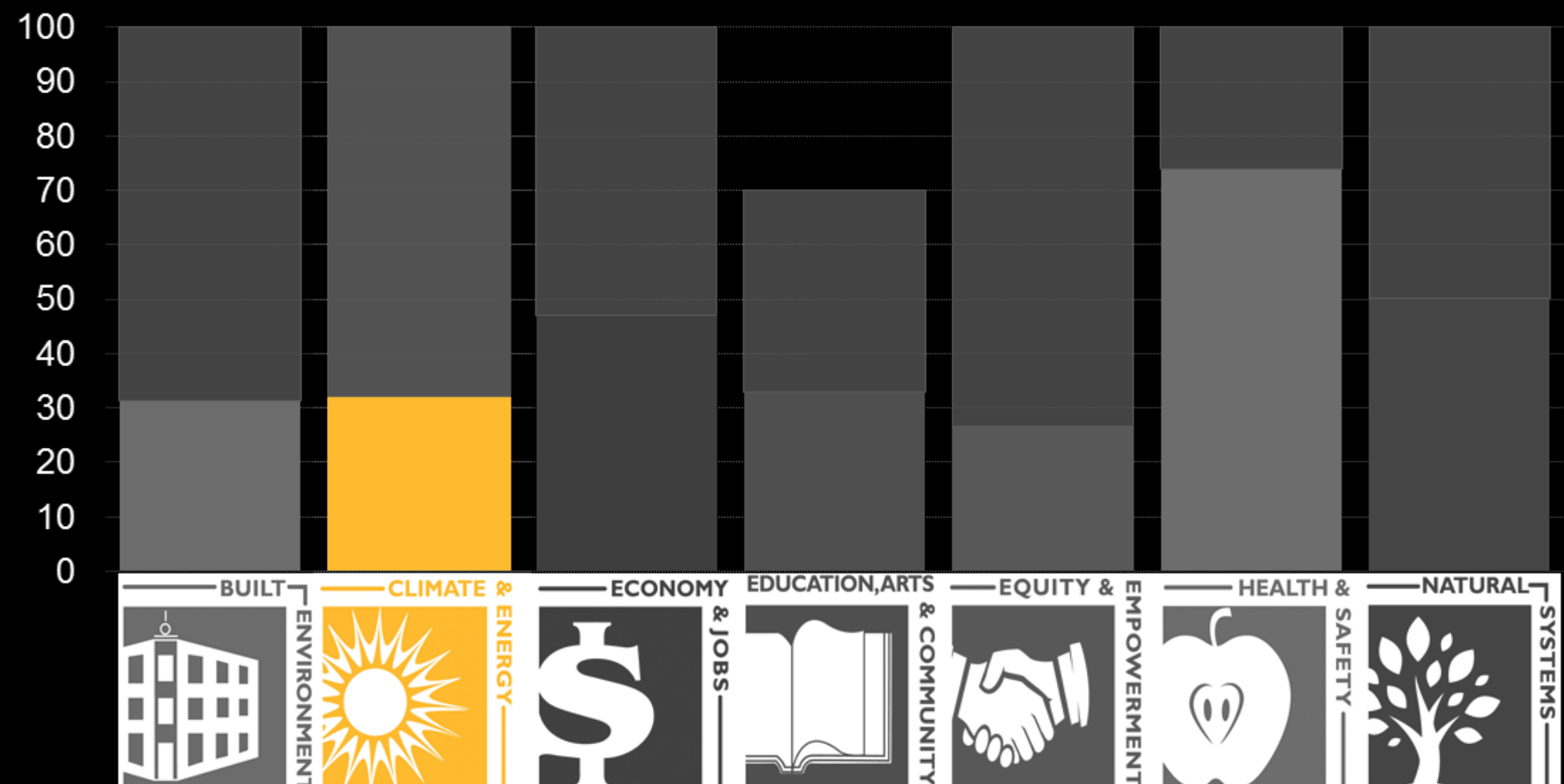
Built Environment – 31.4 points



Benchmarking Sustainability

STAR Rating System

Climate & Energy – 32.2 points



Benchmarking Sustainability

STAR Rating System

Economy & Jobs – 47 points



Benchmarking Sustainability

STAR Rating System

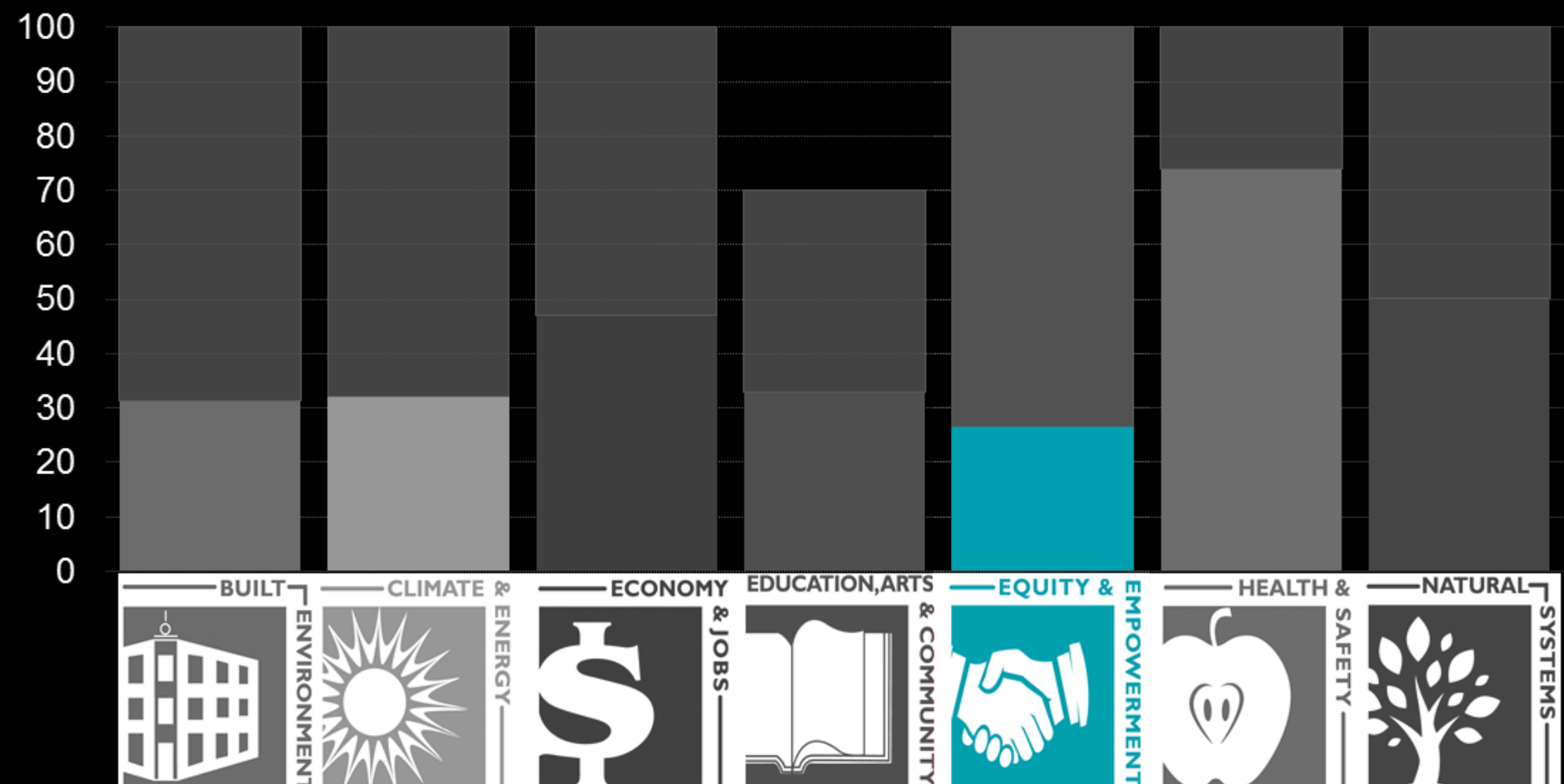
Education, Arts & Community – 32.9 points



