

Return on Environment

Kittatinny Ridge Coalition



Return on Environment

Kittatiny Ridge Coalition

Place

- 9 of top 20 fastest growing counties
- 20% of state population (2,496,196 people)
- 21% of agriculture in the state (11,400 farms)
- Two major watersheds
- 3 Major outdoor recreation vendors
- Many resource-dependent businesses
- Major Tourism-Hershey Park, Poconos, Cabela's, Hawk Mountain
- Several top trout streams in the state

The major challenge
is to balance growth and open space



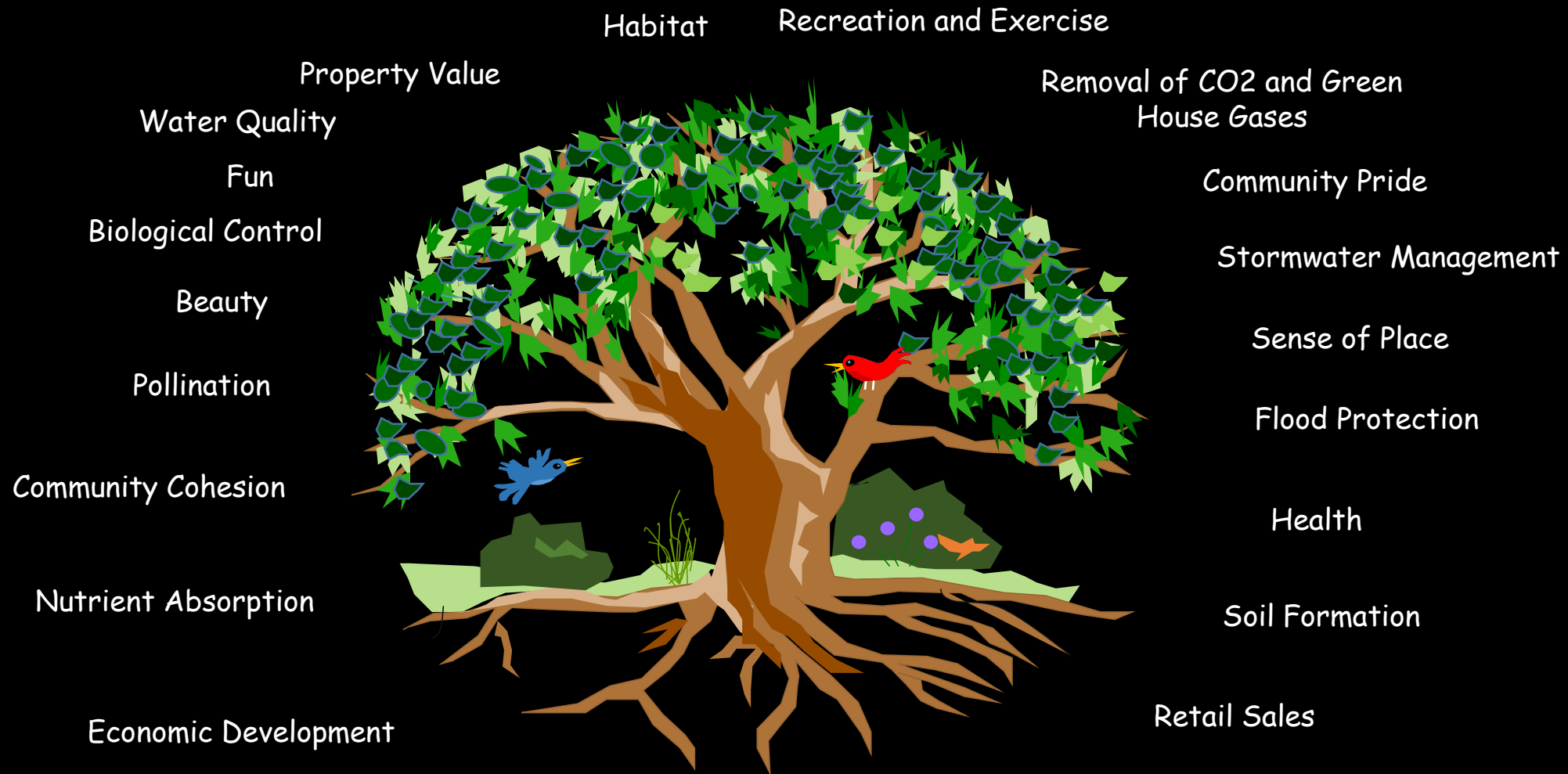
Mother Nature doesn't write receipts



Nature's benefits are often overlooked and undervalued

Losing significant amounts of resources year after year and not knowing it, is poor asset management.

Habitat Provides Many Natural, Social and Economic Services



The first rule of ecology is everything is connected to everything else.

ROE Study Objectives

Document:

1. The monetary value of natural system services
2. The value of improved air quality on health care costs
3. The monetary value of outdoor recreation and the number of participants
4. The increased property value due to proximity of open space
5. Mapping financial resource value
6. Provide new tools to help begin the integration of ROE into everyday practice

Return on Environment Studies

1. Berks County
2. Cumberland County
3. Monroe County
4. Lehigh County
5. Northampton County
6. Dauphin County

What progress has been made?

1. Six projects
2. Federal programs
3. Chesapeake Bay interest and collaboration (Maryland DNR)
4. Recognition by state agencies
5. Business involvement
6. Political support
7. New language -The Business of Nature
8. Communication/Reports
9. Diversity of support
10. New conservation tools

Northampton County Commissioners
replaced \$2.2 million in their
open space budget in 2015 based on the
Lehigh Valley Return on Environment Report.

