



Introduction to the Forest Resilience Bond (FRB)

Prepared for the Climate Finance Alliance

May 9th, 2019





North Fork, Feather River 1890-1993



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

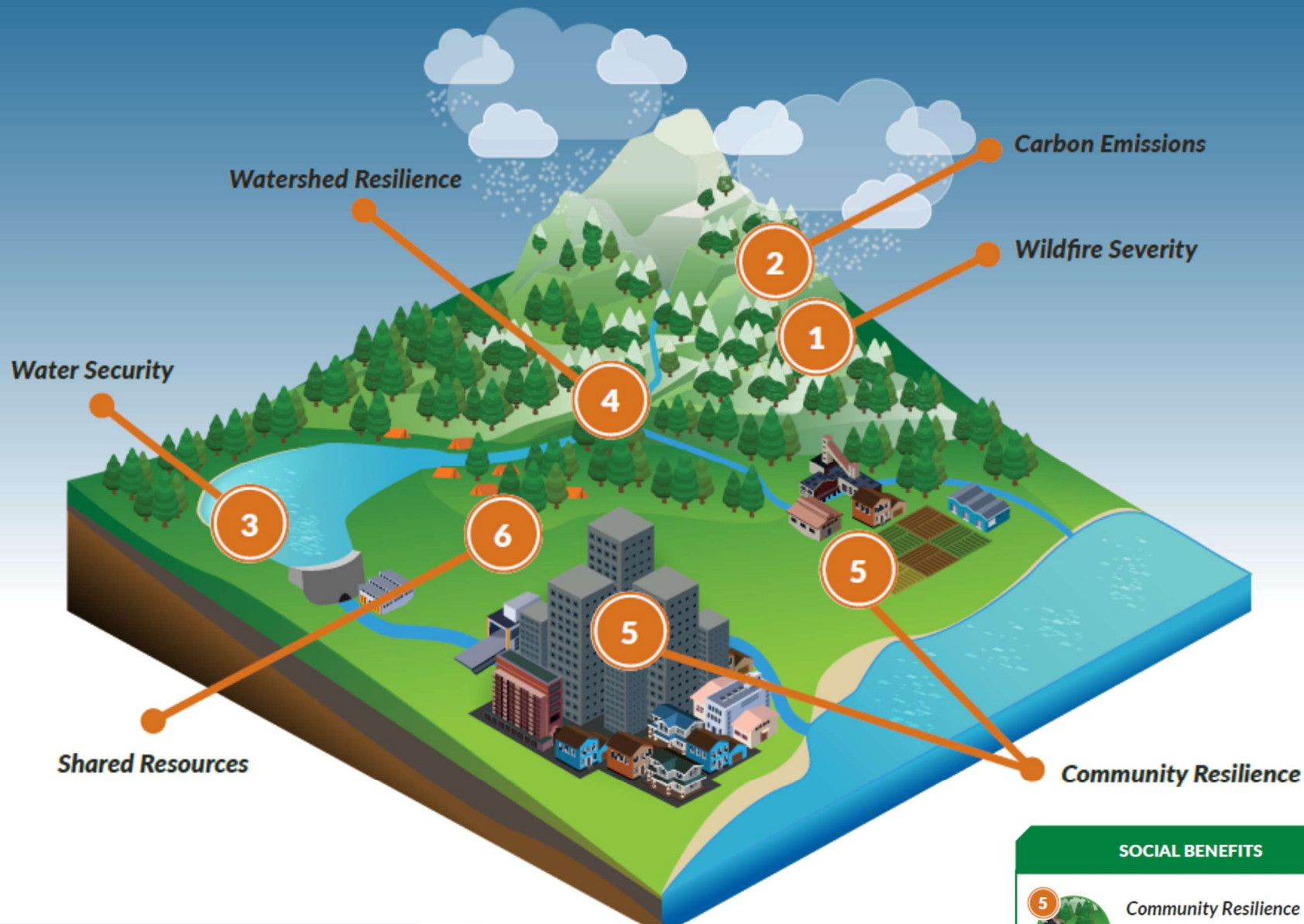
Forest Restoration as a Solution

Overgrown



Restored





Carbon Emissions

Wildfire Severity

Watershed Resilience

Water Security

Shared Resources

Community Resilience

ENVIRONMENTAL BENEFITS

1 Wildfire Severity
Reduced risk of severe wildfire benefits forest ecosystems, habitat, and species

2 Carbon Emissions
Avoided carbon emissions maintains air quality and protects against climate change

ENVIRONMENTAL BENEFITS

3 Water Security
Protected water quality, avoided sedimentation, and increased water quantity help improve water security