Benchmarking Sustainability

STAR Rating System

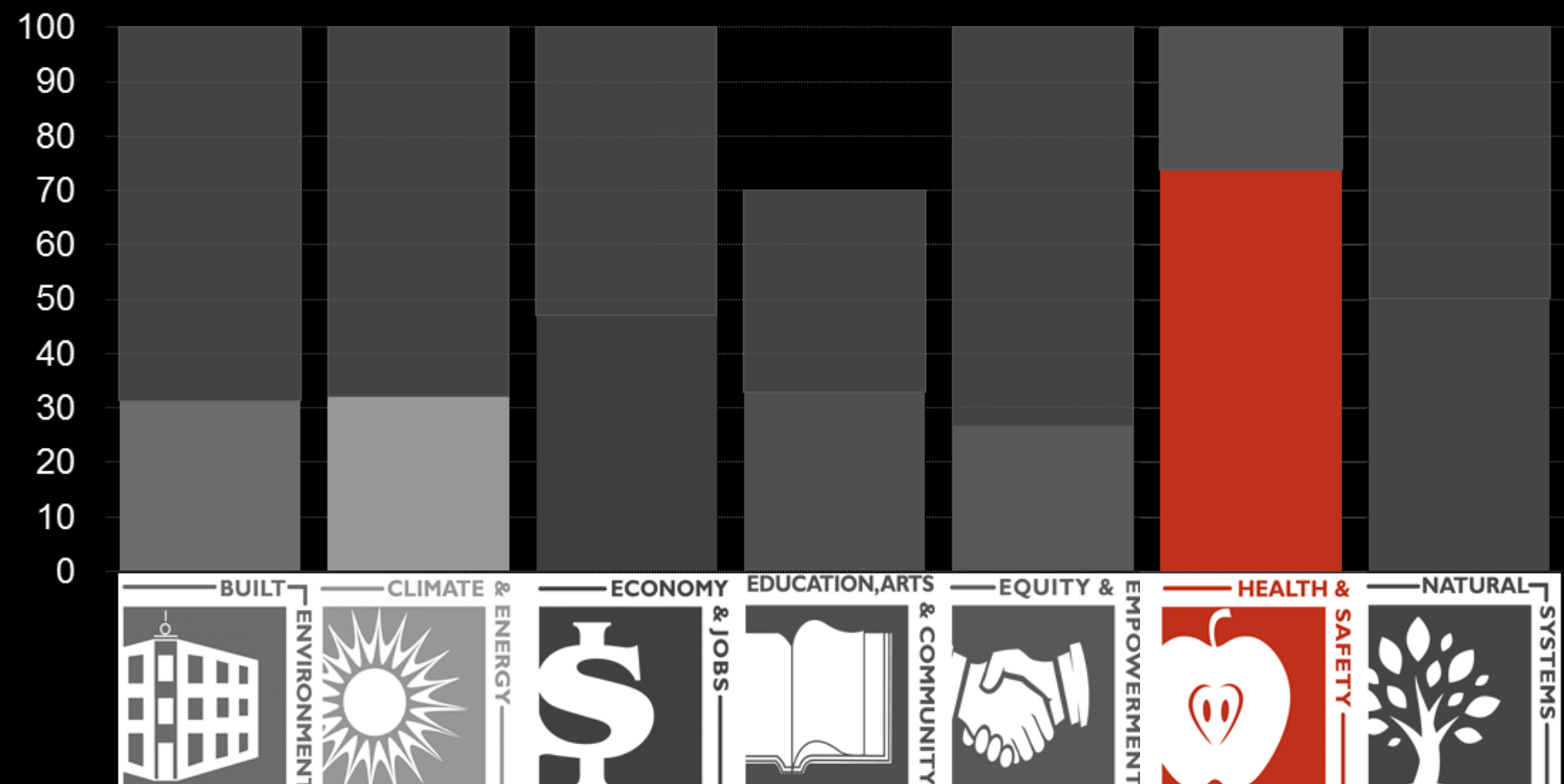
Equity & Empowerment – 26.8 points



Benchmarking Sustainability

STAR Rating System

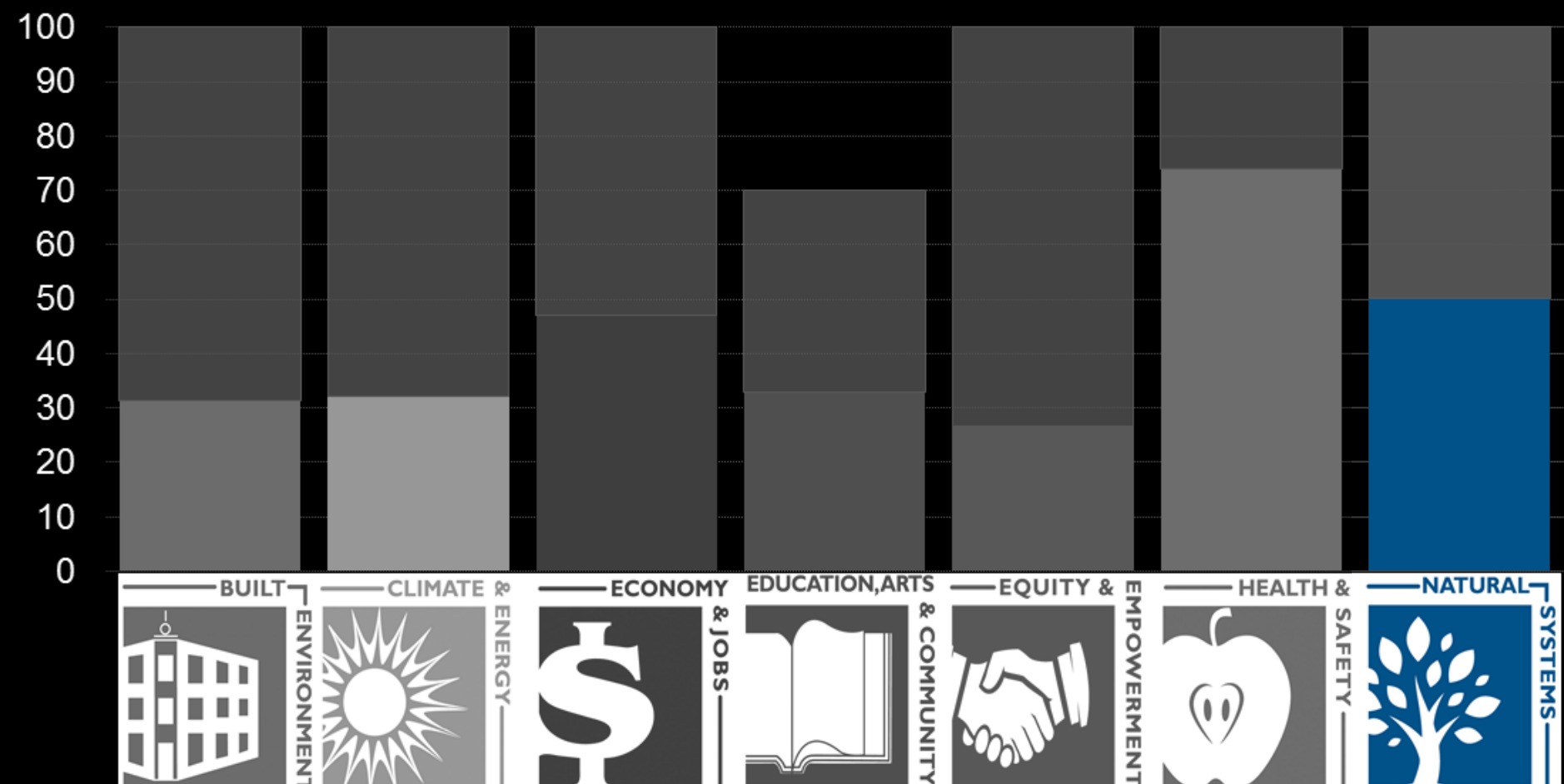
Health & Safety – 74 points



Benchmarking Sustainability

STAR Rating System

Natural Systems – 50 points



Benchmarking Sustainability

STAR Rating System



An aerial night photograph of a city street. The street is illuminated by streetlights, and long light trails from cars are visible. Buildings line both sides of the street, and a tall smokestack is visible in the distance. The word "ENERGY" is overlaid in large white letters.

ENERGY

Eric Hempel, Energy Educator
Eric.Hempel@CoMo.gov

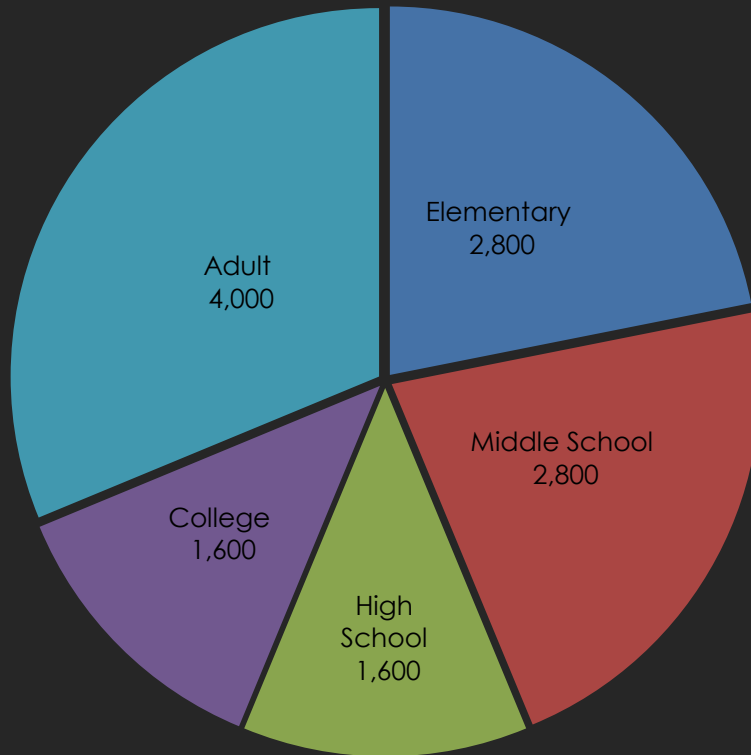
Energy Education History

- Programming began in 1980s
Designed, built, and implemented by
W& L employees
- Energy Educator Position, created in 2013, tasked
to:

**Educate the public on the efficient
use of energy and water, Demand
Side Management programs, and
renewable energy resources and
programs.**

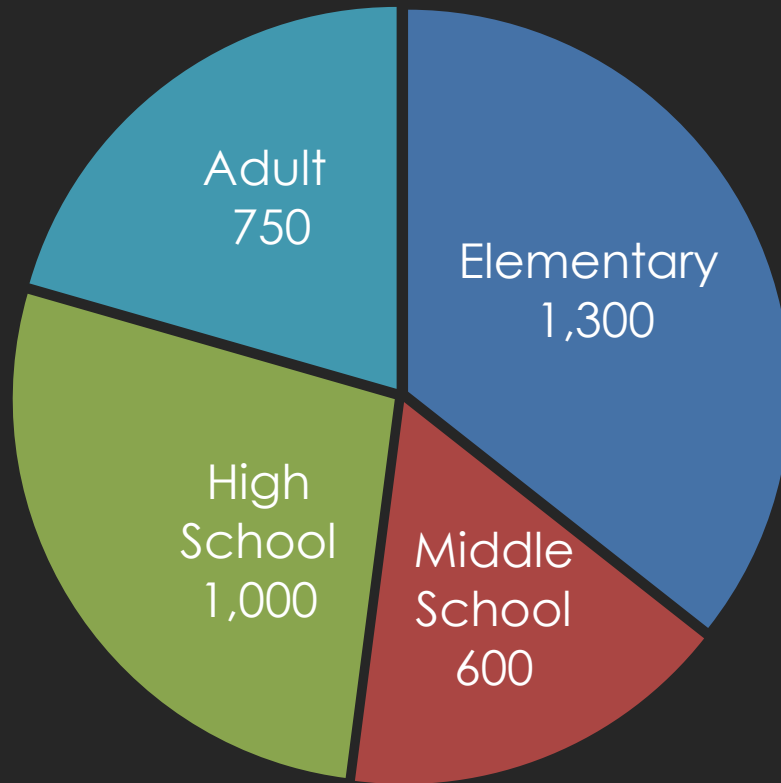


W & L Energy Education City of Columbia FY16



73 individual events
98 days
12,800 citizens

W & L Energy Education Strategic Plan Areas FY16



40 individual events
50 days
3,700 citizens

Columbia Water & Light Educational Programs	
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Please note: Most programs can be customized to fit learning goals, age levels, time constraints, etc.
Contact Eric Hempel (573) 441-5513, eahempel@gocolumbiamo.com with any questions or to schedule a program.

