

ACES 2016

The Forest Resilience Bond - Financing Forest Restoration

December 7th, 2016

Nick Wobbrock
Co-Founder and Partner
Blue Forest Conservation
nick@blueforestconservation.com



Collaboration



WORLD
RESOURCES
INSTITUTE



encourage
capitalSM

THE
ROCKEFELLER
FOUNDATION

the David &
Lucile Packard
FOUNDATION



American Forest Foundation

Brownstein Hyatt
Farber Schreck



O R R I C K



natural
capital
PROJECT



U.S. Endowment
for Forestry and Communities

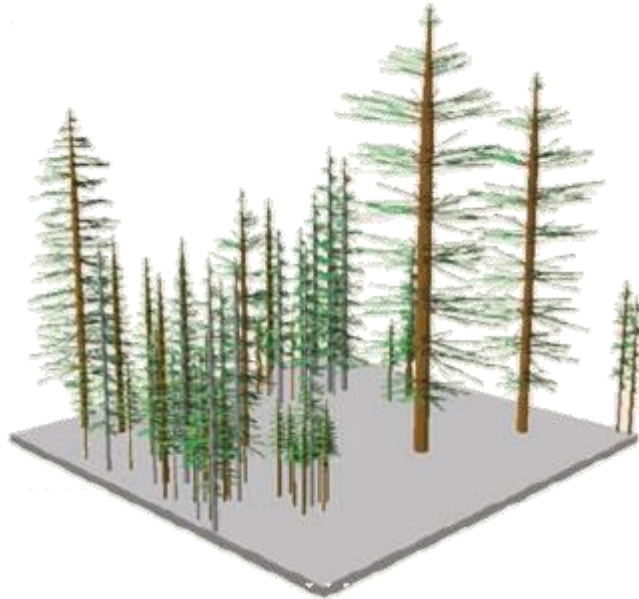


NRCS
Natural Resources Conservation Service

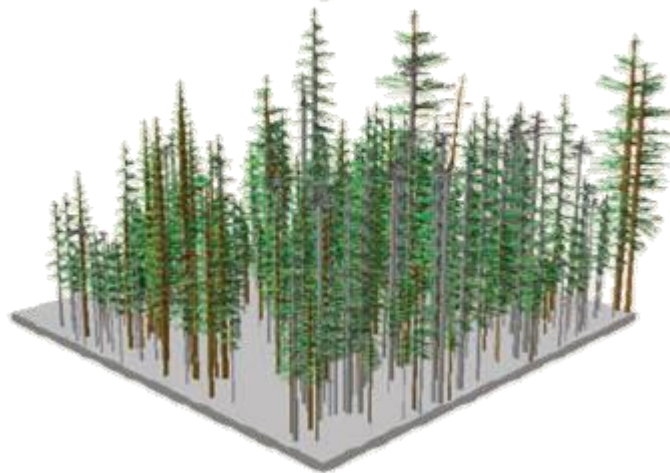
BLUE FOREST
CONSERVATION

Crisis: Overgrown Forests

1929



Today



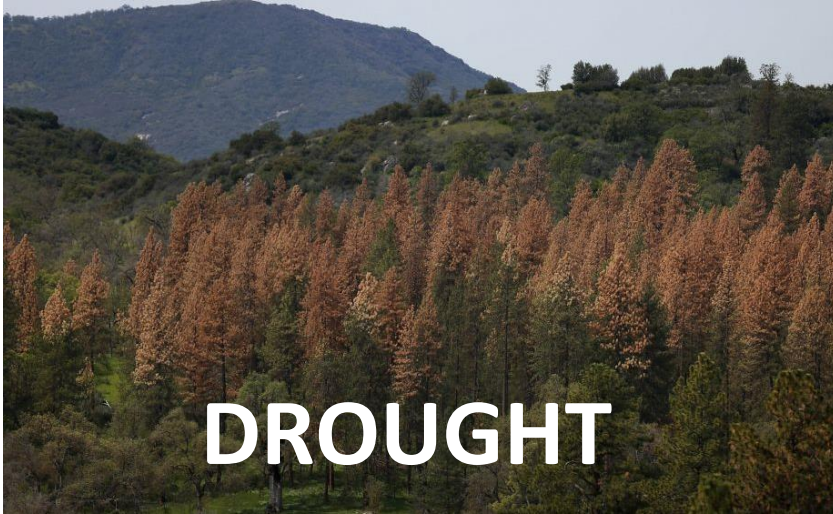
Sierra Nevada forests provide...

- ▶ 60% CA water supply¹
- ▶ 75% of CA's in-state hydropower²
- ▶ 420M tons of carbon storage³

Today's forests...