Bryan Cope, Northampton County Open Space Coordinator

Business as Usual is Not Working

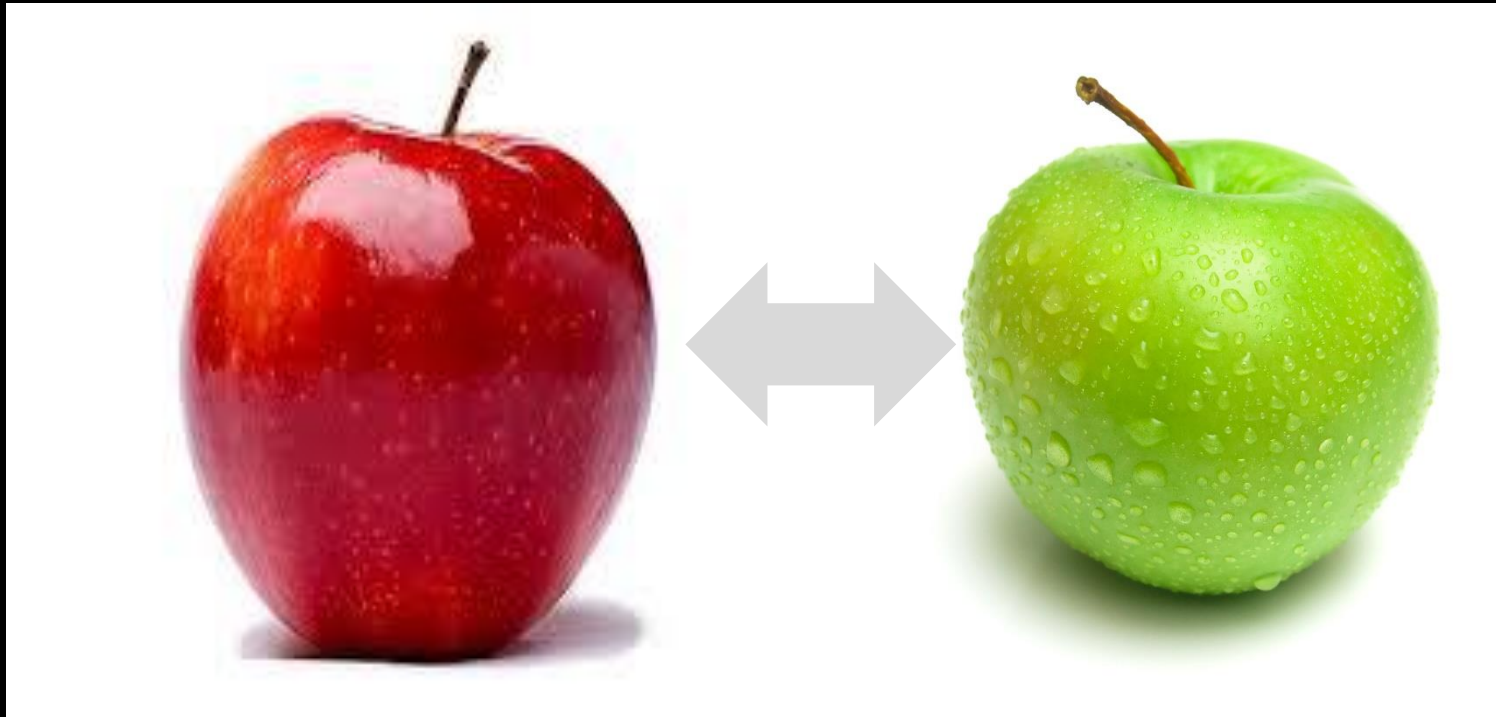


Dauphin County's
Natural Conundrums

“We can’t solve problems by using the same kind of thinking we used when we created them.”

Albert Einstein

Major Benefit of Return on Environment Studies



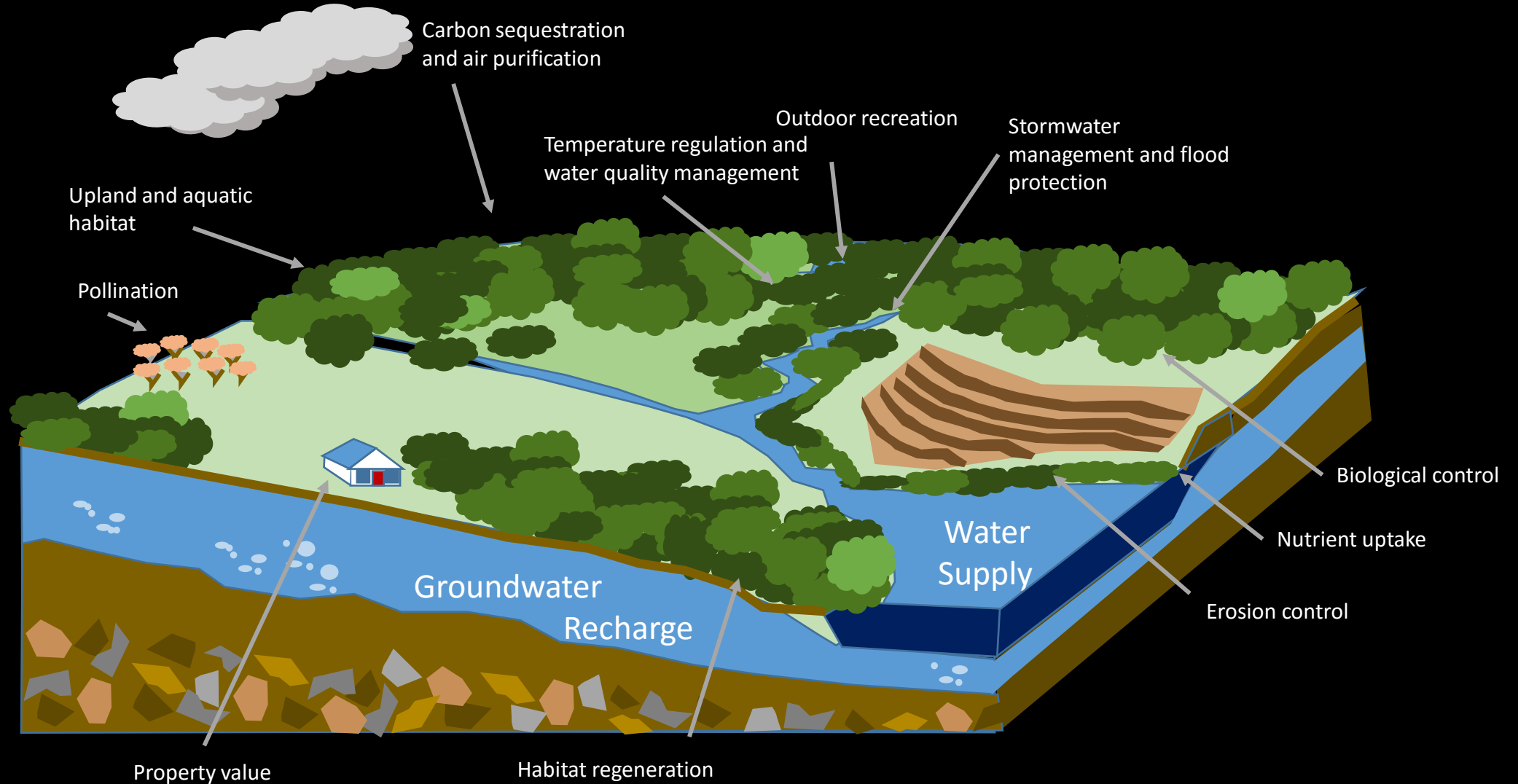
A New Approach

Nature's benefits are real, significant and impact a wide range of stakeholders.

