GREENHOUSE GAS OFFSET PROTOCOL FOR FOREST FUEL TREATMENTS

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FUEL TREATMENTS

GREENHOUSE GAS BENEFITS OF FUELS TREATMENTS

Fire resilient, large diameter trees
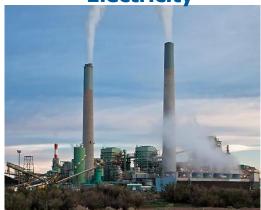

Mitigated catastrophic wildfire, delayed regeneration

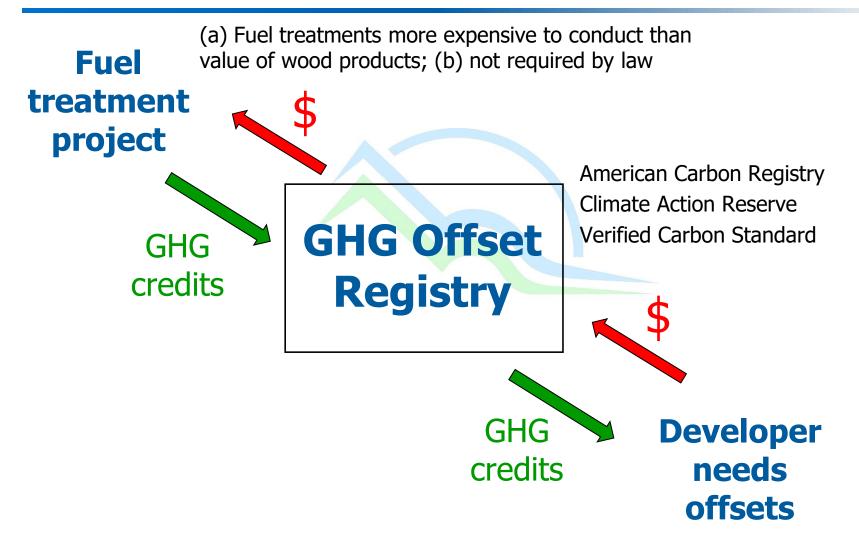# GREENHOUSE GAS BENEFITS OF FUELS TREATMENTS

Renewable energy

Wood products

Biochar

Electricity

Concrete, steel

Fertilizer, water

Avoided fossil fuel energy

DRIVING A GREENHOUSE GAS OFFSET PROTOCOL

(a) Fuel treatments more expensive to conduct than value of wood products; (b) not required by law

