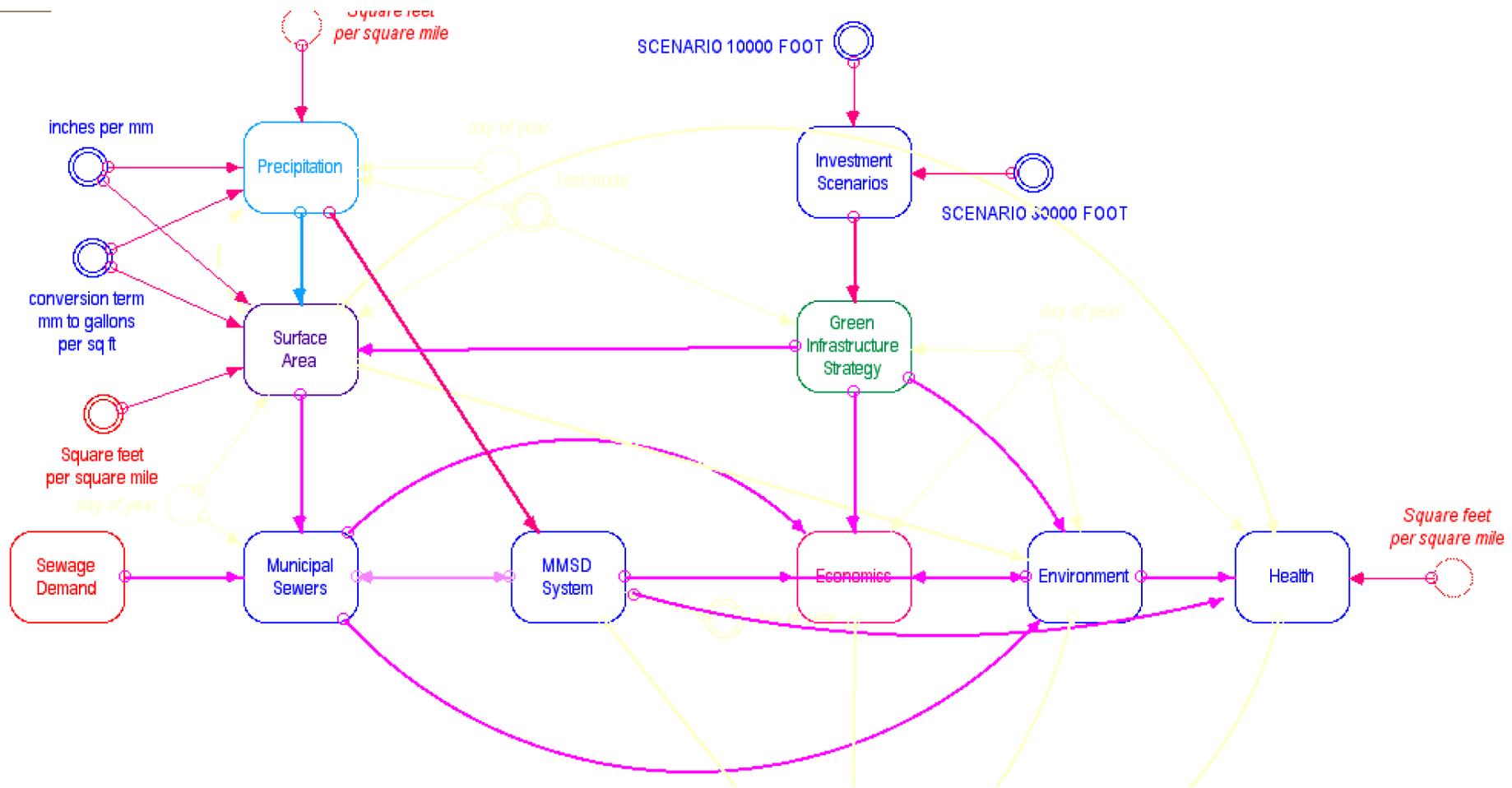




# Stronger Communities, Healthier Landscapes: The Multiple Benefits of Preparing for Climate Change

Elizabeth Sawin  
Climate Interactive  
UVAW Forum  
April 2014

# Systems analysis



- day\_of\_year = COUNTER(1,366)
- day\_of\_year\_1 = COUNTER(1,366)
- inches\_per\_mm = 0.0393701
- Pause\_every\_5\_years? = 0
- pause\_it = IF Pause\_every\_5\_years?=1 AND TIME>2 AND days\_in\_5\_years=1825 THEN 1 ELSE 0
- SCENARIO\_10000\_FOOT = 1
- SCENARIO\_30000\_FOOT = 0
- Square\_foot\_per\_square\_mile = 27878000
- Stop\_sim = IF TIME>=days\_to\_simulate+1 THEN 1 ELSE 0
- Test\_mode = 0
- YEAR = INT(TIME/365)
- Years\_to\_Simulate = 20

## Baseline Comparison:

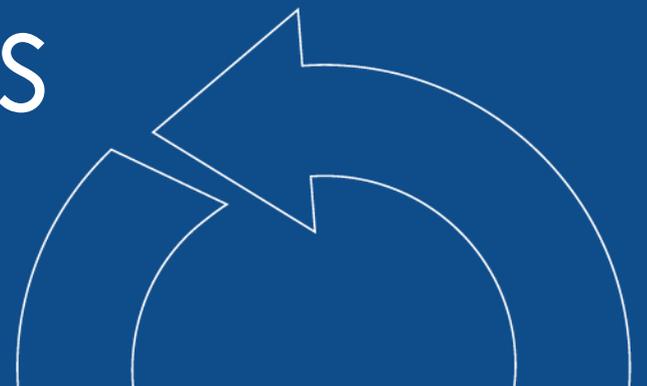
- 4.  $\text{Saved\_Value}[\text{Compare}](t) = \text{Saved\_Value}[\text{Compare}](t - dt) + (\text{remembering}[\text{Compare}]) * dt$   
INIT Saved\_Value[Compare] = 0  
INFLOWS:

