



**FOREST
RESILIENCE
BOND**

BLUE FOREST
CONSERVATION
Financial Innovation for Sustainable Solutions

Funding Watershed Restoration Through Public-Private Partnerships

Prepared for the Headwaters to Groundwater Symposium

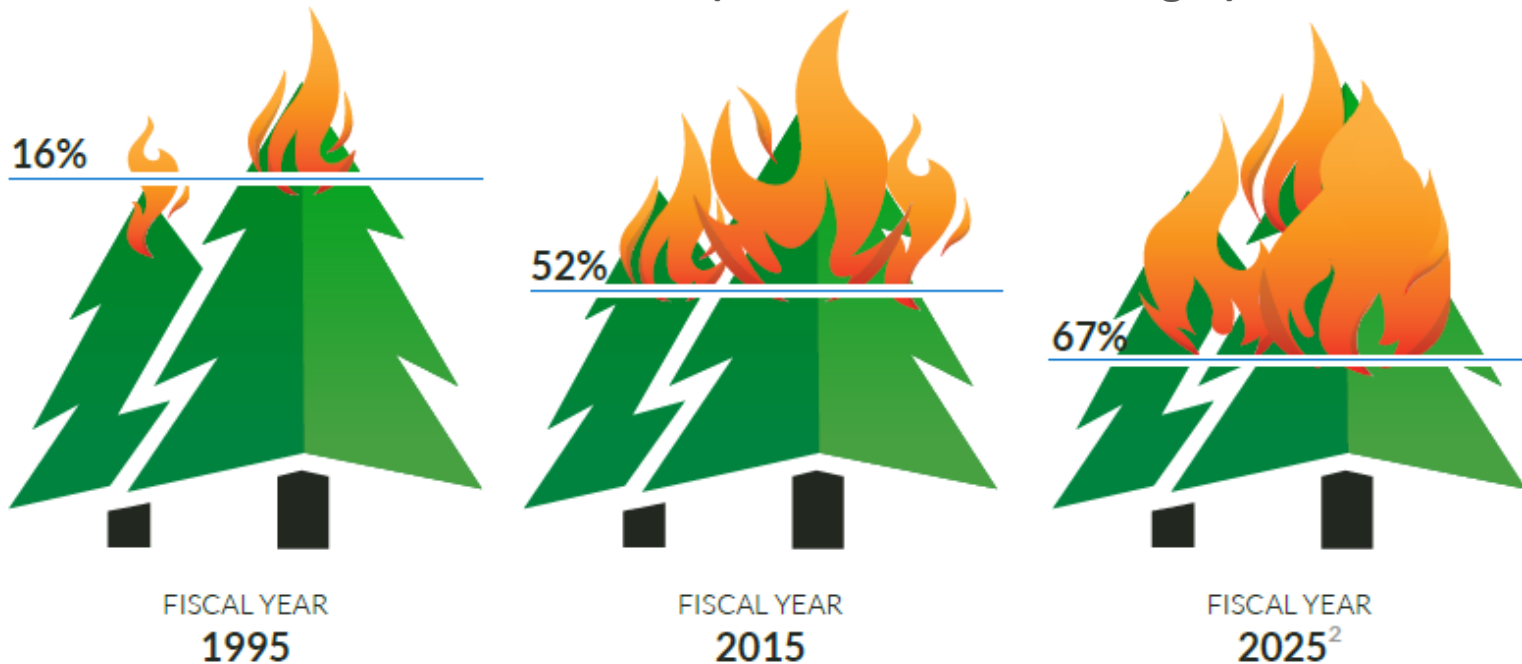
October 12th, 2017

USFS: Rising Cost of Fire Suppression

US Forest Service

Vicious cycle in which USFS is forced to pay for today's fires out of the funds designed to prevent tomorrow's

Cost of Wildland Fire (% of USFS Annual Budget)¹



1. [The Rising Cost of Wildfire Operations](#), USDA Forest Service

North Fork, Feather River 1890 - 1993



Photo Credit: George E. Gruell, Fires in the Sierra Nevada, 2001

Forest Restoration as a Solution

Overgrown




Restored



Left: Stanislaus-Tuolumne Experimental Forest (Stanislaus National Forest)