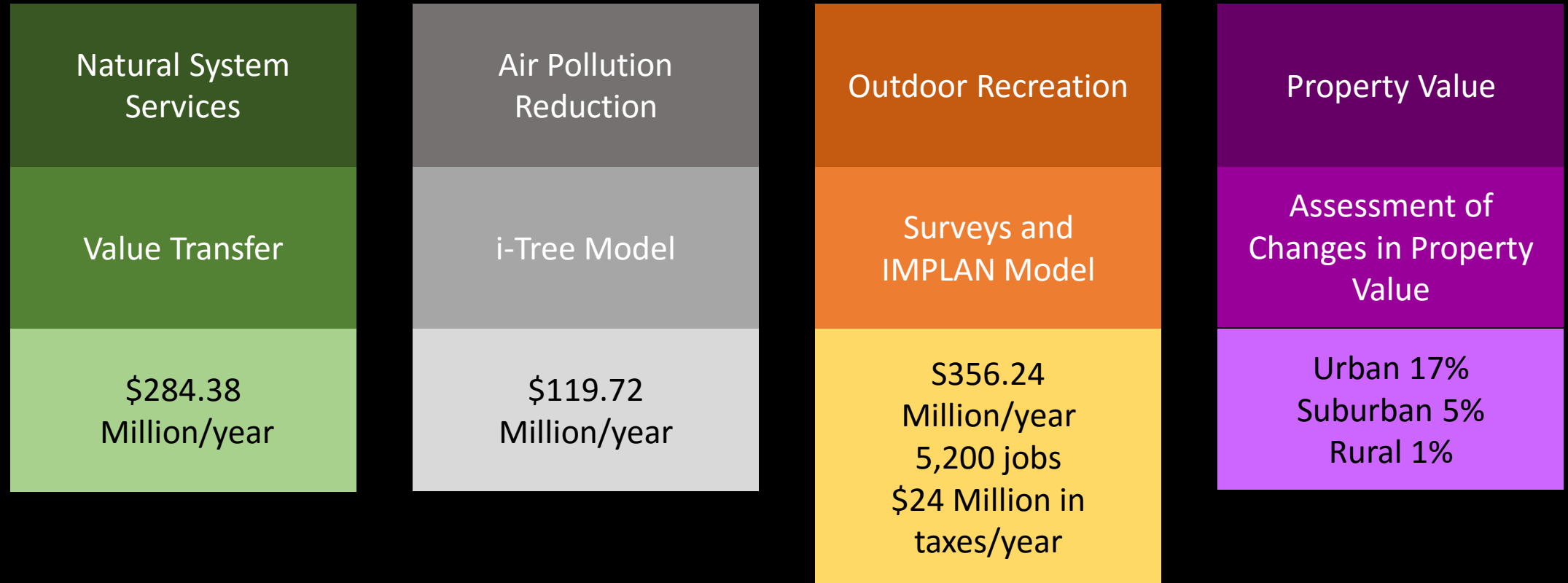


Portfolio of Financial Assets

Nature's Cost Free Services



ROE Results



← Avoided Costs →

Revenues

Real-Estate
Premiums

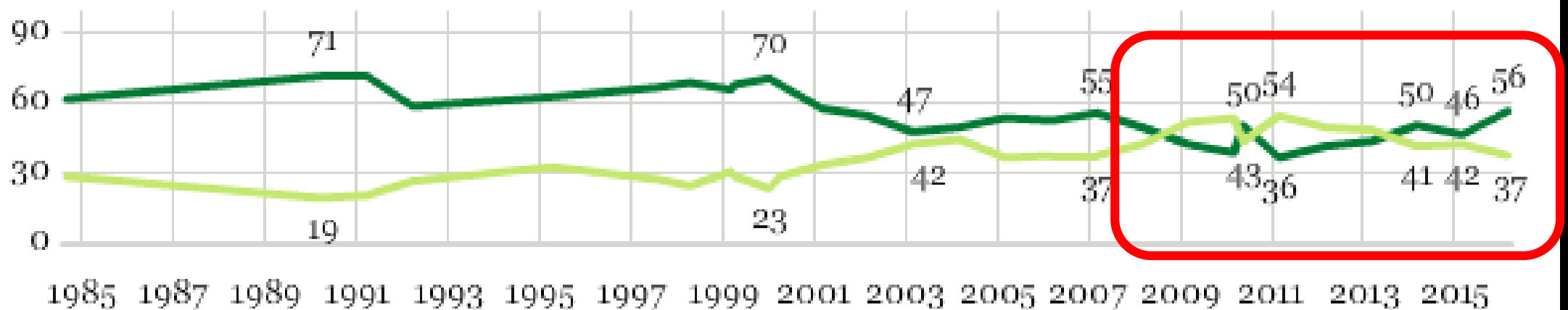
Any good business person would never overlook a revenue stream, miss an avoided cost, or allow anyone to tarnish their brand.

It's extremely difficult to have a strong economy without a clean environment and plenty of open space.

With which one of these statements about the environment and the economy do you most agree -- protection of the environment should be given priority, even at the risk of curbing economic growth (or) economic growth should be given priority, even if the environment suffers to some extent?

■ % Protection of the environment should be given priority

■ % Economic growth should be given priority



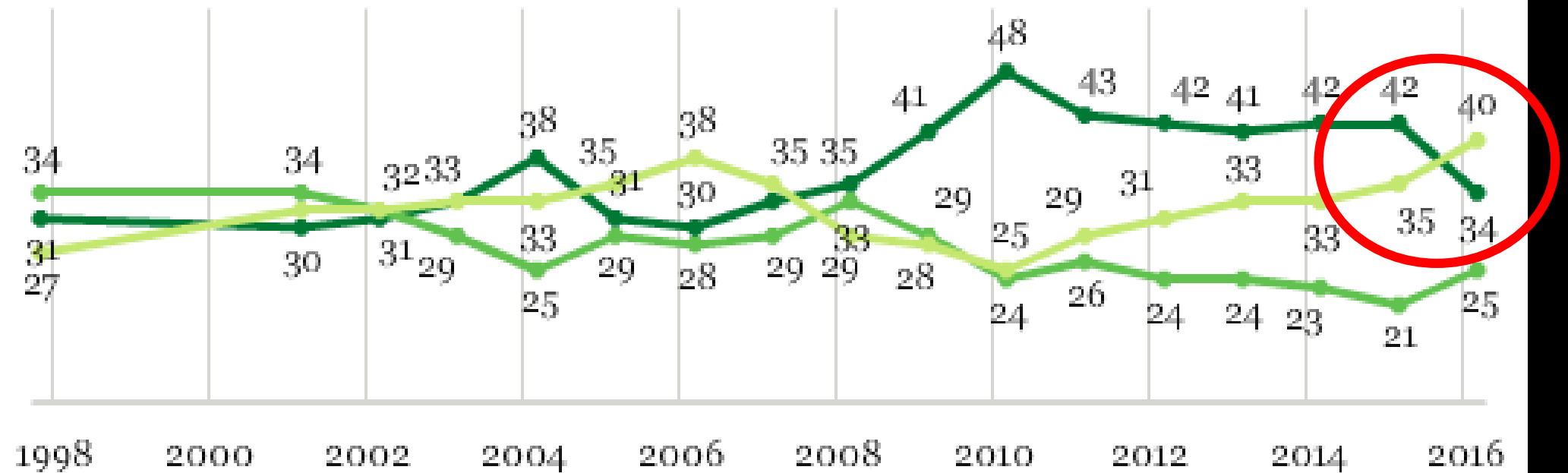
GALLUP®

Thinking about what is said in the news, in your view is the seriousness of global warming -- [ROTATED: generally exaggerated, generally correct, or is it generally underestimated]?

■ % Generally exaggerated

■ % Generally correct

■ % Generally underestimated



GALLUP®

Natural System Services Provided by a *Riparian Forest* (\$ per acre annually)