Using systems analysis to help people see the whole system and make wise long-term decisions



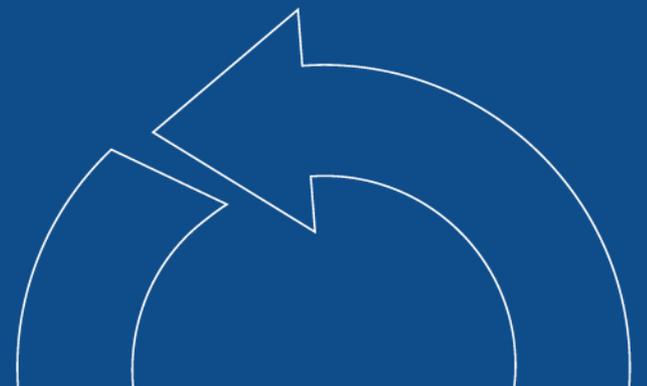


We can find opportunities to respond to climate change that, ***for the same investment of time and money,*** bring us other benefits





- Case study from a project in Milwaukee, Wisconsin
- Examples and implications for our region



# Kinnickinnic River Watershed- Milwaukee Wisconsin



**MMSD PARTNERS FOR A CLEANER ENVIRONMENT**

LEARN ABOUT  
**DEEP TUNNEL**  
MILWAUKEE'S

HOW WE ARE DOING  
**100%**

GET YOUR RAIN BARREL

STORIES FROM *THE* SHED GREEN INFRASTRUCTURE SUSTAINABILITY

The banner features a man in a tan shirt holding a hose, a large marina with many sailboats, and a blue rain barrel. The background is a blue sky with white clouds.



**Sixteenth Street**  
COMMUNITY HEALTH CENTERS

414-672-1353

Welcome Careers Donate Services Volunteer About Us Contact Us **My Portal** Search

The website screenshot shows a navigation menu with links for Welcome, Careers, Donate, Services, Volunteer, About Us, Contact Us, My Portal, and Search. Below the menu are three images: a doctor examining a baby's ear, a man and woman looking at a device, and a group of people sitting together.

## \$\$ Investment



Costs  
Stormwater management  
Other benefits  
?

