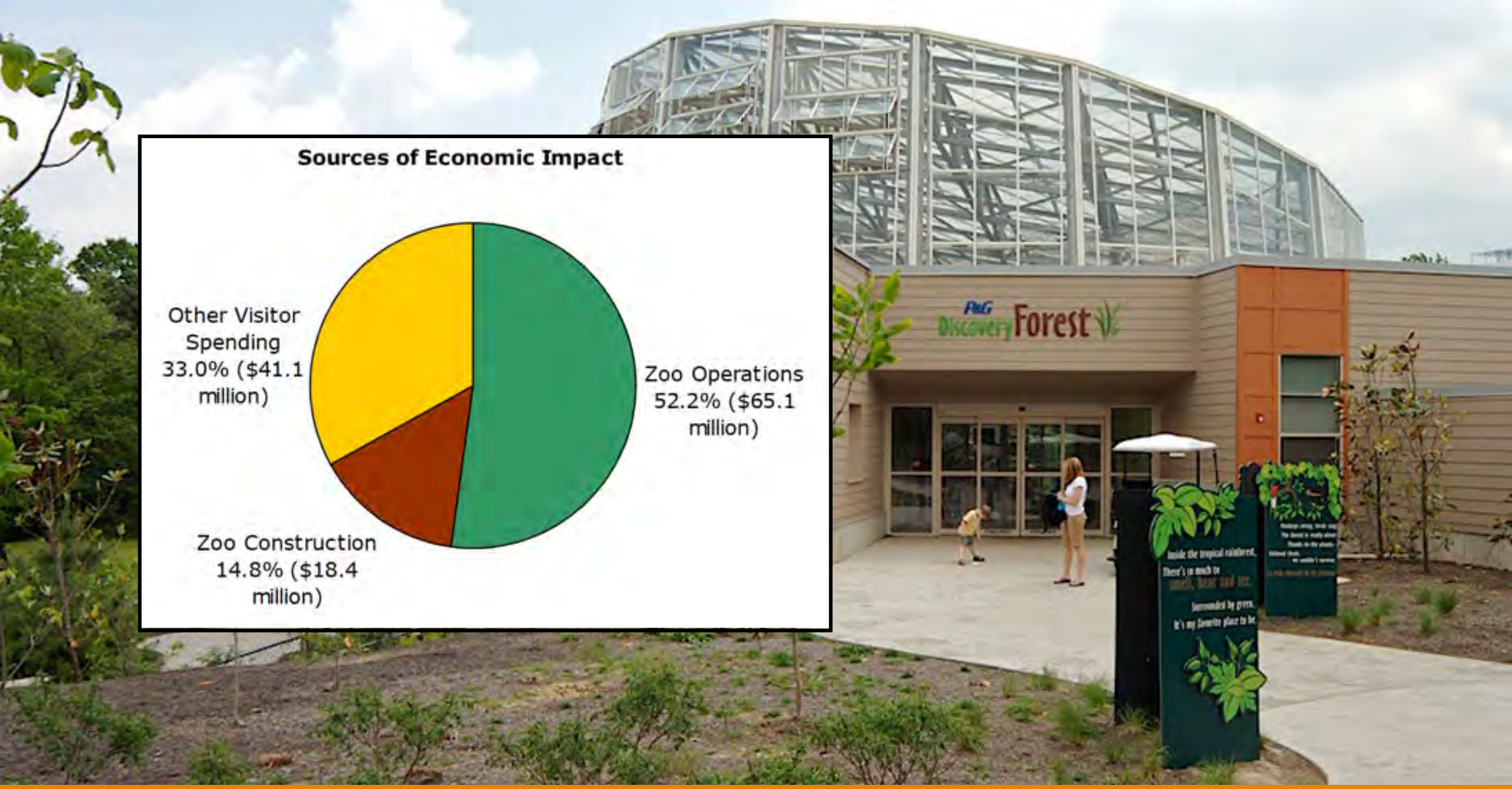
Monetizing the Value of AIB

2018 AMERICA IN BLOOM SYMPOSIUM

Economic contributions of tourism

Total travel related output was more than $2.1 trillion in 2014.

In 2014, a total of 15 million American jobs was directly and indirectly supported by travel and tourism.


Sources of Economic Impact
Other Visitor Spending 33.0% ($41.1 million)
Zoo Operations 52.2% ($65.1 million)
Zoo Construction 14.8% ($18.4 million)
P&G
Discovery Forest




Total economic impacts of the Florida Botanical Gardens are $113.9 million, adding an additional 1,584 jobs.

