



NET AIR EMISSIONS REDUCTION DUE TO FOREST BIOMASS DIVERSION TO AN EXISTING BIOMASS POWER FACILITY



Biomass Work Group

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Sacramento, California



PRESENTATION OVERVIEW

- Background
- Challenges and Opportunities
- Biomass Recovery Methodology
- Air Emissions Tracking
- Results
- Other Placer County Biomass Initiative Projects





CHALLENGES AND OPPORTUNITIES



Challenges

- Century of successful fire suppression activities have allowed forest conditions in the West to deteriorate.
- Wildfire scale and intensity have grown significantly in the last two decades.
- Impacts to watersheds, habitat, and local economies are severe.
- Cost to treat forest fuels are high.
- Very limited markets for biomass material.
- State and federal \$ for fuels treatment are of limited scope and duration.

Opportunities

- Alternative markets for biomass material are developing.
- Collection, processing and transport methodologies are more efficient.
- Renewable portfolio standards are in place providing markets for biomass power.
- Short term – federal and state incentives for biomass removal (e.g., BCAP).
- Long term – fungible emission reduction credit offsets or GHG reduction credits.



PLACER COUNTY BIOMASS TEAM

- Placer County Biomass Program
- Placer County Air Pollution Control District
- TSS Consultants
- Spatial Informatics Group



PLACER COUNTY AIR POLLUTION CONTROL DISTRICT

- Air quality in Placer County
- Programs:
 - Permitting and inspections of stationary sources
 - Enforcement of Air Pollution Control Regulations
 - Air Monitoring
 - Air Quality Planning – CEQA & Attainment
 - Clean Air Grants and Incentive Programs
 - Air Toxics
 - **Manage Open Burning – Forestry and Agriculture**



BIOMASS DIVERSION STUDY OBJECTIVES

- Compare net air impacts of biomass combustion - open pile burning and controlled combustion at an existing biomass power generation facility.
- Confirm costs to collect, harvest and transport biomass material from the forest to an existing biomass power generation facility.