## \$\$ Investment

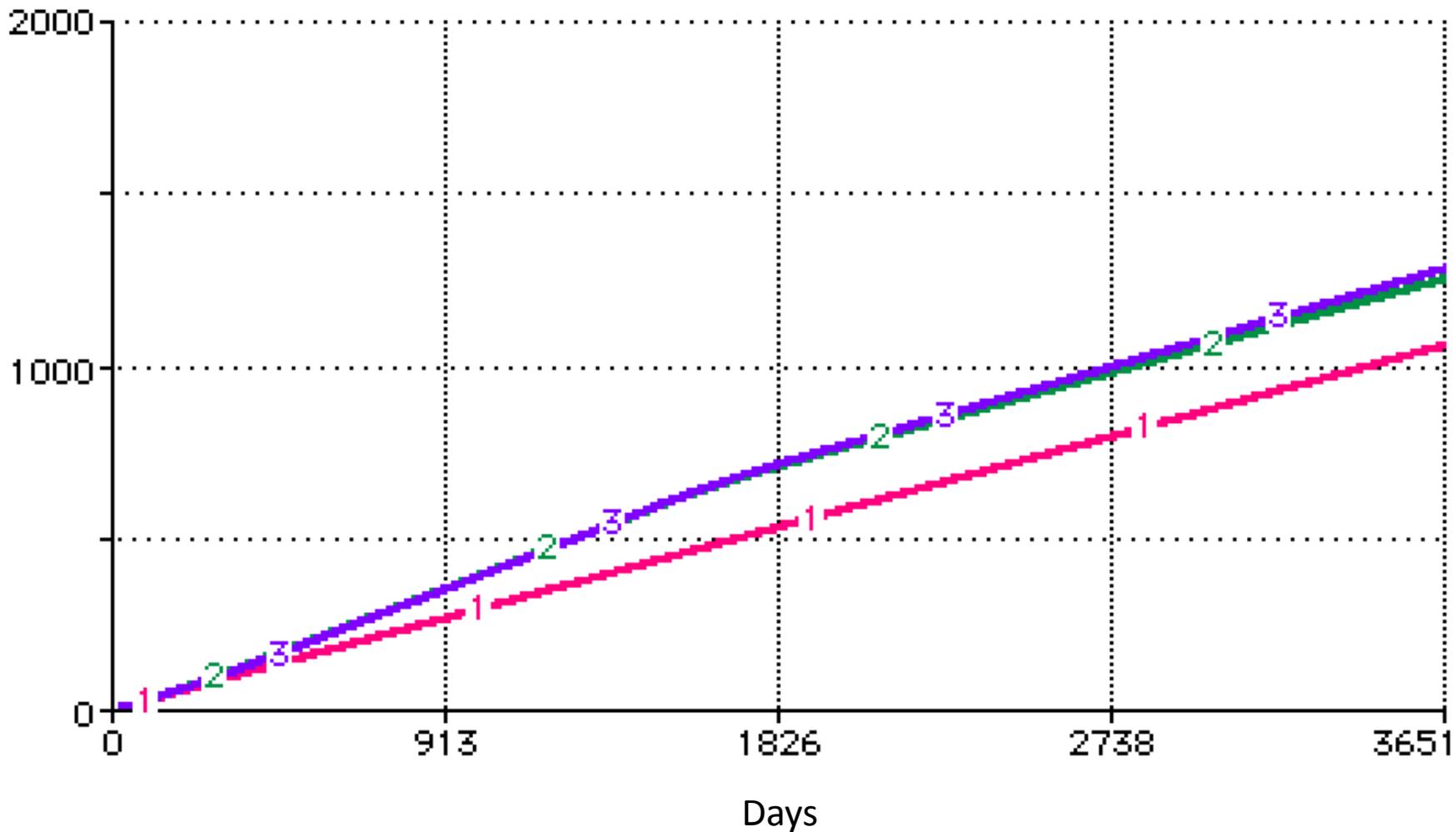


Costs  
Stormwater management  
Other benefits  
?