4 Watershed Resilience
Resilience to drought, invasive species, and infestations makes watersheds more productive

SOCIAL BENEFITS

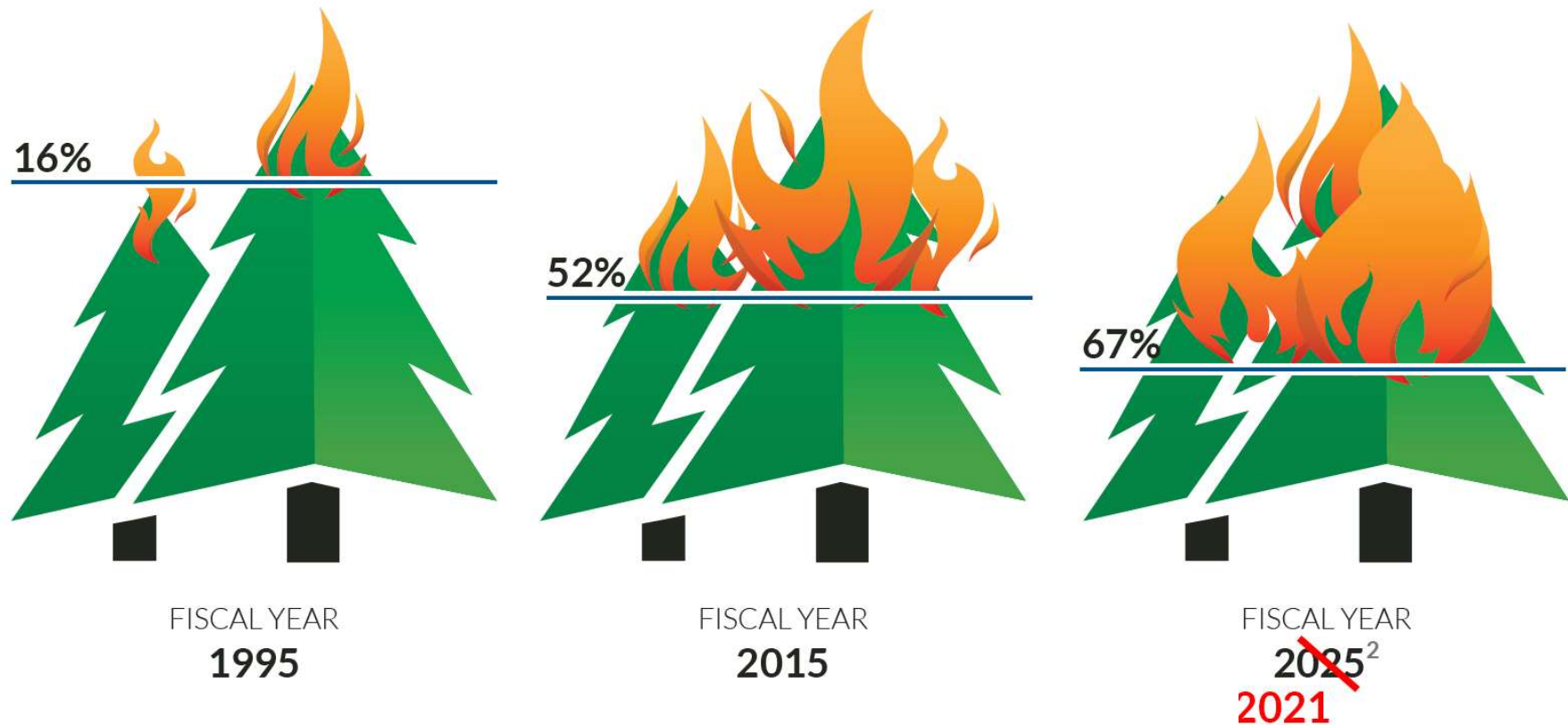
5 Community Resilience
Job creation and protected homes, lives, and livelihoods make rural communities more resilient

6 Shared Resources
Preservation of recreational, historical, and cultural resources ensures national forests can be enjoyed by all for generations