Chihuly in the garden – Desert Botanic Garden, Phoenix (630,000 annual attendance = $22M)

Shoppers spend 9 to 12% more.

Shoppers' WTP = +17% more.

7% higher rental rates + higher occupancy rates

2 million jobs in the U.S.

Office plants decrease sick time by 14%.

$2,200 reduction in average annual health care costs per adult.

The results of an eight-year study showed that women living in areas with more vegetation had a **12% lower mortality rate** than women living in areas with the least vegetation.


• $1.09 per $1.00 invested
• Adjacent to parks +8 to 20%
• Trees = +3 to 15%

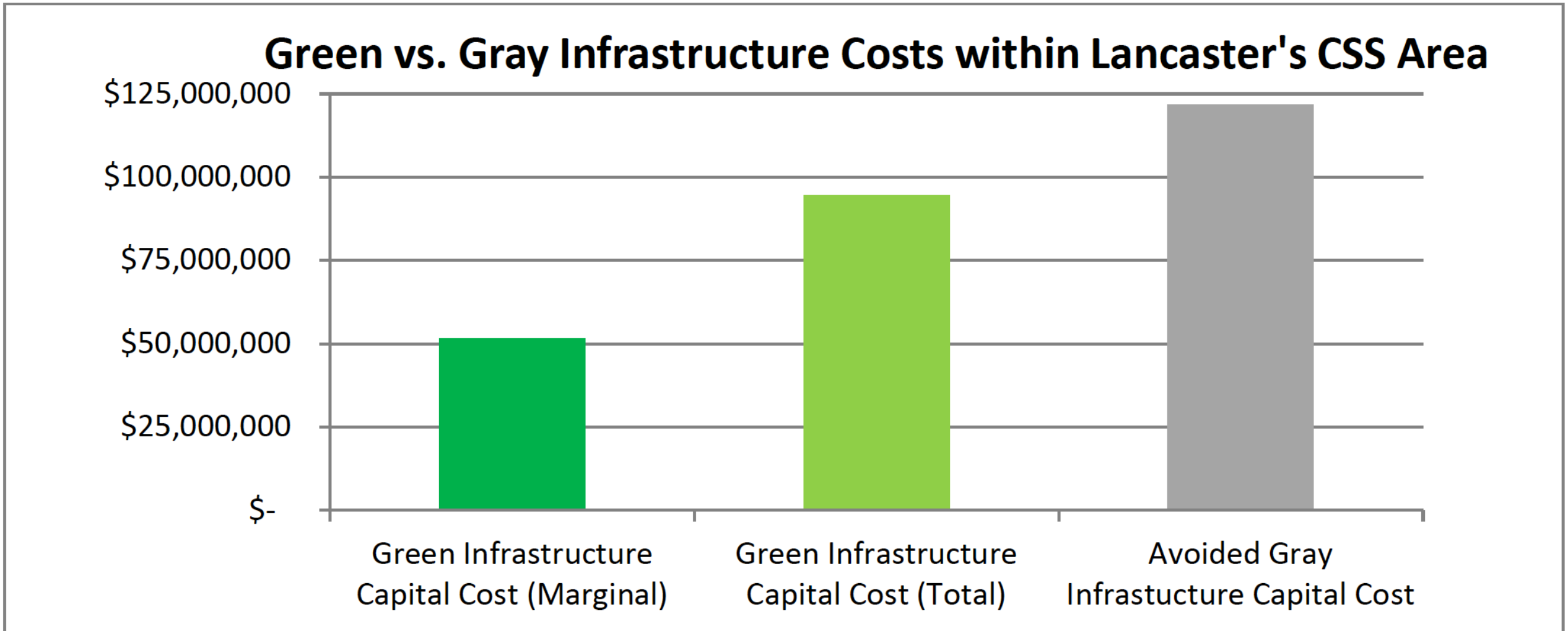

Greetings from
LANCASTER
PA.

Benefit measurement & evaluation: WATER

- Green roofs
- Tree planting
- Bioretention & infiltration
- Permeable pavement
- Water harvesting

→

- Reduced water treatment needs
- Reduced gray infrastructure needs
- Improved water quality
- Reduced flooding



Estimated Value of Avoided Costs for Wastewater Treatment & Storage at 25-Year Implementation*	
Reduced Pumping and Treatment Costs (per year)	$661,000
Reduced Gray Infrastructure Capital Costs	$120,000,000