Fuel treatment project

$

GHG credits

GHG Offset Registry

American Carbon Registry
Climate Action Reserve
Verified Carbon Standard

$

GHG credits

Developer needs offsets

5

PROJECT FUNDING PARTNERS

PROJECT CONTRACTORS

PROJECT PROTOCOL

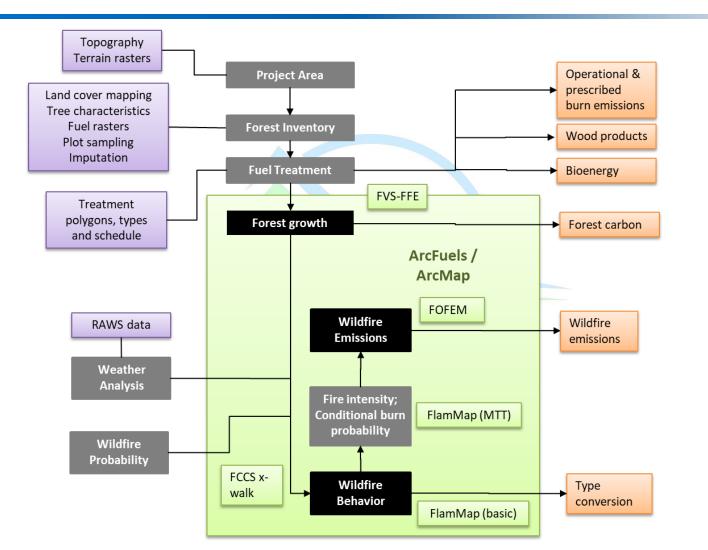# DELAYED REFORESTATION

- <u>Delayed reforestation</u>: For high severity burn areas, tree-dominated vegetation cover has not reestablished atleast 20 years post fire (burn area is grass- or shrub-land)
- Protocol recommends use of established delayed reforestation rates:
  - Determined high severity burn areas for fires prior to 1994 using USFS MTBS database (class 4 rated)
  - Identified burn areas that were forested prior to the fire (and veg type class) using CAL VEG 77
  - Determined if burn areas are forest or shrub 20 years post fire using Fveg 2015
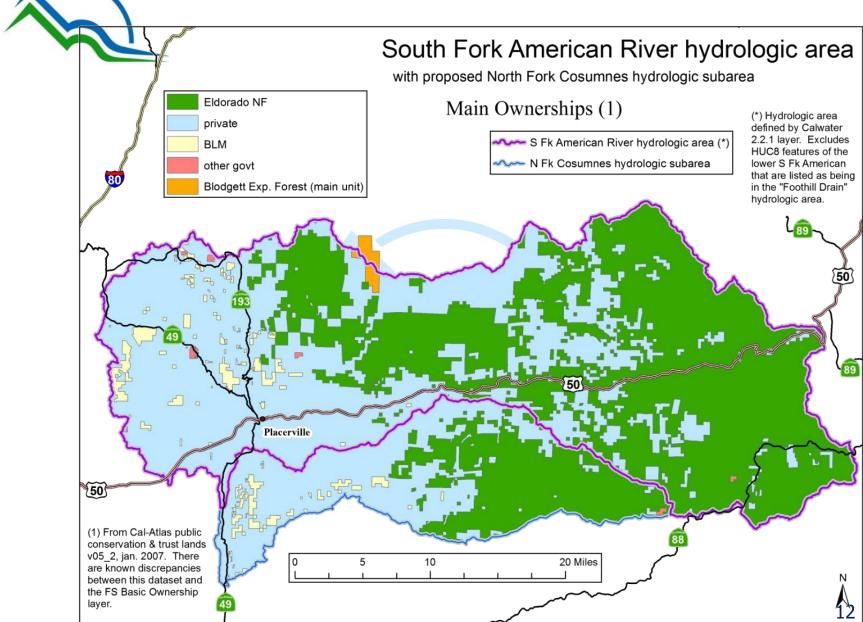
DELAYED REFORESTATION

Forest type (CALVEG77 WHRNAME)	Acres burnt at high severity	Delayed reforestation (% of acreage)
Sierran Mixed Conifer	40,706	43%
Chamise-Redshank Chaparral	25,404	87%
Montane Hardwood-Conifer	15,385	45%
Douglas-Fir	15,028	34%
Coastal Oak Woodland	14,559	61%
Montane Hardwood	14,073	44%
Jeffrey Pine	13,047	78%
Klamath Mixed Conifer	12,846	52%
Ponderosa Pine	11,579	50%
Mixed Chaparral	10,075	62%
Blue Oak Woodland	8,710	50%
Eastside Pine	8,475	9%
Red Fir	4,562	79%
Pinyon-Juniper	2,057	86%
Montane Chaparral	1,846	66%
White Fir	1,512	82%
Valley Oak Woodland	1,395	77%
Juniper	648	94%
Lodgepole Pine	124	21%
Subalpine Conifer	55	5%
Redwood	43	18%
Grand Total	202,127	55%

FIRE RETURN INTERVAL

- CAL FIRE modeling uses old data before 2004

- Contemporary updated assessment using Moritz procedure:
    - Relative fire probability from Parisian (2012)
    - Absolute fire probability from fire perimeter data from the Monitoring Trends in Burn Severity database (1996-2015)

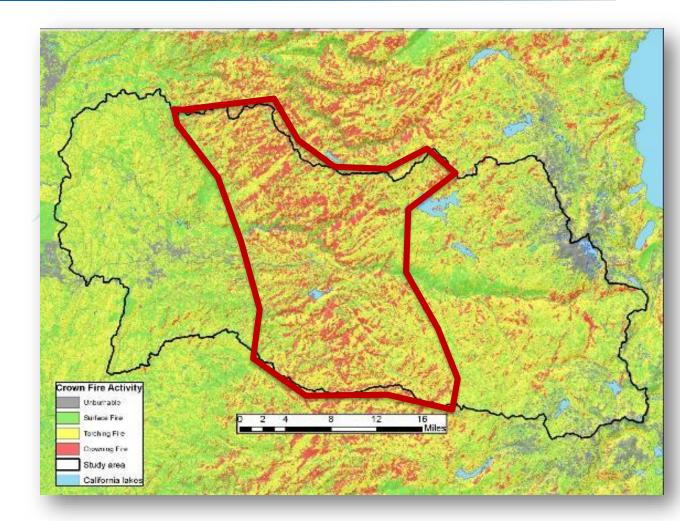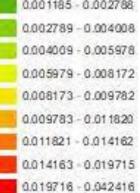- 300 m resolution, forest types in 44 ecological supersections

