



# Emerging Issues in Carbon and Natural Asset Accounting

March 11<sup>th</sup>, 2014

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# Economy



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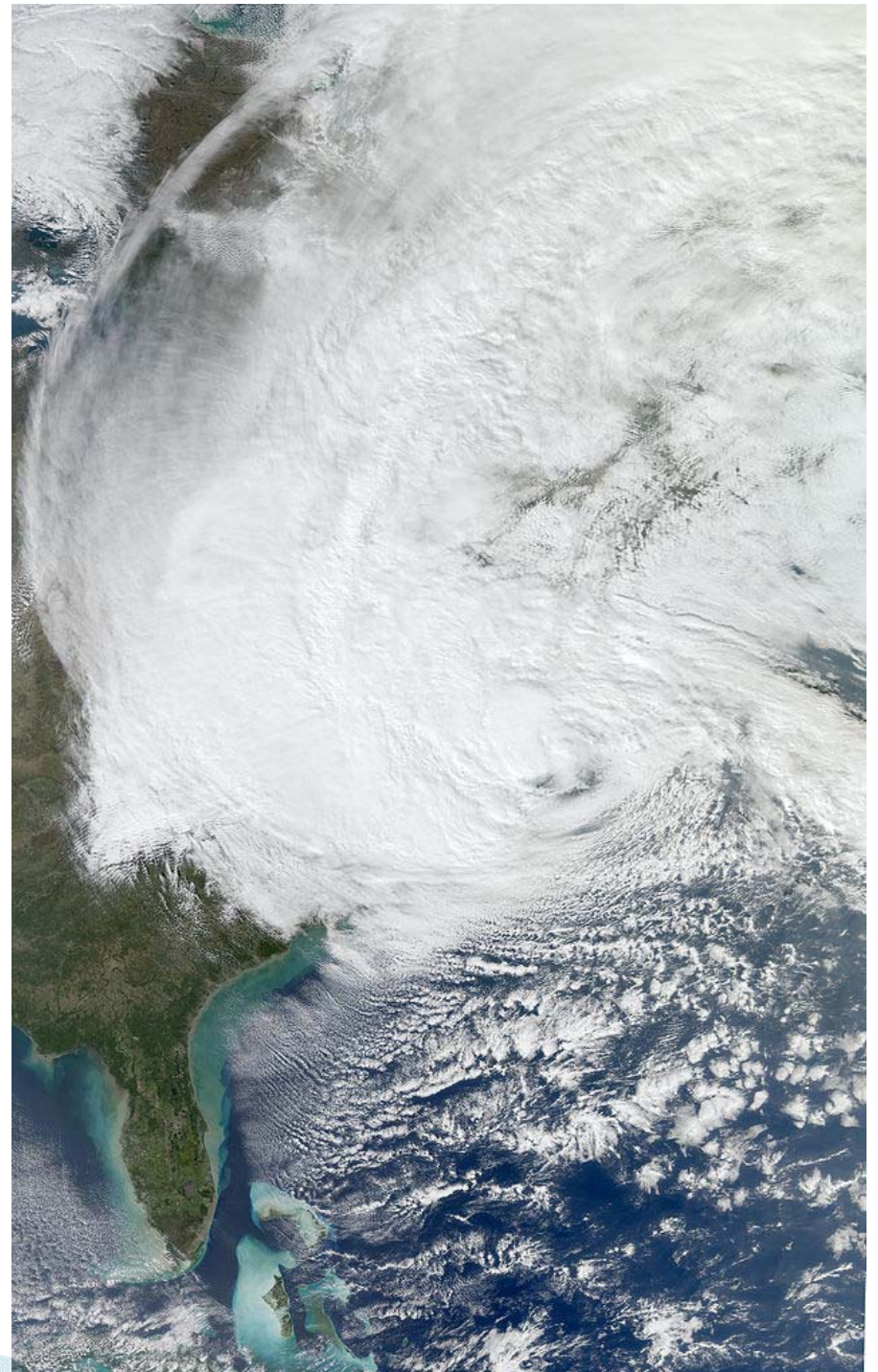


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Investors and rate payers need to know the value of natural assets.



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## New Jersey Governor Christie declares a State of Water Emergency November 1, 2012



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# Hurricane Sandy Leaves State With \$2.6B Tab for Water Infrastructure

Superstorm reveals vulnerabilities in drinking water facilities, sewer treatment plants

By Tom Johnson, April 10, 2013 in [Energy & Environment](#) | [Post a Comment](#)

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Hurricane Sandy damaged more than 100 facilities supplying drinking water to residents and sewage treatment plants, leaving the state with an unexpected \$2.6 billion bill to repair, rebuild, and make the systems more resilient, according to state officials.