Benefit measurement & evaluation: Energy

Green roofs

Tree planting

Reduced water treatment

} Reduced heating & cooling

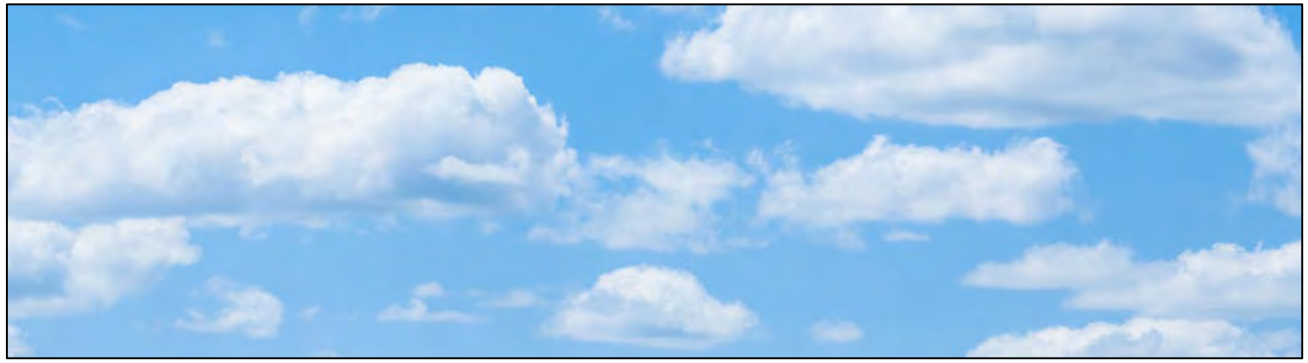
Reduced electricity usage

Estimated Value of Reduced Energy Use at 25-Year Implementation	
Reduced Electricity Use (kWh)	$592,000
Reduced Natural Gas Use (Btu)	$1,776,000
TOTAL (per year)	**$2,368,000**

Benefit measurement & evaluation: Air Quality

Green roofs
Tree planting
Bioretention & infiltration

} Reduced criteria pollutants
Climate change benefits



Estimated Value of Reduced Air Pollutants at 25-Year Implementation	
Reduced NO_2	$285,000
Reduced O_3	$171,000
Reduced SO_2	$238,000
Reduced PM-10	$329,000
TOTAL (per year)	**$1,023,000**

Total Calculated Benefits (at Long-Term 25-Year Implementation)	
Estimated Value from Water Benefits Reduced CSS Gray Infrastructure Capital Costs (one-time) Reduced Pumping and Treatment Costs (per year)	 $120,000,000 $661,000
Estimated Value from Energy Benefits (per year)	$2,368,000
Estimated Value from Air Quality Benefits (per year)	$1,023,000
Estimated Value from Climate Change Benefits (per year)	$786,000
Estimated Value from other Qualitative Benefits	Not calculated
TOTAL **Avoided Capital Costs** **Annual Benefits**	 **$120,000,000** **$4,838,000**

THE BENEFITS OF GREEN STORMWATER INFRASTRUCTURE ON PRIVATE COMMERCIAL PROPERTY

GREEN ROOFTOPS

Apartment buildings with green roofs received a 16% rental premium, according to one study.

Green roofs typically last twice as long as conventional roofs, saving hundreds of thousand of dollars in roof repair/replacement costs.

The green roof on the Target Center Arena in Minneapolis has decreased annual energy costs by $300,000.

LANDSCAPING
WITH RAIN GARDENS AND BIOSWALES

Well-designed landscaping boosts average rental rates for office buildings by approximately 7 percent

ECO-LABELS

LEED, Sustainable Sites Initiative or other certifications can increase property values, rents, and occupancy rates in commercial office buildings.


TREE COVER
Trees can reduce building energy demand for heating and cooling by providing shade in summer and blocking wind in winter. Multiple trees on a site can save hundreds of dollars in annual energy costs.
Retail customers are willing to pay
8% to 12% more for products in shopping centers with mature tree canopy.
RAIN BARRELS AND CISTERNS
Capturing rainwater for reuse can help save on water bills for landscape irrigation and other non-potable water uses.
PERMEABLE PAVEMENT
Permeable asphalt, concrete, or paver blocks allow water to seep into gravel and soil below. These systems can have significantly lower maintenance costs than traditional pavement, resulting in lower overall life-cycle costs.

RETAIL CENTER

The figures below present the key assumptions, proposed green infrastructure property improvements, and the resulting benefits for a midsize retail center.

GREEN INFRASTRUCTURE IMPROVEMENTS

40,000-sq.-ft. **green roof**, installed at the end of the life of the existing conventional roof, with green covering 90 percent of surface, or 36,000 sq. ft.

