



AB 691 #2

Informational Webinar

September 20, 2018

Maren Farnum, State Lands Commission
Sheri Pemberton, State Lands Commission
Abby Newman, State Lands Commission
Flower Moye, State Controller's Office
Maya Kocian, Earth Economics



**EARTH
ECONOMICS** 


Outline

- Welcome and opening remarks
- Earth Economics Presentation (Maya Kocian): “Natural Capital in CA Ports and Harbors”
- Additional Tools & Resources
- Question and Answers

An aerial photograph of a port area, showing several large cargo ships docked at piers and numerous stacks of shipping containers. The water is dark, and the land is filled with industrial infrastructure.

The economic value of NATURAL CAPITAL IN CA PORTS AND HARBORS

Maya Kocian, Senior Economist | Earth Economics
Training Webinar | September 20, 2018

The background of the slide is a dark, aerial photograph of a port area. Several large cargo ships are docked at long piers. The water is dark, and the land areas show industrial buildings and infrastructure. The overall tone is muted and professional.

The economic value of

NATURAL CAPITAL IN CA PORTS AND HARBORS

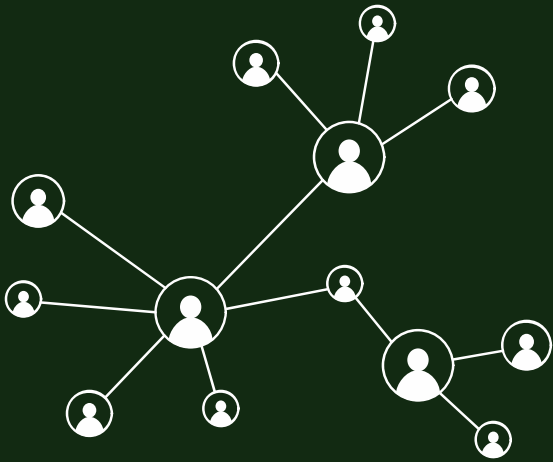
- About Earth Economics
- Concepts + Framework
- Methodology
- Applications
- Discussion

PRESENTED BY: Maya Kocian, Senior Economist

**Earth Economics is a leader
in ecological economics**
and has provided innovative analysis
and recommendations to governments,
tribes, organizations, private firms, and
communities around the world.

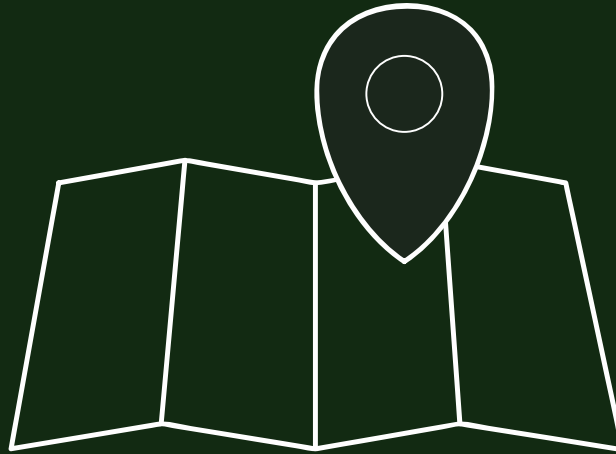


Our Approach



Awareness Building

...



Place-Based Analysis

...



