

the U.S. National Academies

Roundtable on Science and Technology for Sustainability

Panel I Sustainability Indicators

June 4, 2015

Lidia Berger, LEED Fellow, MEM

Principal, National Sustainability Director

Sustainability & Resiliency



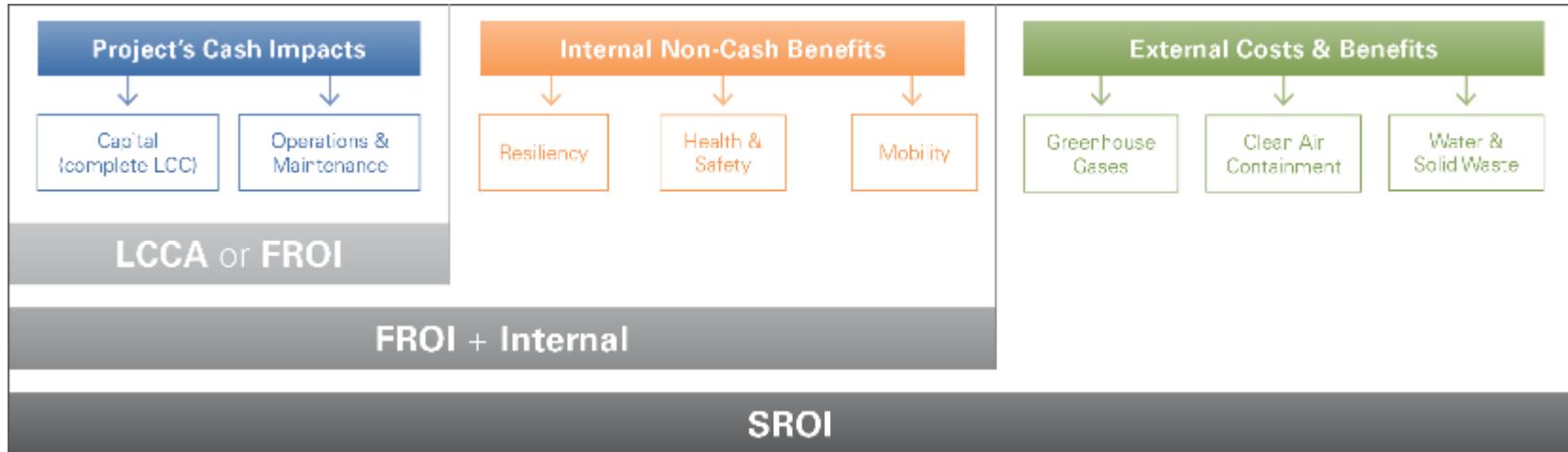
Economic Development & Mitigation, Adaptation

Social Responsibility & Response

Ecosystem Services & Recovery

Calculating the Triple Bottom Line

Creation of Risk-Adjust Business Cases for Sustainable Investment



- Aids decision-making for projects or portfolio of assets
- Formulates Strategies for Risk Avoidance
- Helps to justify and obtain funding
- Demonstrate due diligence