# Similar Investments



Cumulative \$M Total: 1 - 2 - 3 -

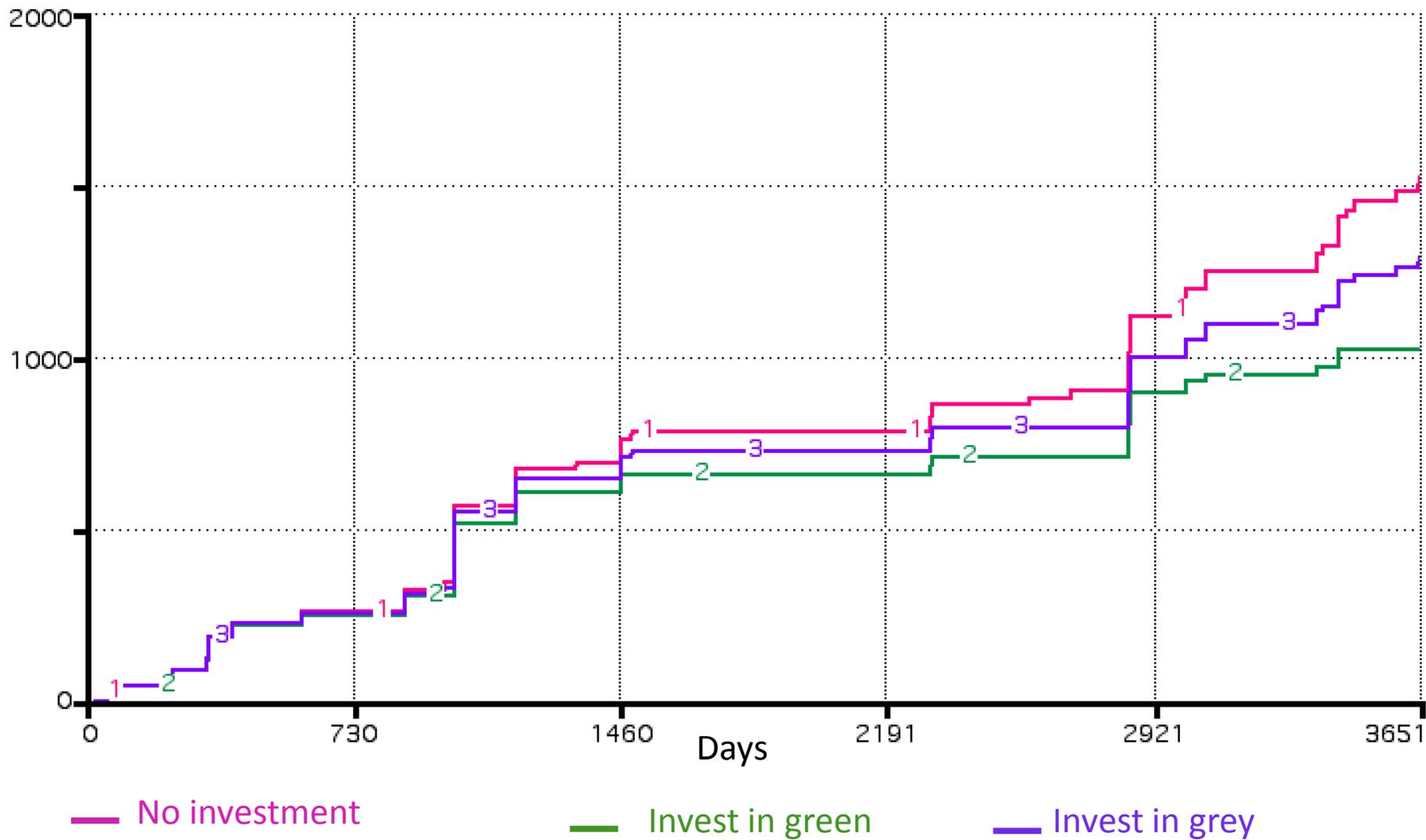


— No investment

— Invest in green

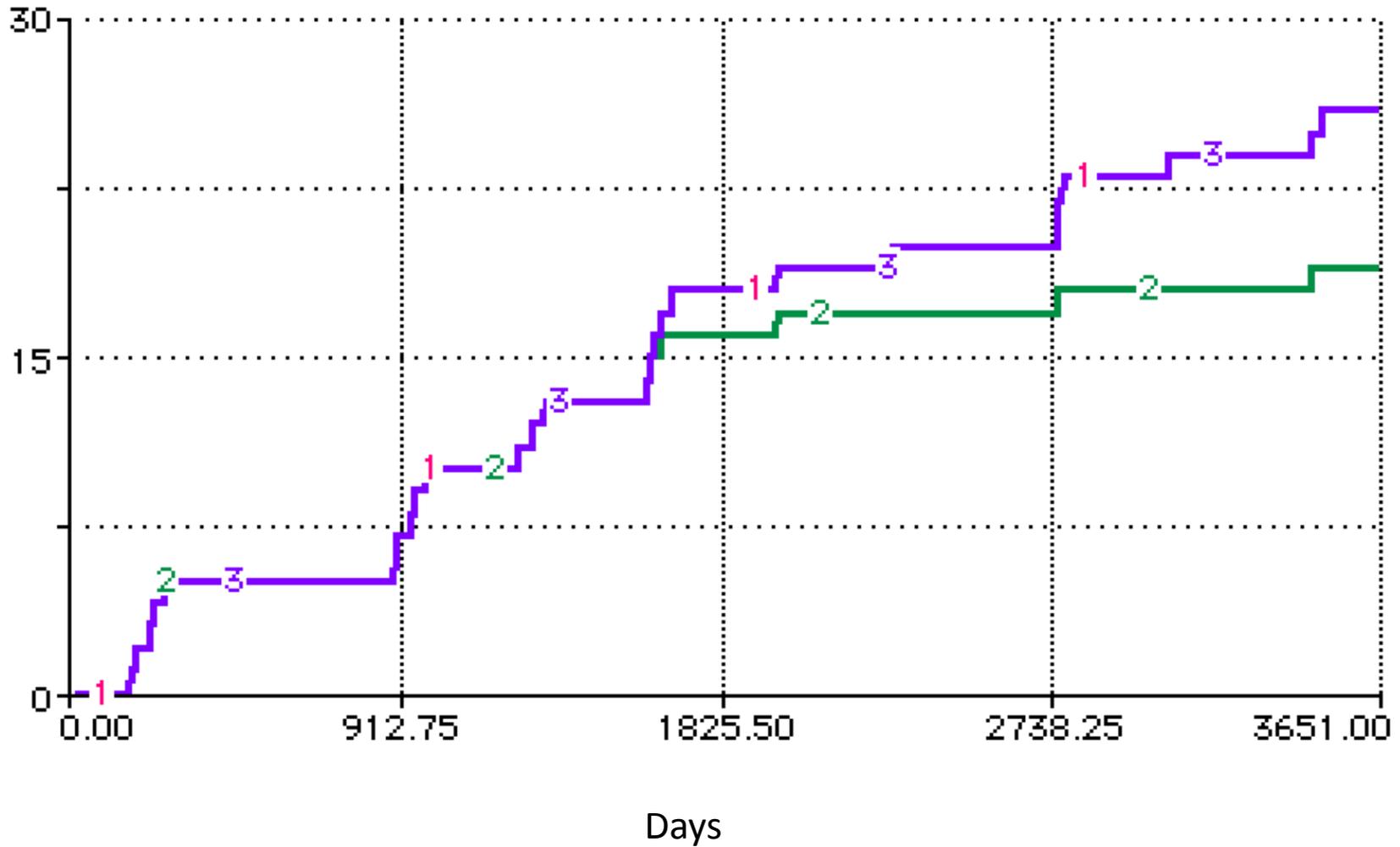
— Invest in grey

# Million Gallons Combined Sewer Overflow



# Better air quality

Bad Air Days: 1 - 2 - 3 -



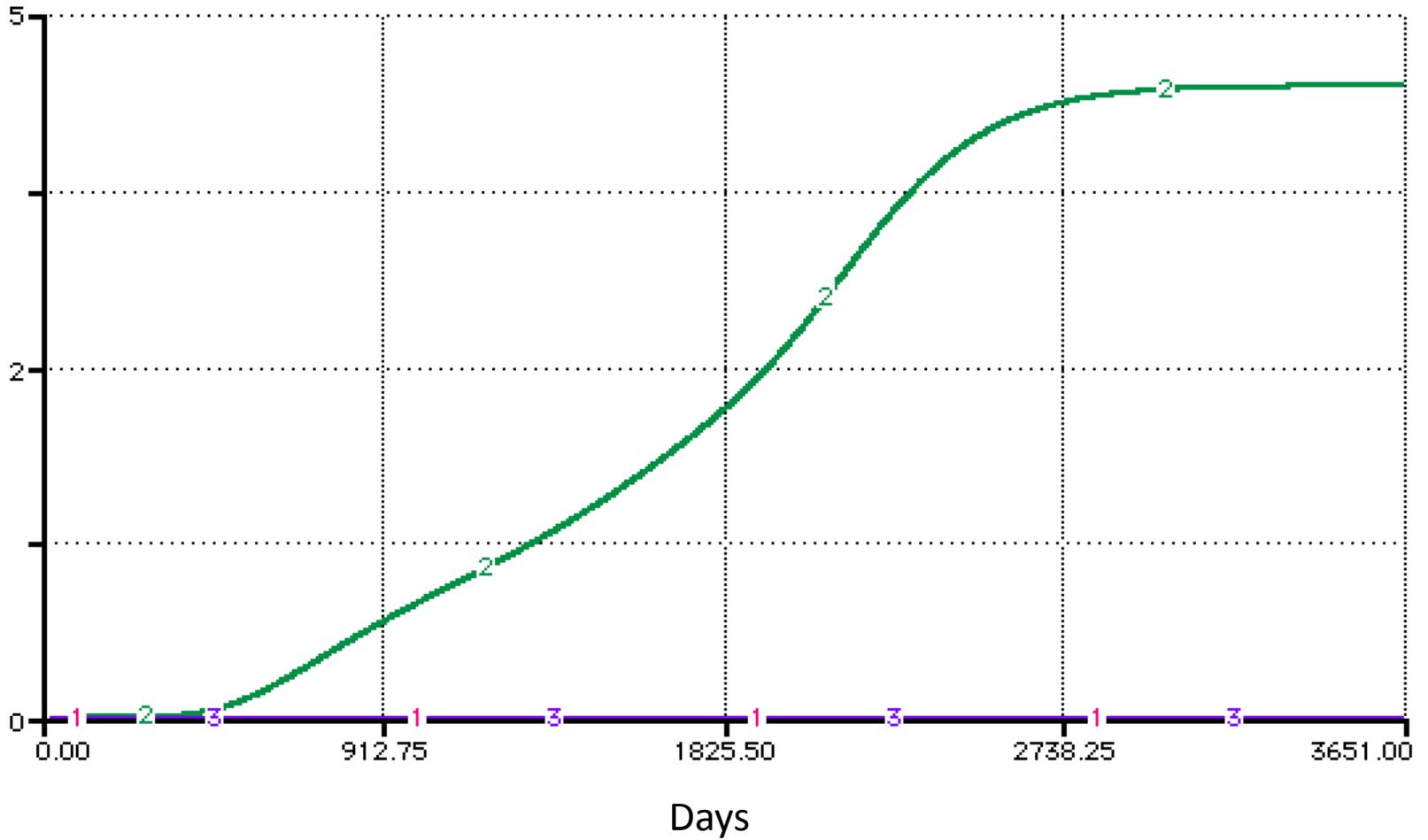