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



Source: The Rising Cost of Wildfire Operations, USDA Forest Service

The Forest Resilience Bond



Goals of the Forest Resilience Bond

**Provide
resources to
support
collaboration**

**Accelerate
pace and
scale of
restoration**

**Support
public land
management**

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

The Forest Resilience Bond Ecosystem



Project Partners



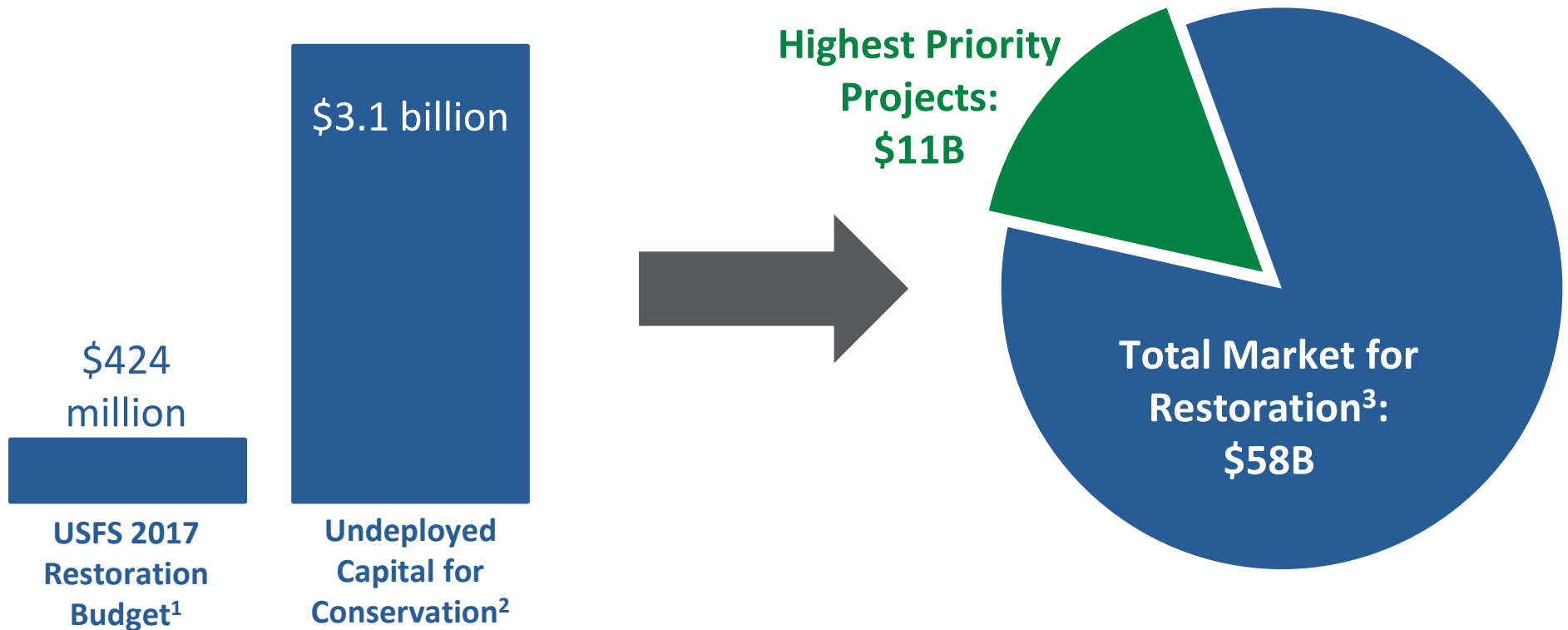
Research Partners



Grant & In-Kind Funders



Opportunity for Private Capital