PROJECT CASE STUDY

South Fork American River hydrologic area

with proposed North Fork Cosumnes hydrologic subarea

Main Ownerships (1)

Legend:
- Eldorado NF
- private
- BLM
- other govt
- Blodgett Exp. Forest (main unit)

S Fk American River hydrologic area (*)
N Fk Cosumnes hydrologic subarea

(*) Hydrologic area defined by Calwater 2.2.1 layer. Excludes HUC8 features of the lower S Fk American that are listed as being in the "Foothill Drain" hydrologic area.

Placerville

(1) From Cal-Atlas public conservation & trust lands v05_2, jan. 2007. There are known discrepancies between this dataset and the FS Basic Ownership layer.

0   5   10   20 Miles

N

PROJECT CASE STUDY

Treatment:

- Stand Density Index of 200
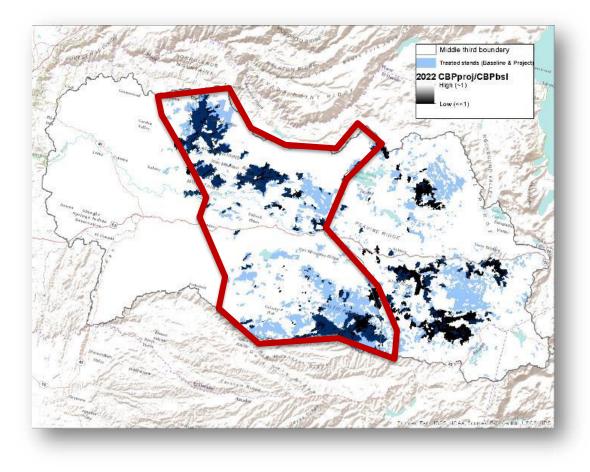- 20% baseline, +20% project
- Prescribed burn

Crown Fire Activity
- Unburnable
- Surface Fire
- Torching Fire
- Crowning Fire
- Study area
- California lakes

FIRE RETURN INTERVAL

Probability
- 0.000000 - 0.001184
- 0.001185 - 0.002788
- 0.002789 - 0.004008
- 0.004009 - 0.005978
- 0.005979 - 0.008172
- 0.008173 - 0.009782
- 0.009783 - 0.011820
- 0.011821 - 0.014162
- 0.014163 - 0.019715
- 0.019716 - 0.042416

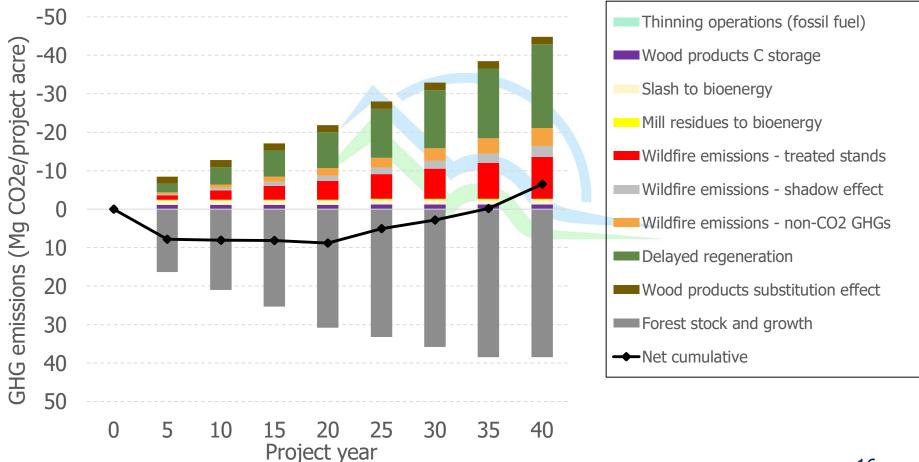# WILDFIRE SHADOW EFFECT: CBP RATIO

PROJECT CASE STUDY RESULTS

PROTOCOL ADOPTION STATUS

- Submitted to American Carbon Registry for adoption in Oct. 2018
- Rejected in Sept. 2019
  - Issue GHG credits before achieved
  - Temporary increase in GHG
  - High risk due to large treatment projects
  - Complex and probabilistic models
- Currently working with Climate Action Reserve for approval in their Climate Forward Registry
- Publish paper in peer-reviewed technical journal