How the state goes about meeting that challenge remains to be seen, although the New Jersey Department of Environmental Protection is hoping to leverage federal funds approved by Congress in the wake of Sandy to help address those problems.

Making those systems more resilient to future storms is among the agency's top priorities, one the department is expected to wrestle with over the next few months, but with few clear answers emerging just yet.



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# FEMA

## MITIGATION POLICY – FP-108-024-01

### I. TITLE:

Consideration of Environmental Benefits in the Evaluation of Acquisition Projects under the Hazard Mitigation Assistance (HMA) Programs

### II. DATE OF ISSUANCE:

JUN 18 2013

### III. POLICY STATEMENT:

FEMA will allow the inclusion of environmental benefits in benefit-cost analyses (BCA) to determine cost effectiveness of acquisition projects.

### IV. PURPOSE:

The purpose of this policy is to identify and quantify the types of environmental benefits that FEMA will consider in the BCA for acquisition projects.



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# FEMA

## MITIGATION POLICY – FP-108-024-01

Table I shows the types and values of environmental benefits included in the BCA for acquisition-demolition or acquisition-relocation projects:

Table I: Annual Estimated Monetary Benefits per Acre per Year

Environmental Benefit	Green Open Space	Riparian
Aesthetic Value	\$1,623	\$582
Air Quality	\$204	\$215
Biological Control	--	\$164
Climate Regulation	\$13	\$204
Erosion Control	\$65	\$11,447
Flood Hazard Reduction	--	\$4,007
Food Provisioning	--	\$609
Habitat	--	\$835
Pollination	\$290	--
Recreation/Tourism	\$5,365	\$15,178
Storm Water Retention	\$293	--
Water Filtration	--	\$4,252
<b>Total Estimated Benefits</b>	<b>\$7,853</b>	<b>\$37,493</b>



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# Seattle Public Utilities





# Seattle Public Utilities



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# Natural Asset Valuation, Investment and Accounting: Emerging Issues



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# Natural Assets



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# Accounting Guidance for Carbon Emissions Trading



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# Hetch Hetchy



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**San Francisco Public Utilities Commission**  
Notes to Financial Statements - Capital Assets  
June 30, 2013 and 2012  
(Dollars in thousands)

	<u>Balance June 30, 2012</u>	<u>Increases</u>	<u>Decreases</u>	<u>Balance June 30, 2013</u>
Capital assets not being depreciated:				
→ Land and rights-of-way	\$ 50,641	14,623	(500)	64,764
Intangible assets	5,162	—	—	5,162
Construction work in progress	1,586,702	903,494	(700,216)	1,789,980
Total capital assets not being depreciated	1,642,505	918,117	(700,716)	1,859,906
Capital assets being depreciated:				
Facilities and improvements	5,162,377	655,916	—	5,818,293
→ Intangible assets	61,480	524	—	62,004
Machinery and equipment	392,907	28,493	(991)	420,409
Total capital assets being depreciated	5,616,764	684,933	(991)	6,300,706
Less accumulated depreciation for:				
Facilities and improvements	(1,933,979)	(111,682)	—	(2,045,661)
→ Intangible assets	(22,046)	(3,595)	—	(25,641)
Machinery and equipment	(199,546)	(21,973)	890	(220,629)
Total accumulated depreciation	(2,155,571)	(137,250)	890	(2,291,931)
Total capital assets being depreciated, net	3,461,193	547,683	(101)	4,008,775
Total capital assets, net	\$ 5,103,698	1,465,800	(700,817)	5,868,681



# Accounting for Natural Resources

## Now

- ▶ Historical cost, book value under-reports natural resources value
- ▶ Value of watersheds & water rights in financials at \$28M of \$5B+ in total Water Enterprise assets
- ▶ GASB requires immediate recognition of any pollution remediation but disallows any recognition of accretive value like land, natural resources or water rights values

## Proposal

- ▶ GASB should allow public utilities to report value of natural capital assets, like FASB requires for oil, gas and timber
  - Oil and gas industry reports size and value of fossil fuel reserves
  - Timber holders report timber reserves
- ▶ Adding Required Supplementary Information disclosure useful for policymakers, stakeholders & investors

Why: A growing, live tree is a carbon sequestration vehicle.  
A healthy forest is analogous to a large carbon reservoir