— No investment

— Invest in green

— Invest in grey

# Property Values

Property value change % from initial: 1 - 2 - 3 -



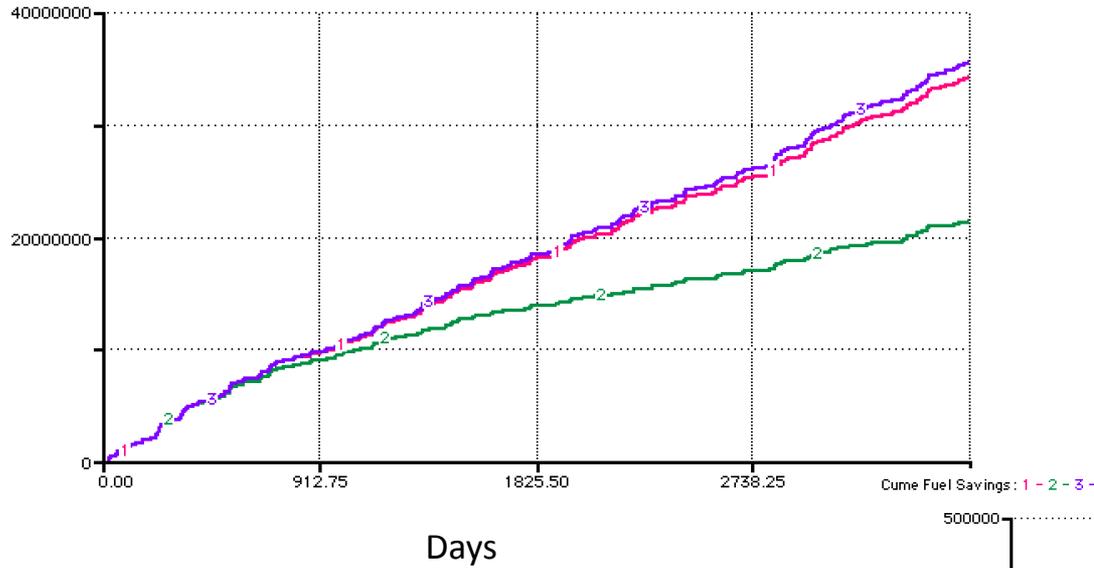
— No investment

— Invest in green

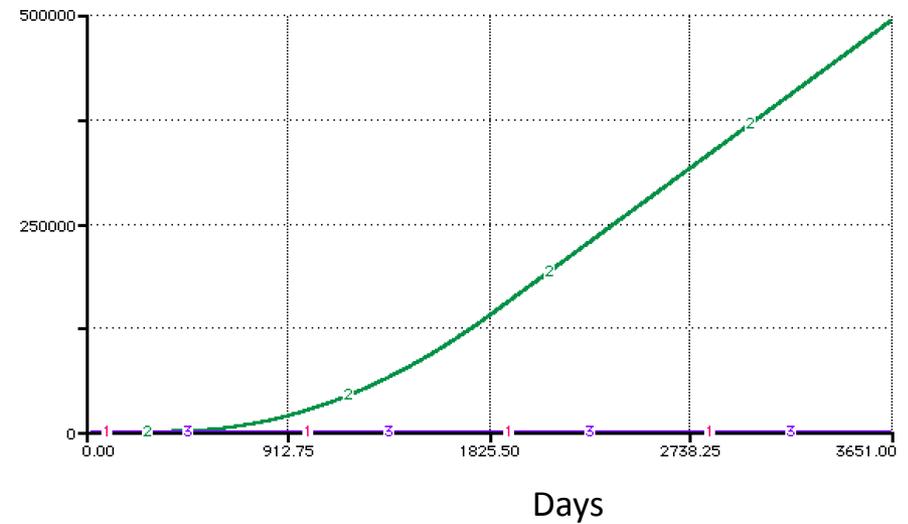
— Invest in grey

# Energy and emissions

Cume MMSD pumping & processing costs: 1 - 2 - 3 -