CURRENT FATE – OPEN BURNING



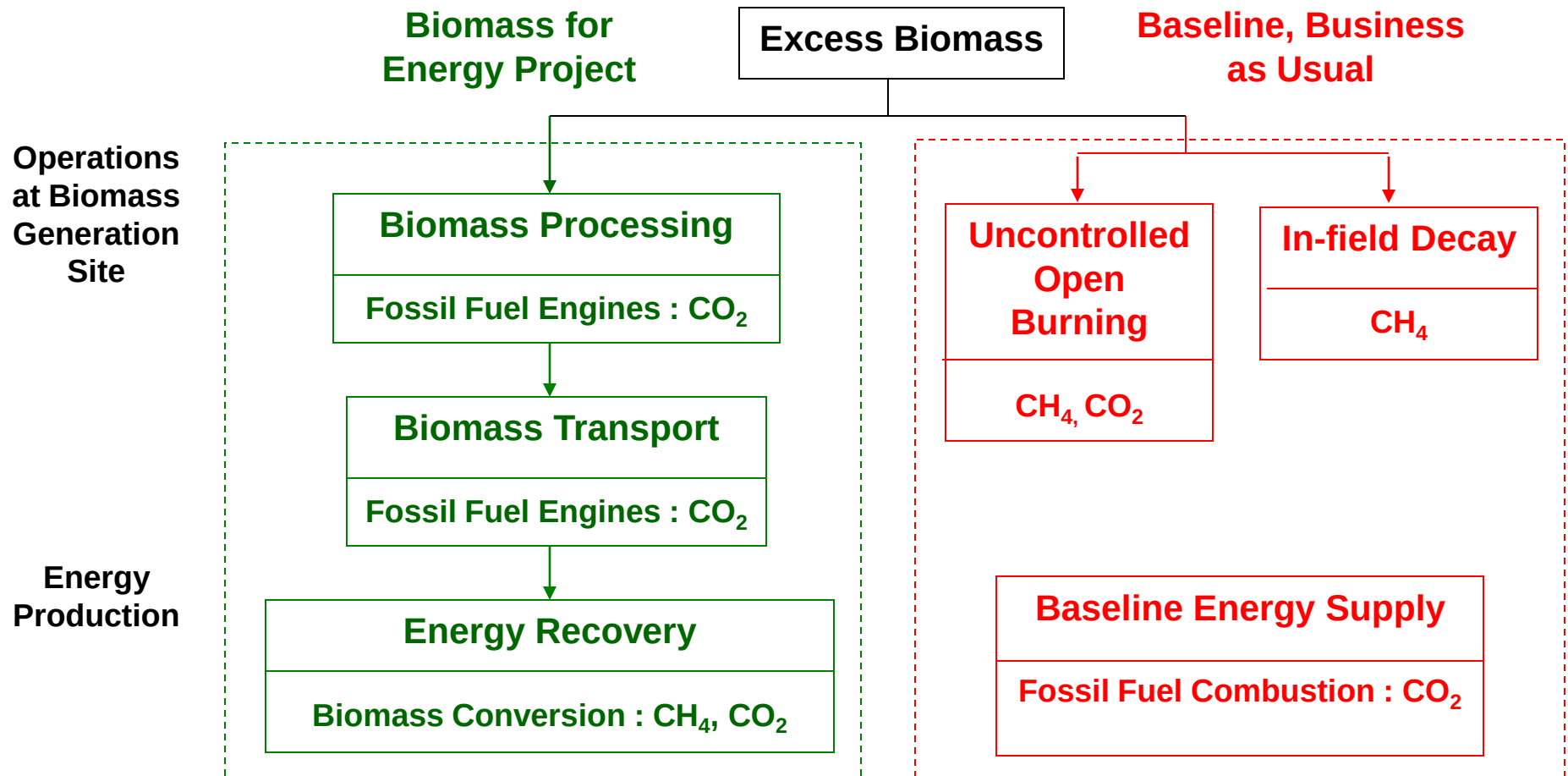


ALTERNATE FATE – RENEWABLE ENERGY





BIOMASS WASTE FOR ENERGY GHG OFFSET PROTOCOL





DEMONSTRATION PROJECT





DATA TRACKING

- Collection and Processing
 - Diesel engines on grinder and loaders
 - Dust from grinding operation
- Transport
 - Diesel engines on chip van transports
 - Dust from vehicle travel on dirt roads
- Biomass-to-energy plant
 - Energy production
 - Biomass fuel use