Title	Primary Subject	Description	Grade	Type	Duration	Hands on
Electrical Safety	Electrical Safety	Another Pohlman masterpiece, this display shows where potential dangers in the electrical system are and how we can avoid getting hurt.	Elem and up	Activity	30 min	y
Build a transformer	General Electricity	Why do cars use 12 volts and houses on 120 volts? This two hour program explains why electricity is transmitted the way it is using demonstrations and thermal images. Students will also build and test their own transformers.	MS and up	Activity	2hr	y
Mini Motor	General Electricity	This demonstration and activity introduces the concepts of energy transformation and electromagnetic induction. Students will construct their very own motor using every day materials. The motors can also be spun backwards to produce a current.	MS and up	Activity	1 hr	y



Columbia Water and Light Educational Programs

[illegible]



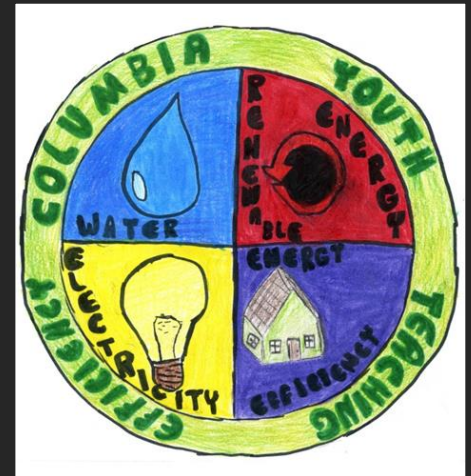
Middle School





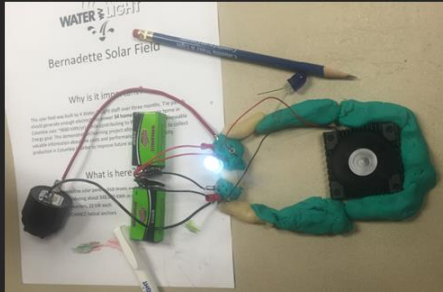
Middle School EEE

Is your house freezing?
Maybe so hot that you sweat?
Bro, insulation.





Douglass HS



After
School



Festivals
Summer events



Facility Tours

SIL

Services for Independent Living



Other partners



Priority Projects

YOU'RE INVITED! OPEN HOUSE
COLUMBIA, MO
WATER RESOURCE PLAN



Please join us and learn about the Columbia, Mo Water Resource Plan! Come and go, ask questions and provide important feedback for the plan.

Wednesday October 19 2016

COME AND GO ANYTIME
BETWEEN 5:30 - 7:30 PM
Activity & Recreation Center
1701 W. Ash Street
Columbia, MO 65203



Rental Property Owners



Do you want to get paid rebates to improve your rental property?
Do you want to have comfortable, happy tenants with less turnover?
Do you want to increase the long-term property value of your rental property?

Home Performance with Energy Star can help.

Create a competitive edge in the rental market by making your rental units more energy efficient. You can earn up to \$1,200 in rebates for making the improvements.

What rebates are available?

Qualifying Improvement	Home Performance with Energy Star \$1,200 maximum
New AC/heat pump	\$200 (plus up to \$1,600 offered separately)
New windows and doors	\$100/opening, 5 openings max
Whole house air sealing	Up to \$420

How does your attic measure up?

As energy prices and building codes change over time, so does the depth of insulation typically installed in attics. Use these estimates to find out how much you could save on heating and cooling in a year by improving your attic insulation to 18" (R-50).

Calculations based on 1100 ft² living space

When was your house built?		Before 1970 Average attic insulation 6" (R-19)		1970-1989 Average attic insulation 9" (R-26)		1990-2010 Average attic insulation 11" (R-30)	
How do you heat your house?	Heating system type	Annual Utility Savings at R-50	Payoff (years)	Annual Utility Savings at R-50	Payoff (years)	Annual Utility Savings at R-50	Payoff (years)
	ELECTRIC	Older \$246 Newer \$131	2 - 4	Older \$173 Newer \$90	3 - 5	Older \$127 Newer \$64	5 - 9
How much will it cost?	Heating system type	Annual Utility Savings at R-50	Payoff (years)	Annual Utility Savings at R-50	Payoff (years)	Annual Utility Savings at R-50	Payoff (years)
	GAS	Older \$134 Newer \$89	4 - 6	Older \$94 Newer \$60	5 - 8	Older \$69 Newer \$46	9 - 13

qualifies with installation of ex/heat pump

Have your voice & ideas heard on how we can
save energy in RENTAL HOUSING

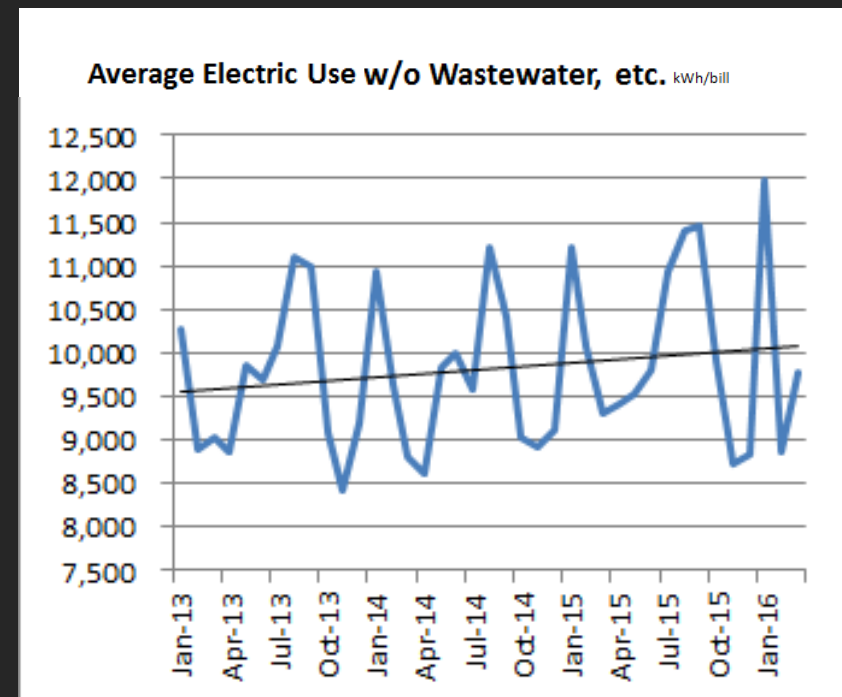
Strategic Plan
2016-2019

City of Columbia, Missouri



Looking Forward – Resource Efficient City Facilities

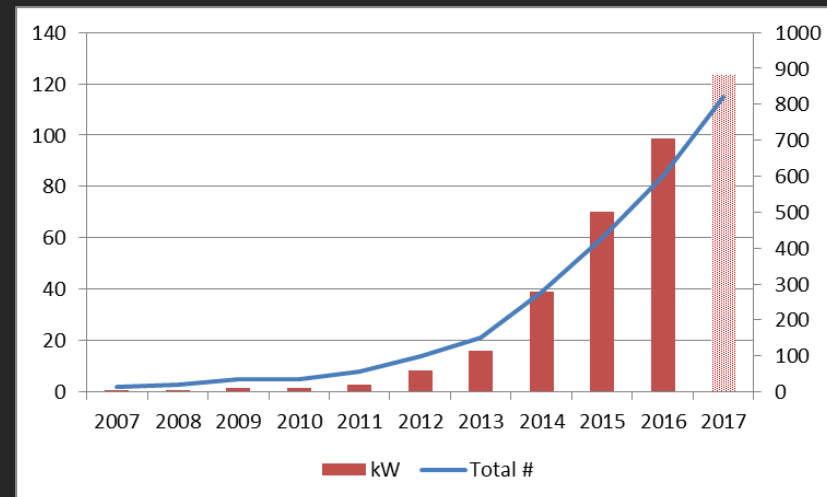
- ❖ **Evaluation Schedule**
- ❖ **Efficiency standard**
- ❖ **Training and Education**
 - **How buildings work**
 - **Impact of improvements
\$, Energy, GHG**



Looking Forward – Solar in CoMo



- ❖ SolSmart Gold
- ❖ One of 22 U.S. cities selected by DOE to receive training and assistance
- ❖ Commercial and residential interconnections
 - 2016 – 84 systems, 706 kW



An aerial night photograph of a city street, likely in a downtown area. The street is illuminated by streetlights, and the long exposure of the camera has created bright white and red light trails from moving vehicles. The surrounding buildings are lit up, and a tall industrial smokestack is visible in the background on the left. The overall scene is a vibrant urban nightscape.

RECYCLING

Ben Kreitner, Waste Minimization Coordinator
Ben.Kreitner@CoMo.gov

Waste Diversion Programs

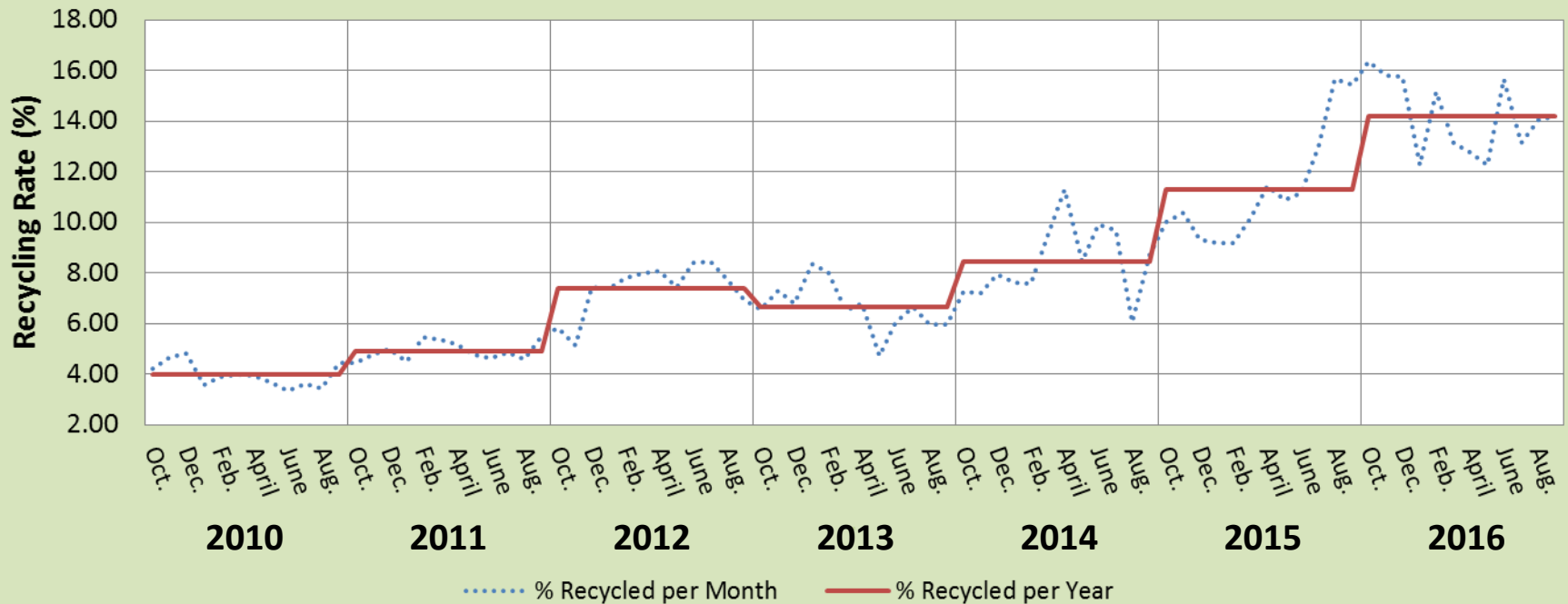
- Apartment Recycling
- Commercial Food Waste
- Curbside Collection
- Household Hazardous Waste
- Recycling Drop-off Sites
- Volunteer Programs
- Yard Waste Drop-off



Where have we seen the
greatest improvement?