Advantages of Private Capital

Infusion of capital

Cost sharing

Larger projects

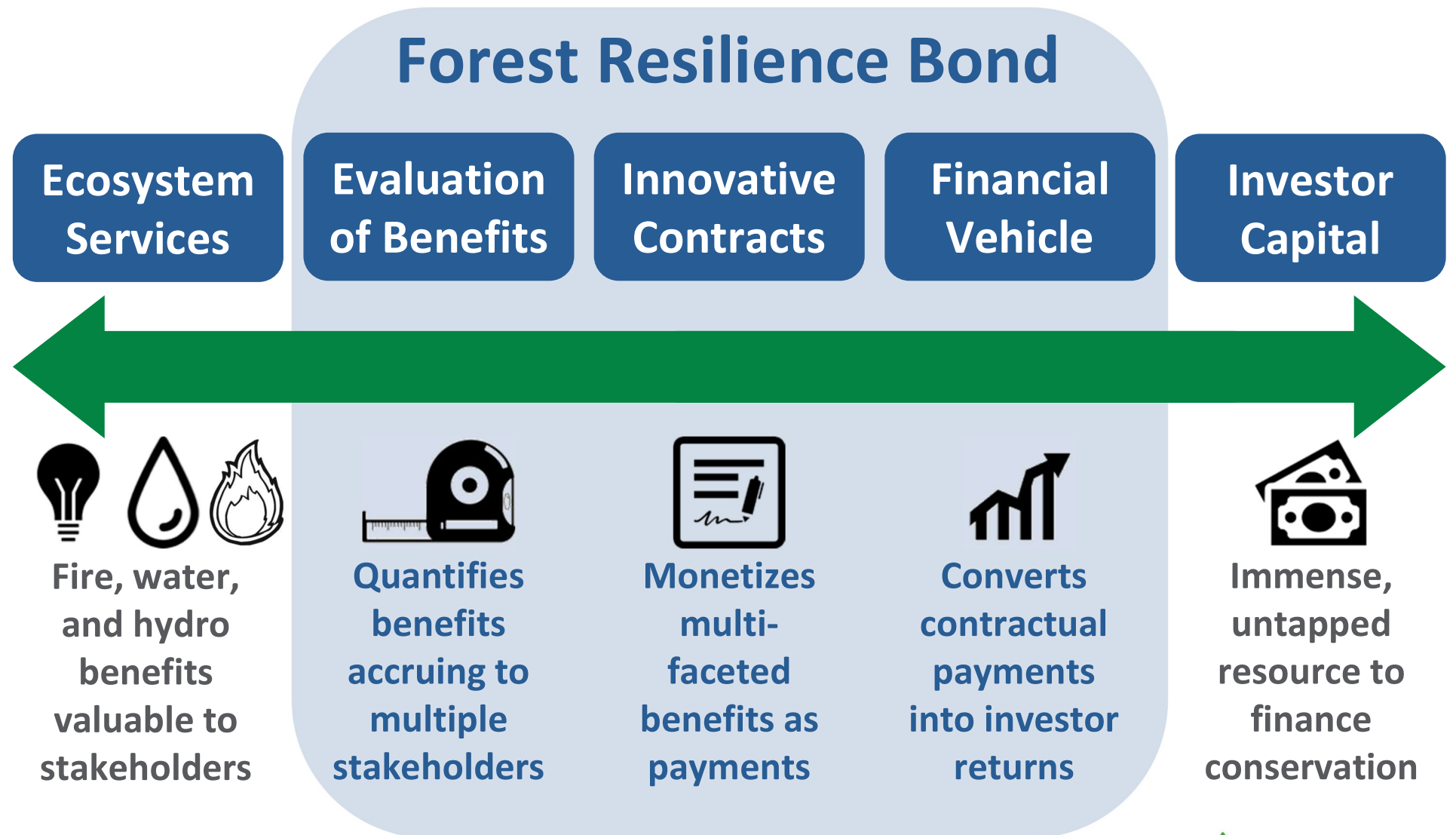
Project catalyst

Ex-post payments

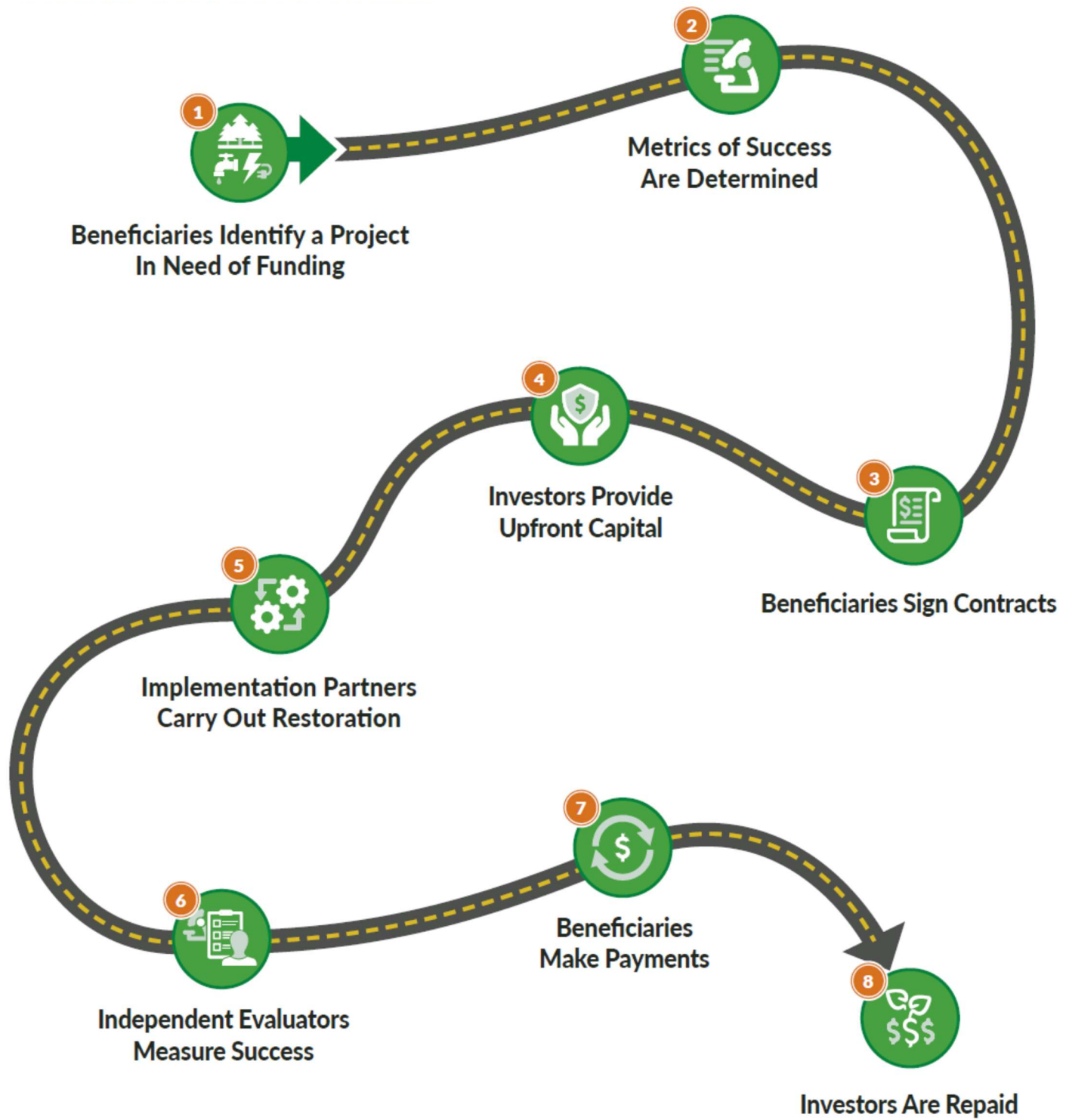
1. [USFS Fiscal Year 2017 Budget Overview](#) (\$40 million for CFLRP and \$384.1 million for hazardous fuel reduction)
2. [State of Private Investment in Conservation 2016](#) (\$3.1 billion of investor capital undeployed at end of 2015)
3. [USFS Fiscal Year 2017 Budget Overview](#) (58 million acres at "high or very high risk of severe fire" @ \$1,000/acre)