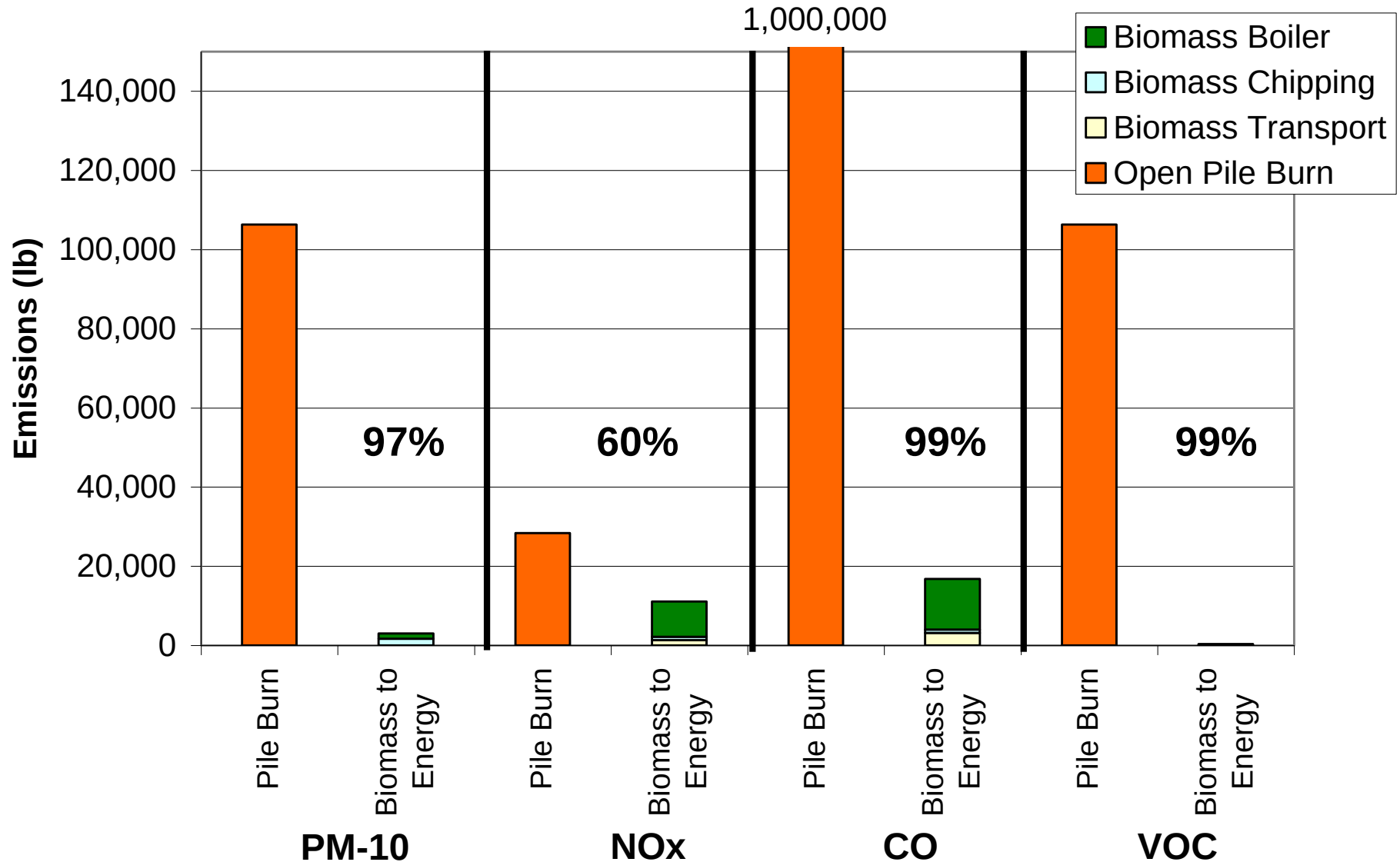


PROJECT RESULTS

- Achievements
 - Transported 7,089 green tons (4,200 BDT)
 - Biomass fuel characteristics: 9,000 Btu/lb, 40% moisture
 - 4,652 MW electricity generation
- Economics
 - Approx. \$58.50/BDT (\$3.25/MMBtu)
 - Working to increase operating efficiency and reduce cost