Recycling Rates

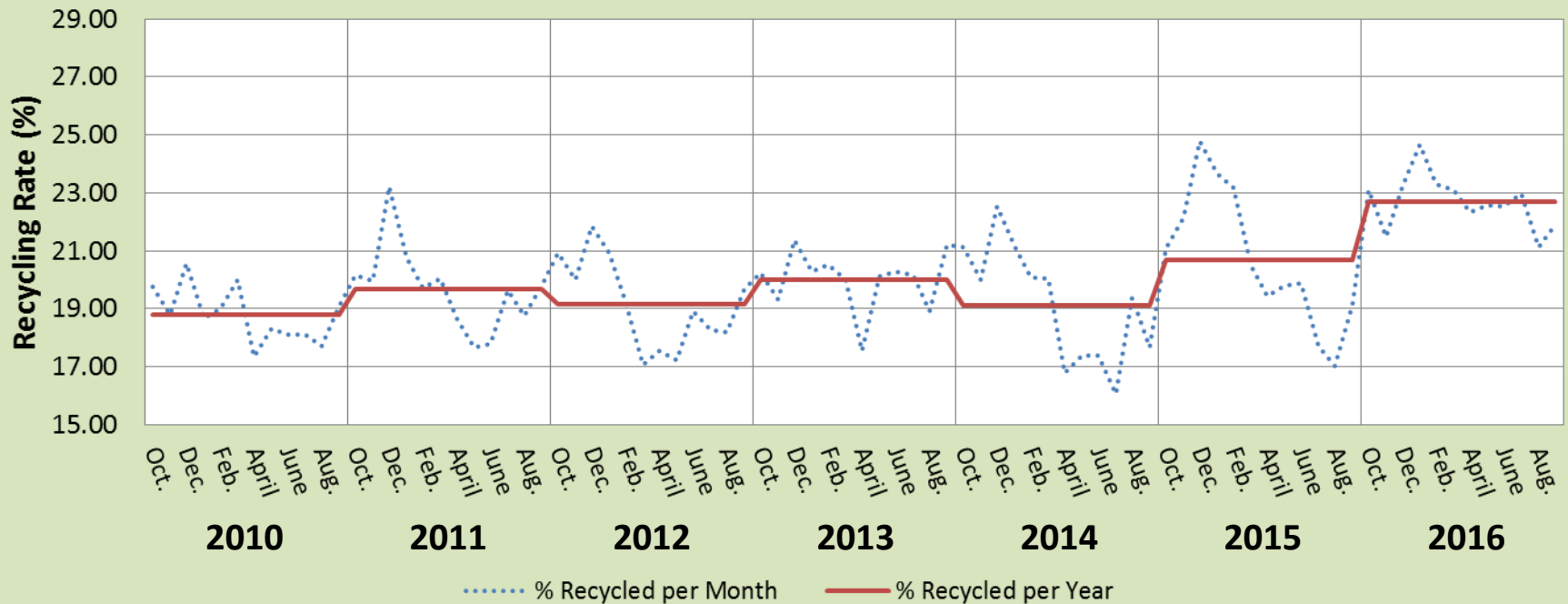
Commercial Recycling Rate: FY2010 - FY2016



Gather Baseline Data

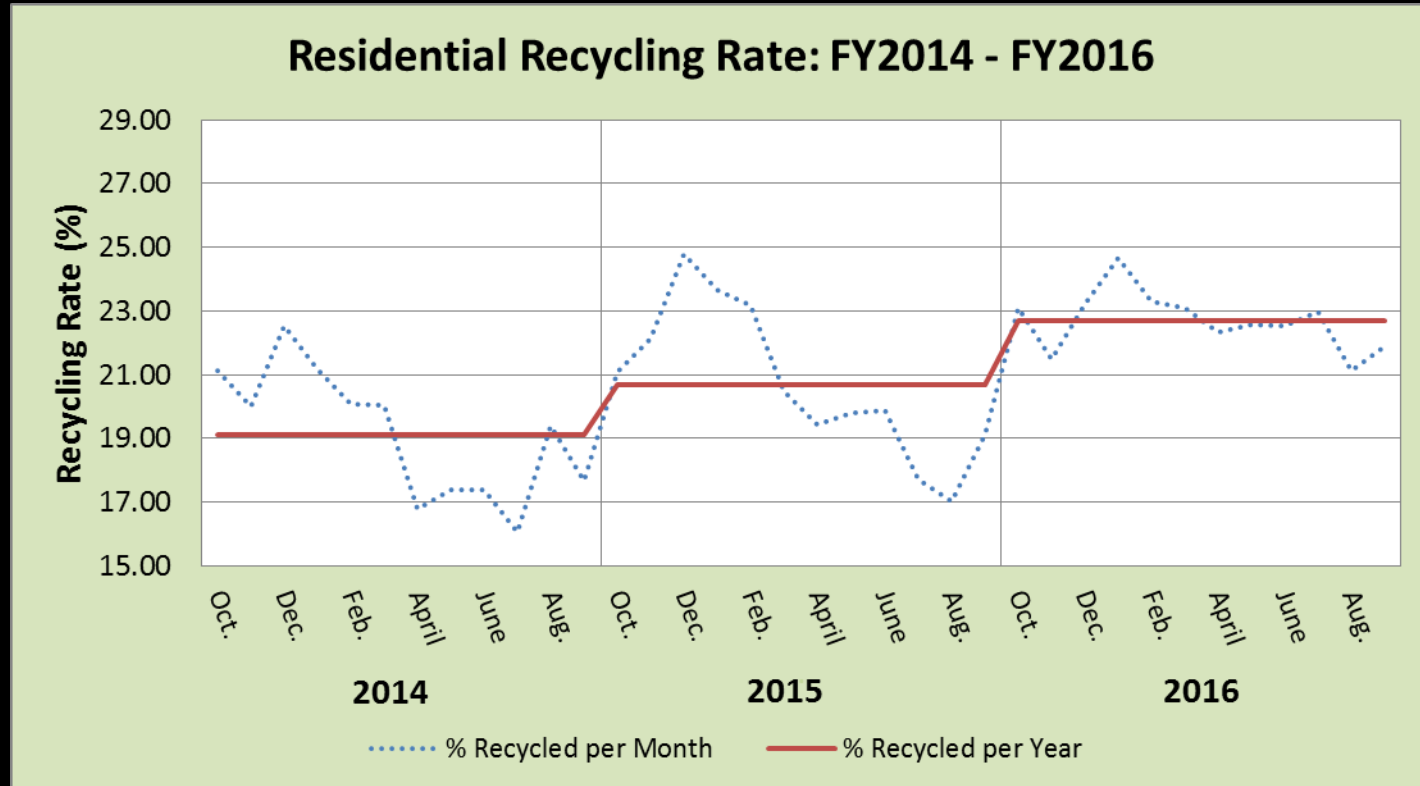
Recycling Rates

Residential Recycling Rate: FY2010 - FY2016



Gather Baseline Data

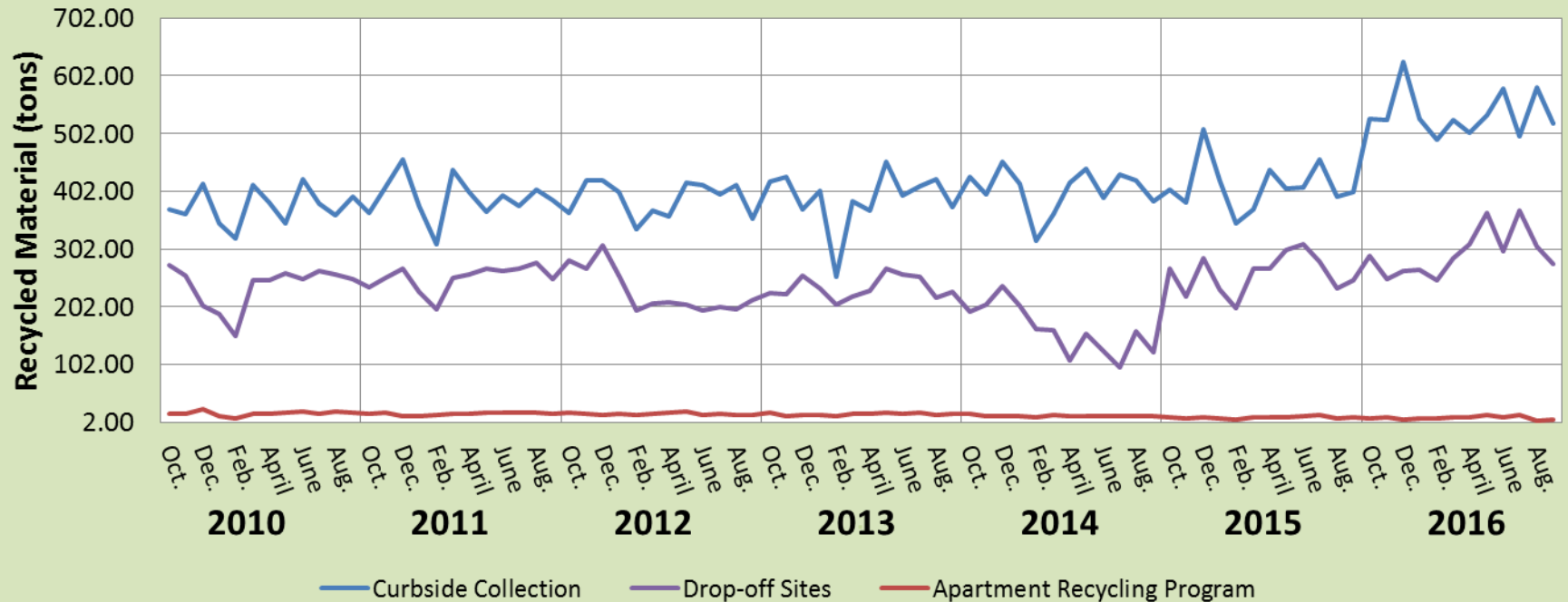
Recycling Rates



Gather Baseline Data

How can we find
weaknesses in a
recycling program?