Policy & Finance



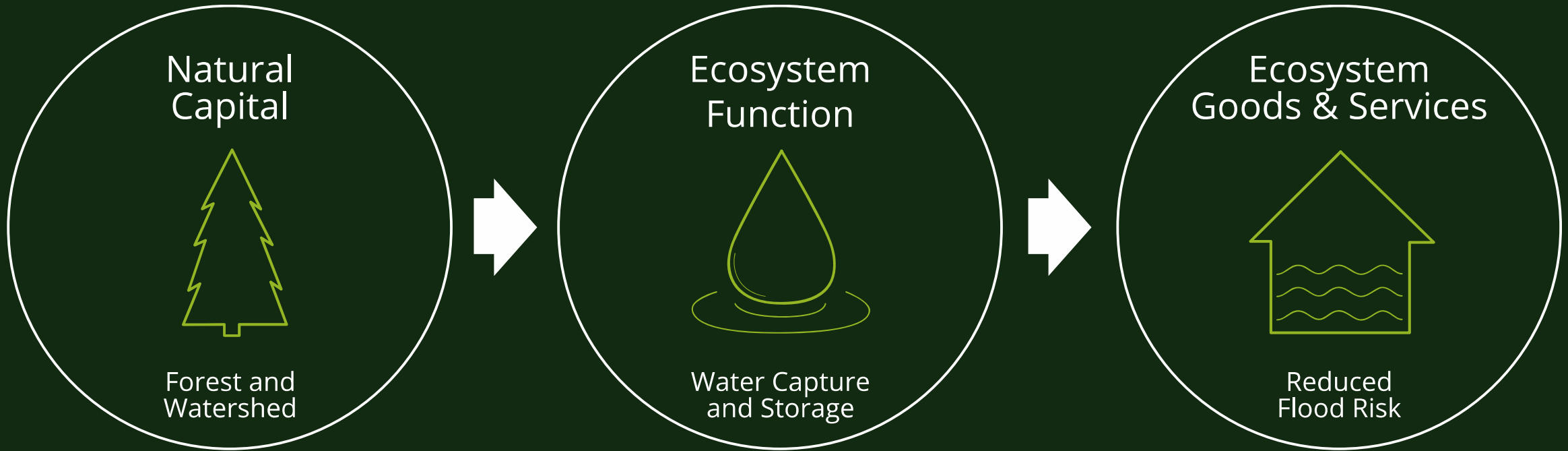
NATURAL CAPITAL

performs natural functions that
provide goods and services that
humans need to survive.

A harbor scene at sunset. In the foreground, a tugboat is moving across the water, leaving a wake. In the background, several large cranes are visible, silhouetted against the bright orange and yellow sky. The sun is low on the horizon, reflecting on the water.

ECOSYSTEM SERVICES
are quantifiable benefits
humans receive from nature.

Capital Function



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Ecosystem Services

The natural capital of California's ports and harbors provides a range of ecosystem services that can be valued.*

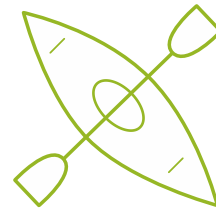
**For a complete list of ecosystem services please contact Earth Economics.*



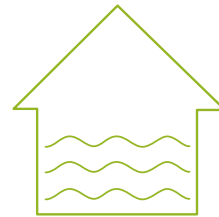
Water Supply



Air Quality



Recreation + Tourism



Flood Risk Reduction




Climate Regulation

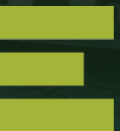


Habitat



An aerial photograph of San Francisco at dusk. The Golden Gate Bridge is visible in the center, with its towers and suspension cables illuminated. The city skyline is in the background, with the Transamerica Pyramid being a prominent feature. The water in the foreground is dark, with several ferries and boats visible. The text is overlaid on the image in a large, white, sans-serif font.

Understanding ecological and economic interactions and trade-offs is critical to sound decision making and investment strategies.



Methodology:

Ecosystem Services Valuation



But how can you determine
dollar values for goods
and services that are not
bought and sold?