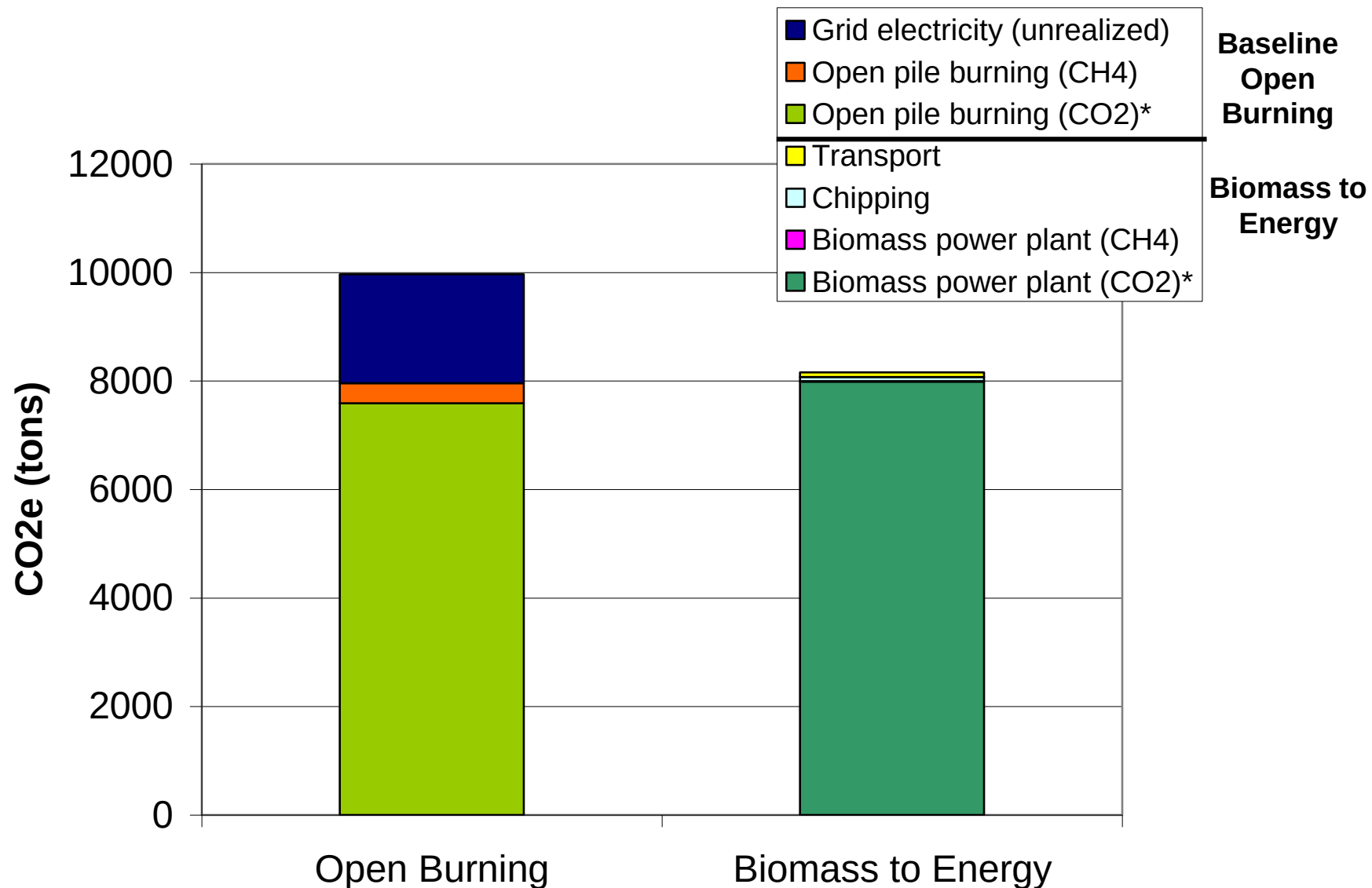


CRITERIA AIR POLLUTANTS





GREENHOUSE GASES



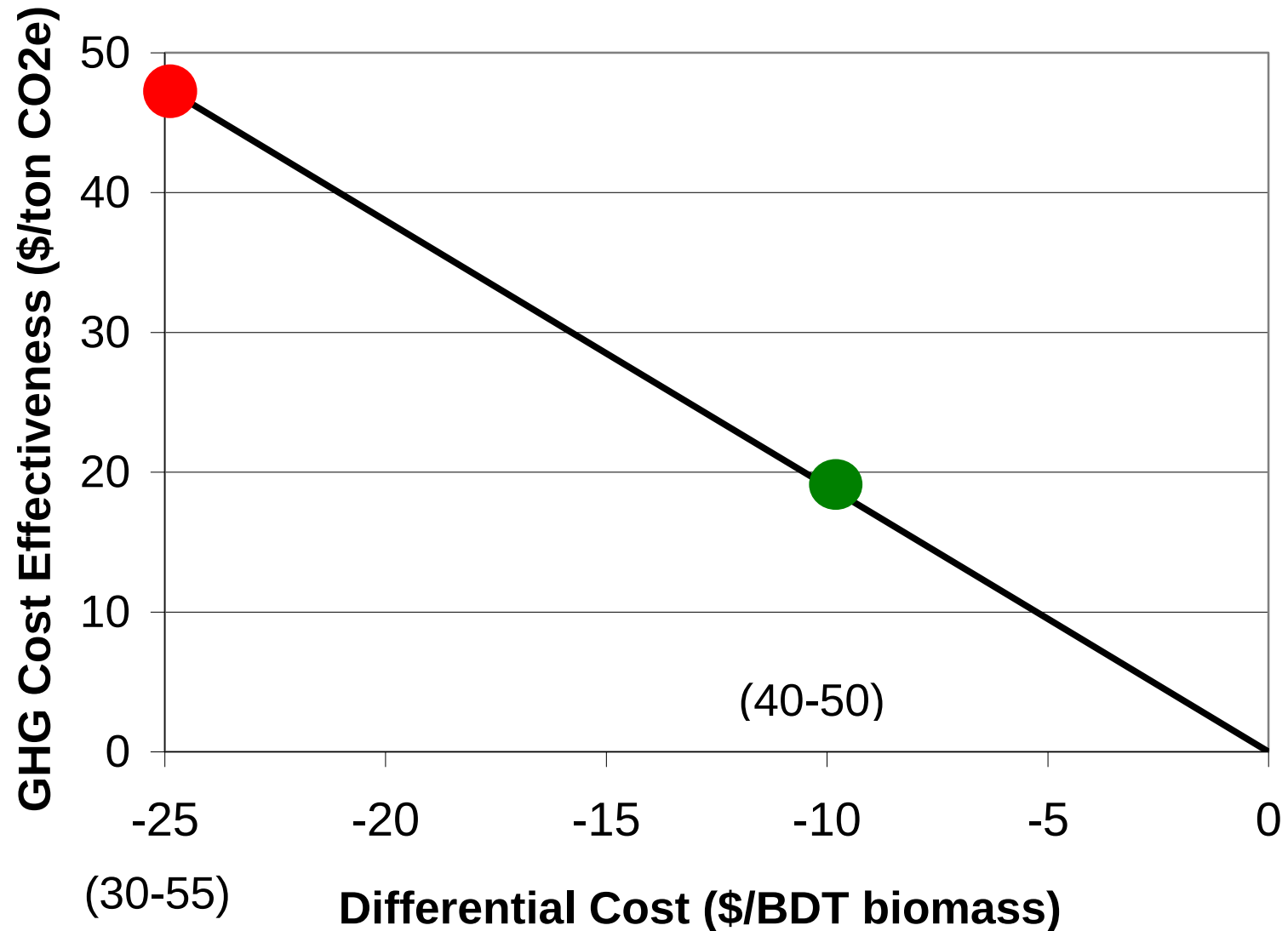


COSTS TO COLLECT, PROCESS, AND TRANSPORT

EQUIPMENT	\$/OPERATING HOUR	AVERAGE OPERATING HOURS/DAY	COST \$/BDT
Grinder – Bandit Beast	\$400	4	\$17.19
Excavator – Linkbelt 135	\$125	3.7	\$4.97
Excavator – Linkbelt 290	\$150	3.7	\$5.96
Chip Truck - Kenworth	\$85	9	\$27.13
Water Truck – Ford L9000	\$60	3	\$1.93
Service Truck – Ford F 350	\$25	2	\$0.54
Crew Truck – Ford F 250	\$20	2	\$0.43
Low Bed – Kenworth	\$100	.27	\$0.29
TOTAL			\$58.43