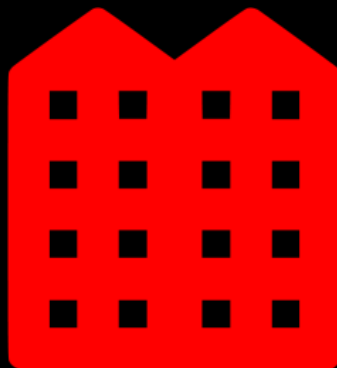
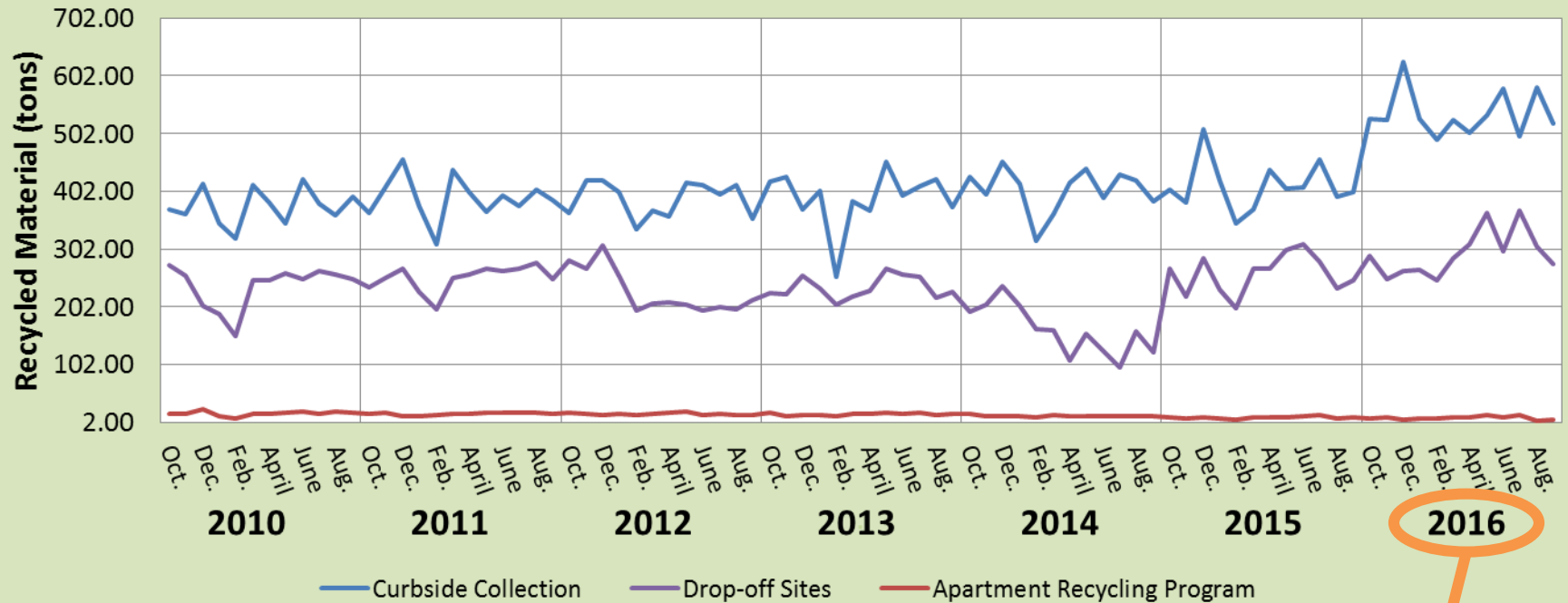
Residential Recycled Material: FY2010 - FY2016



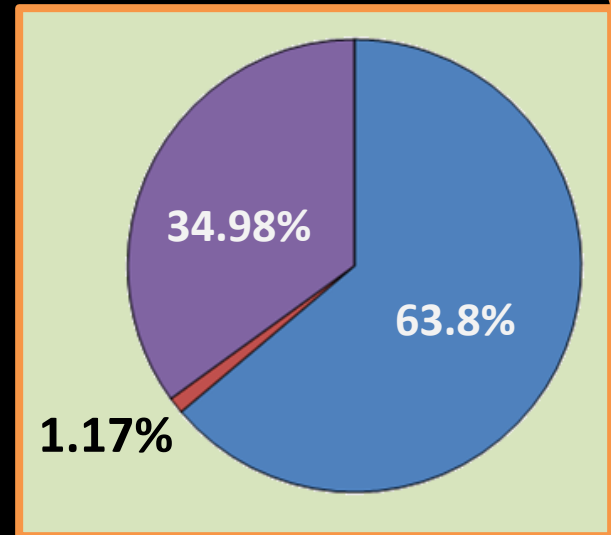
Self Evaluation

Gather Baseline Data

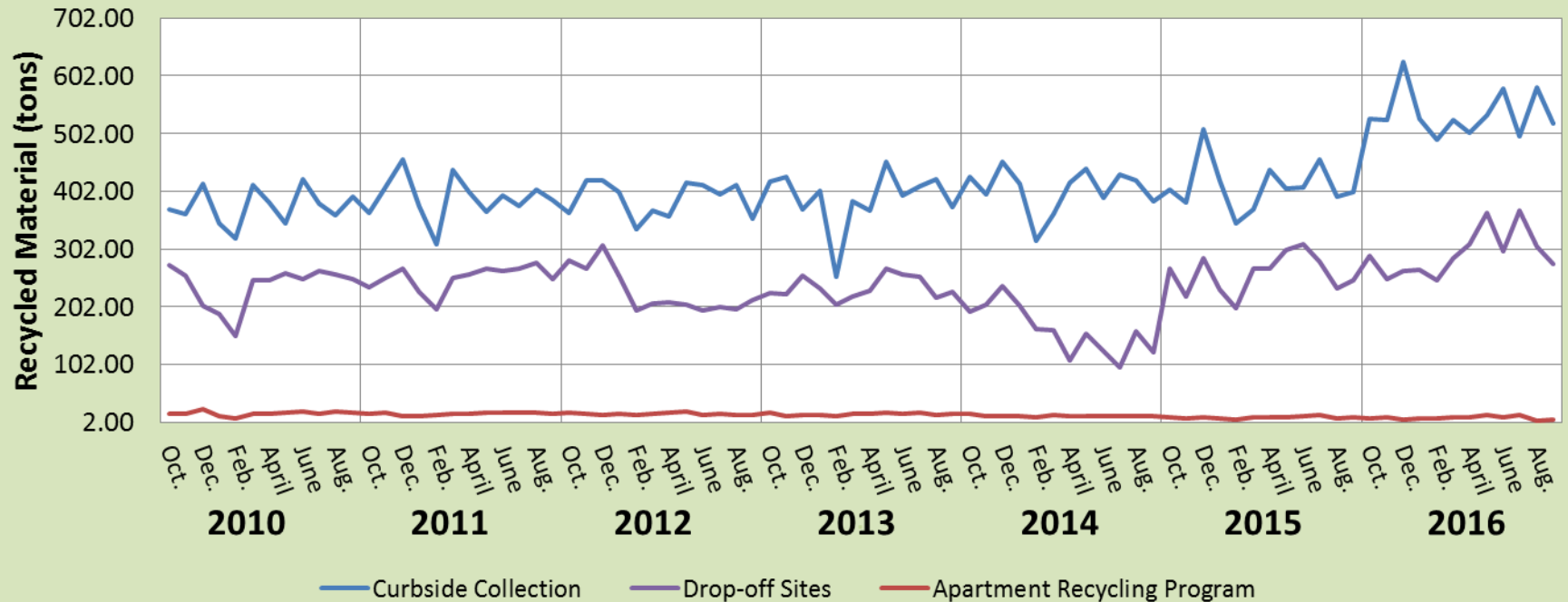
Residential Recycled Material: FY2010 - FY2016

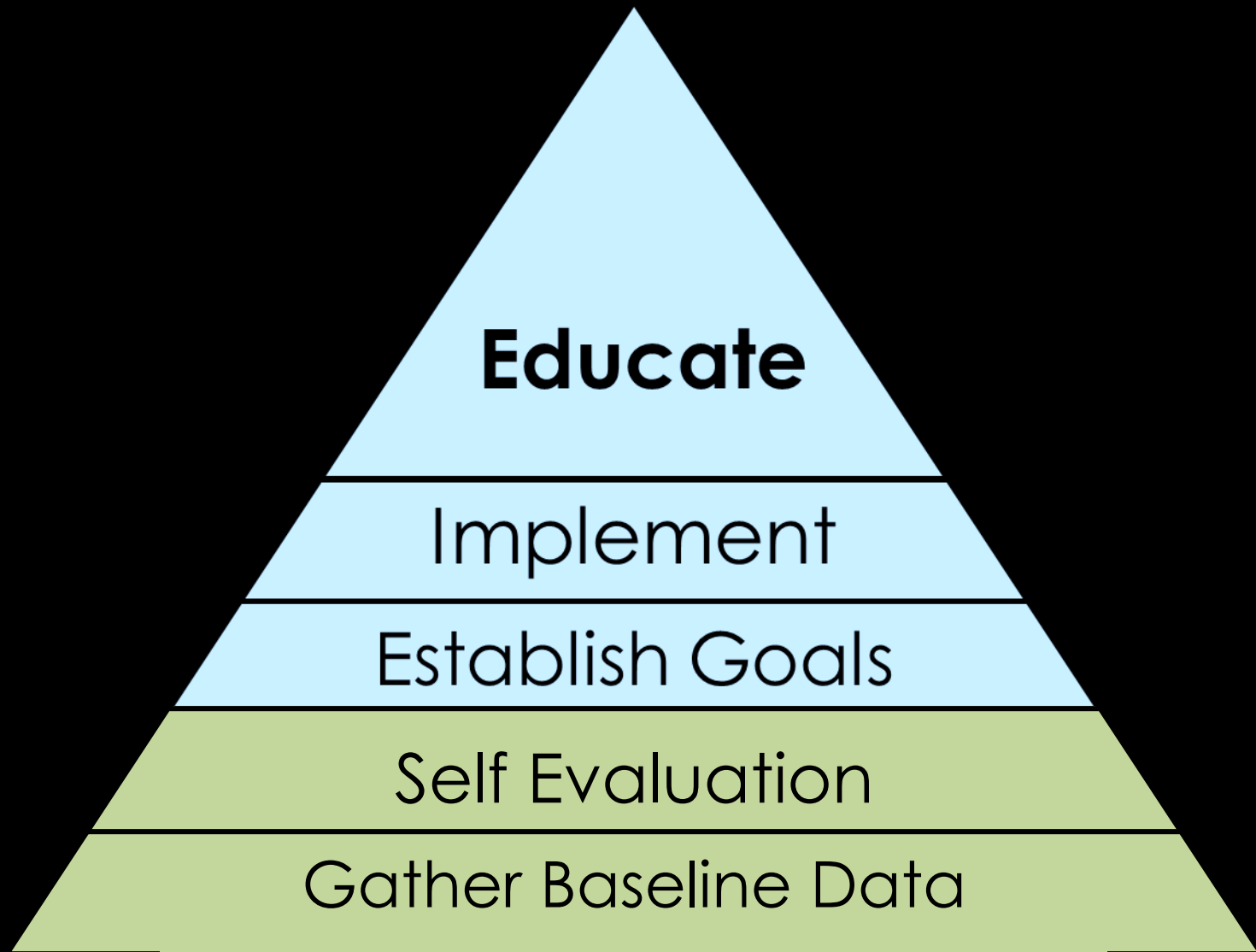


**MULTI-FAMILY
HOUSING**



Residential Recycled Material: FY2010 - FY2016





Future Projects

City Properties:
Expand Recycling Services
and Participation



Columbia Public Schools:
Recycle Bowl Competition

An aerial night photograph of a city street. The street is illuminated by streetlights, and there are long, bright light trails from cars moving through the intersection. Buildings line both sides of the street, and a tall tower is visible in the distance under a dark blue sky.