Fort Belvoir Community Hospital

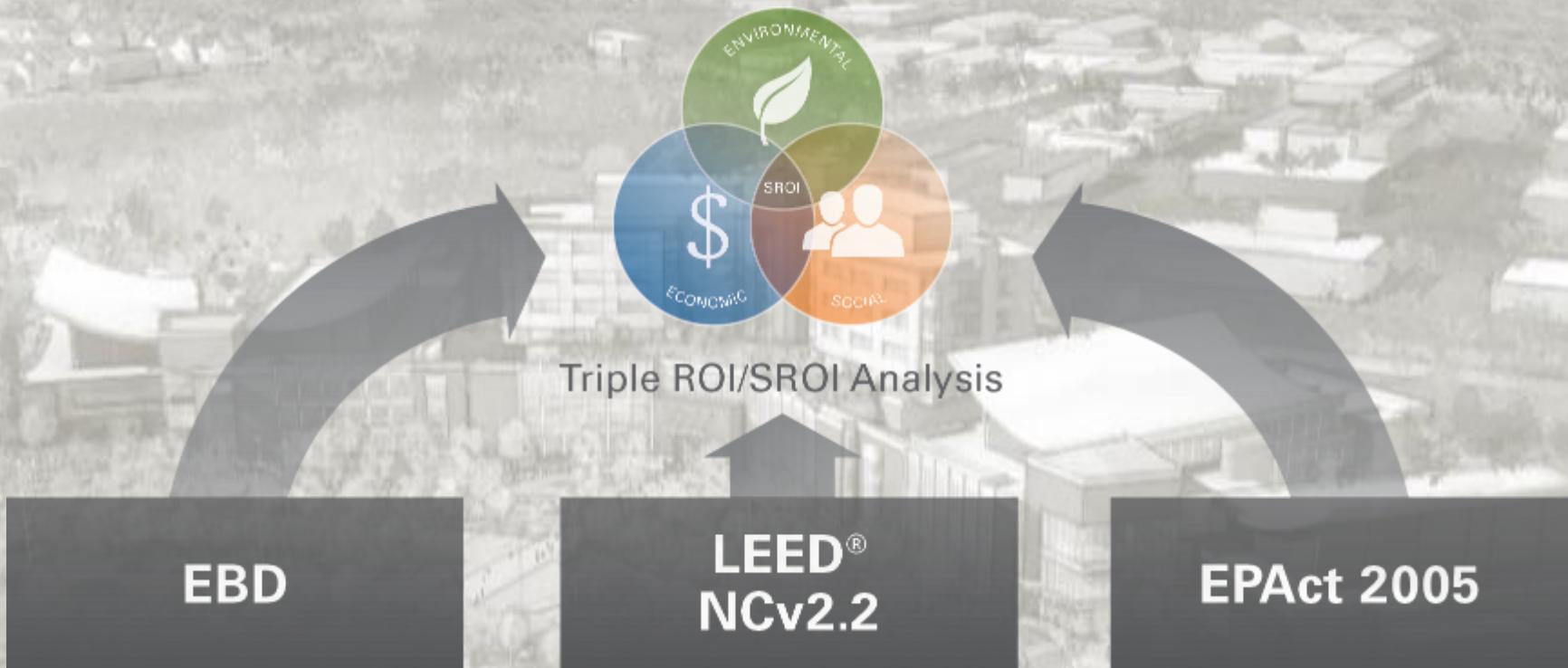
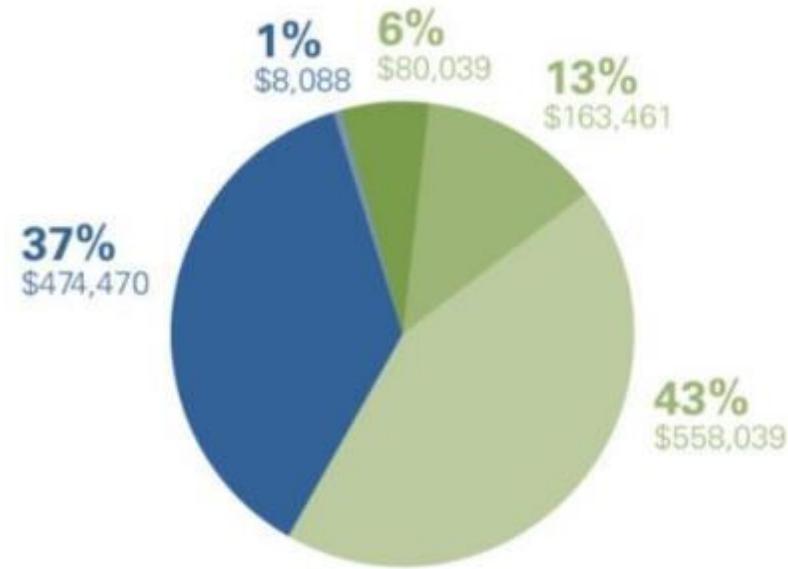


Image referenced from: Sustainable Return on Investment and Life-Cycle Cost Analysis of: The Energy and Water Conservation Measures for the Proposed FBCH, HDR | Dewberry Joint Venture

FBCH Key Risk-Adjusted Outputs

SROI	Current Design with Updates
Annual Value of Benefits	\$1,284,097
Energy Reduction	\$474,470
Water Reduction	\$80,039
Greenhouse Gases Savings	\$163,461
Air Pollutants Savings	\$558,039
Savings from Reduced Water Use-Economic Value	\$8,088
Net Present Value	\$15,773,620
Return on Investment	39.3%
Discounted Payback Period	4.6

← EO 13514 →



FROI	Current Design with Updates
Annual Value of Benefits	\$554,870
Net Present Value	\$4,353,935
Return on Investment	15.9%
Discounted Payback Period	12.9

SROI: Sustainable Return on Investment calculations (includes externalities). All dollar figures are in 2009 current dollars.
FROI: Financial Return on Investment calculations (traditional cash return). All dollar figures are in 2009 current dollars.