Connecting Investor Capital to Conservation



How the FRB Works



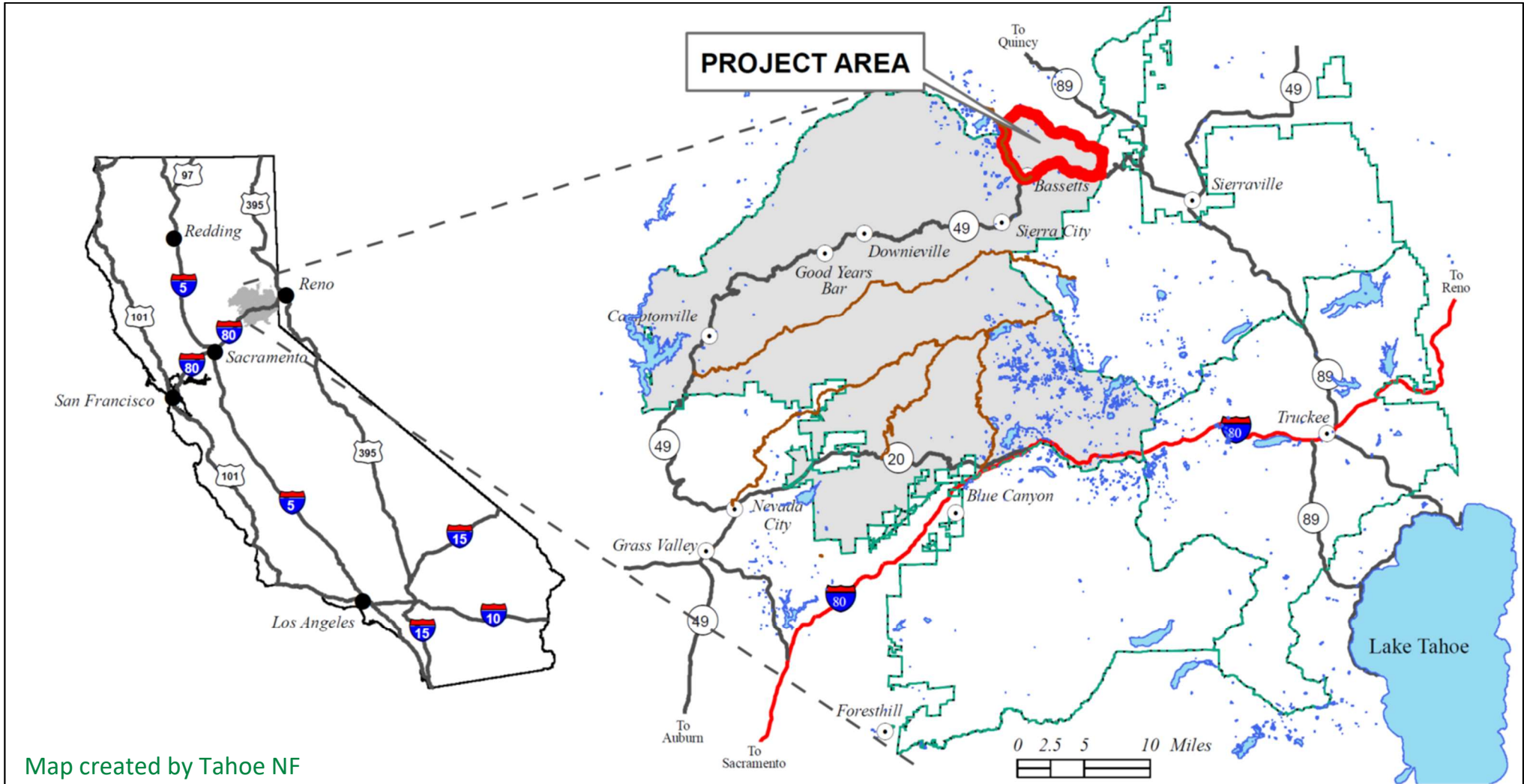
The Yuba Project, Tahoe NF



Yuba Project Overview

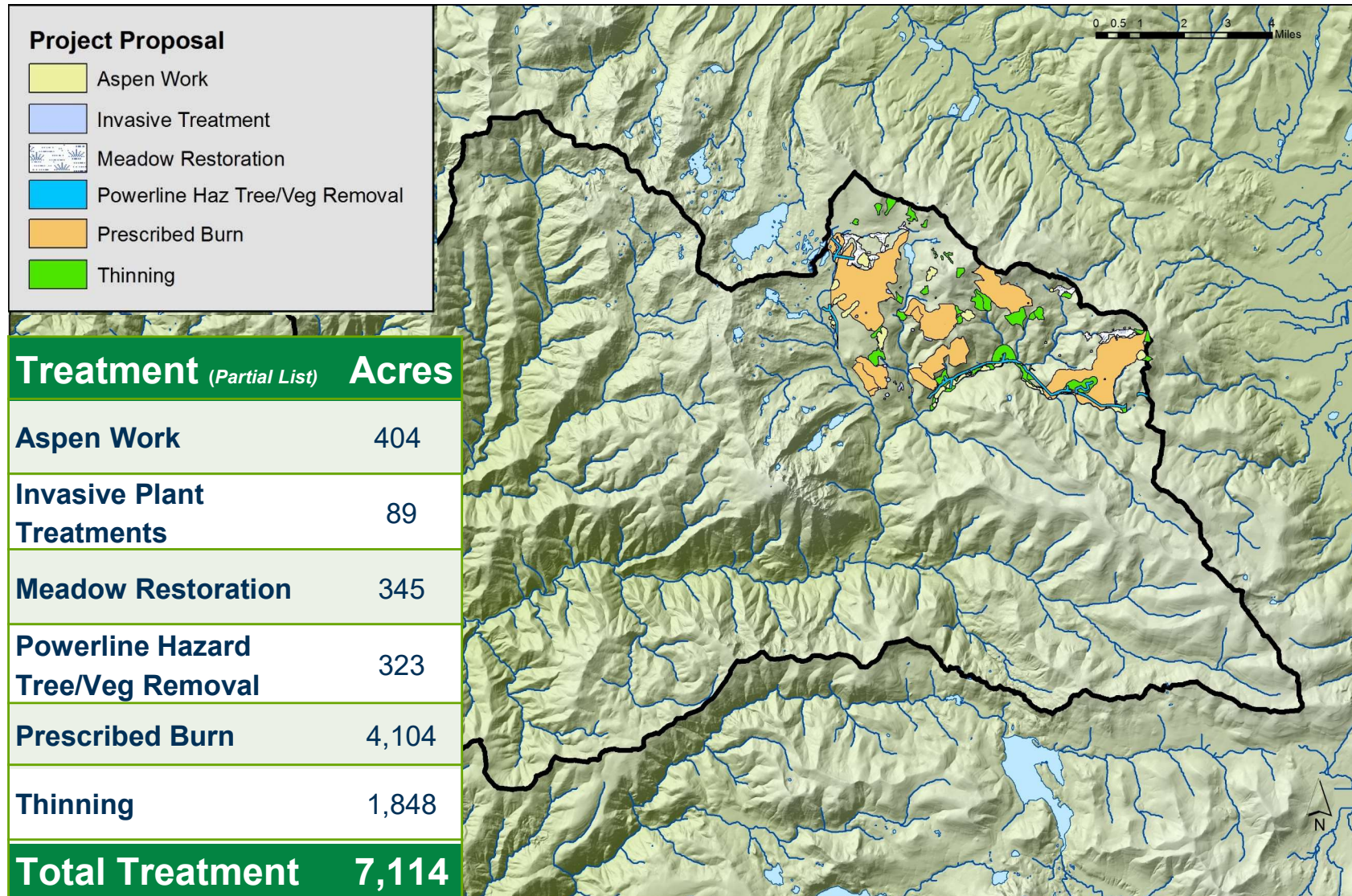
Location	Northern CA - North Yuba River Watershed, Tahoe National Forest
Project type	Primarily fuels reduction with some meadow restoration, invasive species management, and aspen regeneration
Size	7,114 acres of restoration to protect 15,000 acre area
Land ownership	Public – USFS
Status	Closed on 11/1/2018. Restoration work planned for 2018 – 2022
Total project cost	\$4.6 million (\$4.0 million financed by FRB)
Expected impacts	Wildfire risk reduction, increased water quantity, protected water quality, avoided sedimentation, protected habitat and ecosystems
Payors	CA State (CAL FIRE and SNC grants) and Yuba Water Agency. USFS providing in-kind support