Right: Glaze Forest Restoration Project (Deschutes National Forest)

GTR-220 & GTR-237 Establishing Standards




United States
Department of
Agriculture

Forest Service


Pacific Southwest
Research Station


General Technical Report
PSW-GTR-220
(Second printing,
with addendum)
March 2009



An Ecosystem Management Strategy for Sierran Mixed- Conifer Forests

Malcolm North, Peter Stine, Kevin O'Hara, William Zielinski,
and Scott Stephens






United States
Department of
Agriculture

Forest Service

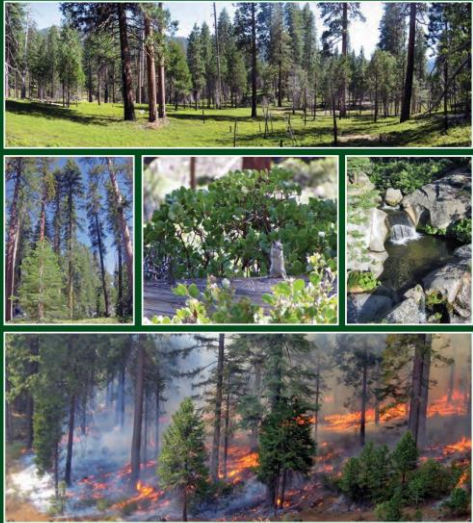
Pacific Southwest
Research Station

General Technical
Report

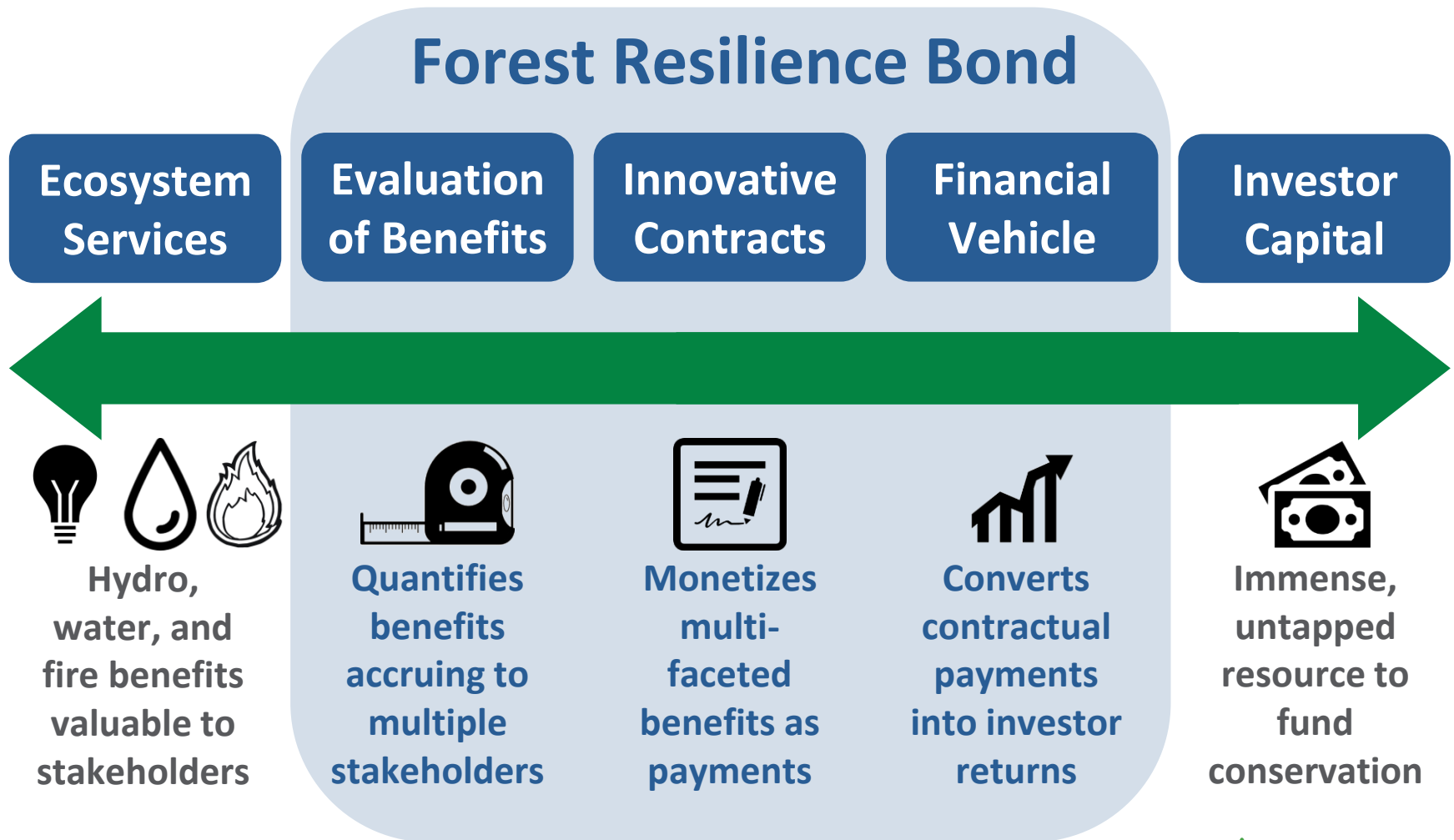
PSW-GTR-237
March 2012



Managing Sierra Nevada Forests



Connecting Investor Capital to Conservation



Goals of the Forest Resilience Bond

**Provide
resources to
support
collaboration**

**Accelerate
pace and
scale of
restoration
across CA**

**Ensure that
public land
remains
public**

SOCIAL

- Rural job creation & community development
- Community resilience
- Protected lives & homes

ENVIRONMENTAL

- Reduced fire severity
- Protected water resources
- Carbon storage
- Protected habitat

