

# Tahoe Central Sierra Cal FRAME Project

Water Agency Role in Forest Health Report

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## ACRONYMS AND ABBREVIATIONS

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BDT	bone dry ton(s)
BioRAM	Biomass Renewable Auction Mechanism
CABY	Consumnes, American, Bear, and Yuba
Cal FRAME	California Forest Residual Aggregation Market Enhancement
CTC	California Tahoe Conservancy
EBMUD	East Bay Municipal Utility District
EDCWA	El Dorado County Water Agency
EID	El Dorado Irrigation District
FERC	Federal Energy Regulatory Commission
IRWM	Integrated Regional Water Management
JPA	Joint Powers Authority
LAFCO	Local Agency Formation Commission
MAC	Mokelumne-Amador Calaveras
MFP	Middle Fork American River Project
MSA	Master Stewardship Agreement
MW	megawatt
NCSD	Northstar Community Services District
NID	Nevada Irrigation District
NTPUD	North Tahoe Public Utility District

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## **ACRONYMS AND ABBREVIATIONS (CONT.)**

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OPR	Governor’s Office of Planning and Research
PCWA	Placer County Water Agency
RCD	Resource Conservation District
SNC	Sierra Nevada Conservancy
SPI	Sierra Pacific Industries
SOFAR	South Fork American River
SWRCB	State Water Resources Control Board
TCS	Tahoe Central Sierra
TNC	The Nature Conservancy
UMRWA	Upper Mokelumne River Watershed Authority
USFS	United States Forest Service; United States Department of Agriculture Forest Service
YBP	Yuba-Bear Hydroelectric Project
YWA	Yuba Water Agency

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## 1.0 INTRODUCTION

### 1.1 Study Background

This study is part of the Tahoe Central Sierra (TCS) California Forest Residual Aggregation Market Enhancement (Cal FRAME) Pilot Project led by Placer County Water Agency (PCWA) and funded by the Governor’s Office of Planning and Research (OPR) pursuant to actions contained in the California Wildfire and Forest Resilience Action Plan (Plan; Forest Management Task Force 2021) to address feedstock barriers to biomass utilization throughout the state. Under the TCS Pilot Project, PCWA is tasked with finding pathways, which may include the creation of a public entity, to reinforce and facilitate feedstock supply chain logistics for woody biomass gathered from public and private forest lands, utility and transportation corridors, and forest thinning projects, and to advance utilization of the biomass in an environmentally sustainable way that supports a circular forest economy. The TCS Pilot Project focuses on the TCS Region, which includes Placer, Nevada, and El Dorado Counties, but consistent with the Plan, “information and templates will be shared broadly to provide a menu of options for broader adoption” (Action 3.10 Address Feedstock Barriers through Pilot Projects; Forest Management Task Force 2021).

An element of the TCS Pilot Project involves assessing the potential role of water agencies within the TCS Region as it relates to forest health and feedstock availability. Many water agencies in the state may have a strong interest and key role in forest health and feedstock availability due to their reliance on watershed health to generate, store and deliver adequate and high quality water supplies and to protect and maintain natural and built infrastructure in forested areas. This study was prepared to address this element of the TCS Pilot Project. The information contained in this study will be combined with other research to help inform potential approaches for biomass feedstock aggregation on a regional scale and how the associated entity may be structured and function.

This investigation addresses the following questions:

- How have PCWA and the water agencies in the TCS Region taken an interest in forest biomass issues? What are their associated objectives, justifications and what actions have they taken to move the needle on forest health management and biomass removal?
- What efforts have been taken by water agencies in forested regions outside the TCS Region to address forest biomass issues? What are the applicable lessons learned by the water agencies?
- What are the critical impacts of wildfire on the water agencies and their mission? What actions have they taken to avoid wildfire impacts to water system infrastructure and local and downstream water users?
- What can we glean from local PCWA partners and key stakeholders that could contribute to forest health and biomass utilization?
- What are the water agencies’ legal authorities and restrictions under state law as they pertain to forest management and biomass utilization?