# Financial Impacts: Revenues & Expenses

## Revenue Opportunities

	Revenue Impacting										Expense Savings Impacting						
	Cap & Trade						Renewables Portfolio Standard				Low Carbon Products		Cost Savings				
	Carbon Allowance Allocations	Grant Opportunities	Approved Carbon Offset Protocols				ERC: Emissions Reductions Credits	REC: Renewable Energy Credits	LCFS: Low Carbon Fuel Standards	RIN: Renewable Index Number	Biomethane	Biodiesel Feedstock	Energy Efficiency Standards	Peak/ Power Cost Avoidance	Riparian, Nutrient, and Other Credit Stacking	Water Storage Capacity	Power Generation Flexibility
			US Forestry	Urban Forestry	Ozone Depleting Substances	Livestock Methane											
Water Enterprise																	
Hetch Hetchy Watershed																	
Micro-Hydro Power Generation: University Mound																	
Calaveras																	
O'Shaughnessy Dam (heightening)																	
Calaveras Dam (heightening)																	
Power Enterprise																	
AB32 2013-2020 Allocations	\$1-2M/year <sup>(1)</sup>																
Wind Turbines @ 525 Golden Gate																	
Solar on:																	
Moscone																	
Airport - SFO																	
Sunset Reservoir																	
City Hall																	
Davies Symphony Hall																	
Southeast																	
Pier 96																	
Maxine Hall																	
Chinatown																	
CDD																	
North Point																	
Muni Woods Motor Coach																	
Chinatown Public Health																	
SFPUC Headquarters																	
Tesla Water Treatment Plant																	
Alvarado School																	
Combustion Turbine							\$1.25M <sup>(3)</sup>										
Cogen - Southeast																	
+ Peak Power Avoidance																	
With High Strength Waste Addition																	
Sewer Enterprise																	
Cogen - Oceanside																	
+ Peak Power Avoidance																	
With High Strength Waste Addition																	
BioFuels																	
Biomethane - Oceanside									\$40K	\$202K	\$355K						
Biomethane - Southeast									\$300K	\$920K	\$1.62M						
F.O.G. - Fats, Oils & Grease Program												\$720K					
SFPUC-Wide																	
Fleet refueling																	
City-Wide																	
Power Cost Savings (low-cost Hetchy vs. PG&E rates)														\$50M			
City Trees						approx. \$11M <sup>(2)</sup>											
Environmental Justice Communities																	
Sources:																	

- (1) Per ARB regulations.  
 (2) Estimated project value based on annual average maintenance.  
 (3) Verified with financial reporting.



# Case Studies:

# 2013 Rim Fire



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# THE ECONOMIC IMPACT OF THE 2013 RIM FIRE ON NATURAL LANDS

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## PRELIMINARY ASSESSMENT



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# Rim Fire Damages: Environmental Benefits

TABLE 21	TOTAL RIM FIRE FIRST-YEAR ECOSYSTEM SERVICE VALUES LOST BY LAND COVER	
LAND COVER	Low	High
Grassland	\$30,569,395	\$69,202,212
Herbaceous Wetland	\$515,158	\$20,284,851
Lake	\$93,926	\$2,877,038
Riparian	\$47,071	\$325,824
River	\$4,073	\$907,523
Shrub	\$541,959	\$37,247,933
Forest Broad Leaf	\$5,098,191	\$284,804,356
Forest Coniferous	\$63,147,300	\$320,363,902
	<b>\$100,017,074</b>	<b>\$736,013,639</b>

# Rim Fire Damages: Environmental Benefits

TABLE 22 TOTAL ANNUAL ECOSYSTEM SERVICES LOST TO THE RIM FIRE BY ECOSYSTEM SERVICE		
ECOSYSTEM SERVICE	Low	High
Aesthetic Information	\$28,290,426	\$334,324,867
Biological Control	\$775,534	\$792,153
Moderation of Extreme Events	\$43,970,557	\$45,605,922
Air Purification	\$1,558,478	\$31,382,368
Habitat and Biodiversity	\$125,029	\$65,015,130
Pollination	\$10,069,509	\$32,791,479
Recreation and Tourism	\$450,299	\$211,241,045
Soil Retention	\$14,371	\$97,805
Waste Treatment	\$14,762,870	\$14,762,870
	<b>\$100,017,074</b>	<b>\$736,013,639</b>