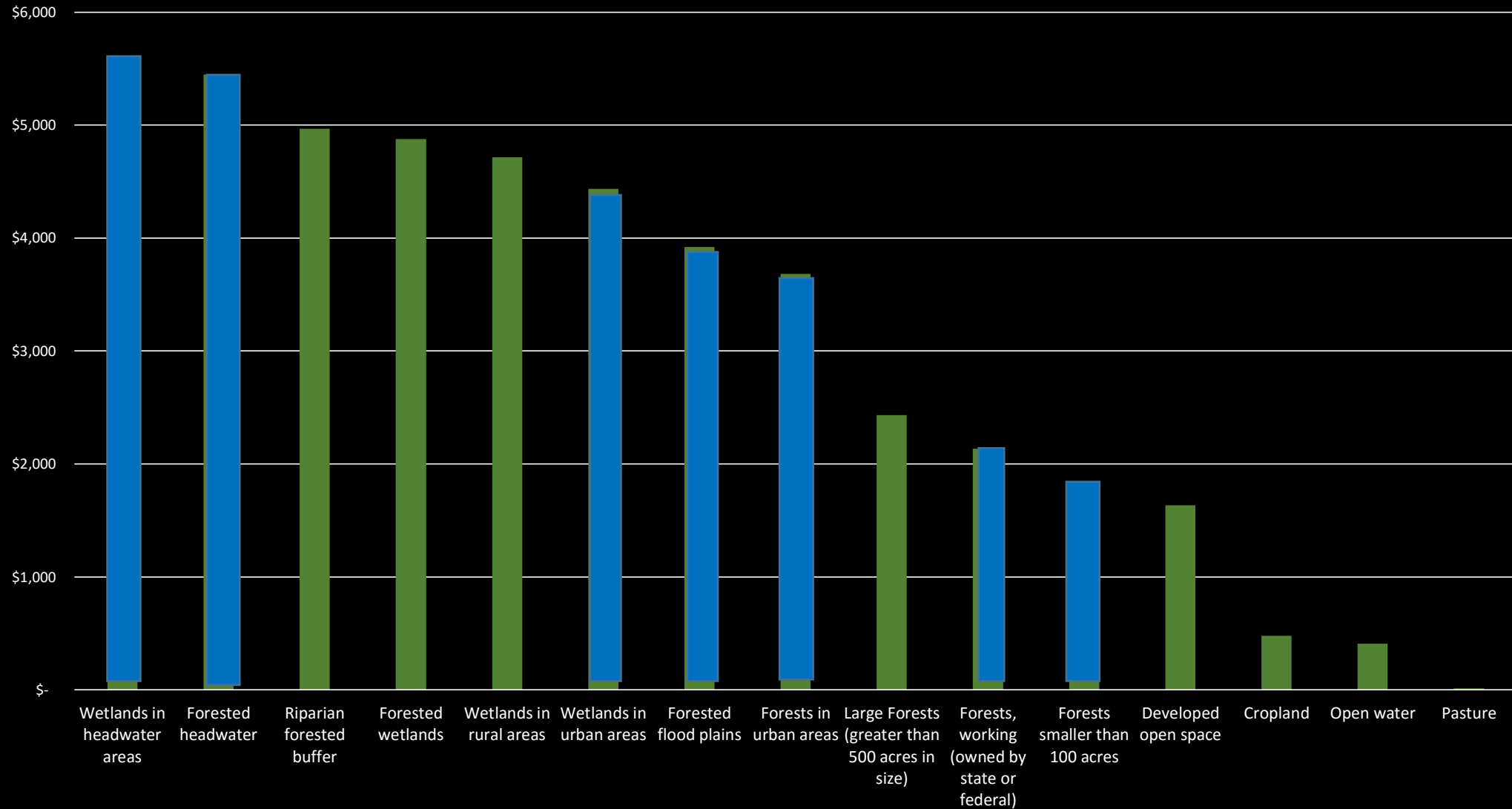
1.	Stormwater management	\$1,803
2.	Nutrient uptake	\$1,128
3.	Water supply	\$ 279
4.	Carbon	\$ 38
5.	Air pollutants	\$ 7
6.	Habitat	\$1,100
7.	Aquatic resources	\$ 275
8.	Pollination	\$ 184
9.	Erosion prevention	\$ 12
10.	Regeneration	\$ 136
11.	Biological control	\$ 2
		<hr/>
		\$4,967

Eco-price data

- Over 100 peer-reviewed articles
- Pennsylvania Department of Conservation and Natural Resources
- Pennsylvania Fish and Boat Commission
- Pennsylvania Boat Commission
- Maryland Department of Natural Resources
- Existing regulatory fines and penalties
- Nutrient trading
- Stormwater management practices
- Habitat replacement costs

Cover Type Values

ROE Cover Types



Points of Interest

- For every dollar invested in land and water conservation, \$7 in natural goods and services is returned to the state of Pennsylvania.

Trust for Public Land, 2012. Keystone Fund Report,
www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_20028898.pdf

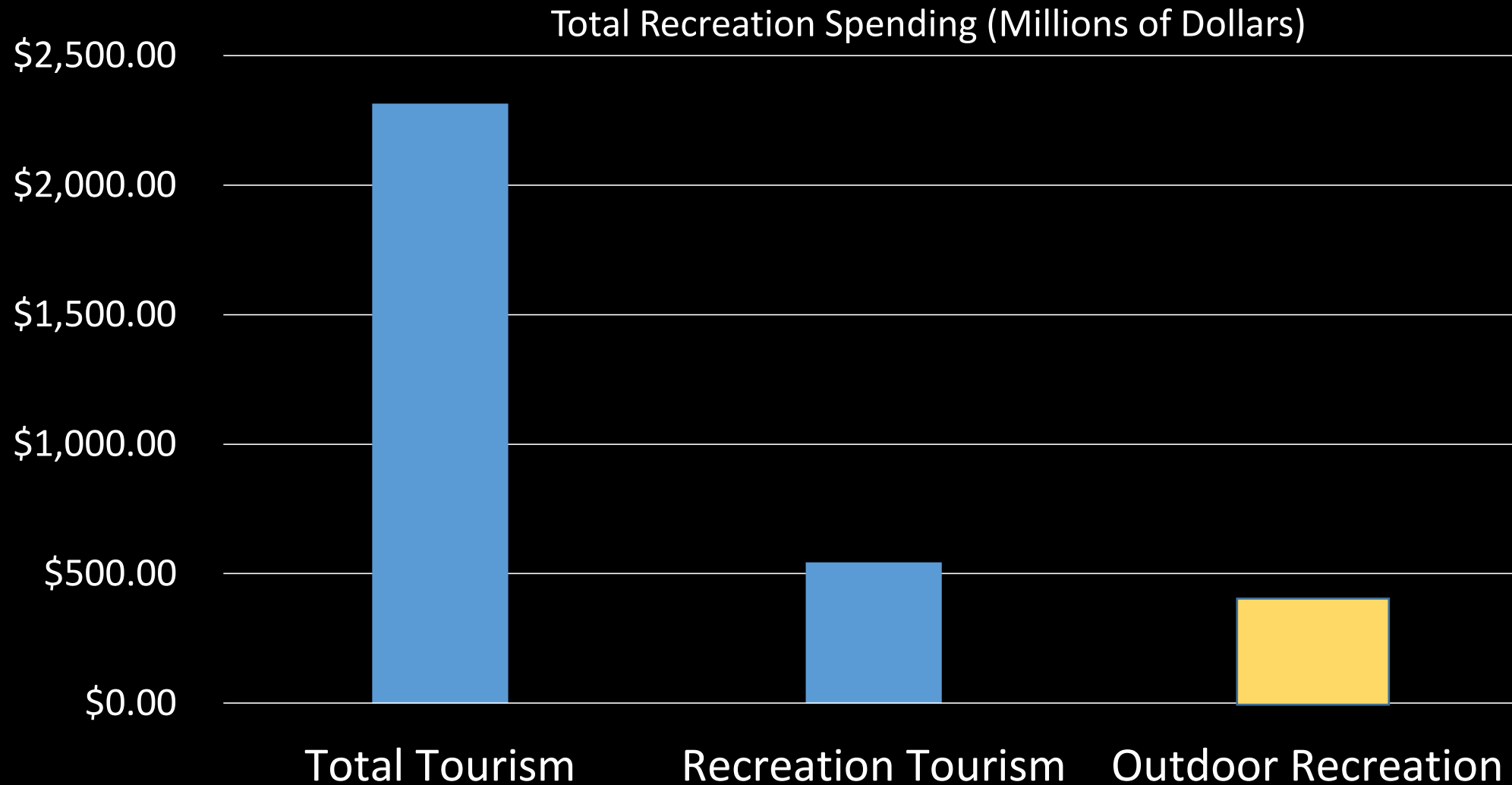
- An EPA study of drinking water source protection efforts concluded that, for every \$1 spent on source water protection, an average of \$27 was saved in water treatment costs.