CONSERVATION

Danielle Fox, Community Conservationist
Danielle.Fox@CoMo.gov

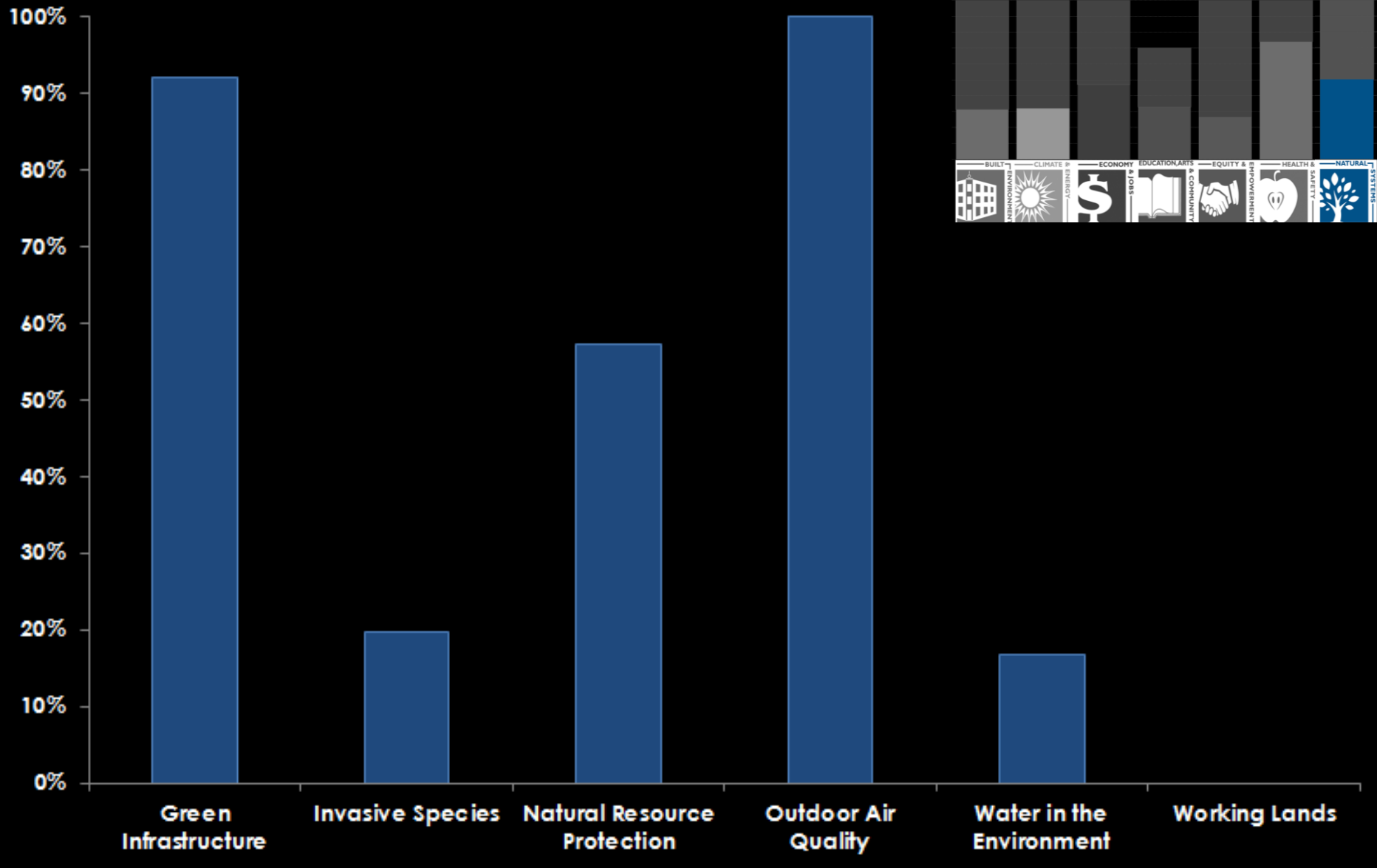
Benchmarking Sustainability

STAR Rating System

Natural Systems – 50 points



STAR Communities - Natural Systems



Where do we start?

Conservation Strategy

- First Step
 - Interdepartmental Conservation Committee
 - Goal: Fall 2017
- Second Step
 - Steering Committee
 - Partners (NGOs, University of Missouri, state and federal agencies, business owners, etc.)
 - Goal: Fall 2018



Current Efforts

- Manage existing natural parks
 - Individual action plans
- Education
 - SustainCoMo internship
 - EcoBlitz! w/ Columbia Public Schools



Current Efforts

- Communication
 - Action plans posted on website
 - City Source article
 - Parks and Recreation Facebook
- Be a leader
 - Demonstrate BMPs
 - Fund restoration projects
 - Help residents
 - Join national and statewide conservation efforts

facebook

CITYSOURCE

City of
Columbia MISSOURI





Mayors' Monarch Pledge

The monarch butterfly is an iconic North American species whose multigenerational migration and metamorphosis from caterpillar to butterfly has captured the imagination of millions of Americans.

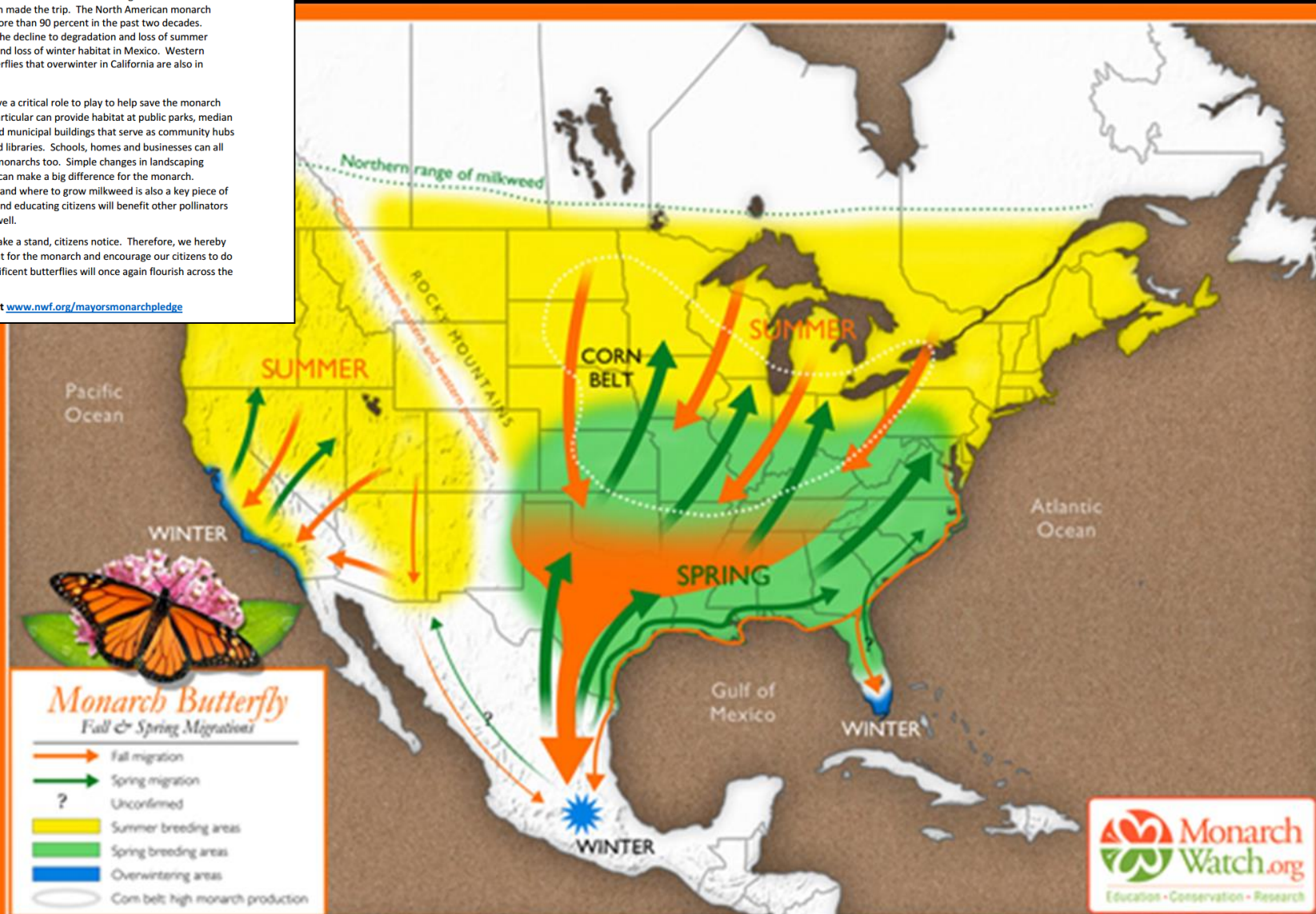
We, the undersigned Mayors and local government chief executives, are deeply concerned about the decline of the monarch butterfly population. Twenty years ago, more than one billion Eastern monarch butterflies migrated to Mexico. In the winter of 2014, only 60 million made the trip. The North American monarch population has declined by more than 90 percent in the past two decades. Monarch scientists attribute the decline to degradation and loss of summer breeding habitat in the U.S., and loss of winter habitat in Mexico. Western populations of monarch butterflies that overwinter in California are also in decline.

Cities, towns and counties have a critical role to play to help save the monarch butterfly. Municipalities in particular can provide habitat at public parks, median strips, community gardens and municipal buildings that serve as community hubs such as recreation centers and libraries. Schools, homes and businesses can all provide essential habitat for monarchs too. Simple changes in landscaping ordinances or school policies can make a big difference for the monarch. Educating citizens about how and where to grow milkweed is also a key piece of the puzzle. Creating habitat and educating citizens will benefit other pollinators that need healthy habitat as well.

When Mayors speak up and take a stand, citizens notice. Therefore, we hereby commit to help restore habitat for the monarch and encourage our citizens to do the same, so that these magnificent butterflies will once again flourish across the continent.