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50 strategically planted **medium-size trees**, 25 opposite west-facing walls and 25 opposite south-facing walls

---

Bioswales and **rain gardens** that manage 1 inch of runoff from 2,000 sq. ft. of adjacent impervious area

---

72,000-sq.-ft. **permeable-pavement** parking lot

Cisterns to capture runoff from 5,000 sq. ft. of roof area and use for irrigation

BUILDING ASSUMPTIONS
(BEFORE IMPROVEMENTS)

SIZE	40,000 sq. ft.
STORIES	1
ROOF SIZE	40,000 sq. ft.
LOT AREA	128,000 sq. ft.
PERMEABLE AREA (COVERED IN TURF)	4,000 sq. ft.
NUMBER OF STORES	15
ANNUAL RENT	$17 per sq. ft.
ANNUAL RETAIL SALES	$2,182,000 per store

POTENTIAL BENEFITS

Energy savings due to reduced demand for heating and cooling	**$3,560** Annually
Avoided costs for conventional roof replacement	**$607,750** net present value over 40-year analysis period
Tax credit	**$100,000** one-time credit in year of installation
Increased **retail sales**	**$1.2 MILLION** per year
Stormwater **fee reduction**	**$14,020** Annually (projected to increase 6% per year)
Total present value benefits (over 40-year analysis period)	**$24,202,000 +** (including $22,963,800 in increased retail sales, which accrue to the tenants)

NON-QUANTIFIED BENEFITS

Water **conservation**	+
Increased **property value**	++
Reduced infrastructure costs due to use of permeable pavement system	+/U
Reduced crime	+/U
Improved **health and employee satisfaction**	+ (for tenants and employees)
Reduced costs associated with flooding	U

\+ would likely increase net benefits;
\+ + would increase net benefits significantly;
U direction of net change is uncertain.

Present value benefits over 40-year period were estimated on the basis of a 6 percent discount rate, projected CPI, projected increase in electricity and natural gas prices in relation to CPI (based on historical relationship), and 6 percent annual increase in stormwater fees. Improvements assumed to be implemented in 2015. Avoided conventional roof replacement costs were added to net present value of other benefits.Tax credit and stormwater fee reductions are based on available credits and fee structure in Philadelphia; many other localities have similar incentives.

APARTMENT BUILDING

The figures below present the key multifamily building assumptions, the proposed green infrastructure property improvements, and the resulting benefits.

GREEN INFRASTRUCTURE IMPROVEMENTS

8,435 sq. ft. **green roof,** installed at the end of the life ofthe existing conventional roof, with green covering 90 percent of the surface, about 7,600 sq. ft.

---

12 strategically planted **large trees**, 6 opposite a west-facing wall and 6 opposite an east-facing wall

---

Bioswales and **rain gardens** that manage 1 inch of runoff from 2,635 sq. ft. of adjacent impervious area

POTENTIAL BENEFITS

Energy savings due to reduced demand for heating and cooling	**$1,780** Annually
Avoided costs for conventional roof replacement	**$128,160** present value over 40-year analysis period
Tax credit	**$52,720** one-time credit in year of installation
Increased **rental income**	**$77,720** Annually (assuming no vacancies)
Increased **property value**	**$37,500** one-time benefit to property owner at time of sale
Stormwater **fee reduction**	**$1,230** Annually (projected to increase 6% per year)
Total present value benefits (over 40-year analysis period)	**$1,740,000 +**

Present value benefits over 40-year period were estimated on the basis of a 6 percent discount rate, projected CPI, projected increase in electricity and natural gas prices in relation to CPI (based on historical relationship), and 6 percent annual increase in stormwater fees. Improvements assumed to be implemented in 2015. Avoided conventional roof replacement costs were added to net present value of other benefits.Tax credit and stormwater fee reductions are based on available credits and fee structure in Philadelphia; many other localities have similar incentives.

NON-QUANTIFIED BENEFITS

Reduced crime	+/U
Reduced costs associated with flooding	U

\+ would likely increase net benefits;
U direction of net change is uncertain.

BUILDING ASSUMPTIONS (BEFORE IMPROVEMENTS)

SIZE	33,740 sq. ft.
STORIES	4
ROOF SIZE	8,435 sq. ft.
LOT AREA	12,435 sq. ft.
PERMEABLE AREA (COVERED IN TURF)	1,000 sq. ft.
NUMBER OF UNITS	32
MONTHLY RENT	$1,265 per unit

MEDIUM-SIZE OFFICE BUILDING

The figures below present the key office building assumptions, the proposed green infrastructure property improvements, and the resulting benefits.

GREEN INFRASTRUCTURE IMPROVEMENTS

17,900-sq.-ft. **green roof**, installed at the end of life of the existing conventional roof, with green covering 80 percent of the surface, or 14,300 sq. ft. (Remainder of roof is impervious area.)