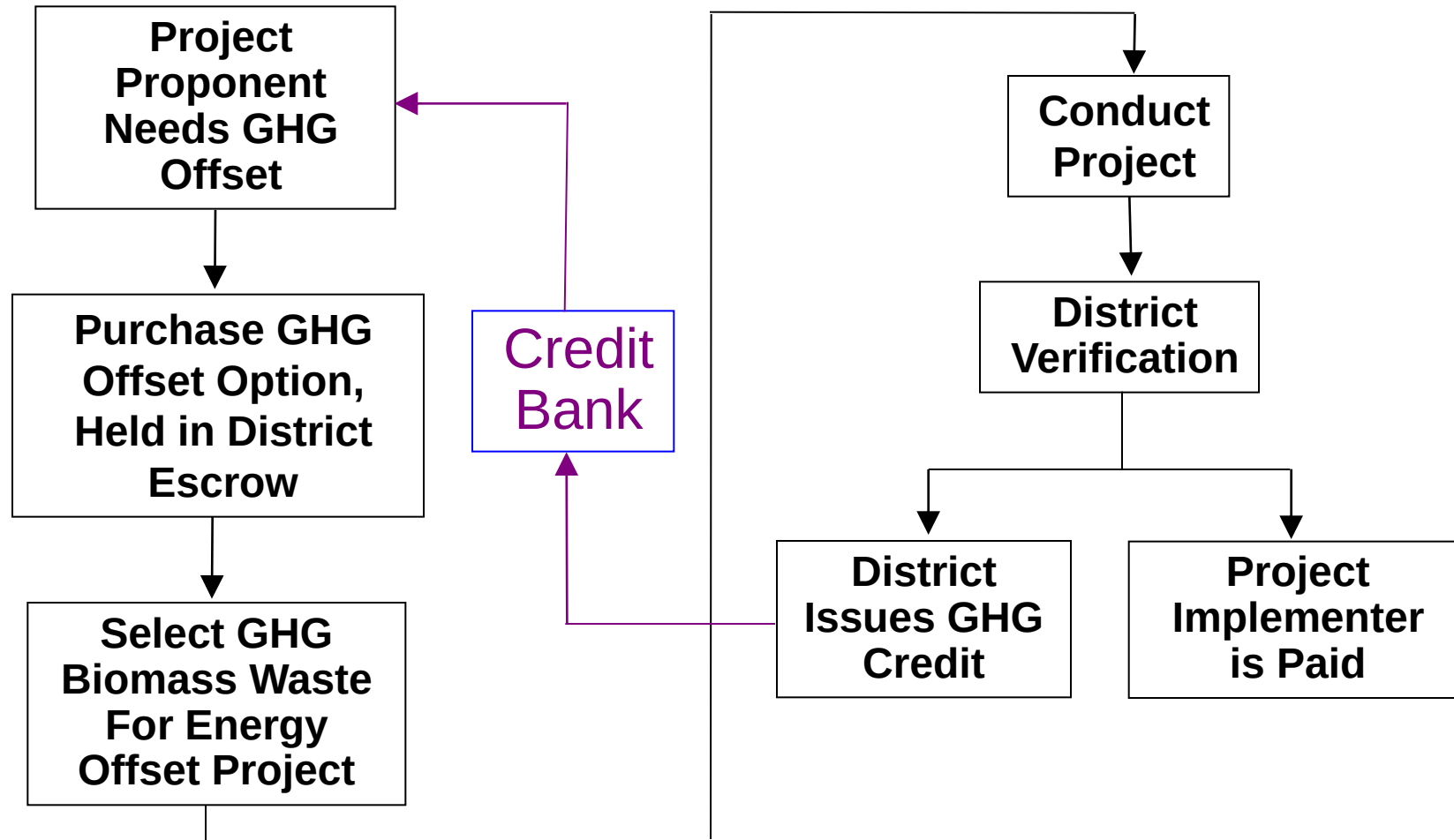
GHG COST EFFECTIVENESS



[Purchase Price of Fuel at BioEnergy Facility - Cost to Process and Transport]



GHG CREDIT IMPLEMENTATION





LAKE TAHOE REGIONAL BIOMASS PROJECT



CONCEPTUAL ILLUSTRATIONS
(REVISED 01/27/2011)