- ▶ Up to 10x more trees per acre⁴
- ▶ 58M acres at risk of intense fire⁵
- ▶ 2015 snowpack lowest level ever recorded⁶

Threats to Watersheds



Threaten the cost effectiveness, reliability, and efficiency of our watersheds

Drought or “abnormally dry conditions” affecting all 11 Western states⁷

Nine of the ten worst wildfire seasons have occurred since 2000⁸

North Fork, Feather River circa 1890



North Fork, Feather River 1993



North Fork, Feather River 1890 - 1993



Forest Restoration Visualized

Overgrown



Restored



Forest Restoration as a Solution



Forest restoration is widely endorsed

In line with US Forest Service policies to address fire, climate change, and more¹⁰

Prevents severe wildfires, infrastructure, and protects tree health¹¹

“Treatments in dense Sierra Nevada forests could potentially increase water yield¹²”

Budgetary Limitations of the USFS

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)
Preparedness, Suppression, FLAME, and related programs¹³



FY 1995

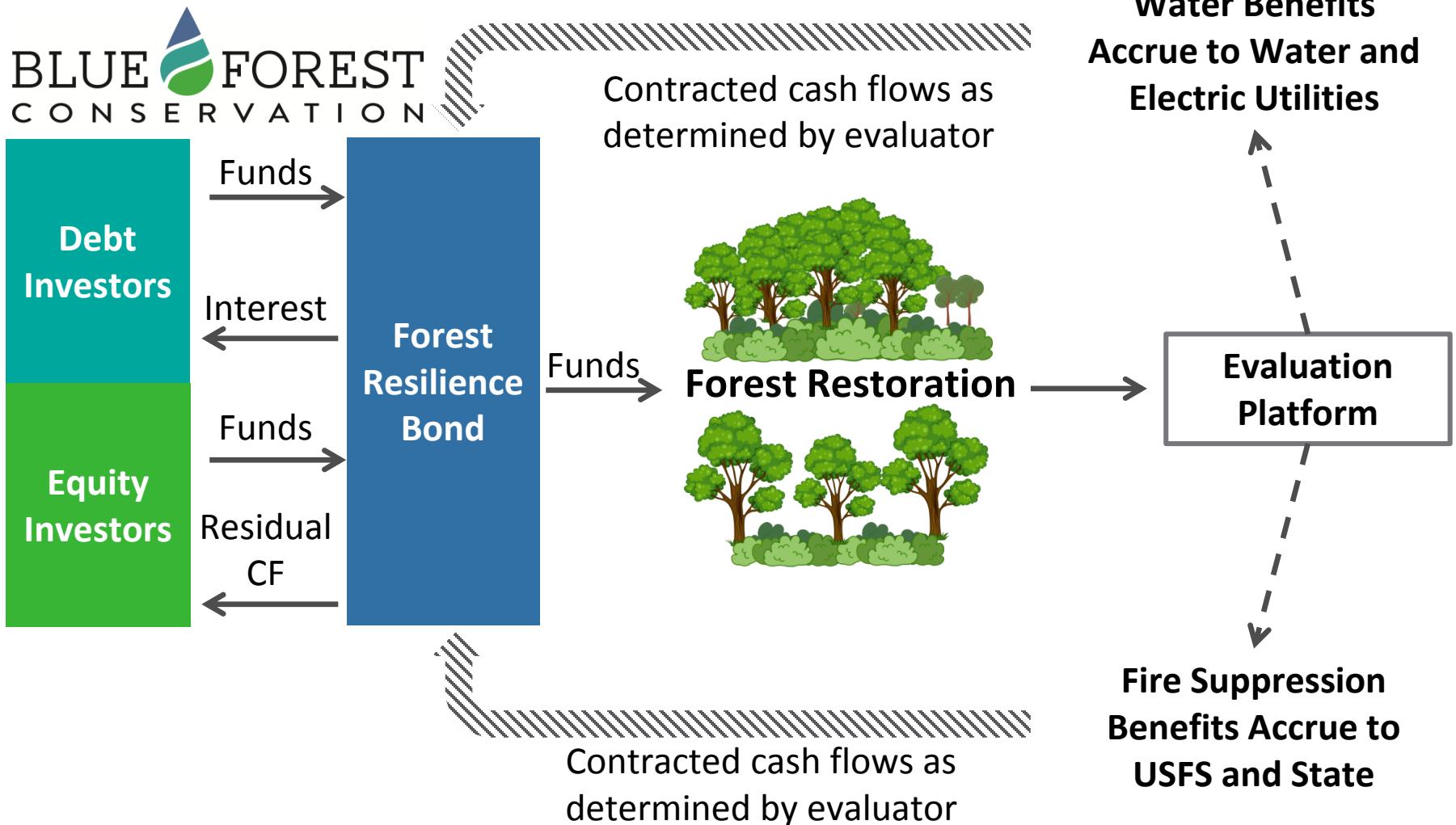


FY 2015

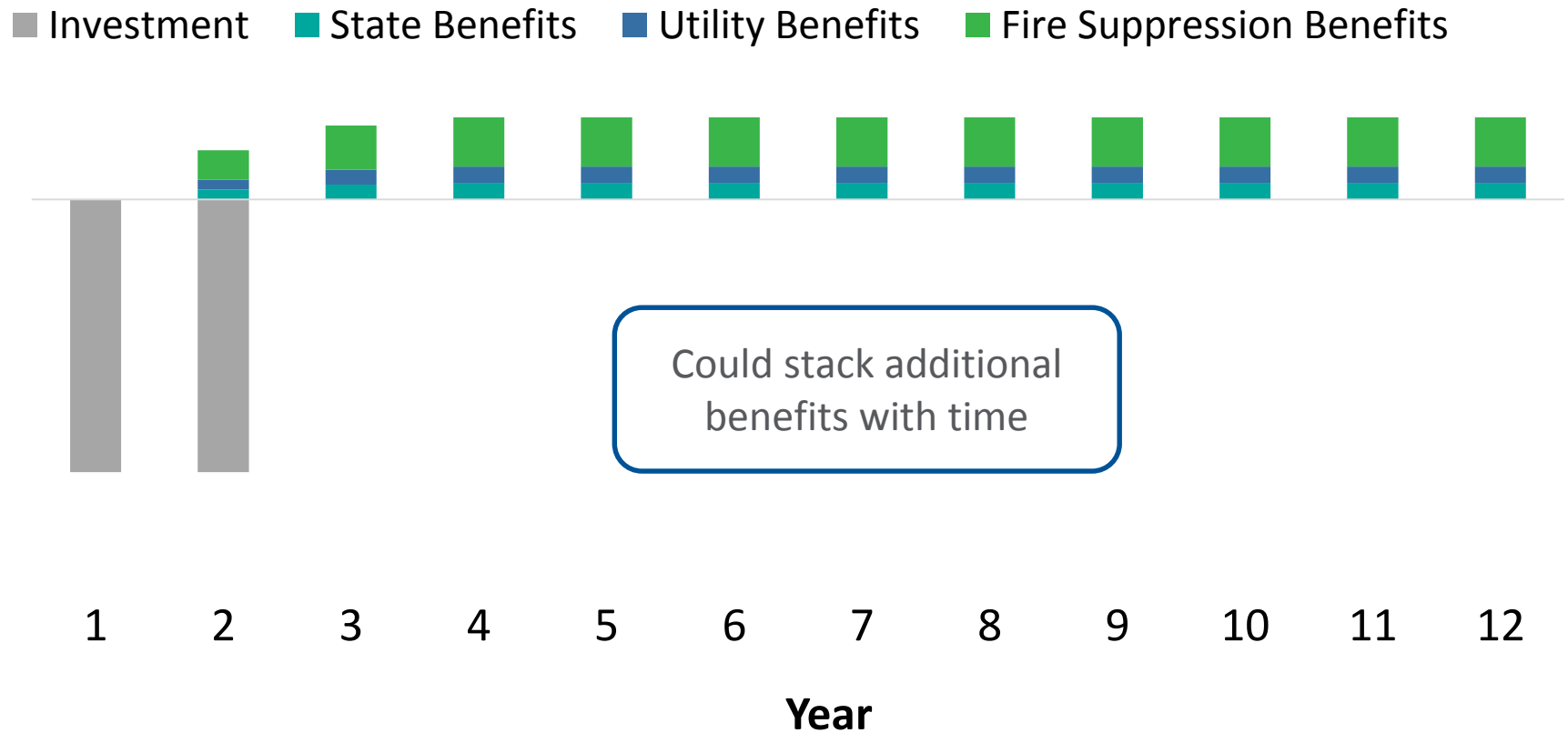


FY 2025E

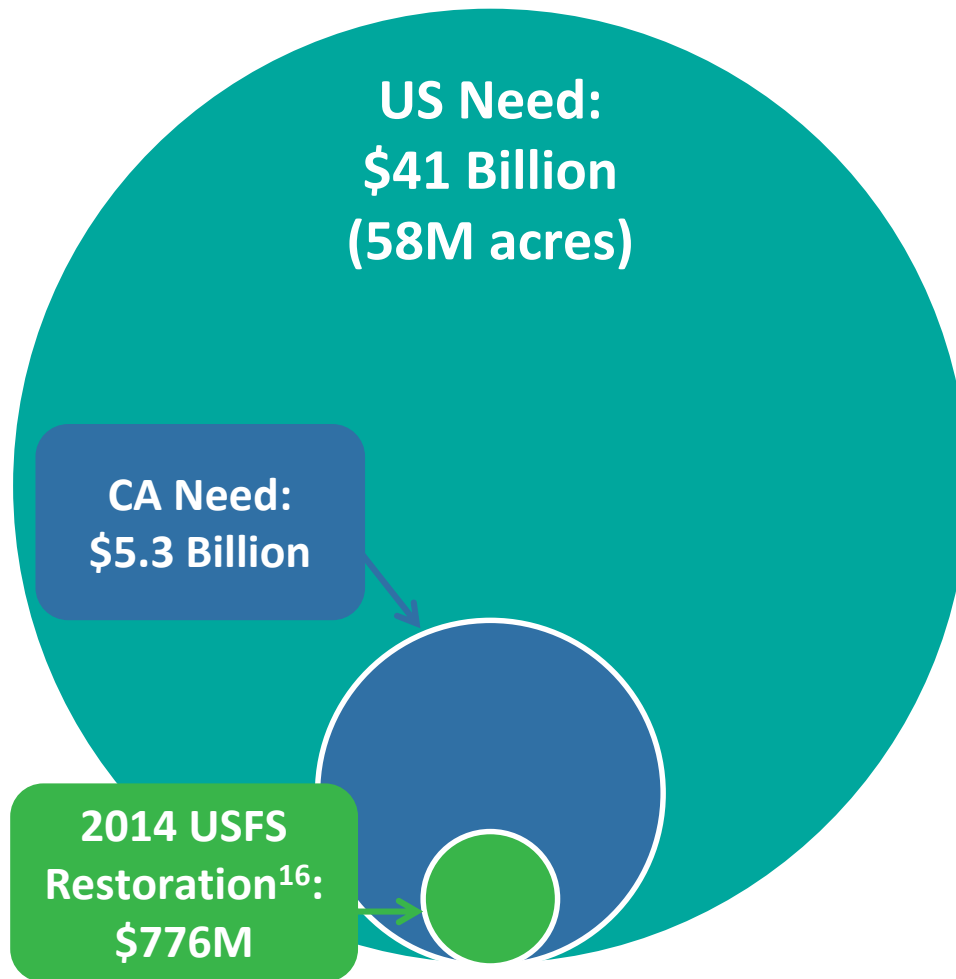
FRB Structure



Illustrative Cash Flows



The Opportunity for Forest Restoration



IMPACT



Infrastructure



Hydropower Generation



Water Quantity & Quality



Fire Severity & Habitat



Air Quality & Emissions



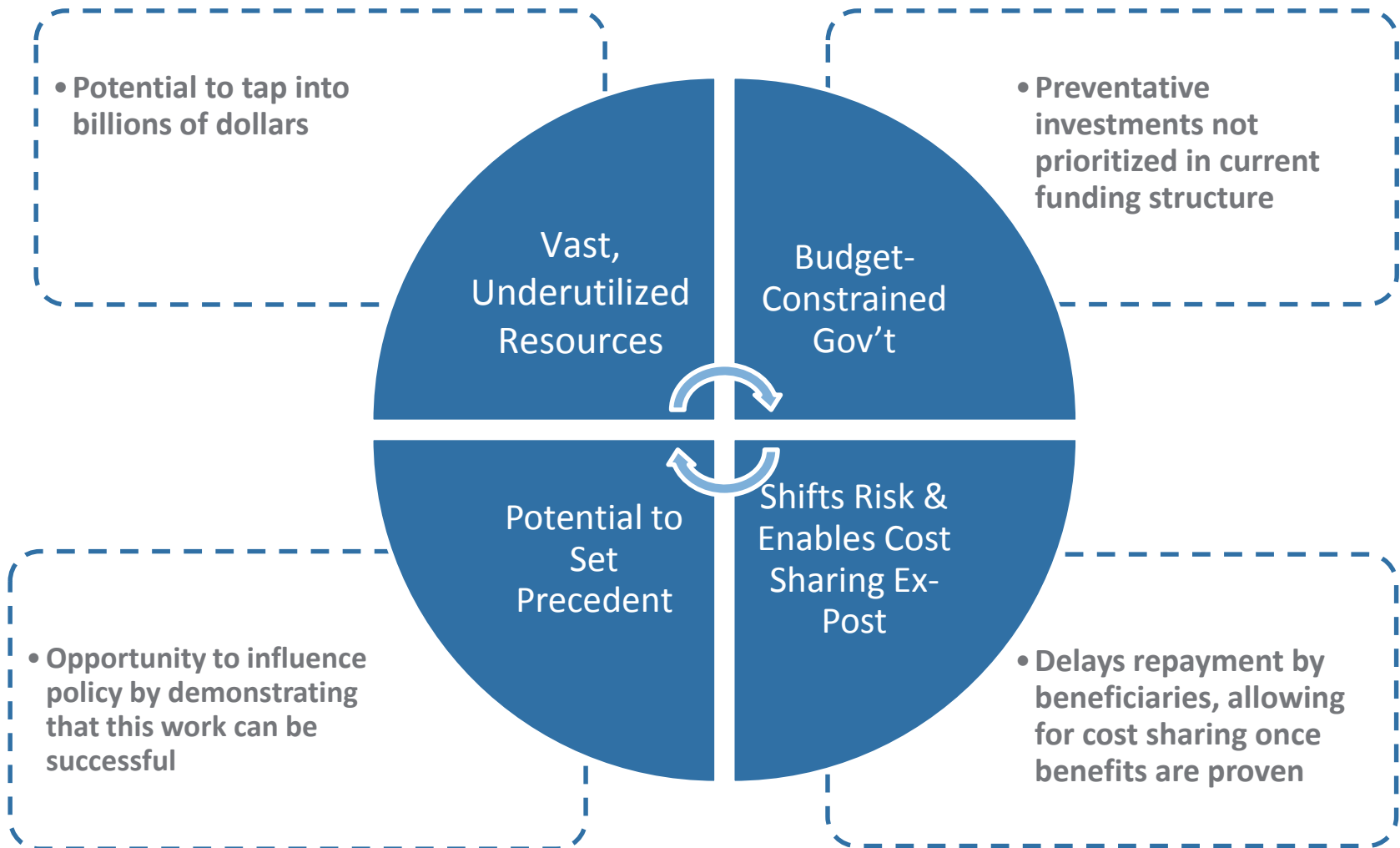
Job Creation

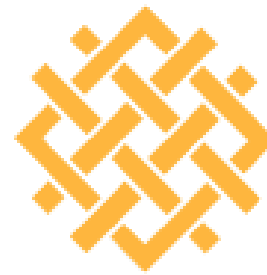


Public Safety

Note: Dollar amounts based on restoration costs of \$705/acre (average price paid by USFS in 2014 for Integrated Resources Restoration program).