---

20 strategically **planted trees**,10 opposite a west-facing wall and 10 opposite an east-facing wall

---

10,000-sq.-ft. **permeable pavement** parking lot, installed at the end of life of the existing parking lot

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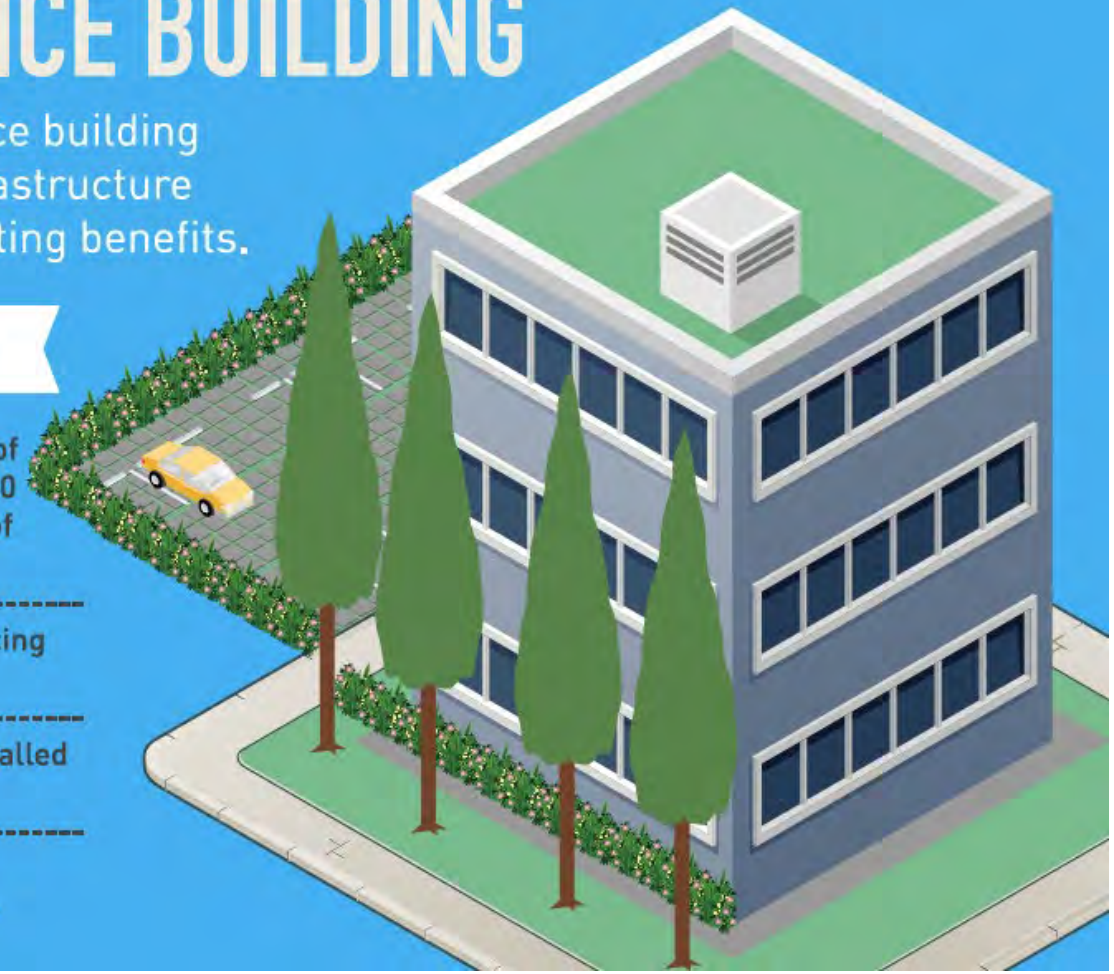
Bioswales and **rain gardens** that manage 1 inch of runoff from 4,700 sq. ft. of adjacent impervious area



POTENTIAL BENEFITS

Energy savings due to reduced demand for heating and cooling	**$1,630** Annually
Avoided costs for conventional roof replacement	**$271,970** present value over 40-year analysis period
Tax credit	**$67,130** one-time credit in year of installation
Increased **rental income**	**$72,150** annually (assuming no vacancies)
Stormwater **fee reduction**	**$3,490** Annually (projected to increase 6% per year)
Total present value benefits (over 40-year analysis period)	**$1,863,000 +**

Present value benefits over 40-year period were estimated on the basis of a 6 percent discount rate, projected CPI, projected increase in electricity and natural gas prices in relation to CPI (based on historical relationship), and 6 percent annual increase in stormwater fees. Improvements assumed to be implemented in 2015. Avoided conventional roof replacement costs were added to net present value of other benefits.Tax credit and stormwater fee reductions are based on available credits and fee structure in Philadelphia; many other localities have similar incentives.