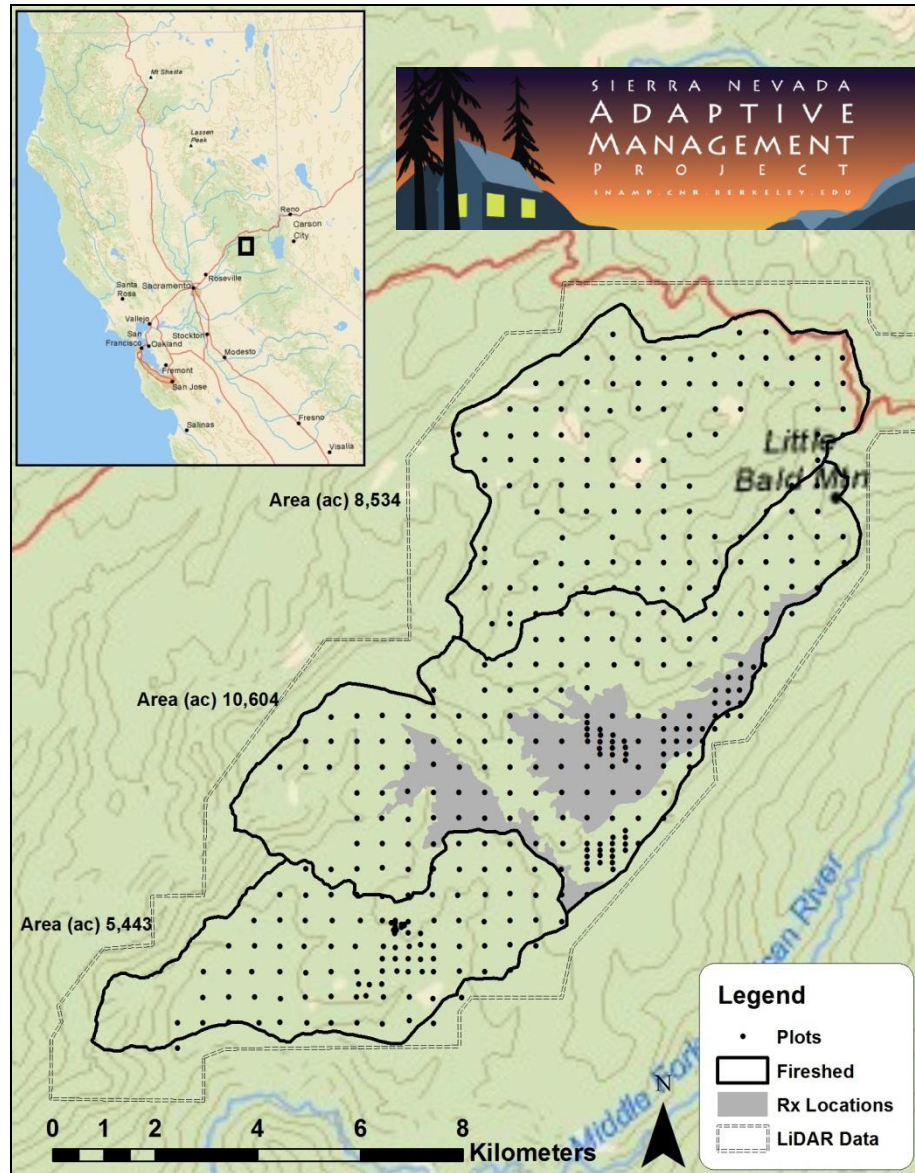


FOREST FUEL TREATMENTS

- Quantify GHG reductions for forest fuel treatment projects
 - Wildfire reduction – size, intensity
 - Forest growth rate enhancement
- Research Team
 - U.S. Forest Service Pacific Southwest Research Station, U.C. Berkeley, and Spatial Informatics Group