US Environmental Protection Agency, 2012. *The Economic Benefits of Protecting Healthy Watersheds.*, EPA 841-N-12-004, 1.

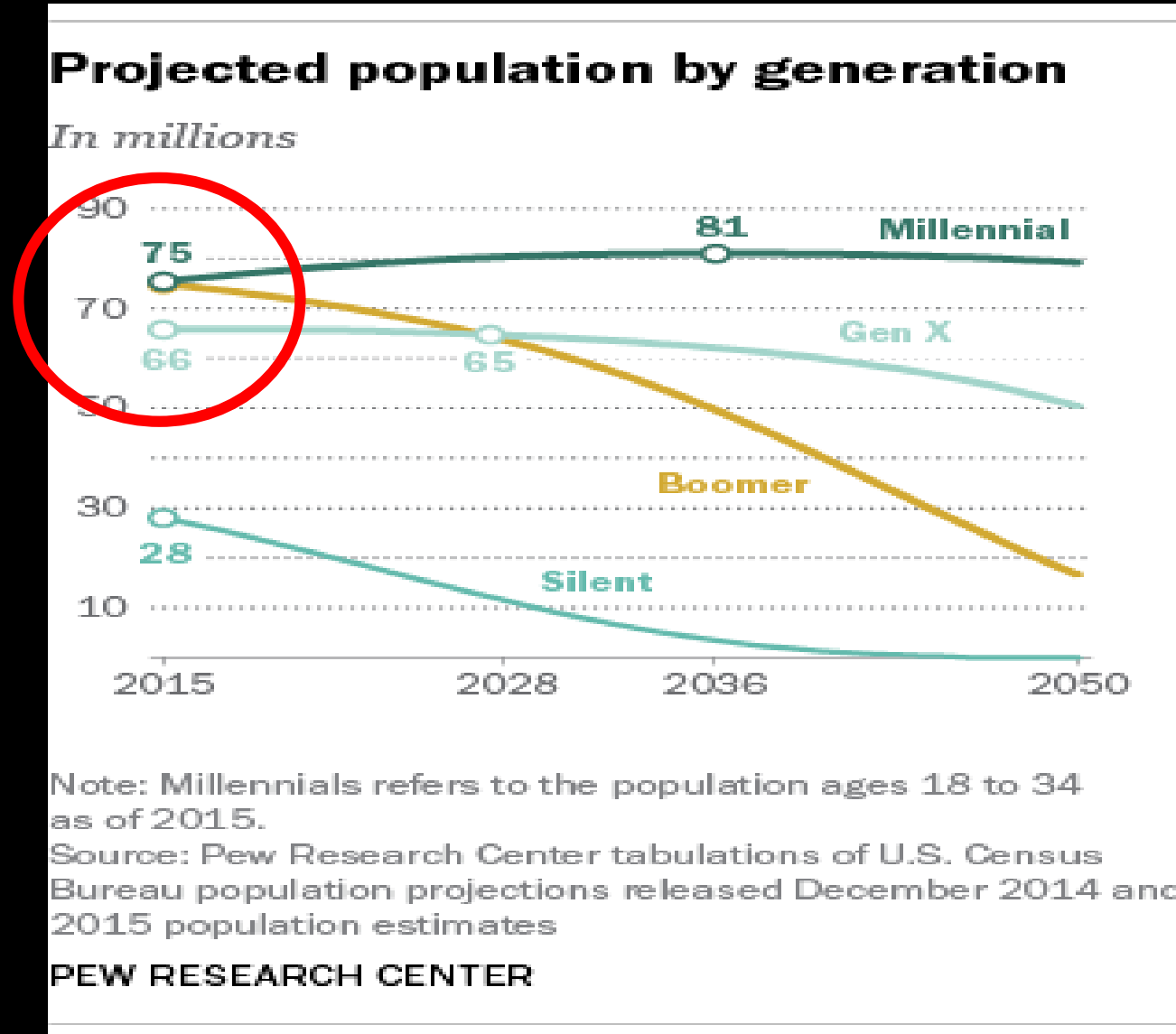
Demand for outdoor recreation is increasing with the current population and will continue to expand with future growth.