Cume Fuel Savings: 1 - 2 - 3 -



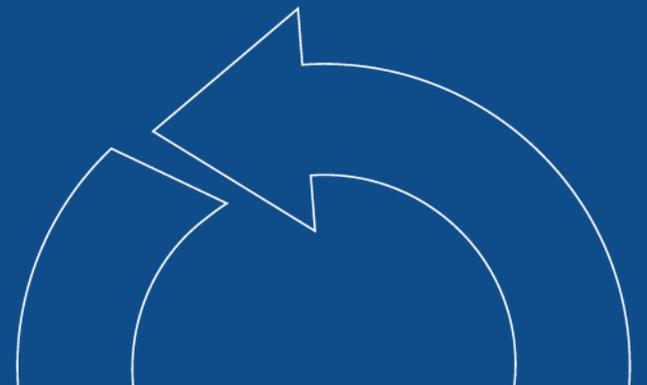
— No investment

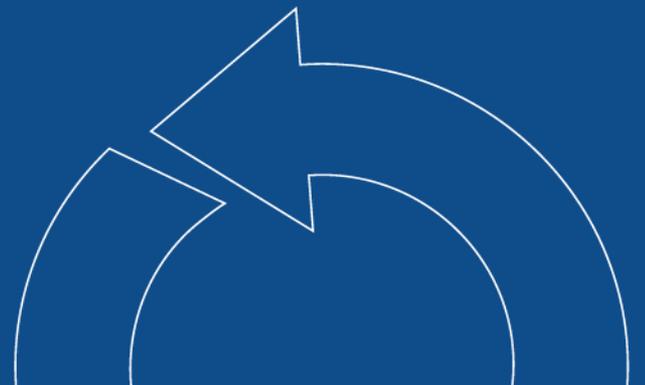
— Invest in green

— Invest in grey

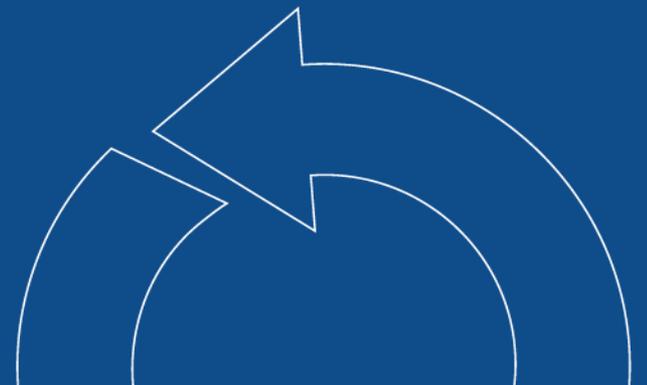


What resilience strategies  
might we have access to  
in the Upper Valley?