FINANCIAL

- Value for beneficiaries
- Taxpayer and ratepayer savings
- Investor returns

Ecosystem Services of Forest Restoration

Ecosystem
Services

Evaluation
of Benefits

Innovative
Contracts

Financial
Vehicle

Investor
Capital



Fire Severity



Water Quantity & Quality



Hydropower Generation



Air Quality & Emissions



Job Creation

Community Resilience

Recreation & Habitat

Measurement and Evaluation

Ecosystem
Services

Evaluation
of Benefits

Innovative
Contracts

Financial
Vehicle

Investor
Capital

Stream Gauge
Measurement



Field-Based
Sensors



Remote
Sensing



Water Quantity & Quality



Hydropower Generation



natural
capital
PROJECT



WORLD
RESOURCES
INSTITUTE

Contracting with Utilities

Ecosystem Services

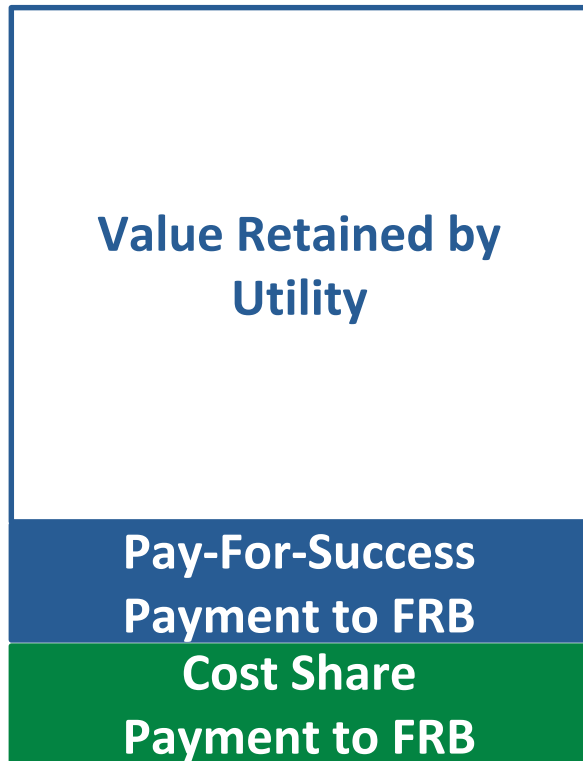
Evaluation of Benefits

Innovative Contracts

Financial Vehicle

Investor Capital

Lower Precision



Higher Precision