Difference between Tourism and Outdoor Recreation



Millennials Surpassed Baby Boomers in 2015

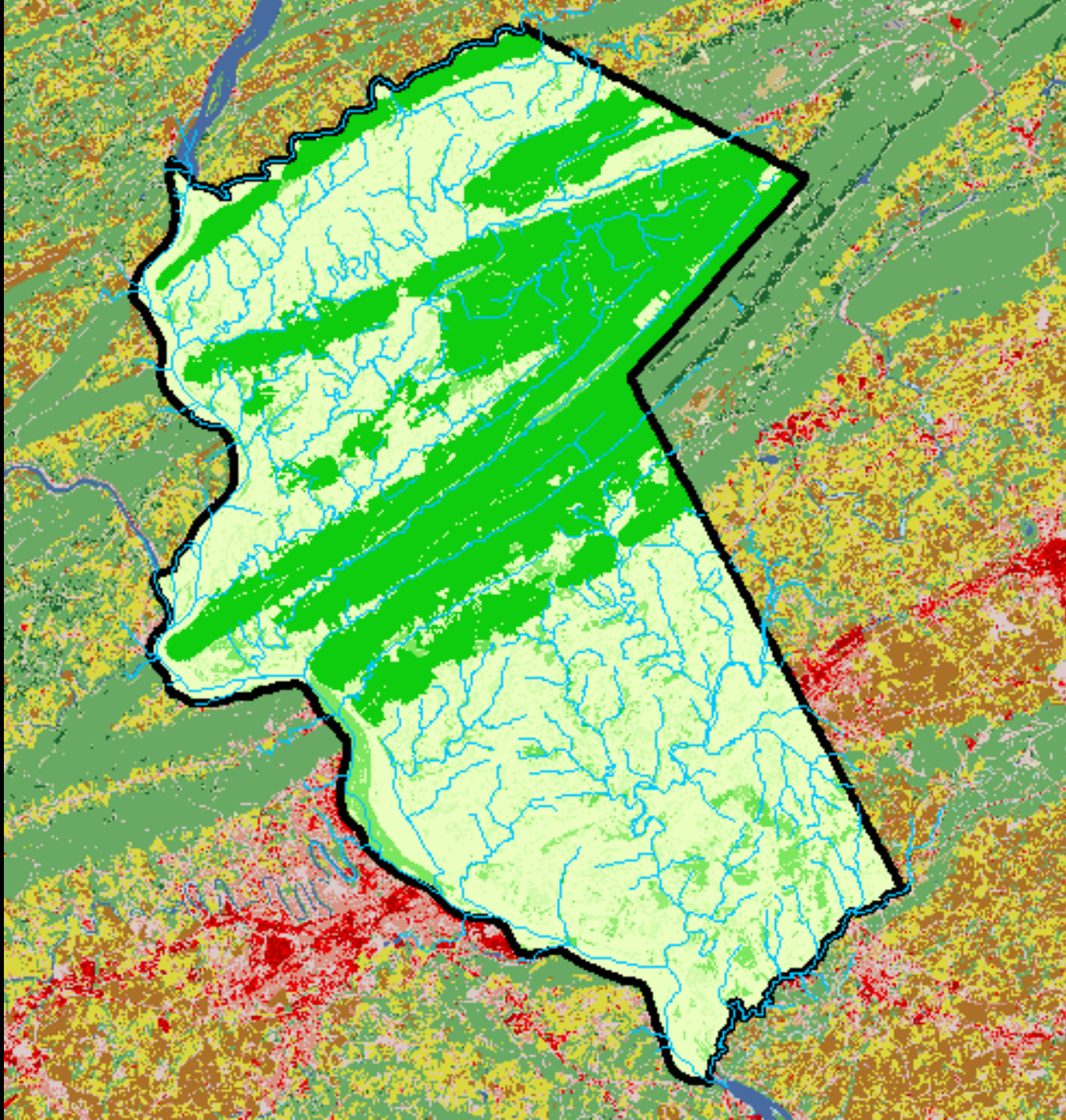


Baby Boomers ages 51-69

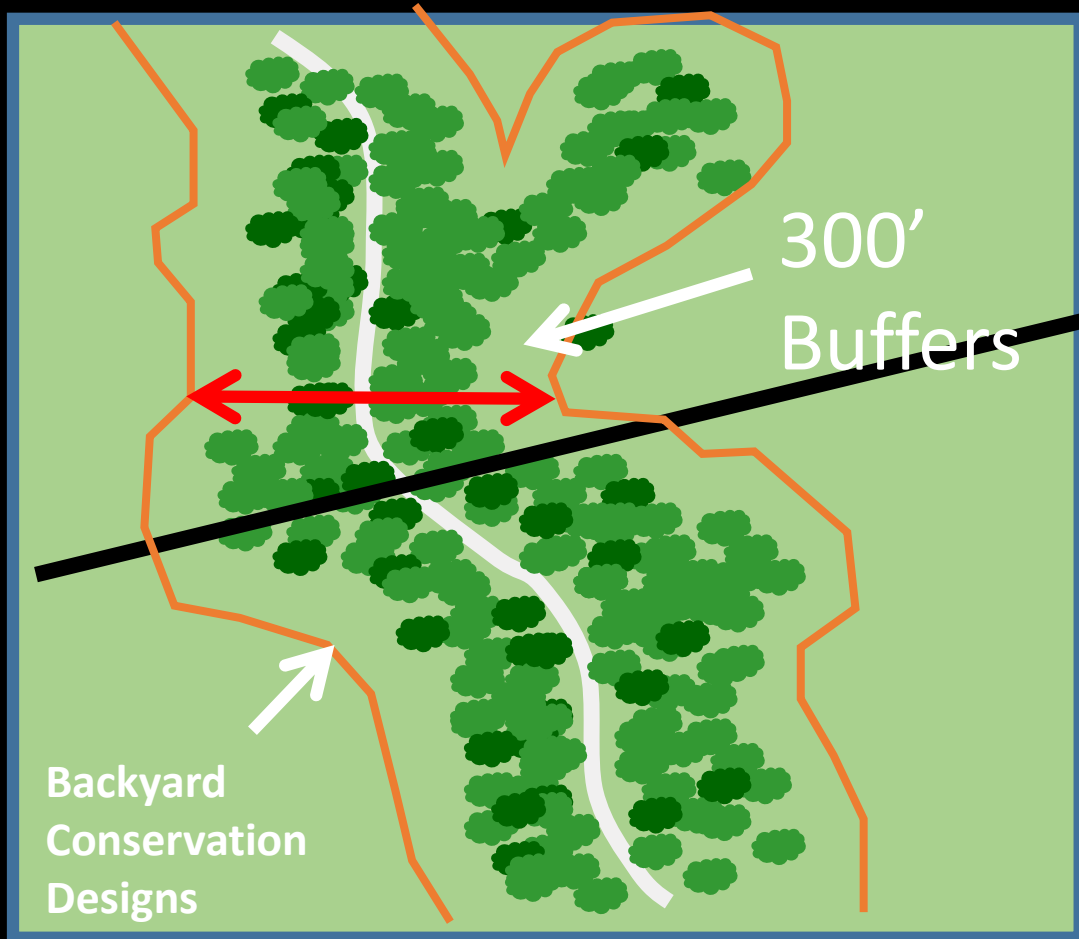
Expanding natural system services and creating a connected pattern of open space is needed to maximize nature's ecological and financial value.



Dauphin
County



Backyard Design



Backyard Conservation Design

- 60% Canopy cover
- Vegetation structure
- 60% native plants
- Less than 20% impervious surface
- Zero runoff design
- Seasonal beauty

Business and Nature are Inextricably Linked

Resource Dependent	Resource Based	Recreation Based	Green Corporations	Naturally Smart Businesses
<ul style="list-style-type: none">• NPDES Permits• TMDL Permits	<ul style="list-style-type: none">• Nestlé Water• Sam Adams Brewery• Yuengling Brewers• Pharmaceutical Companies• Electric Utilities	<ul style="list-style-type: none">• Cabela's• Bass Pros Sop• L.L. Bean• Olympus Camera• Coca Kayaking• Peddle Pushers• Aardvark Sporting Goods• Genesis Bike Shop• Emmaus Running Shop	<ul style="list-style-type: none">• Hershey Foods• TYCO Industries• IBM• Astra Zeneca• Air Products• Knoll Furniture• Waste Management• Martin Guitar	<p>Bethlehem Water Authority</p> <p>Capital Region Water</p>

New tools are needed to create innovative processes that include natural resource financial value for land use, economic development, tourism and recreational decisions.

1. Create conservation incentives

- a. Stormwater
- b. Riparian restoration
- c. Green corridors
- d. Use of native plants

2. Include ROE in decision making

- a. Map ROE financial values
- b. Green corridor buffers
- c. Stewardship and natural design training

3. Connect and expand open spaces

- a. Riparian Ordinance
- b. Official map
- c. ROE Development balance sheet
- d. Environmental audits