← EPAct →

Graph data referenced from: Sustainable Return on Investment and Life-Cycle Cost Analysis of: The Energy and Water Conservation Measures for the Proposed FBCH, HDR | Dewberry Joint Venture

Path Forward - Automation

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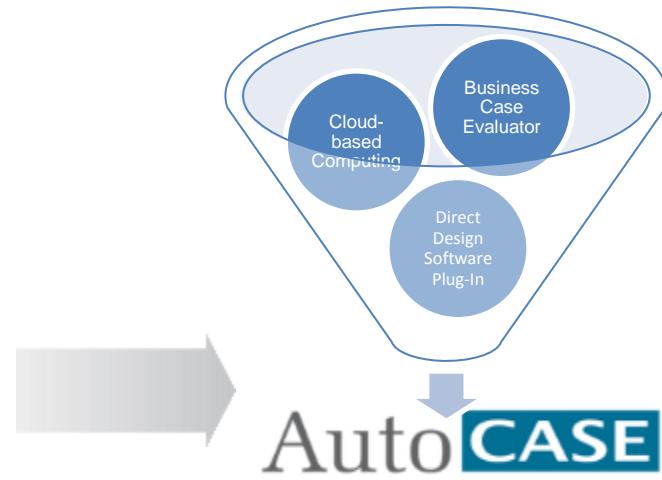
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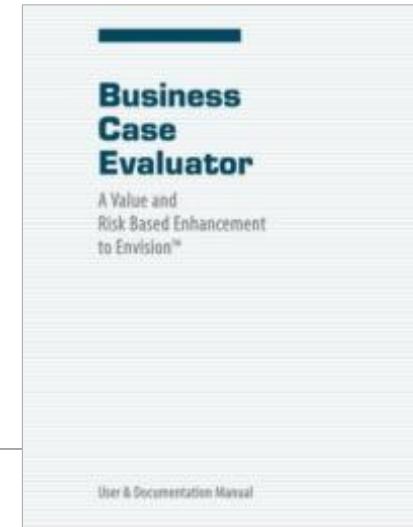
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← EPAct →



Graph referenced from:
Impact Infrastructure, LLC



Case Study

National Mall Underground



Flood Protection & Parking – a Hybrid Proposal for a Sustainable and Resilient Mall proposed by Albert H. Small, National Coalition to Save Our Mall and Arthur Cotton Moore