Estimated Total Value Created

Contracting with USFS

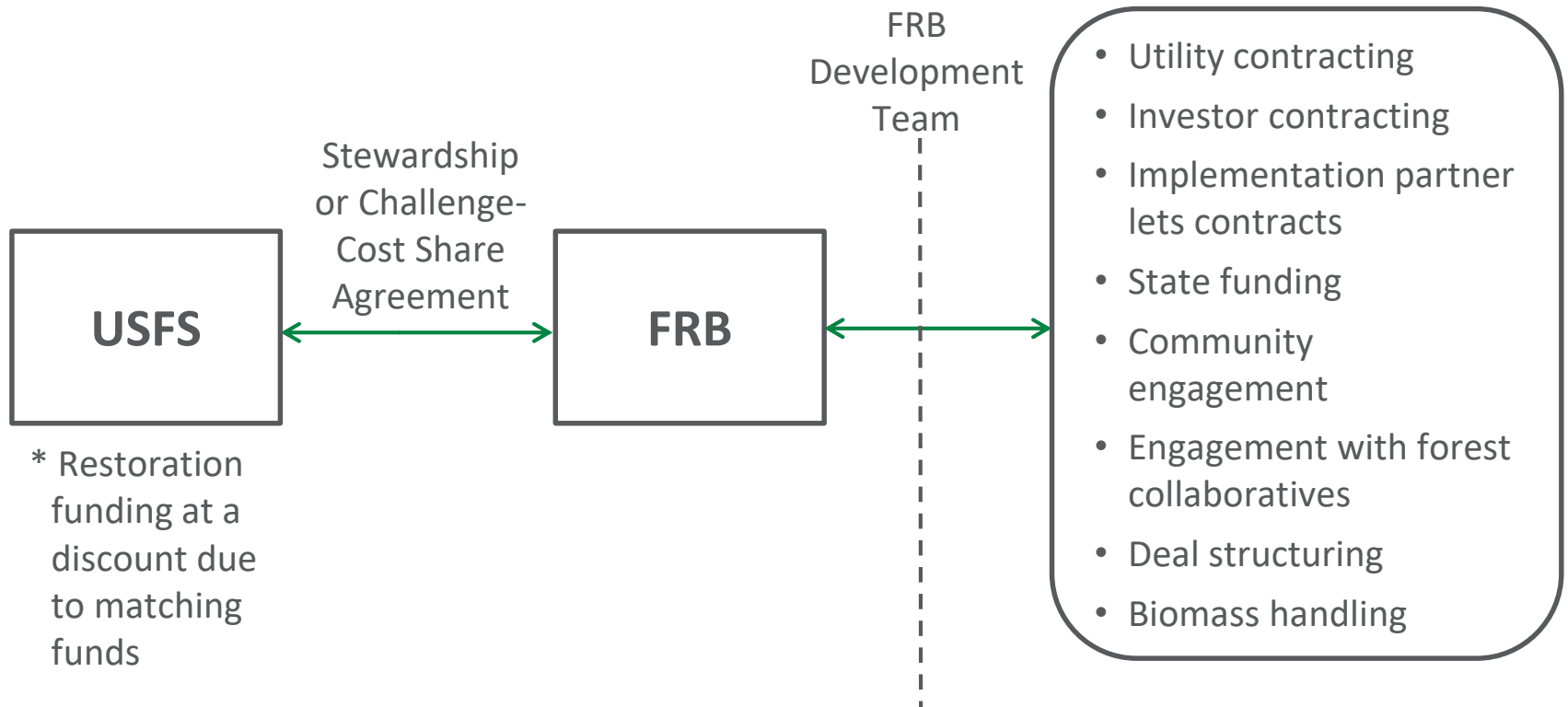
Ecosystem Services

Evaluation of Benefits

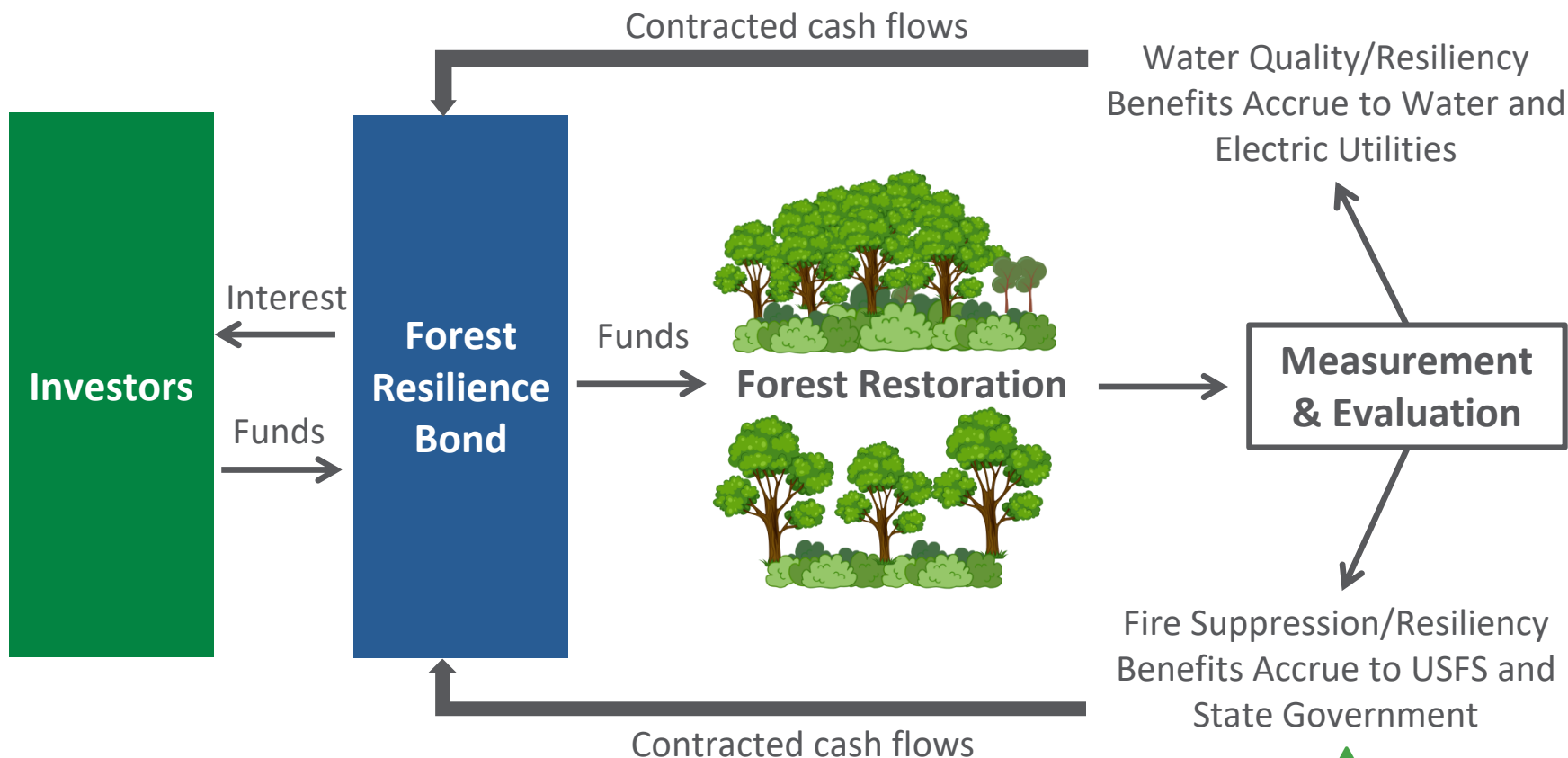
Innovative Contracts

Financial Vehicle

Investor Capital



Financial Structuring



Advantages of Private Capital

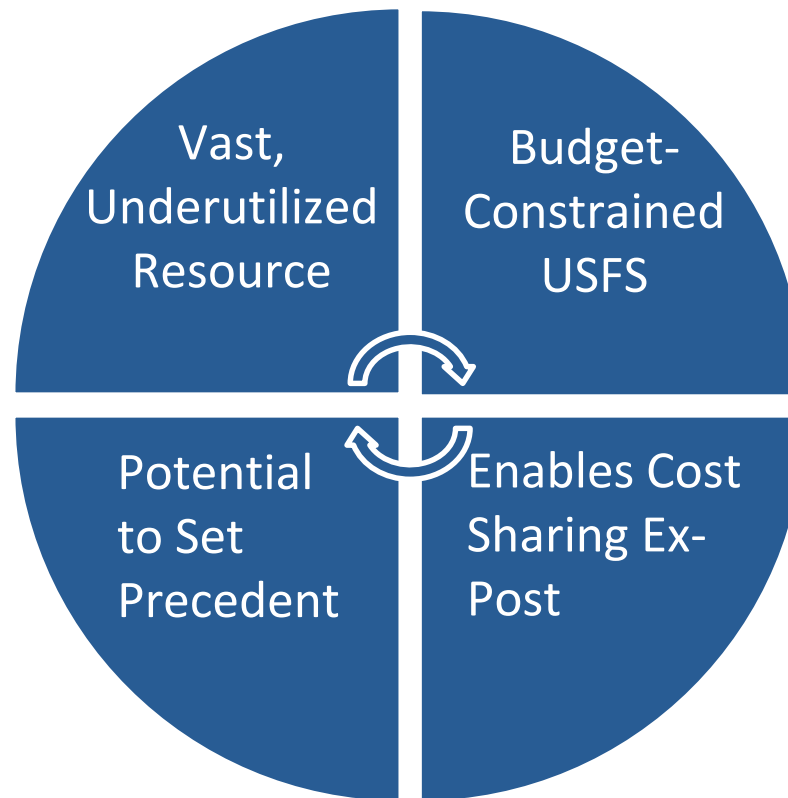
Ecosystem
Services

Evaluation
of Benefits

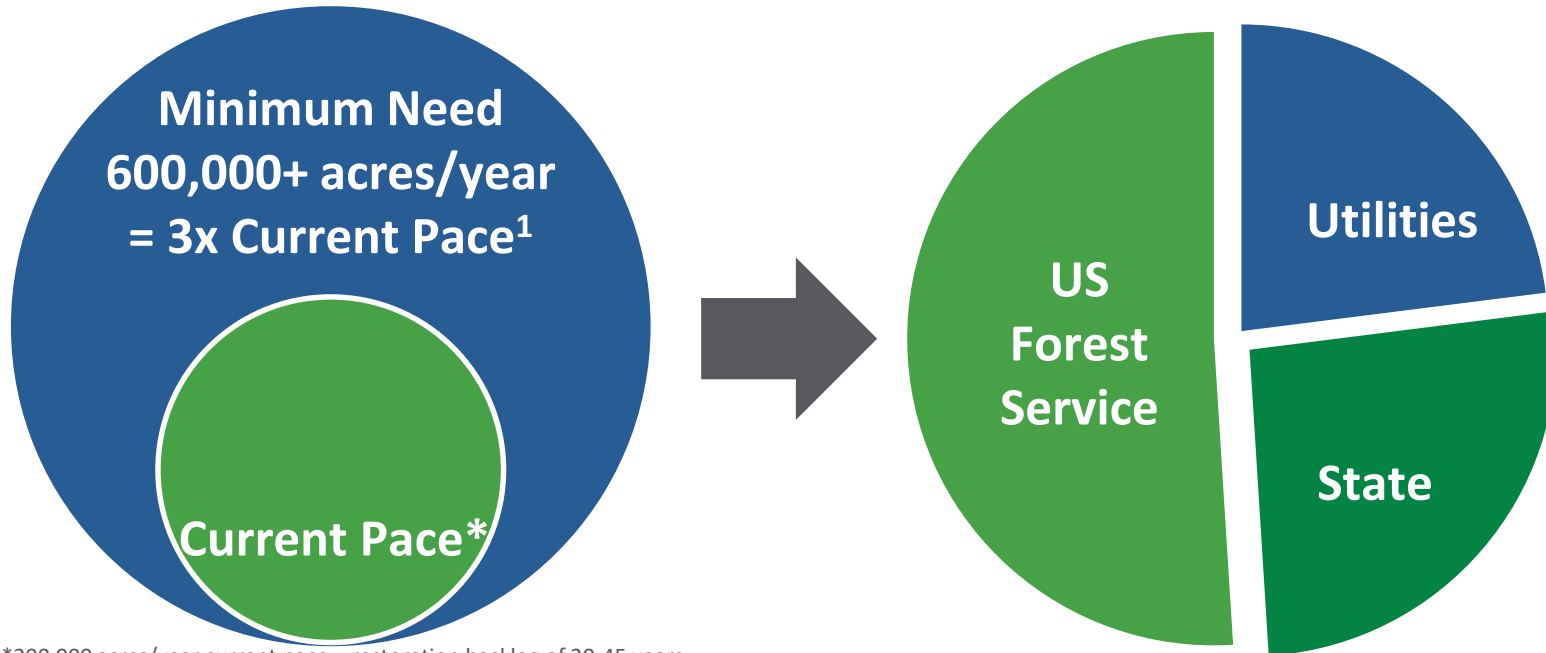
Innovative
Contracts

Financial
Vehicle