## **1.2 Purpose**

The purpose of this study is to review and describe existing initiatives by various water agencies to remove excess biomass to promote forest health and reduce the risks of wildfire. The study also examines the agencies' roles in biomass conversion projects that use biomass residuals from those projects and explores the potential roles of proximate water agencies in biomass feedstock procurement and utilization.



## 2.0 STUDY METHODS

This study included interviews with key local government and water agencies with infrastructure located in forested regions of the state – seven of the agencies are in the TCS Region and two are located outside the TCS Region. The study also analyzed the legal authorities and restrictions as they pertain to forest management and biomass utilization. Note that the agencies referred to in this study as “water agencies” includes County Water Agencies, Irrigation Districts, Community Service Districts, Public Utility Districts and Municipal Utility Districts. While not all agencies interviewed are not governed by the California Water Code, for the purpose of this study, the term “water agency” is used generally to cover all of the above agencies whose responsibilities and/or services include water collection and/or distribution.

The Study Team consists of Kerri Timmer, Placer County, Tony Firenzi, PCWA, and Regine Miller, Headwaters Environmental, Inc. who provided oversight and direction; agency background research and interviews were conducted by Karen Quidachay, Landmark Environmental, Inc. and Catherine Silvester, Point View Environmental d/b/a; and legal research was conducted by Christiana Darlington, Esq. Attorney at Law, CLERE, Inc.

### 2.1 Interviews

Water agencies interviewed within the TCS Region included PCWA partners and TCS Region stakeholders. These include: PCWA, Placer County, Nevada Irrigation District (NID), El Dorado Irrigation District (EID), Northstar Community Services District (NCSD), North Tahoe Public Utility District (NTPUD), and El Dorado County Water Agency (EDCWA). The agencies selected for the study interviews were intended to represent a balanced range of water agencies and water purveyors throughout the TCS Region, including primary water purveyors from each of the three counties with extensive natural and built infrastructure in forested areas as well as agencies and purveyors with smaller service areas and infrastructure footprints. Although not a water agency, Placer County was included in the study due to its role in the TCS Pilot Project and its extensive involvement in forest health and biomass utilization programs in the region, including partnering with the water agencies in Placer County. Agencies outside of the TCS Region that were interviewed include Yuba Water Agency (YWA) and East Bay Municipal Utility District (EBMUD). YWA is broadly engaged in initiatives related to biomass removal and utilization associated with forest health improvement activities and EBMUD is a partner in the Upper Mokelumne River Watershed Authority (UMRWA) which is an existing Joint Powers Authority (JPA) serving as a regional water management group of the Upper Mokelumne River watershed for the Mokelumne-Amador-Calaveras Region.<sup>1</sup>

Background research was conducted prior to each interview to characterize the agency’s services, facilities, location, and existing programs related to forest health, wildfire prevention and/or recovery, and biomass utilization. The background research included reviewing the agency’s websites for readily available agency information and additional relevant documents available to the Study Team. This

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<sup>1</sup> UMRWA is a JPA comprised of six water agencies (Amador Water Agency, Calaveras County Water District, Calaveras Public Utility District, East Bay Municipal Utility District, Jackson Valley Irrigation District and Alpine County Water Agency) and the counties of Amador, Calaveras, and Alpine. UMRWA performs water resource planning in the watershed, facilitates forest fuels reduction and restoration projects and secures grant funding.

information was briefly reviewed with the agency representative during the interview to verify accuracy. The following online resources were also reviewed:

- OPR's State Clearinghouse online environmental database (CEQAnet) for recent project postings
- California State Water Resources Control Board (SWRCB) Drinking Water Supply Service Area Lookup Tool
- SWRCB Water Quality Certification – Current Federal Energy Regulatory Commission (FERC) Projects for hydroelectric facilities
- Cal FIRE Incidents Look Up Tool for recent wildfires (within the past 10 years)

The interviews were conducted by two team members using a structured list of questions. Interviews were recorded to allow the team to revisit and document agency responses. Specific information gathered included: existing and planned programs related to forest health, wildfire prevention and/or recovery, and biomass utilization; motivations, interest, and involvement in forest management and biomass removal projects; ways biomass is utilized and challenges and/or lessons learned associated with biomass utilization or disposal; partners and funding; interest and/or feasibility of agency involvement in biomass utilization in the future. Refer to Appendix A for the list of individuals interviewed and their contact information, and Appendix B for the list of questions used during the interview. Information gathered during the background research and interviews is summarized in Section 3, below.