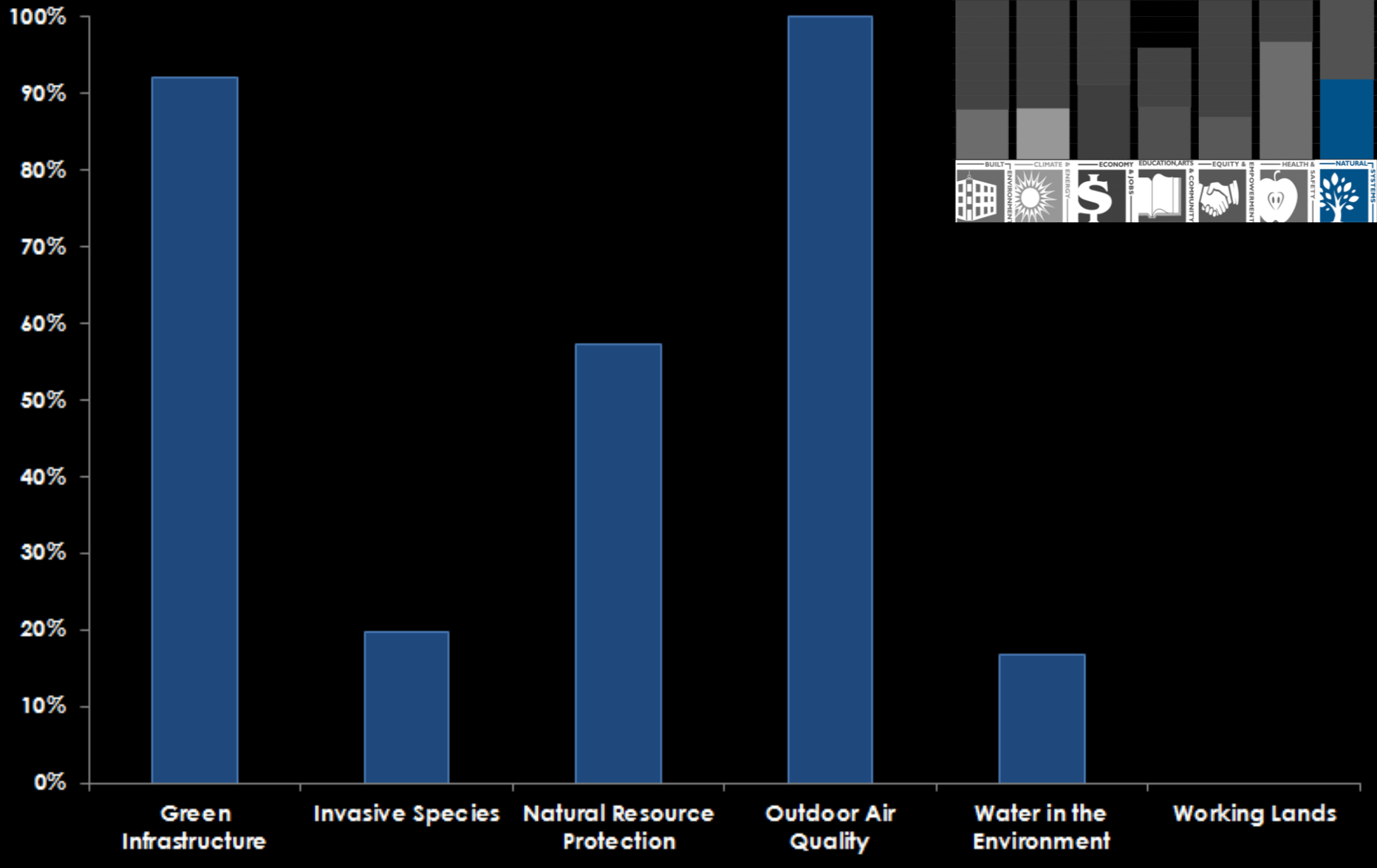
Sign the pledge at www.nwf.org/mayorsmonarchpledge