NON-QUANTIFIED BENEFITS

Increased **property values**	++
Reduced infrastructure costs due to use of permeable pavement system	+
Reduced crime	+/U
Improved **health and employee satisfaction**	+ (for tenants and employees)
Reduced costs associated with flooding	U

\+ would likely increase net benefits;
\+ + would increase net benefits significantly;
U direction of net change is uncertain.

BUILDING ASSUMPTIONS (BEFORE IMPROVEMENTS)

SIZE	53,600 sq. ft.
STORIES	3
ROOF SIZE	17,900 sq. ft.
LOT AREA	32,000 sq. ft.
PERMEABLE AREA (COVERED IN TURF)	1,000
ANNUAL RENT	$19.23 per sq. ft.

LANDSCAPE PERFORMANCE SERIES

by the Landscape Architecture Foundation

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The Landscape Performance Series is the online set of resources to help designers, agencies, and advocates evaluate performance, show value and make the case for sustainable landscape solutions.

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Active Living >

Resilience >

Biodiversity >

Frontier Project

Revitalization >

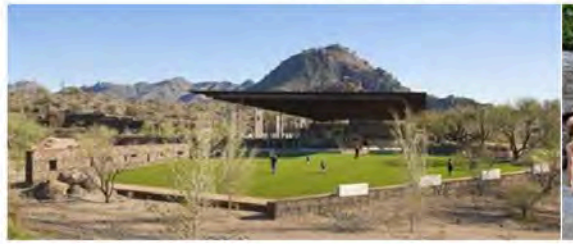
Social Equity >

Water Management >

Health & Wellbeing >

Carbon & Climate >

Urban Agriculture >



Doc Cavalliere Park

Teardrop Park

org/case-study-briefs/renaissance-park

Economic benefits by category

(1) Property Value

- Increase in property value for adjacent or nearby properties
- Increases in sales price for adjacent or nearby properties
- Increases in rents for adjacent residential or commercial properties

Landscape Architecture Foundation's Landscape Performance Series.

Economic benefits by category

(2) Operations and Maintenance Savings	Reduction in heating and cooling costs
	Reduction in irrigation or potable water costs
	Reduction in maintenance costs, mowing, fertilizer and others
	Value of volunteer hours

Landscape Architecture Foundation's Landscape Performance Series.

Economic benefits by category

(3) Construction Cost Savings	Reduced hauling and/or dumping costs
	Reduced material purchasing costs
	Reduced installation costs
	Reduced earthworks costs

Landscape Architecture Foundation's Landscape Performance Series.

Economic benefits by category

(4) Job Creation	Number of permanent jobs created directly for the operation of the site
	Number of permanent jobs created for surrounding, related development
	Number of temporary jobs created for the construction of the site, seasonal operations, or other temporary needs

Landscape Architecture Foundation's Landscape Performance Series.

Economic benefits by category

(5) Visitor Spending	Revenue generated by entry fees
	Revenue generated through direct sales
	General visitor spending in nearby or adjacent areas

Landscape Architecture Foundation's Landscape Performance Series.

Economic benefits by category

(6) Increased Tax Base/Revenue

$$\frac{\text{Increase in office, commercial, or residential space or units}}{\text{Actual increase in tax revenue}}$$