National Mall Underground



Pulling of stormwater during the 2006 flood from runoff from higher ground



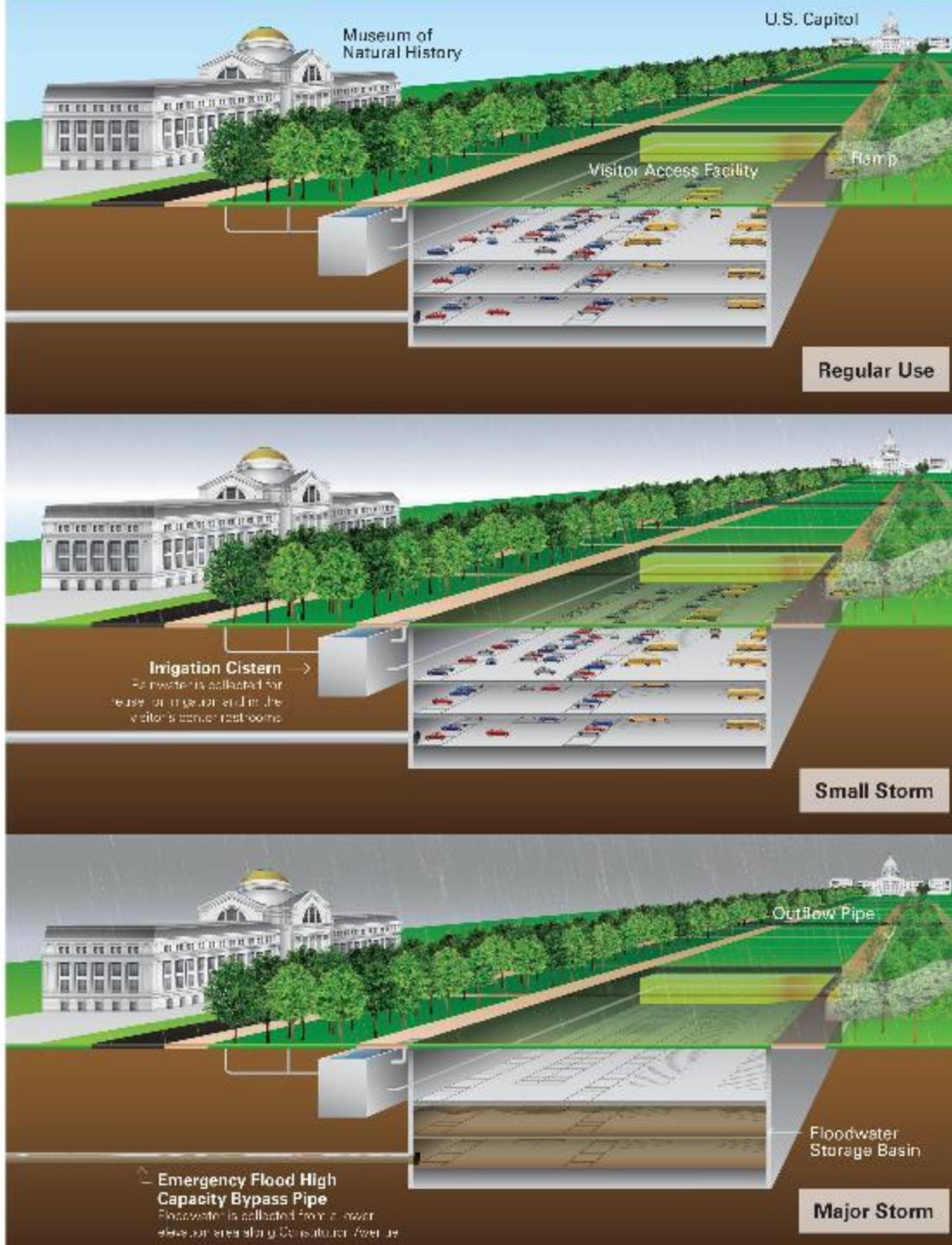
National Mall, 1980s (left)