Private Capital





WORLD
RESOURCES
INSTITUTE

Nick Wobbrock
nick@blueforestconservation.com

Todd Gartner
Tgartner@wri.org

Sources

1. Sierra Nevada Conservancy – *[The State of the Sierra Nevada Forests](#)*, September 2014.
2. California Climate Change Center – *[Water and Energy Sector Vulnerability to Climate Warming in the Sierra Nevada: Simulating the Regulated Rivers of California’s West Slope Sierra Nevada](#)*, July 2012.
3. Sierra Nevada Conservancy – *[Forest Health and Carbon Storage](#)*, December 2012
4. Dick Fleishman of USDAFS Flagstaff Office in an *[article](#)* by Elizabeth Harball of E&E Publishing, LLC
5. *[USDA Press Release](#)*, May 2014.
6. *[Snow Water Equivalents](#)*. California Cooperative Snow Surveys May 2015.
7. *[United States Drought Monitor](#)*, June 2016.
8. *[National Interagency Fire Center](#)*
9. *[Contribution of anthropogenic warming to California drought during 2012–2014](#)*, Geophysical Research Letters, August 2015.
10. *[Increasing the Pace of Restoration and Job Creation on Our National Forests](#)*, US Forest Service
11. *[Impacts of Forest Management Practices on Forest Carbon](#)*, Gelman, Hulkkonen, Kantola, et al.
12. *[Sierra Nevada Watershed Ecosystem Enhancement Project](#)*; Sierra Nevada Research Institute & UC-Berkeley
13. *[The Rising Cost of Wildfire Operations](#)*, USDA Forest Service
14. *[Statement of Under Secretary Robert Bonnie - USDA](#)*, March 2015.
15. California Forestry Association - *[All Lands Approach to Watershed Health](#)*, June 2014.
16. *[USFS Fiscal 2016 Budget Overview](#)*, February 2015.