# 1: Community Organizations





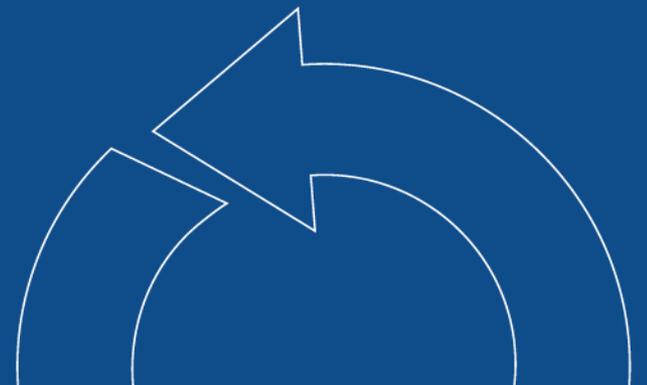
# Prepare and deal

- Co-ordinated volunteers
- Had supplies
- Knew who needed help



# Prevent

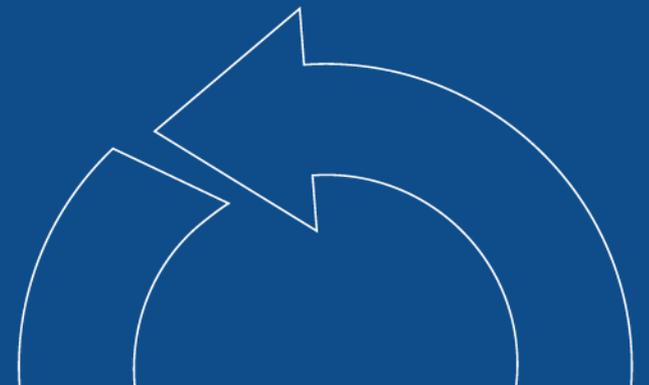
- Weatherization and energy efficiency



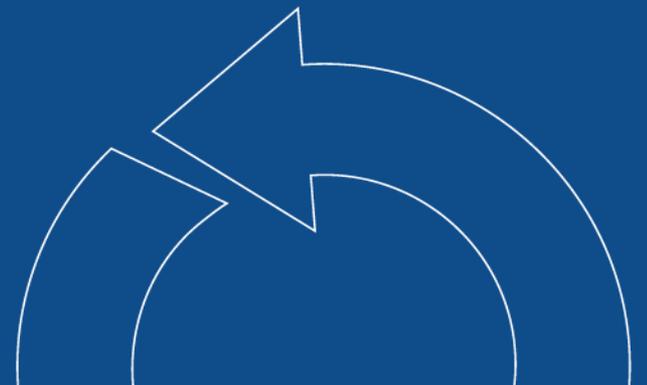


# Improve

- Food
- Shelter
- Support

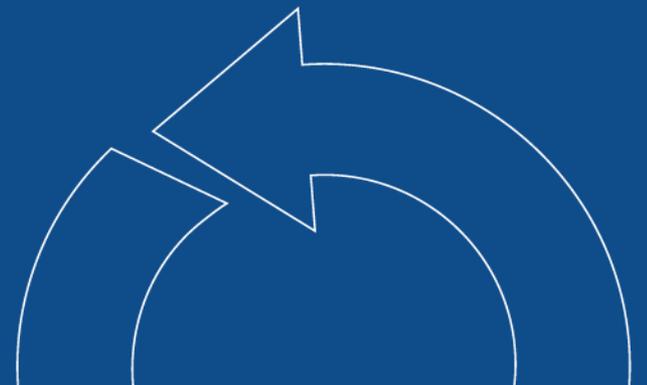


# 2: Local Businesses



# Prepare and Deal

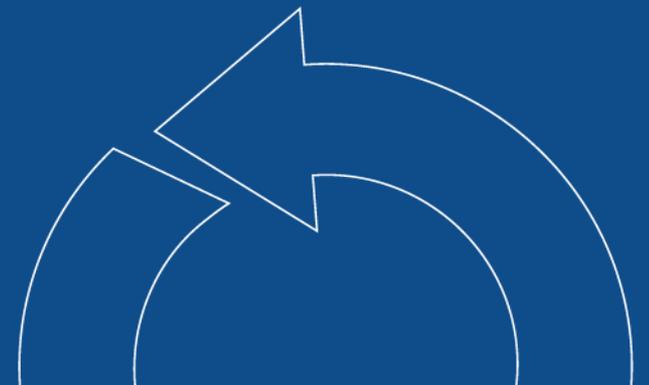
- Water filtration
- Cooking
- Helicopter
- Gathering place



# Prevent

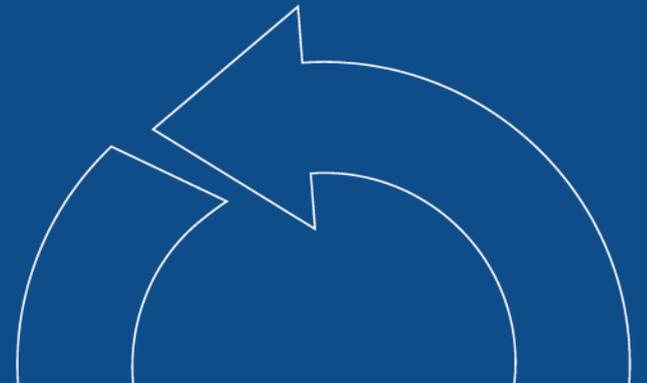


- Renewable energy companies
- Renewable energy systems for local businesses

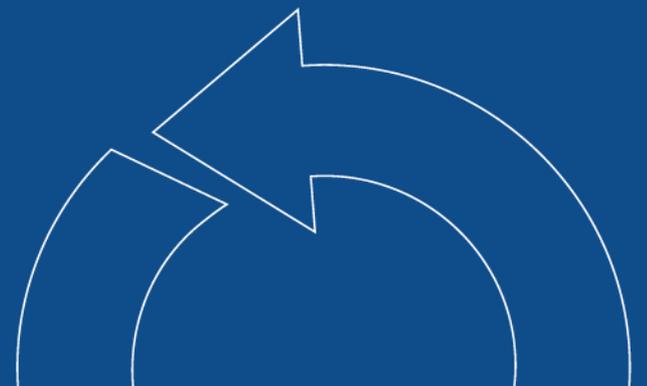


# Improve

- Jobs
- Tax base

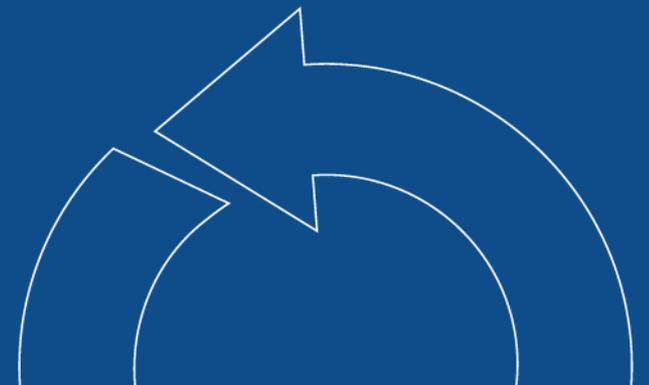


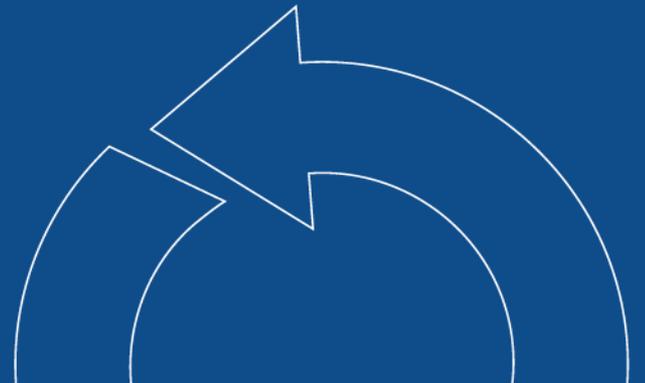
# 3: Nature



# Prepare and Deal

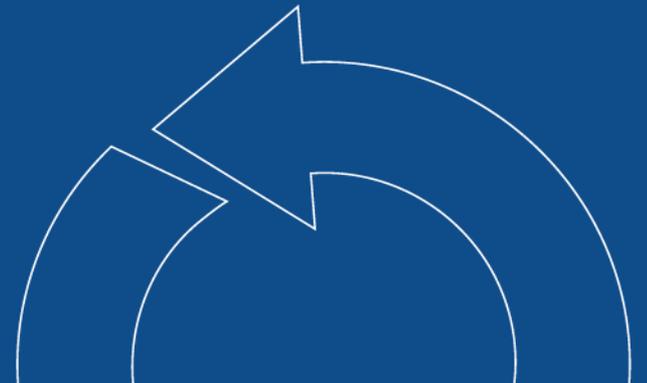
- Wetlands slow and absorb and slow the flow of water in a flood