$$\text{Projected increase in tax revenue}$$

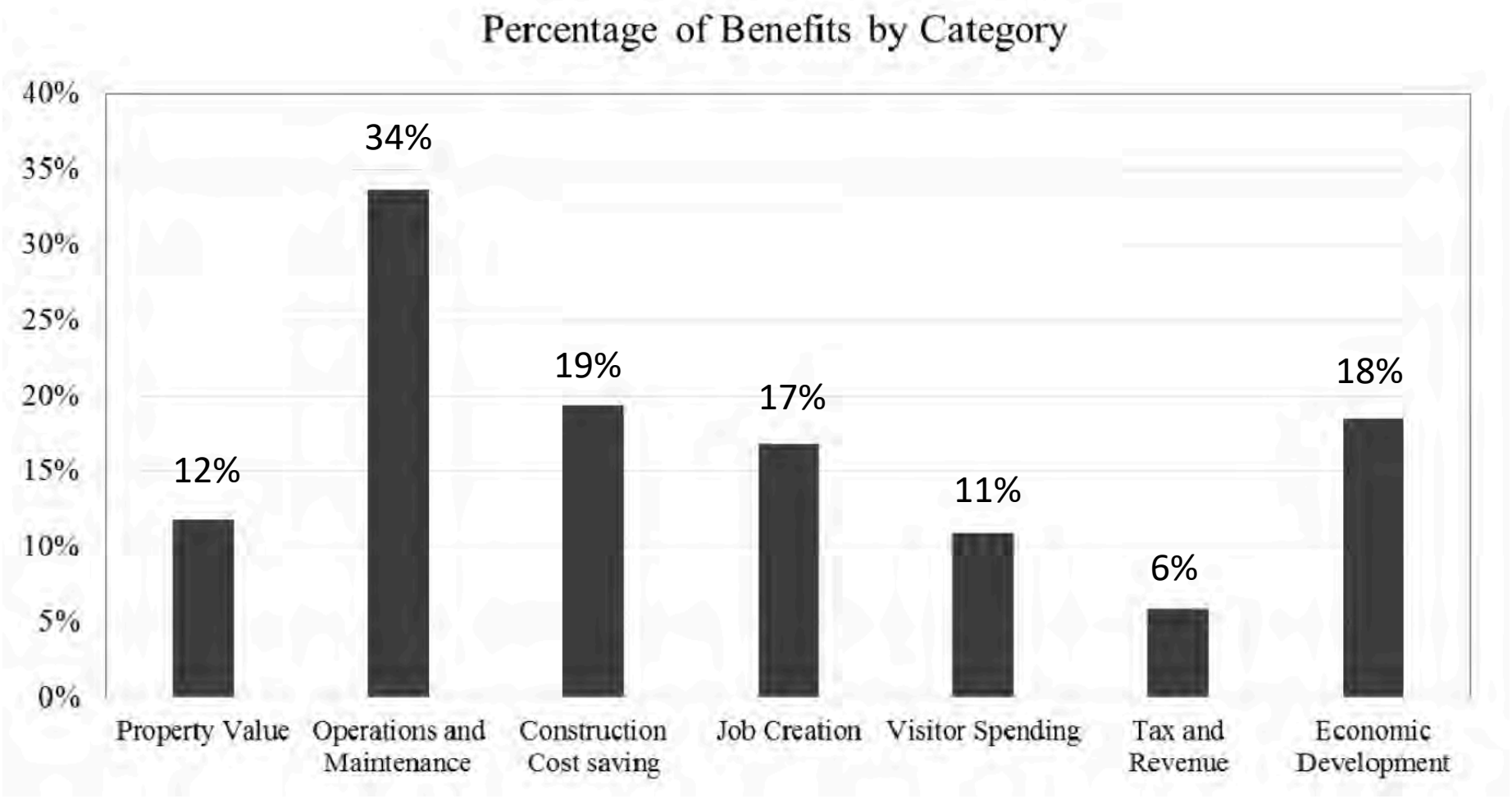
Landscape Architecture Foundation's Landscape Performance Series.