4. Assist sustainable businesses

- a. Capital Region Water

5. Involve schools

- a. Trout in the Schools

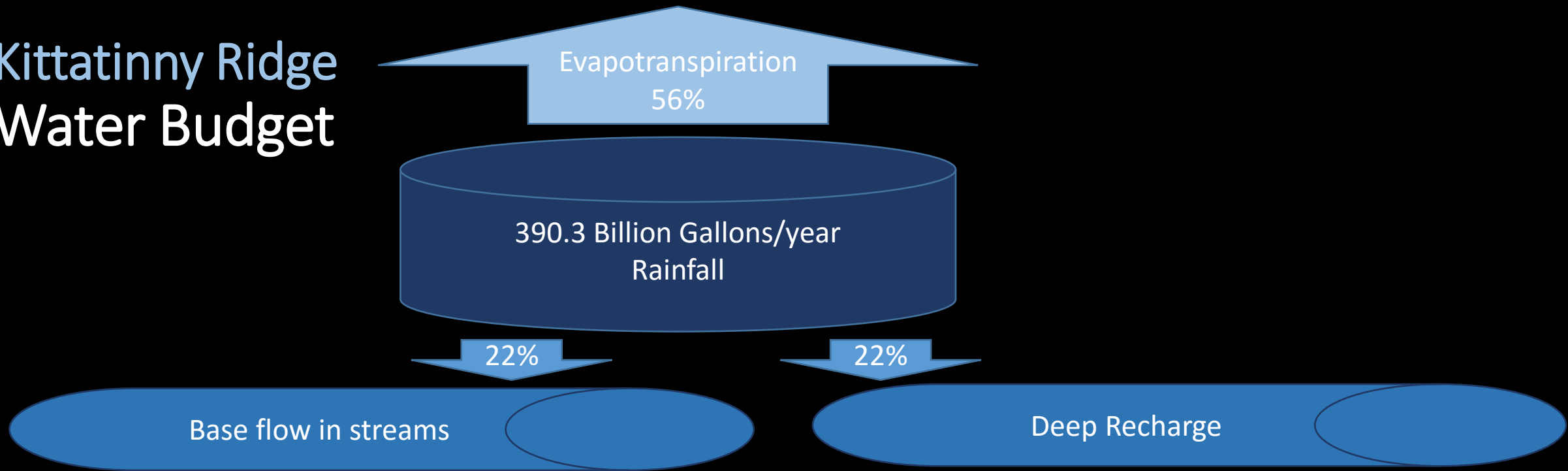
6. Communication

- a. ROE technical report
- b. ROE awareness booklet
- c. ROE power point presentation
- d. Train the trainer
- e. Educate legislators and policy makers

Where are we going in 2017?

1. Franklin or Lebanon County
2. Federal programs - EPA and Army Corp interest
3. Chesapeake Bay interest and collaboration (Maryland DNR)
4. Recognition by state agencies - additional coordination
5. Growing Greener interest - Foundation for Pennsylvania Watersheds
6. Communication/Reports
7. New conservation tools
 - Official maps
 - Green Corridors-expanding natural systems
 - Riparian buffer financial value estimates
 - Open Space referendums
 - County Comprehensive plans
 - Business materials
 - On-line map

Kittatinny Ridge Water Budget



Evapotranspiration

56%

218.6 Billion Gallons

Kittatinny Ridge : A Water Resource Treasure

390.3 Billion Gallons of Water Available Each Year

Base Flow in Streams
85.9 Billion Gallons

Rocks retain
20.6 Billion Gallons

Deep Recharge
85.9 Billion Gallons



Wildlife



Power plants



Water supply



Industrial



Agriculture



Mining

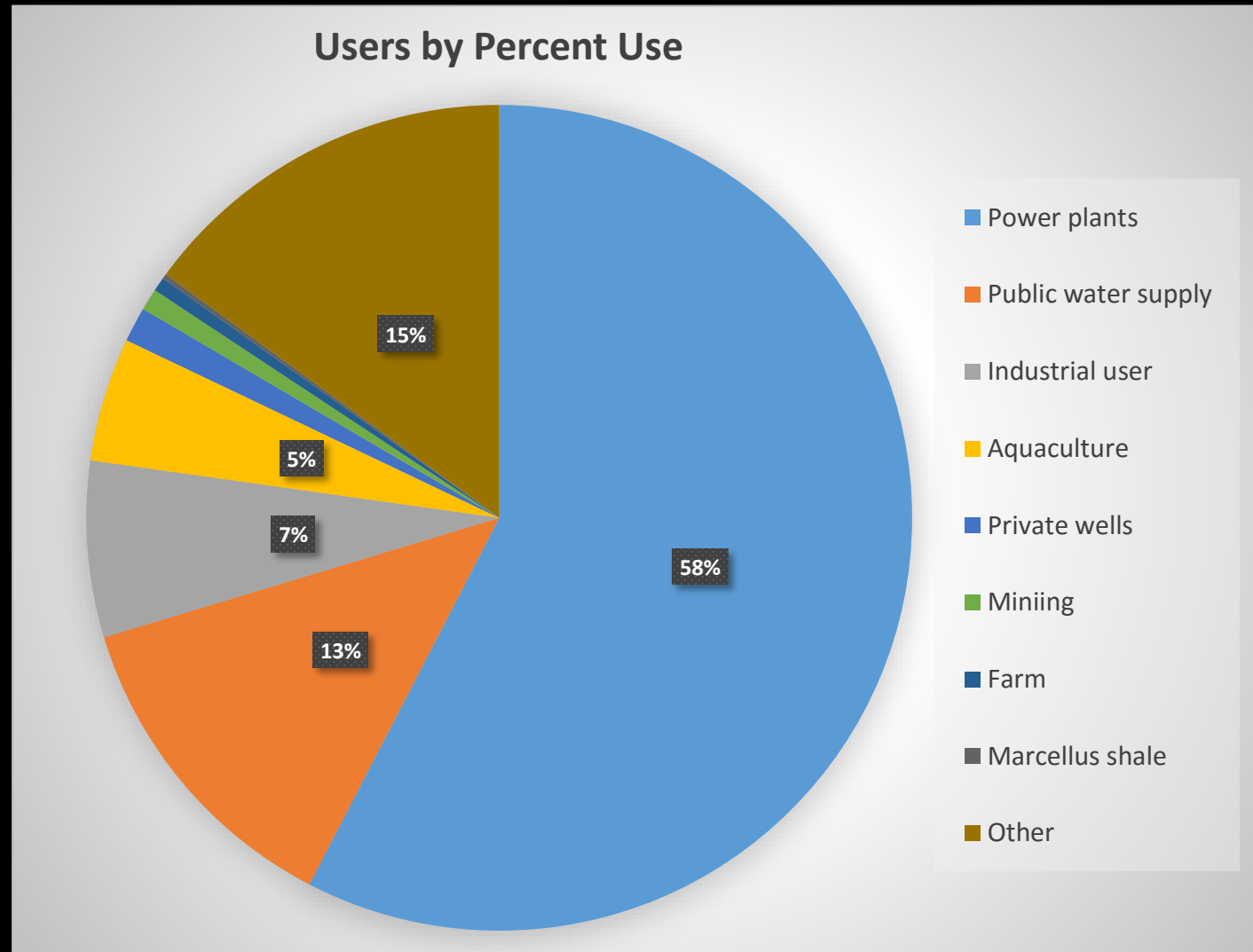


Aquaculture



Tourism

Pennsylvania Water Users



Source: PADEP

The Ridge Makes Water Better in All 12 Counties

The Ridge infiltrates approximately 10% of rainwater in 12 counties.



The water on the Ridge is pristine due to the forests ability to filter water and act like a sponge. It provides many valuable cost-free benefits like:

- Water supply
- Well water
- Stormwater management for MS4 permits
- Base flow and nutrient abortion for NPDES permits
- Flood damage mitigation
- Recreational water related activities
- Habitat and biological diversity
- Natural System Services