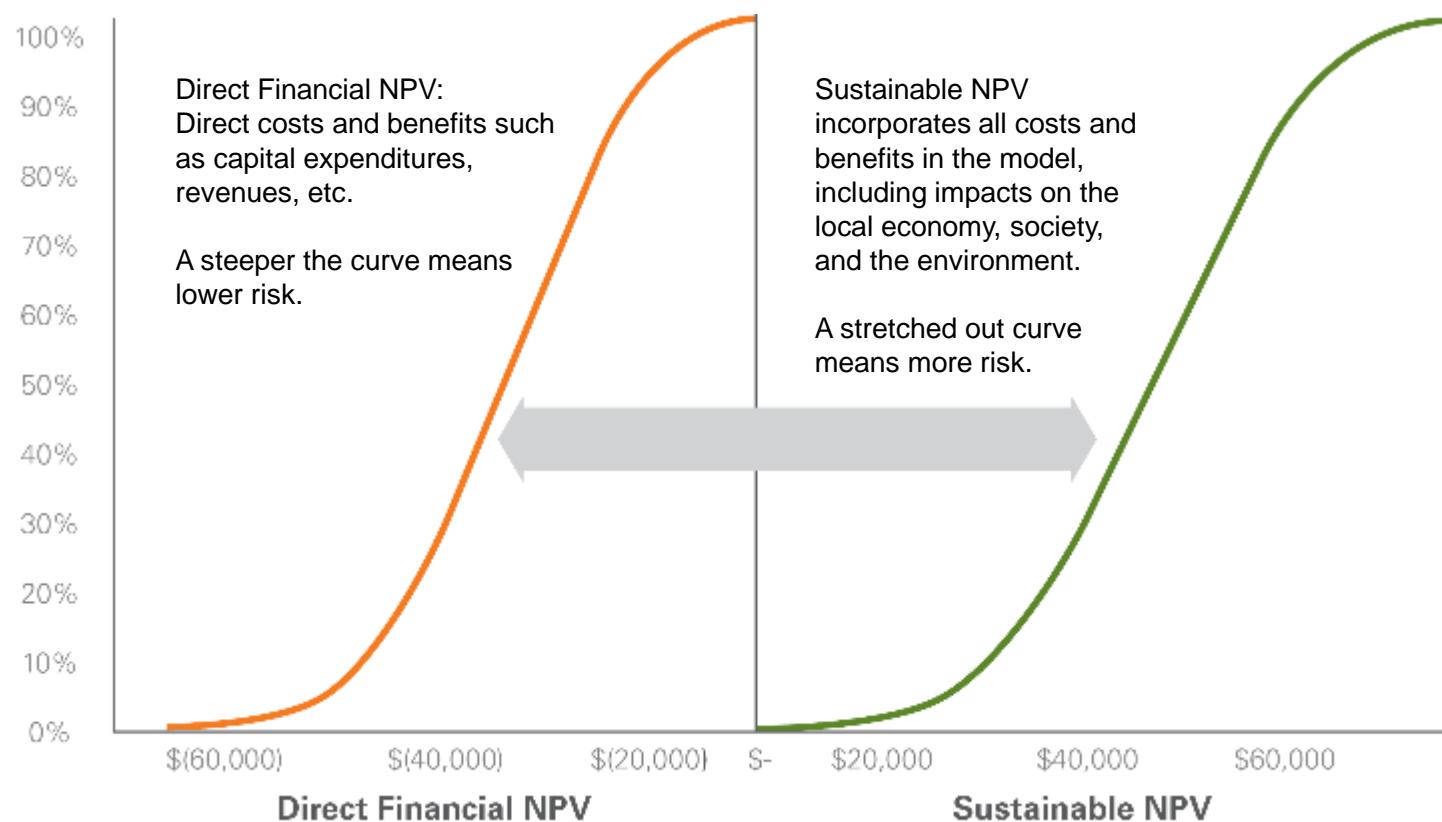
National Mall, 2006 (right)

Images referenced from: Southern Engineering Corporation & National Coalition to Save Our Mall Presentation Dated: March 19, 2013

National Mall Underground



National Mall Underground

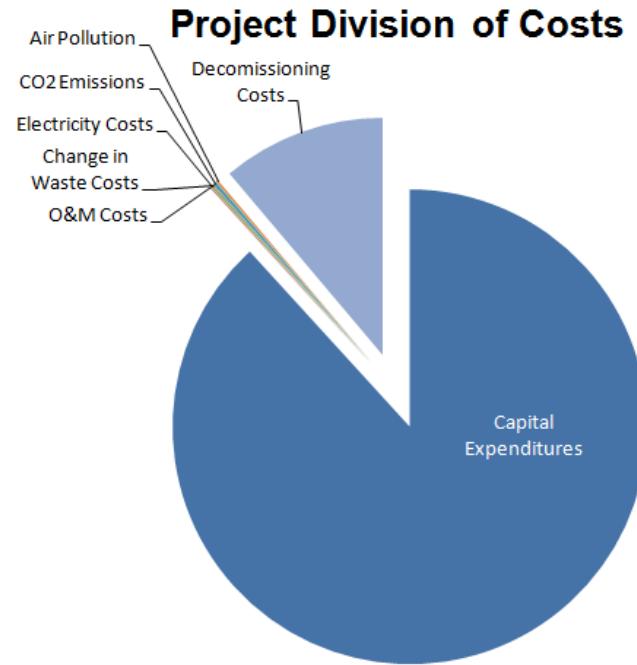
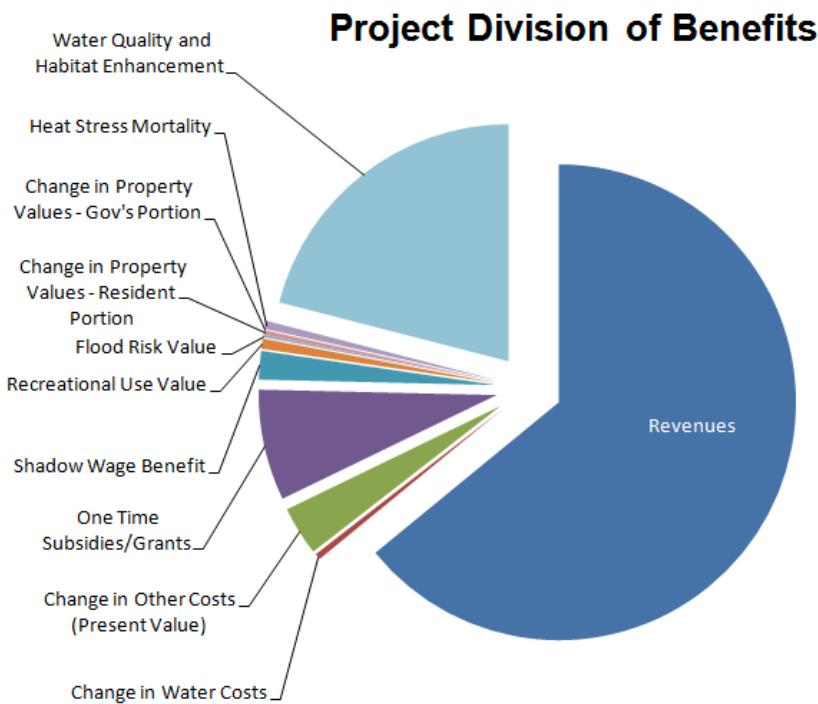