STATED PREFERENCES

what people say



STATED PREFERENCES

what people say

- contingent valuation
- contingent choice



REVEALED PREFERENCES

what people actually do

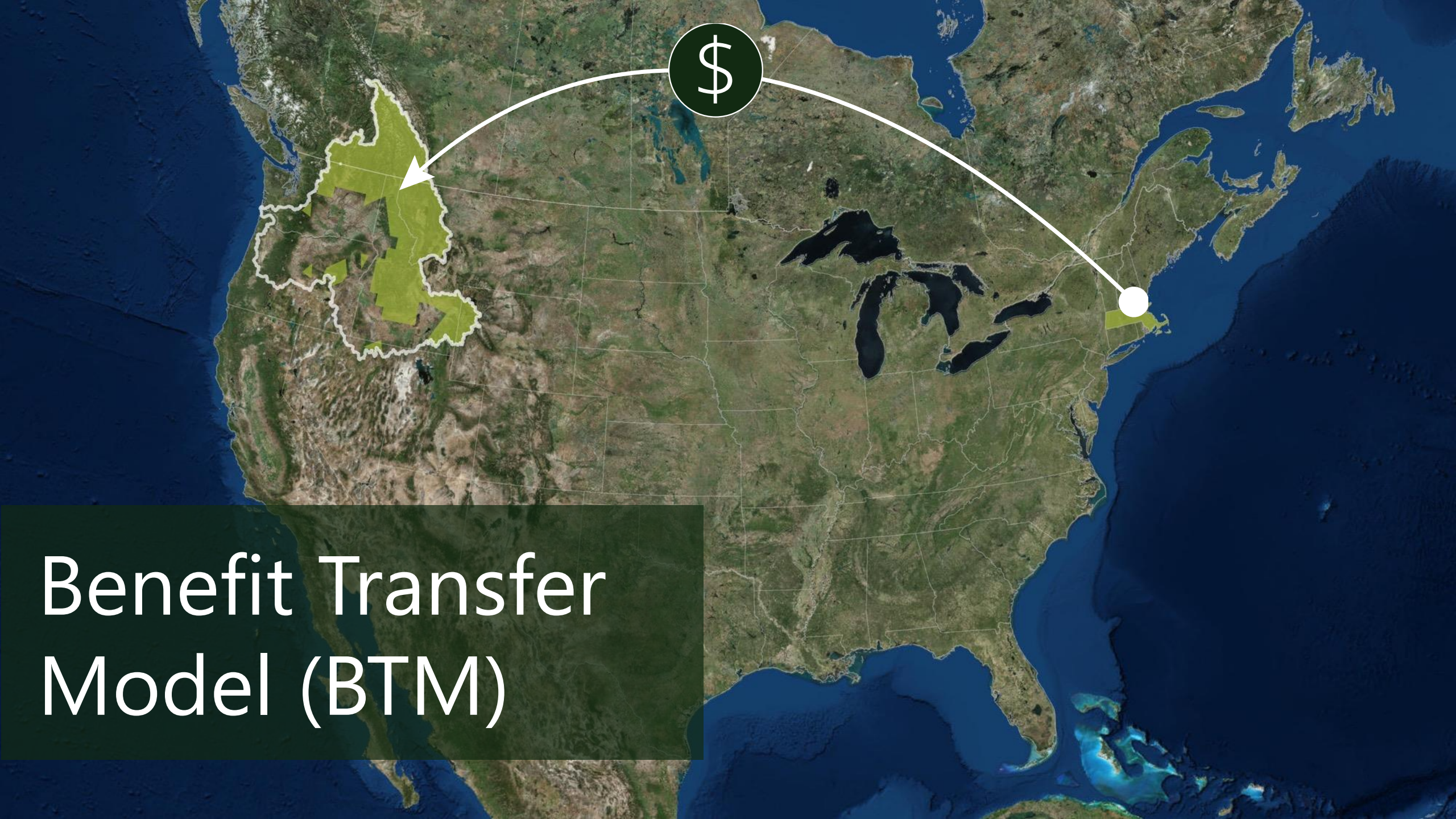


REVEALED PREFERENCES

what people actually do

- hedonic housing price analysis
- travel cost studies





Benefit Transfer Model (BTM)

Ecosystem Valuation Toolkit

Apply current filters to:

☒ All data
☐ Current dataset

Status ▾

Site ▾

Ecosystem Type ▲

- Underwater 0
- Wetlands 161
- Cultivated 39
- Forests 84
- Water 67
- Grasslands 54
- Shrublands 15
- Non Herbaceous 0
- Subterranean 0
- Unspecified 0

Ecosystem Attributes ▲

- Proximity 420
- Within 420
- Water Type 230
- Elevation 25
- Climate 420
- Agricultural Management Practice 3

Ecosystem Service ▲

- Supporting 59
- Provisioning 24
- Regulating 178
- Information 159
- Unspecified 0