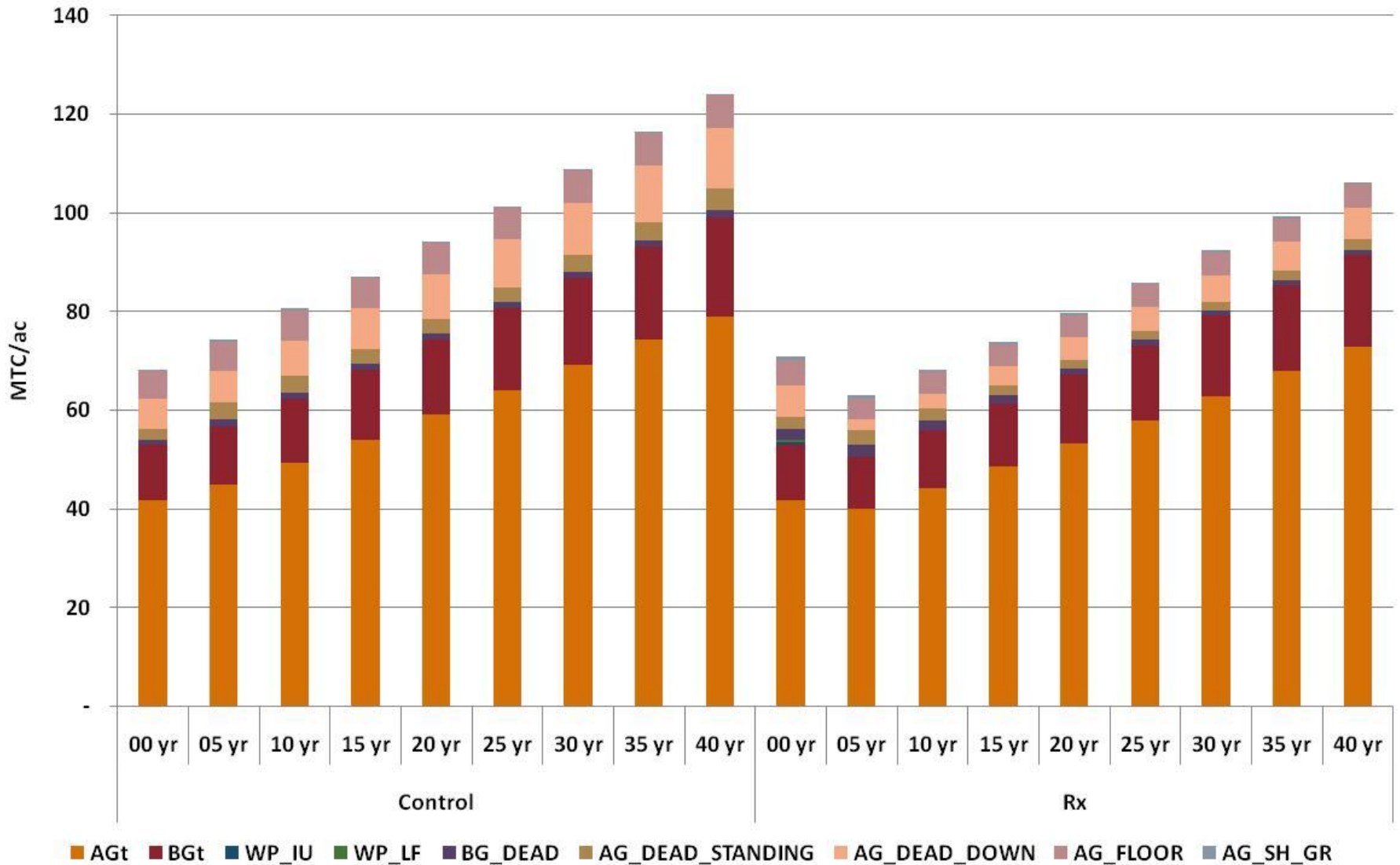


STUDY AREA



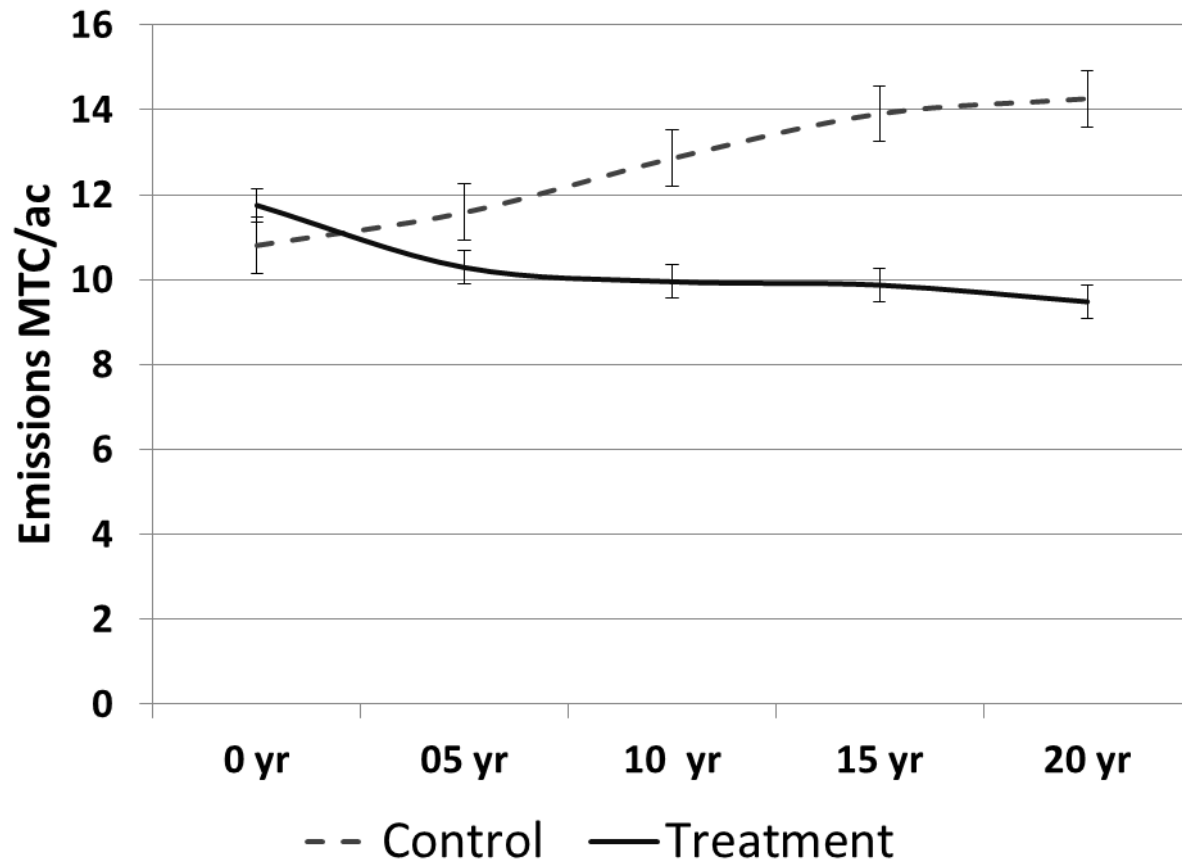


BIOMASS ON THE GROUND





WILDFIRE MITIGATION





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