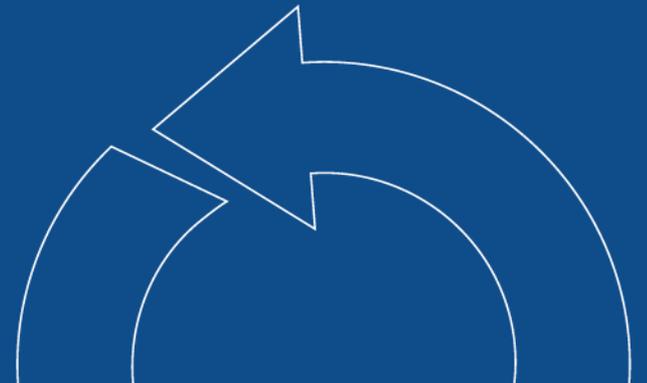
# Prevent

- Absorbing CO<sub>2</sub> and sequestering carbon

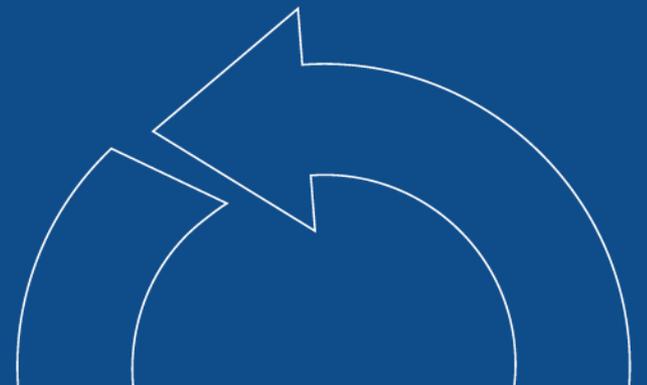


# Improve

- Purify Water
- Provide habitat
- Provide recreation

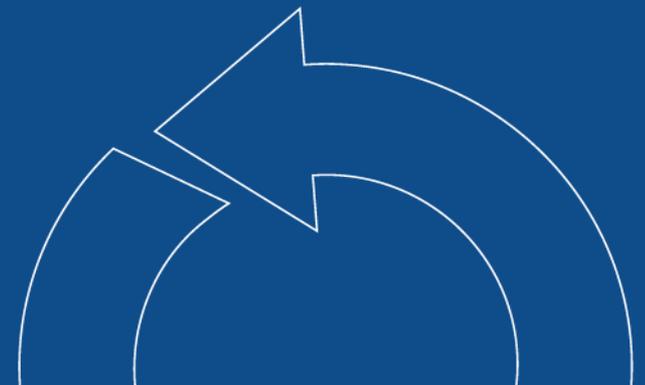


# 4: Infrastructure



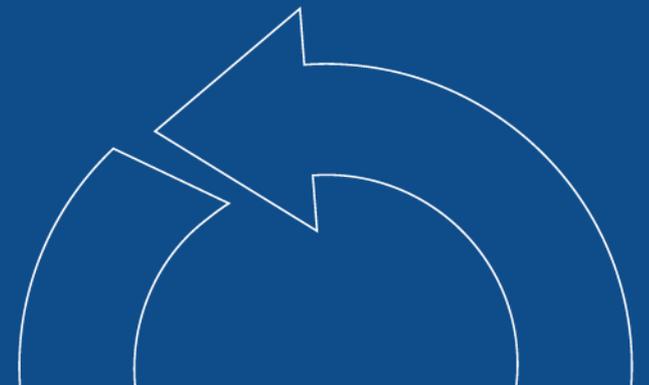
# Prepare

- Avoid more extensive damage from extreme events



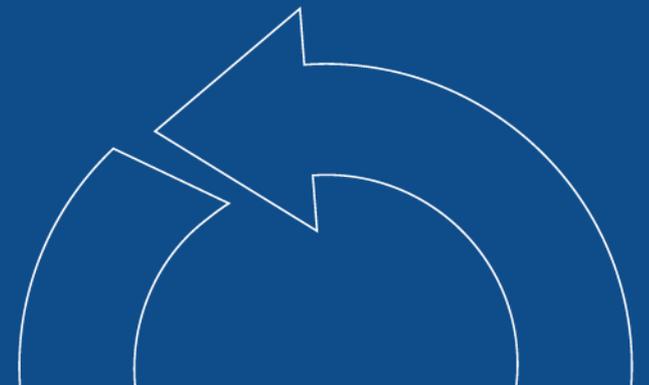
# Prevent

- Projects to improve infrastructure can add features that help save energy and reduce greenhouse gas emissions at the same time



# Improve

- Money not needed to repair damaged infrastructure can be invested towards other needs





Thank You!

[esawin@climateinteractive.org](mailto:esawin@climateinteractive.org)