Valuation Methodology ▾

ECONOMICS ecosystem valuation toolkit

Home

SERVES

Researcher's Library

EcoService Models Library

Directory

Datasets

Reports

Exports

Name: UCUT Dataset

Reports: UCUT Report

Select the studies you want to include in your dataset

Values Selected: 420

<input type="checkbox"/>	Author	Land cover general	Ecosystem service general	Value Type	\$/Ac/Yr: Low	High	
<input checked="" type="checkbox"/>	Leschine, Thomas M, et al.	Wetlands	Disaster Risk Reduction	Primary	1,698.55	7,755.81	
<input checked="" type="checkbox"/>	Leschine, Thomas M, et al.	Wetlands	Disaster Risk Reduction	Primary	1,971.86	6,273.33	
<input checked="" type="checkbox"/>	Colby, Bonnie G, et al.	Wetlands	Recreation & Tourism	Primary	210.85	281.14	
<input checked="" type="checkbox"/>	Bell, James J, et al.	Wetlands	Recreation & Tourism	Primary	160.23	186.09	
<input checked="" type="checkbox"/>	Bell, James J, et al.	Wetlands	Recreation & Tourism	Primary	1,229.36	1,229.36	
<input checked="" type="checkbox"/>	Woodward, Richard, et al.	Wetlands	Recreation & Tourism	Secondary / BTM	41.80	329.35	
<input checked="" type="checkbox"/>	Woodward, Richard, et al.	Wetlands	Disaster Risk Reduction	Secondary / BTM	148.79	2,920.65	
<input checked="" type="checkbox"/>	Woodward, Richard, et al.	Wetlands	Habitat	Secondary / BTM	158.82	1,640.04	
<input checked="" type="checkbox"/>	Woodward, Richard, et al.	Wetlands	Recreation & Tourism	Secondary / BTM	882.71	4,650.97	
<input checked="" type="checkbox"/>	Woodward, Richard, et al.	Wetlands	Recreation & Tourism	Secondary / BTM	158.82	2,243.56	
<input checked="" type="checkbox"/>	Woodward, Richard, et al.	Wetlands	Water Quality	Secondary / BTM	210.65	2,303.75	
<input checked="" type="checkbox"/>	Woodward, Richard, et al.	Wetlands	Water Capture, Conveyance, & Supply	Secondary / BTM	10.03	4,298.21	
<input checked="" type="checkbox"/>	Anderson, Glen D, et al.	Wetlands	Recreation & Tourism	Primary	383.10	383.10	
<input checked="" type="checkbox"/>	Bell, James J	Wetlands	Recreation & Tourism	Primary	160.43	1,058.18	
<input checked="" type="checkbox"/>	Cooper, Joseph, et al.	Wetlands	Recreation & Tourism	Primary	12.97	308.57	
<input checked="" type="checkbox"/>	Jaworski, Eugene, et al.	Wetlands	Recreation & Tourism	Hybrid	177.93	1,363.04	
<input checked="" type="checkbox"/>	Mahan, Brent L	Wetlands	Aesthetic Information	Primary	10,428.18	10,428.18	
<input checked="" type="checkbox"/>	Opaluch, James J, et al.	Wetlands	Habitat	Primary	491.94	491.94	
<input checked="" type="checkbox"/>	Qiu, Zeyuan, et al.	Wetlands	Aesthetic Information	Primary	258.54	1,266.49	