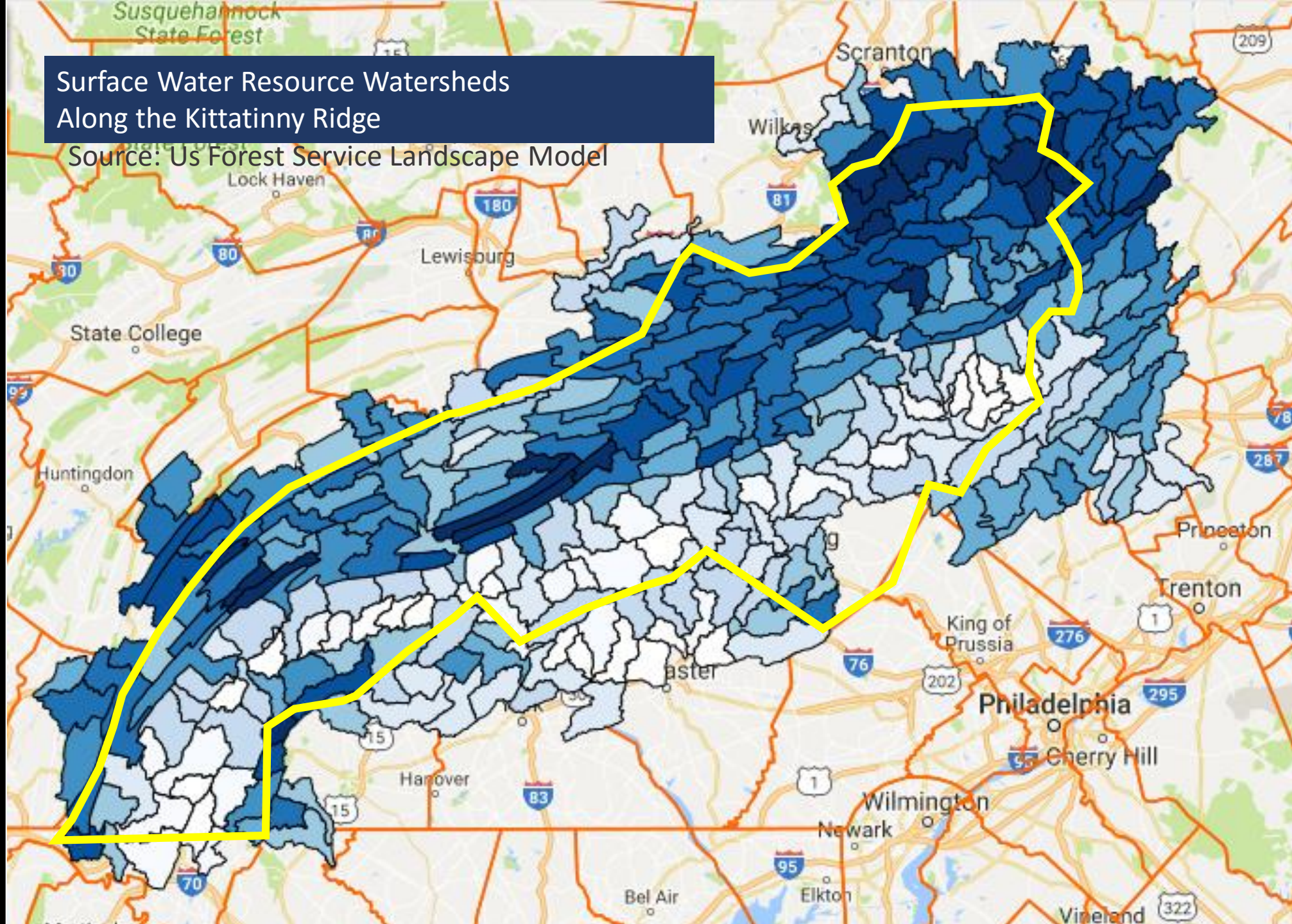
Once lost, these benefits are replaced with tax dollars.

Panel

- Stephen Repasch - Executive Director, Bethlehem Authority
- Tanya Dierolf- Sustainability Manager, Capital Region Water

Surface Water Resource Watersheds
Along the Kittatinny Ridge

Source: US Forest Service Landscape Model



DeHart Reservoir



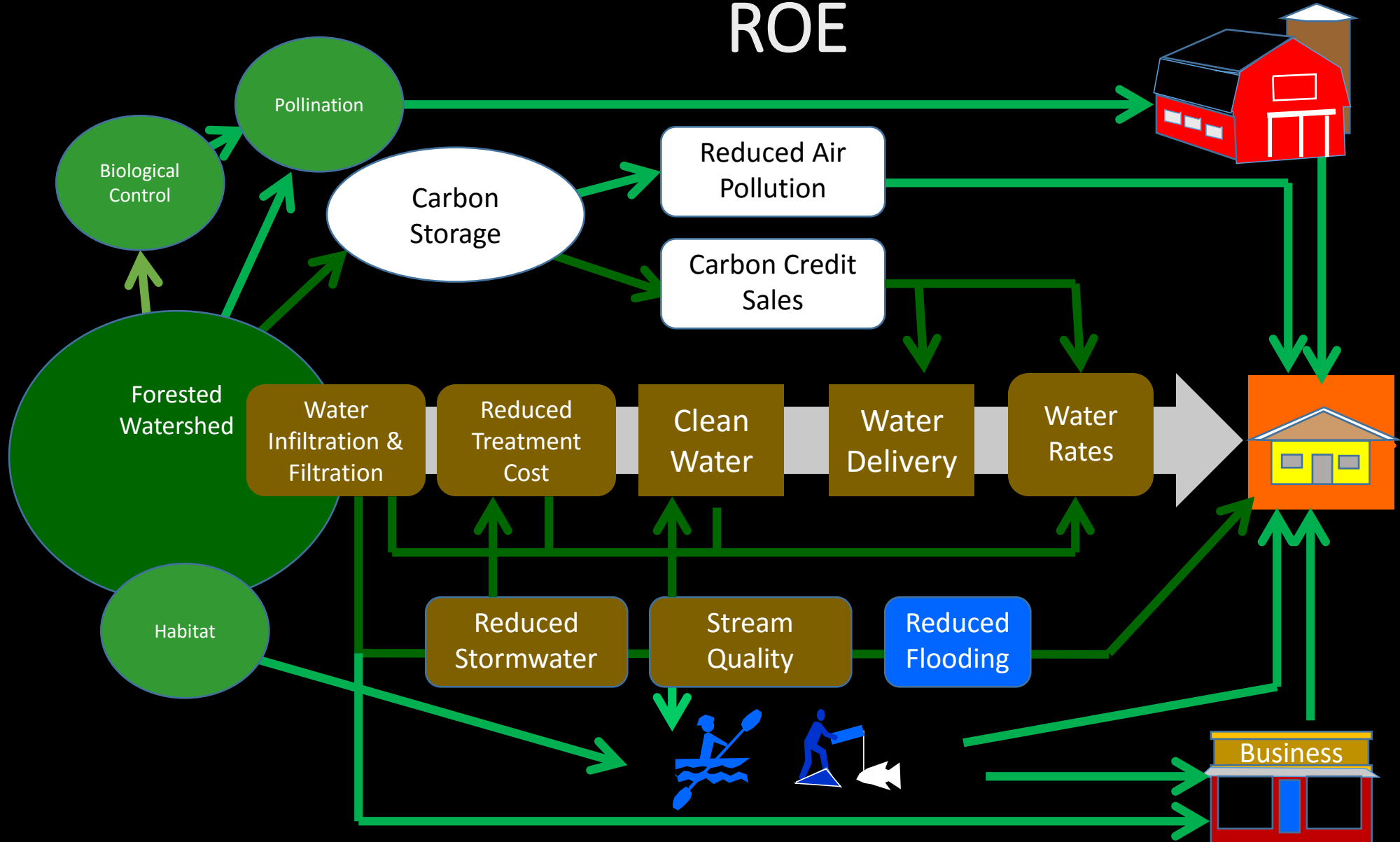
For every 10 percent
increase in forest cover, the
cost of water treatment
goes down 20%.

AWWARF, 2004

A Win/Win for the Economy and the Environment

Bethlehem Water Authority

ROE



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