Investor
Capital



FRB as a Tool to Scale Restoration



*200,000 acres/year current pace = restoration backlog of 30-45 years

Benefits of Forest Resilience Bond

- Cost share enables a lower cost to each beneficiary
- Use of private capital enables scale and ex-post payments for beneficiaries
- Highly replicable platform for stakeholders and investors

1. [Ecological Restoration and Partnerships – Our California Story](#), USDA Forest Service

FRB Partner Network



WORLD
RESOURCES
INSTITUTE



encourage
capitalSM



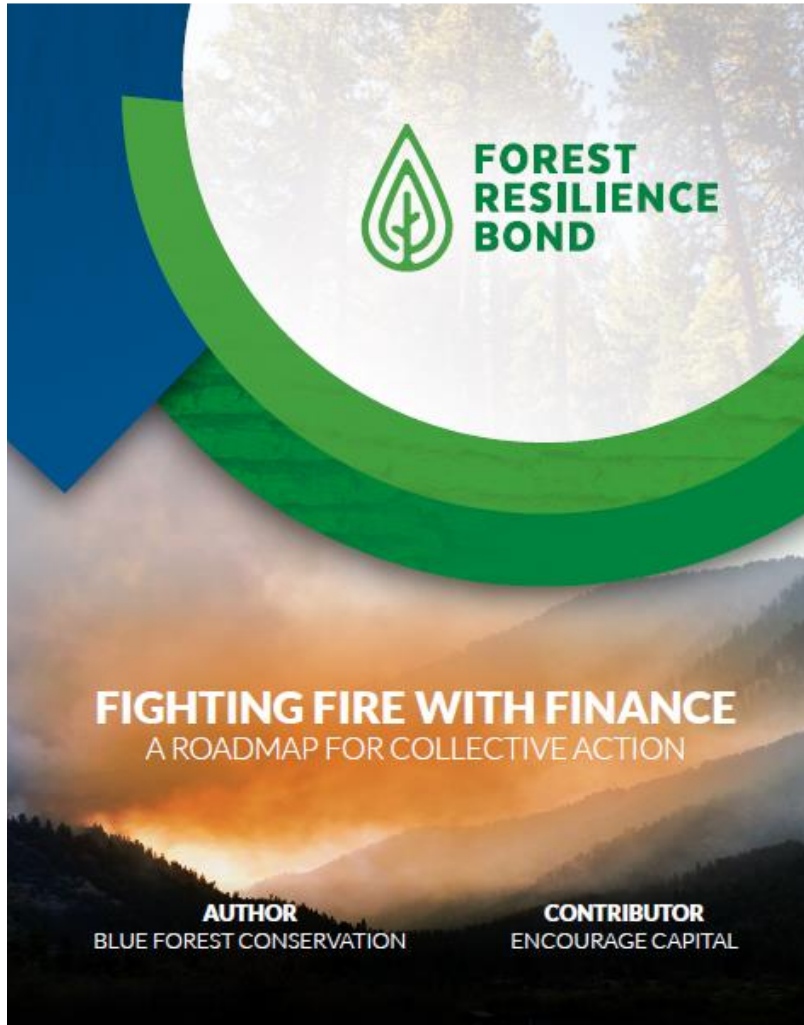
Brownstein Hyatt
Farber Schreck



American Forest Foundation



Additional Resources



Explore and download the Roadmap Report:
www.forestresiliencebond.com

Learn more about Blue Forest Conservation:
www.blueforestconservation.com

Learn more about Encourage Capital:
www.encouragecap.com

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