NATURAL CAPITAL ASSET VALUATION





Applications



Resilience Planning

Panama City's Watersheds
and Associated Ecosystems



Expanding Access to Capital

The Devastation of the Rim Fire,
Sierra Nevada Mountain Range



Public Financing Mechanisms

Open Space Benefits
in Santa Clara County



Flood Protection

\$6.4M Restoration Investment
Thornton Creek in Seattle, WA







BCA Report

from Seattle Public Utility

Table 9. Annual Value of Ecosystem Services by Option and Cover Type

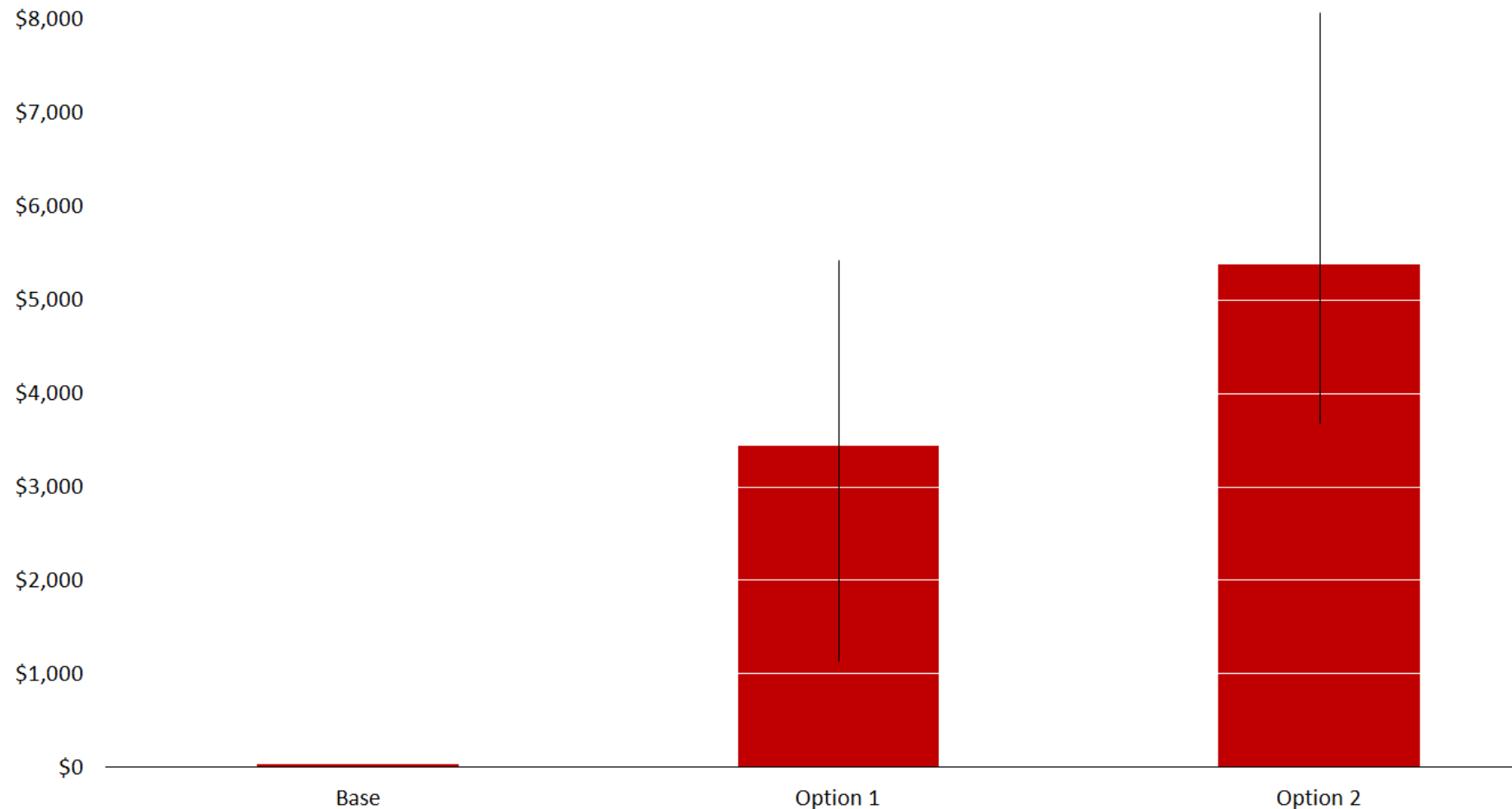
Total Ecosystem Value in \$/year by type						
	BASE CASE			Option 1 and 2		
Cover Type	Acres	Low	High	Acres	Low	High*
Urban				0.12	\$0	\$0
Dirt Road	0.35	\$0	\$0			
Grass	2.52	\$243	\$243	0	\$0	\$0
Stream Channel	0.11	\$136	\$2,914	0.26	\$322	\$6,888
Wetland	0	\$0	\$0	0.55	\$6,871	\$60,600
Riparian forest	0	\$0	\$0	0.87	\$4,050	\$77,814
Upland Forest	0	\$0	\$0	1.18	\$2,377	\$0
Totals	2.98	\$379	\$3,157	2.98	\$13,620	\$145,303

* Uses Washington State classification which would include all forested area on the site as riparian forest.