The difference between the curves is the (net) non-market or societal benefits (externalities) such as lower carbon emissions, less urban heat island effect.

National Mall Underground Case Study based on preliminary estimates.

National Mall Underground

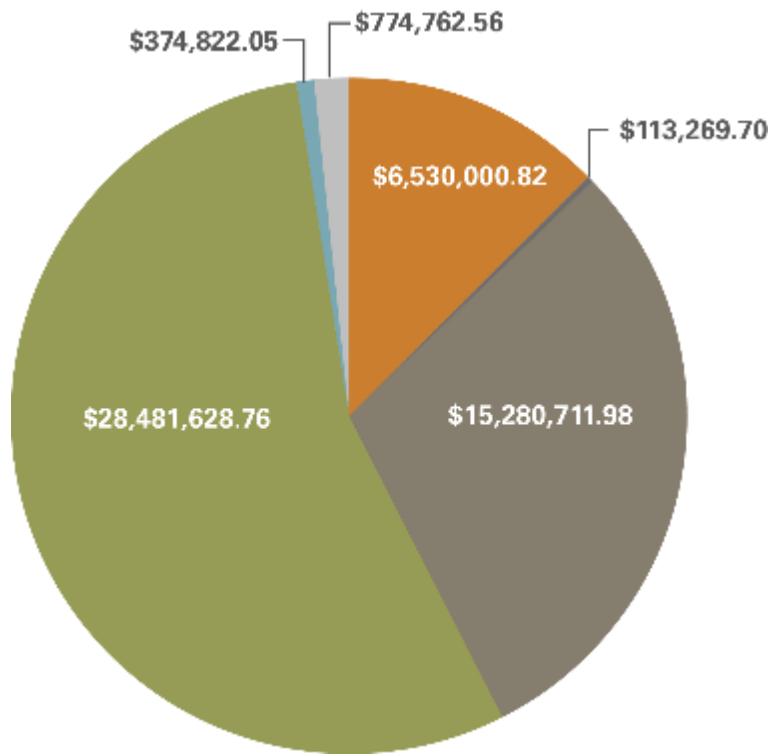
Graphical Representation of Attribution of Benefits



National Mall Underground Case Study based on preliminary estimates.

National Mall Underground

Total NVP of Project for each Envision™ Category



-  **QUALITY OF LIFE** Purpose, Community, Well-being
-  **LEADERSHIP** Collaboration, Management, Planning
-  **RESOURCE ALLOCATION** Materials, Energy, Water
-  **NATURAL WORLD** Siting, Land & Water, Biodiversity
-  **CLIMATE AND RISK** Emission, Resilience
-  **OTHER**

Mapping Business Case to Envision™ Categories
National Mall Underground Case Study Preliminary Results

Q&A

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