Economic benefits by category

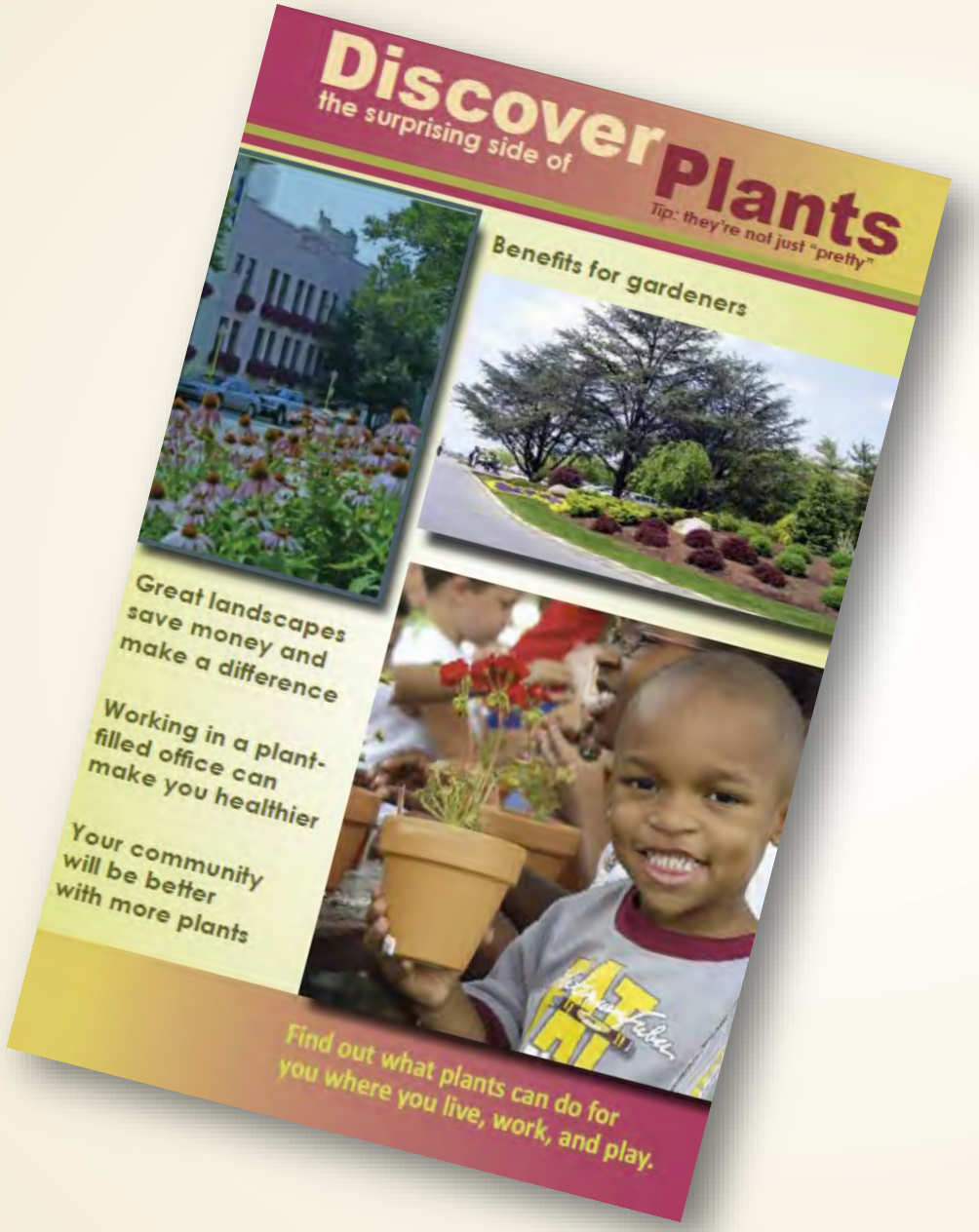
(7) Economic Development	Increase in retail sales
	Increase in commercial establishments
	Decrease in retail vacancies and/or increase in occupancy
	Revenue generated through project-related events

Landscape Architecture Foundation's Landscape Performance Series.

Percentage of economic benefits by category



Landscape Architecture Foundation's Landscape Performance Series.



America in Bloom
Planting pride in our communities!

- ✓ Plants offer numerous benefits for communities.
- ✓ Great landscapes save money.
- ✓ Plants can make you healthier.
- ✓ Your community will be safer.
- ✓ Discover what plants can do for you where you live, work, and play.

NICH

NATIONAL INITIATIVE FOR CONSUMER HORTICULTURE

#PlantsDoThat

Horticulture: The Art, Science, & Business of Plants

Horticulture contributes $196 billion to the US economy across a diverse array of businesses. But the story doesn't end there. Horticulture benefits the wealth and health of every citizen and every community in the US.

Produced by
National Initiative for Consumer Horticulture

ConsumerHort.org

Where We LIVE

A 25-foot tree reduces annual heating and cooling costs for typical homes by 8-12%.

Our homes represent 25% of our personal wealth. Well-landscaped homes are more valuable.

Improvements to your landscape pays off! The return on investment for landscape upgrades is 109%.

1/4 of American homes grow berries, veggies, or fruit trees.

Where We WORK

Green roofs provide beauty and moderate rooftop temperatures, reducing heat loads and lowering energy costs.

Office plants reduce employee sick time by 14% and improve work productivity and speed.

Upkeep and preservation of urban green habitats creates new jobs, boosts local economies, and adds to community prosperity.

Horticulture creates 2 million jobs across a diverse array of businesses.

Where We SHOP

Stores with landscaped areas have expanded sales resulting from longer shopping occassions and can charge more due to higher perceived quality.

Where We PLAY

America's public gardens are key tourist destinations and contribute $2.3 billion in community tourism spending.

Parks provide cities and citizens significant value. In Philadelphia, parks generate $23 million in city revenue, $16 million in municipal cost savings, and $1.1 billion in cost savings for citizens.

There are 4 million miles of US roadways. Street trees preserve paved surfaces. Shaded roads save up to 60% of repaving costs. Trees also improve driver safety and result in fewer traffic accidents.

Trails and greenways increase property values and make adjacent homes sell faster.

SEED YOUR FUTURE™

Promoting Horticulture in the US