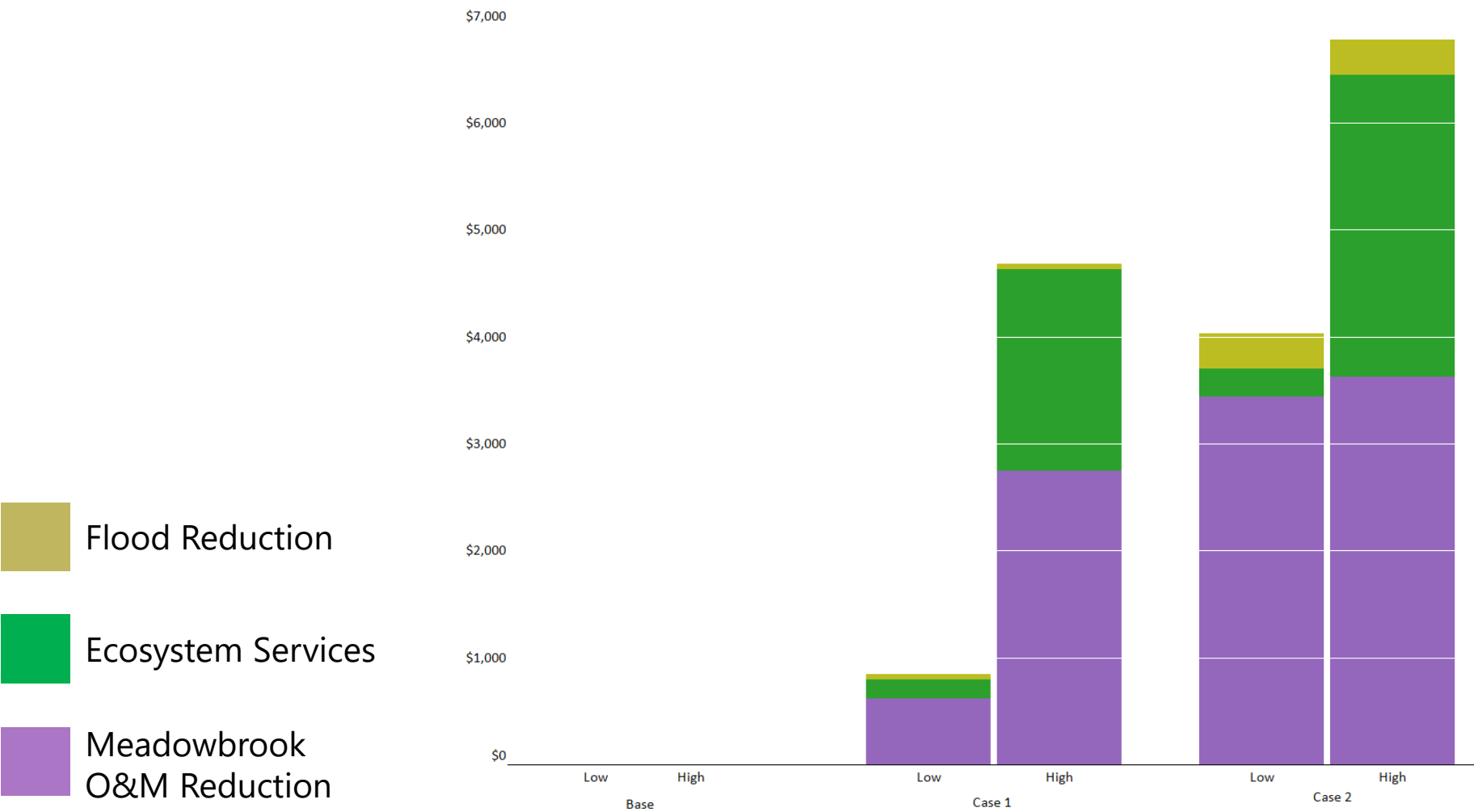
Present Value of Costs

over 100 years at 5%

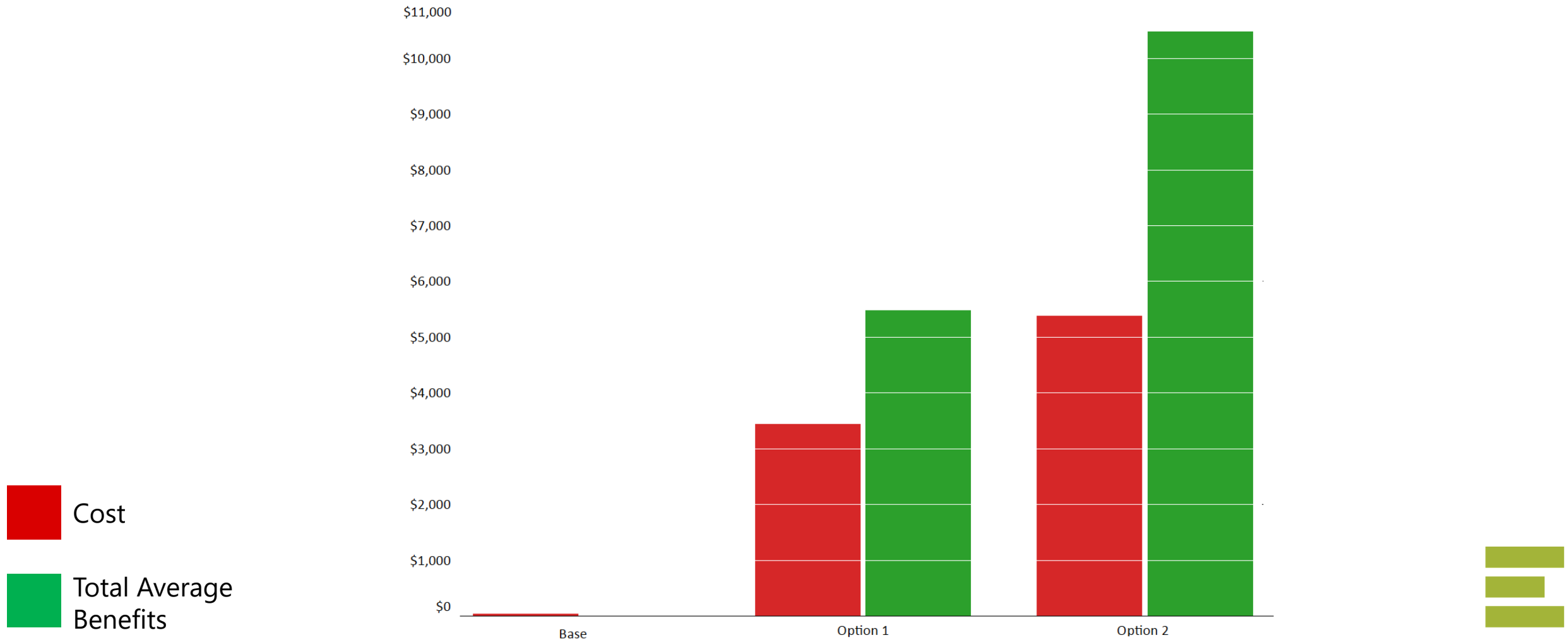


Present Value of Benefits

over 100 years at 5%



Total Average Benefits with Cost



Including ecosystem services and other co-benefits nearly doubled the total benefit amount.

PROJECT COSTS

\$5.4MM

TRADITIONAL BENEFITS

UP TO \$3.6MM

ADDITIONAL BENEFITS

UP TO \$3.2MM



**GREEN INFRASTRUCTURE IS
REAL INFRASTRUCTURE**



NEXT STEPS

Based on what you've just learned,

1. Determine if there is a project that we can work together on.
2. Contact me to discuss.

mkocian@earthconomics.org



THANK YOU

Presented by Maya Kocian, Senior Economist
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EARTH
ECONOMICS 

Additional Resources

Tools:

[National Ocean Economics Program](#)

[FEMA Benefit Cost Analysis Tool – Ecosystem Services](#)

References:

[What Will Adaptation Cost? An Economic Framework for Coastal Community Infrastructure](#)

[Comparing Sea Level Rise Adaptation Strategies in San Diego:
An Application of the NOAA Economic Framework](#)

[Case Studies of Natural Shoreline Infrastructure in Coastal California](#)

[Paying It Forward: The Path Towards Climate-Safe Infrastructure in California](#)

Contact

<http://www.slc.ca.gov/Info/AB691.html>

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