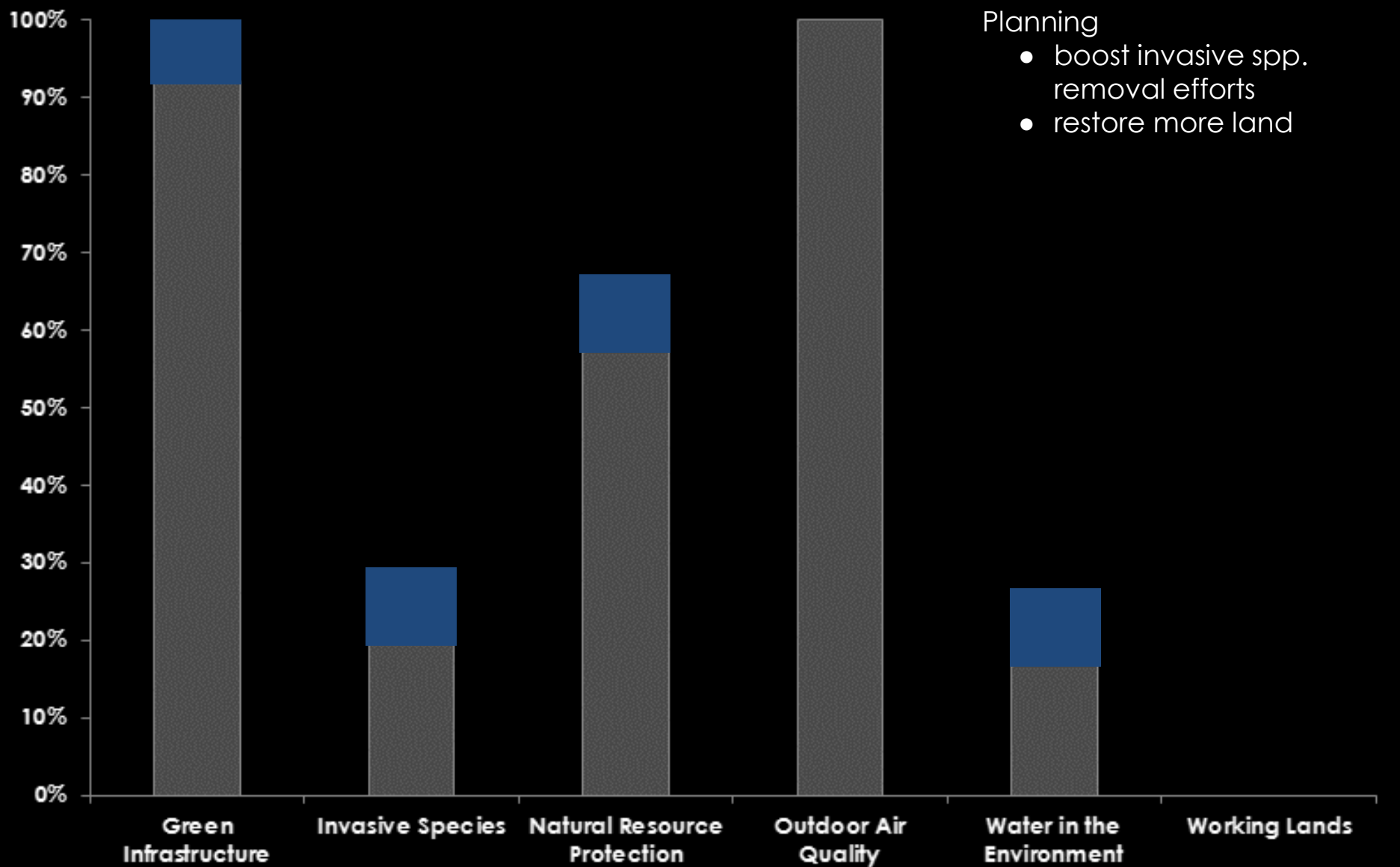
Mayors for Monarchs

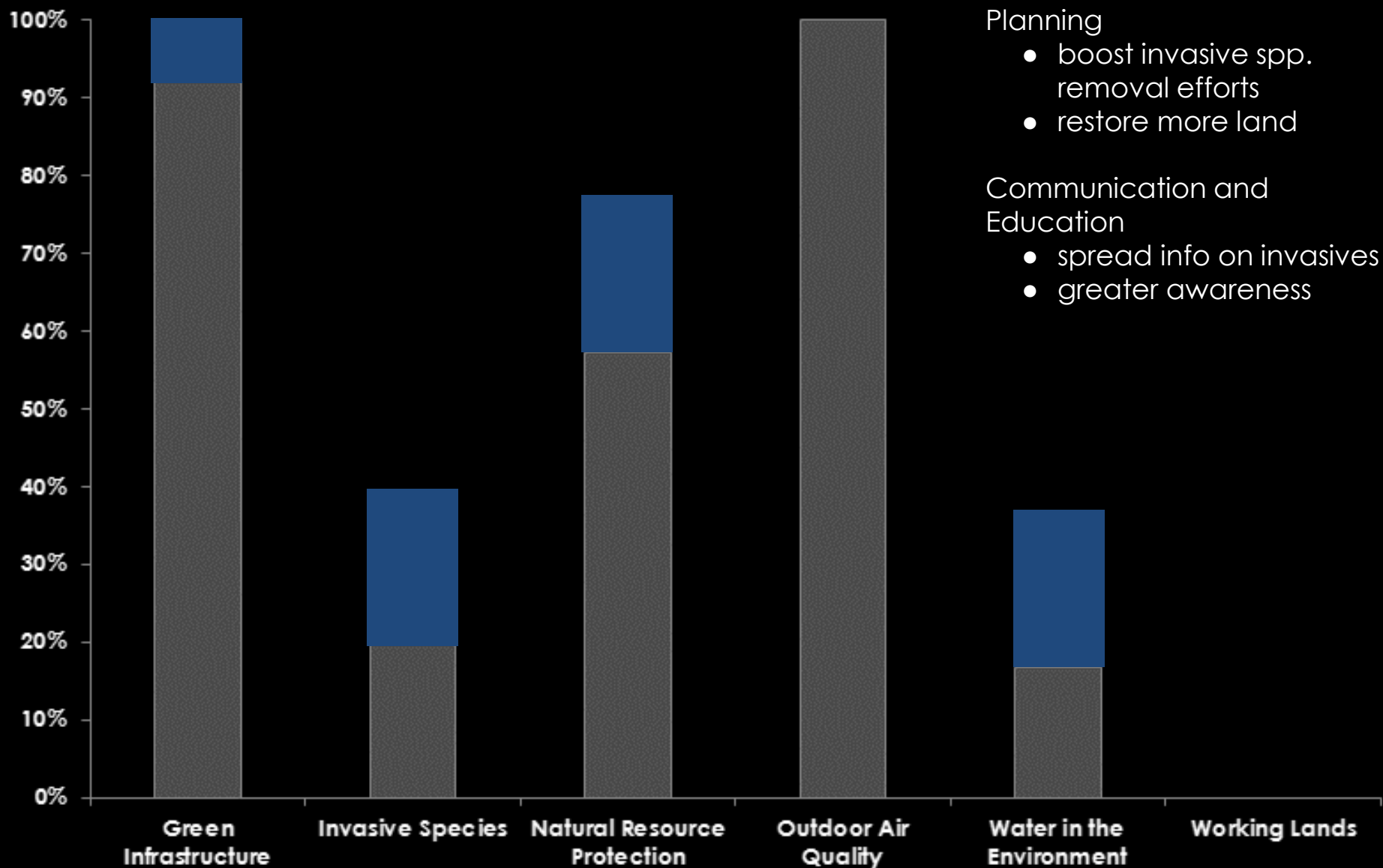




STAR Communities - Natural Systems







100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

Green
Infrastructure

Invasive Species

Natural Resource
Protection

Outdoor Air
Quality

Water in the
Environment

Working Lands

Planning

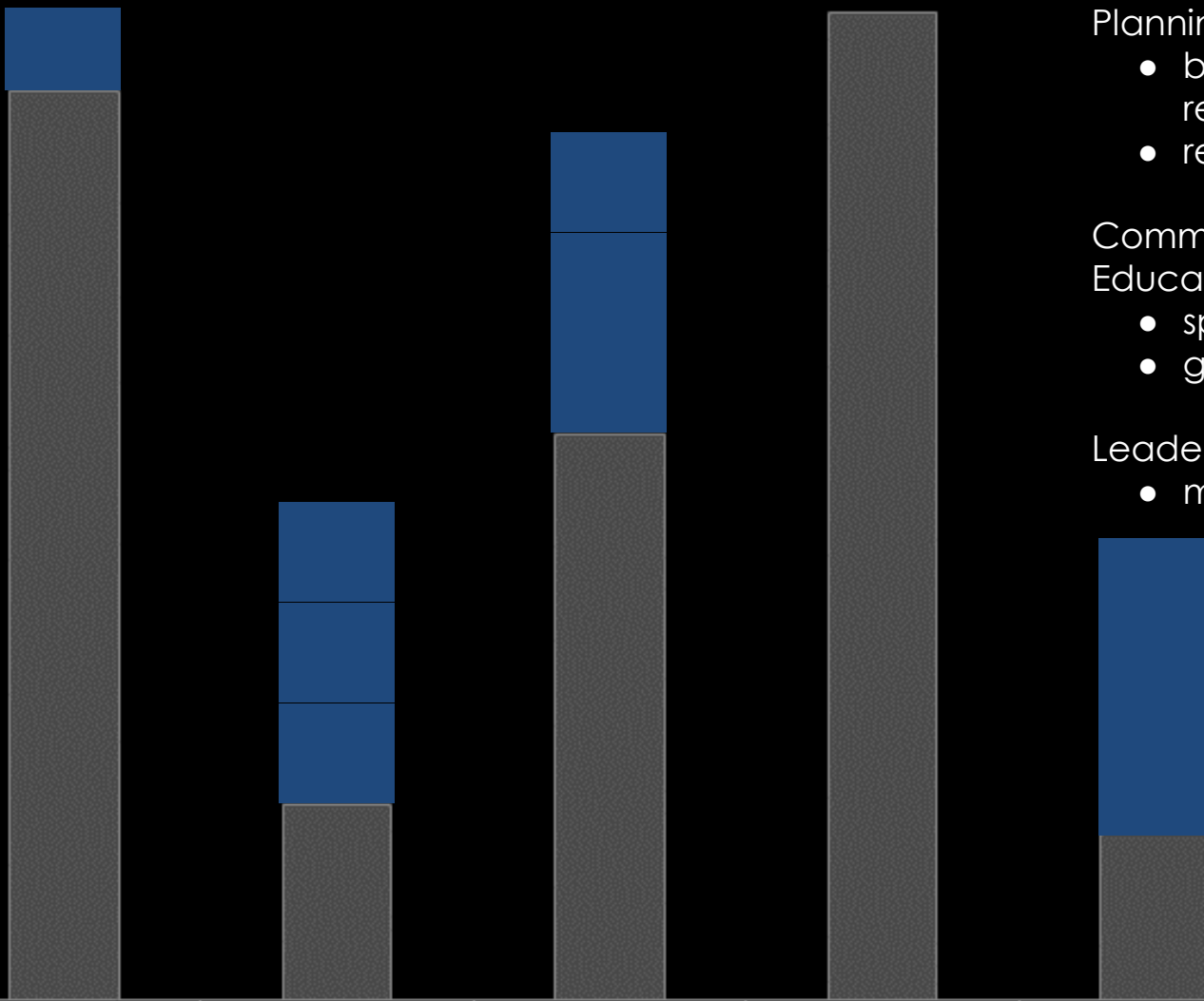
- boost invasive spp. removal efforts
- restore more land

Communication and Education

- spread info on invasives
- greater awareness

Leadership

- making more habitat using BMPs
- join state and nationwide conservation efforts





Mayors' Monarch Pledge

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An aerial night photograph of a city street. The street is illuminated by streetlights, and long light trails from cars are visible. Buildings line both sides of the street, and a large industrial smokestack is visible in the background on the left. The word "STORMWATER" is overlaid in large white letters across the center of the image.

STORMWATER

Mike Heimos, Stormwater Educator
Michael.Heimos@CoMo.gov



MS4 Permit

Municipal
Separate
Storm
Sewer
Systems

Municipal Separate Storm Sewer Systems
Permit

The Stormwater plan has six **M**inimum **C**ontrol **M**easures

These **MCM**'s are:

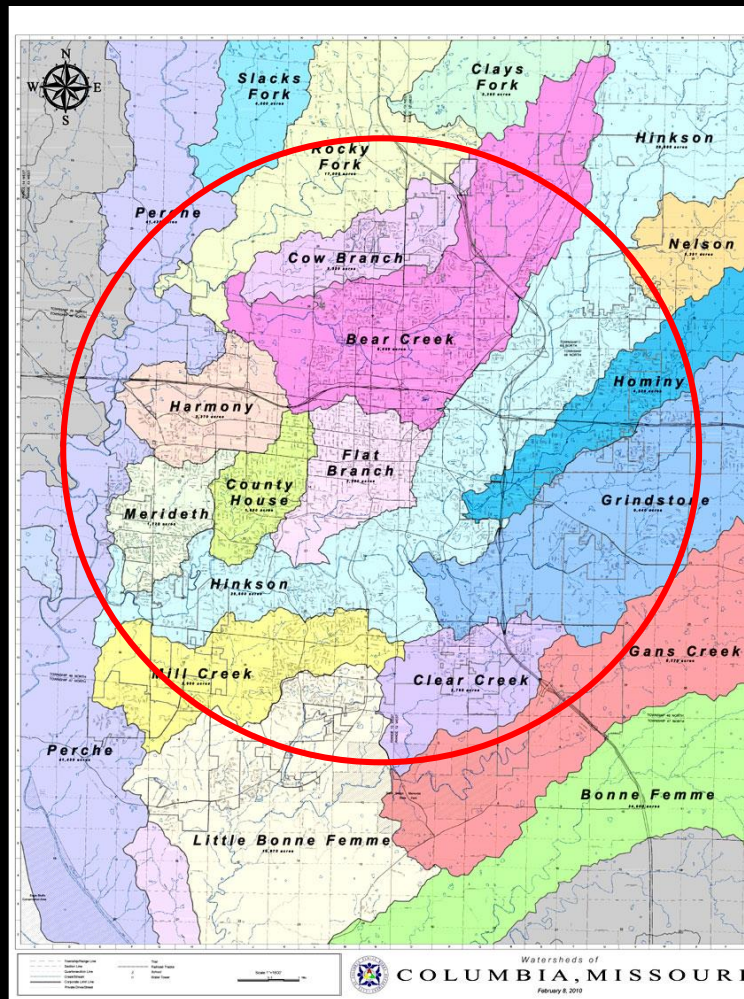
1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Run-Off Control
5. Post-Construction Management
6. Pollution Prevention and Good
Housekeeping for Municipal Operations

Permit Partnership



**DO
YOU
KNOW
YOUR
SHED?**

www.KNOWYOURSHED.com



#1 - Public Education and Outreach











#2 - Public Involvement and Participation











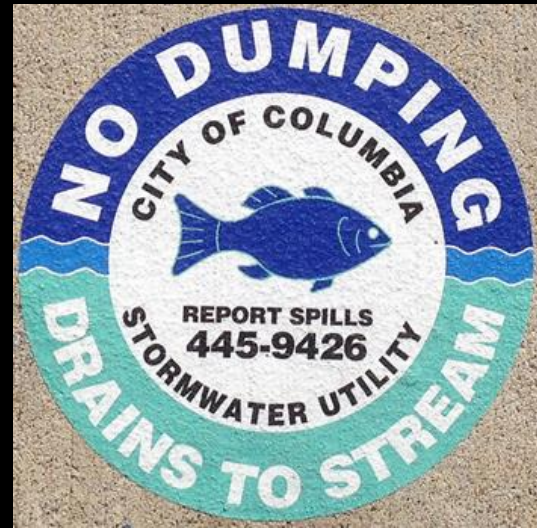








#3 - Illicit Discharge Detection and Elimination



City of Columbia, Missouri
Spill Reporting & Response Team

24 hour number to report Spill and Illicit Discharge Detection

573-445-9426

Contact **911** in any emergency situation

Please collect as much information as possible

- Company name and phone number if on vehicle
 - Local of Dumping
 - Vehicle License plate number
- Location of site, if construction (address)
 - Type of violation

Do not approach citizens illegally dumping, contact stormwater staff first. Collect as much information as possible, report the violation, Stormwater staff will take it from there.



Report a Storm Drain Problem

You can report a storm drainage problem electronically.

Your report will be received by the Columbia, Missouri Department

Examples of storm drain problems: house flooding, yard flooding, street flooding, yard erosion, open channel (ditch), construction site drainage.



If You See Someone Dumping Pollutants

Please report it!

You can report the dumping electronically.

Examples of pollutants that threaten our waterways are fertilizers and pesticides, soaps and detergents, vehicle fluids (motor oil, gasoline, anti-freeze, fuels), paints, solvents, pet waste left on the ground, grease, sewage, trash and debris.

For after hours emergency situations, please call 573.445.9426

#4 - Construction Site Run-Off Control





#5 - Post-Construction Management











**#6 - Pollution Prevention &
Good Housekeeping for Municipal
Operations**











The Office of Sustainability works with all City departments and the community to optimize resource use efficiency and improve economic, environmental, and social well-being.

Office of Sustainability mission

Where do you want to be in 2020?





Office of Sustainability Team:

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Mike Heimos, Stormwater Educator

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Eric Hempel, Energy Educator

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Ben Kreitner, Waste Minimization Coordinator

Ben.Kreitner@CoMo.gov

www.CoMo.gov/sustainability/