Yuba Project – A Pilot For The North Yuba

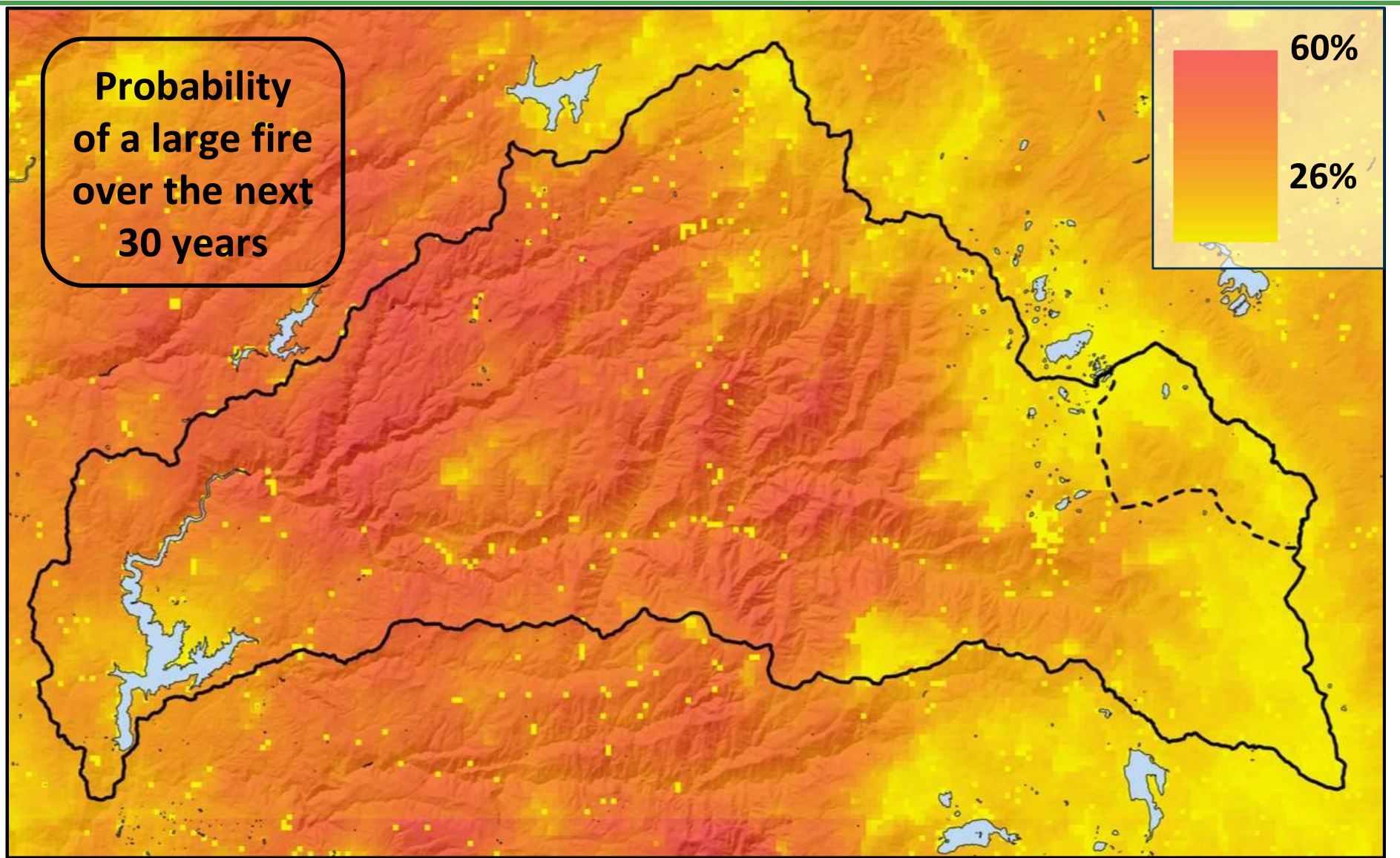


Map created by Tahoe NF

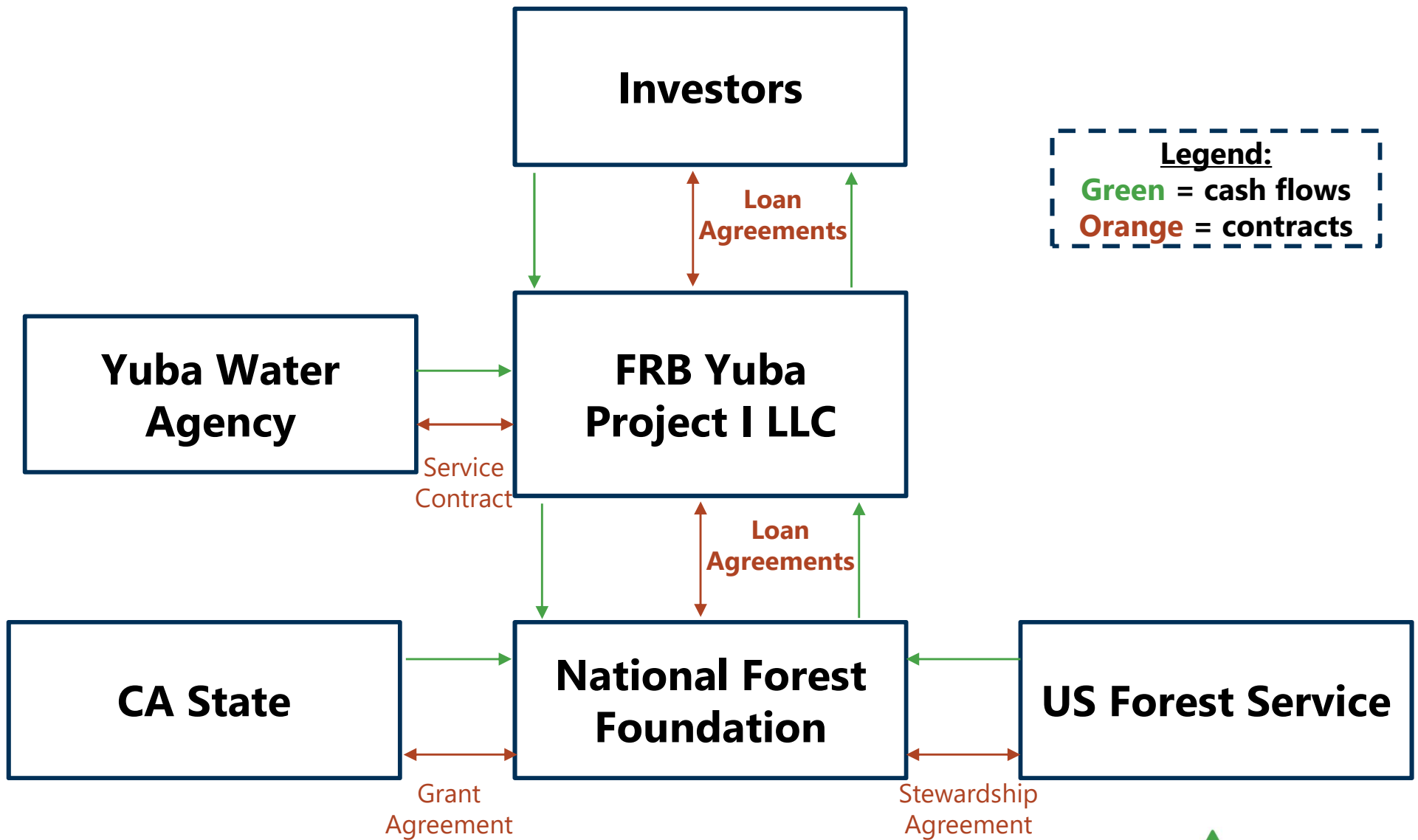
Yuba Pilot Restoration Project



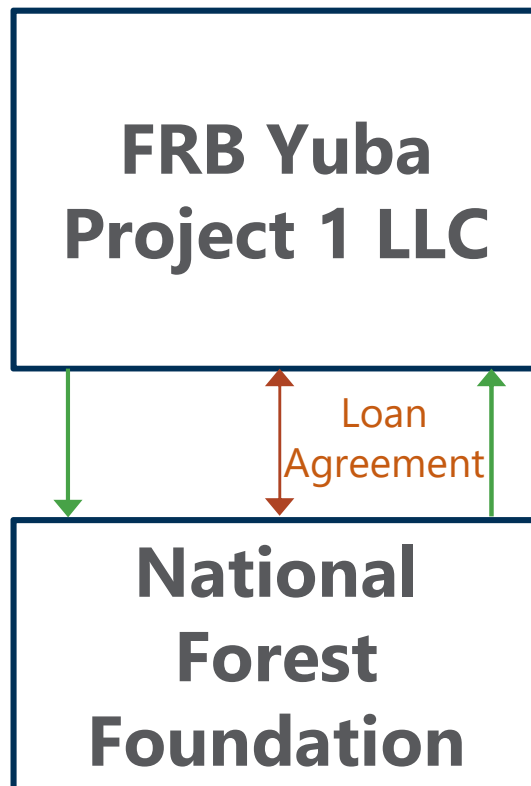
North Yuba Wildfire Risk



Flow of Funds



Role of the Implementation Partner



1

Implementation Partner

Third-party implementation partner ensures proper governance by creating firewall between investors and restoration activities

2

Financial Intermediary

Use of financial intermediary facilitates payments from USFS and state to the FRB

Legend:

Green = cash flows

Orange = contracts

Sources of Repayment

Principal + **Interest** = **Utility Contract** + **State/Fed Contribution**



Project Investors





BLUE FOREST
CONSERVATION

Financial Innovation for Sustainable Solutions



**FOREST
RESILIENCE
BOND**

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