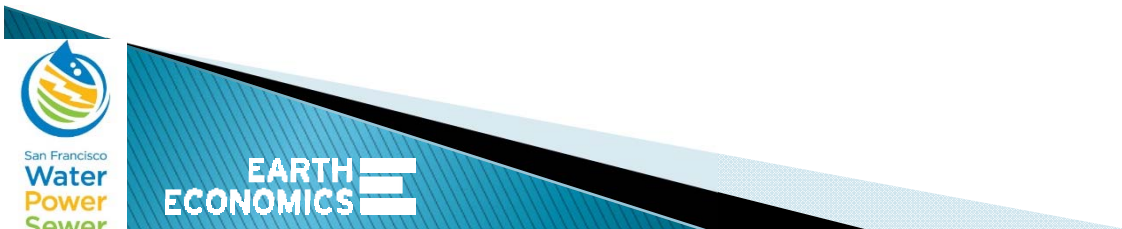


# Rim Fire Damages: Carbon Storage & Property Values

Carbon Storage Value Loss:  
**\$102 – \$797 million**

Property Value Loss:  
**\$50 – \$265 million**

(due to increased perception of fire risk by potential homebuyers and reduction in the amenity value of nearby forest)



# Practical Ramifications



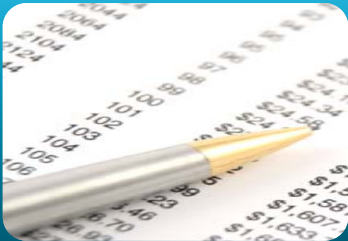
## Finance and Asset Management

- Maintenance of natural assets
- Bonding flexibility



## Rate Payers

- Share investment in natural assets
- Increased awareness



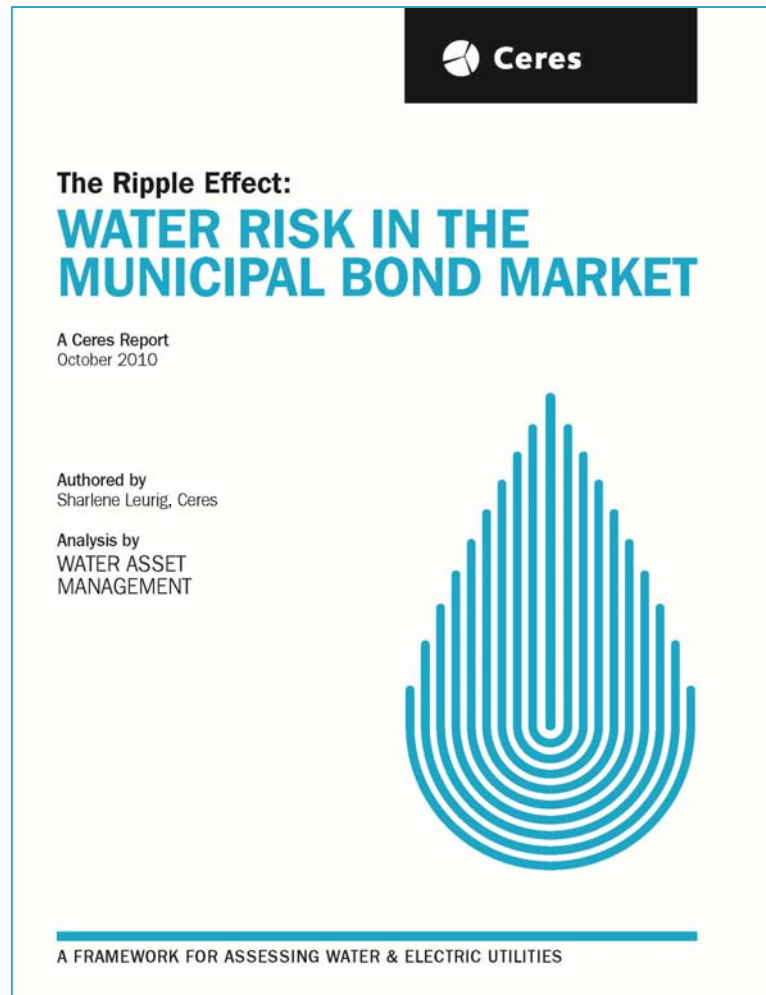
## Financial Report Users

- Transparency in asset and liability reporting
- Better-informed policy decisions



# Case Studies:

# Bond Disclosure



# SFPUC and Earth Economics

San Francisco Public Utilities Commission	Earth Economics
<ul style="list-style-type: none"><li>• A department of the City and County of San Francisco since 1930.</li><li>• Provides water, wastewater and electric power services to 2.6 million customers in the San Francisco Bay Area.</li></ul>	<ul style="list-style-type: none"><li>• Founded in 1998.</li><li>• 501(c)(3) non-profit.</li><li>• Projects across the US, Latin America, Asia.</li></ul>







# Thank You

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