## **2.2 Legal Research**

Legal research was conducted to determine the water agencies' legal authorities and restrictions under state law as they pertain to forest management and biomass utilization and consisted of a review of the laws governing each of the eight water agencies interviewed. As previously mentioned, these entities are concerned about the forest health in their regions impacting their infrastructure and have been investing staff time and resources into reducing their risk. Three threshold legal questions were identified as critical to ensuring this work can continue and expand and were the focus of the legal research to address authorities and restrictions and are discussed below.

The legal backgrounds for the water agencies and responses to the threshold legal questions are summarized in Section 3.3, below.

## **3.0 RESEARCH RESULTS**

### **3.1 Regional Context**

The TCS Region is comprised of Placer, Nevada, and El Dorado Counties, including portions of the Lake Tahoe Basin and the headwaters areas of the Truckee, South and Middle Yuba, Bear, American, and Cosumnes Rivers. These counties extend from the margins of the Sacramento Valley, east through the foothills to the forested steep mountains and deep valleys of the mid- to high-Sierra Nevada. The forested watersheds provide the water supply for water purveyors in the region, with reservoirs and infrastructure located in remote, forested areas of the region. The American, Bear, and Yuba Rivers provide 24 percent of the total Sacramento River flow, while the Cosumnes River provides flows into the Mokelumne River that then drains directly into the San Francisco Bay Delta (CABY IRWM Group 2014). Combined, these watersheds produce water supplies for the Greater Sacramento Region – the Sacramento-Roseville-Folsom Metropolitan area had a population of over 2 million at the 2020 census (United States Census Bureau 2021) – and greatly contribute to water flowing through the Bay Delta. A combination of drought, beetle infestation, and catastrophic wildfire have exacerbated high fuel load conditions of historically overstocked forests, resulting in an ever-increasing risk of wildfire impacts on water agency infrastructure and the catchment areas. The water agency territories in the region encompass a checkerboard of United States Forest Service (USFS), State, and local jurisdictions, including private industrial and non-industrial and agency-owned lands. Refer to Figure 1 for the TCS Region and Figure 2 for the locations of the agencies interviewed in the TCS Region.

There are three operational biomass to electricity facilities accessible to biomass-producing projects within the TCS Region, including one which is currently being restarted. Total nameplate capacity of these operational facilities is 98.5 megawatts (MW); however, this report does not assess how much of this capacity serves the TCS Region. There are three biomass to electricity projects currently under active development, and ten mixed product end-use projects currently being proposed. Refer to Table 1 for operational, under development and proposed biomass outlets in the region. The locations of sawmills and biomass to electricity facilities in the region are shown in Figure 3.

### **3.2 Agency Background**

This section provides a brief description of each agency interviewed, including the location, service area and services provided, and facilities, as well as any catastrophic wildfires that have affected the agency's facilities and operations. TCS Region partner and stakeholder agencies are presented by the County in which they are located. Interviewed agencies outside of the TCS Region are described under subheading "Other Agencies Interviewed."

#### **3.2.1 Placer County**

##### Placer County Water Agency

In addition to numerous small public water systems (defined as 200 or less service connections) that operate in Placer County, many of the urban and suburban areas in Placer County are served by large public water systems (defined as more than 200 service connections): City of Lincoln, City of Roseville, Foresthill Public Utilities District, Midway Heights Water, NID, PCWA and San Juan Water District. These

Figure 1. Tahoe Central Sierra Counties

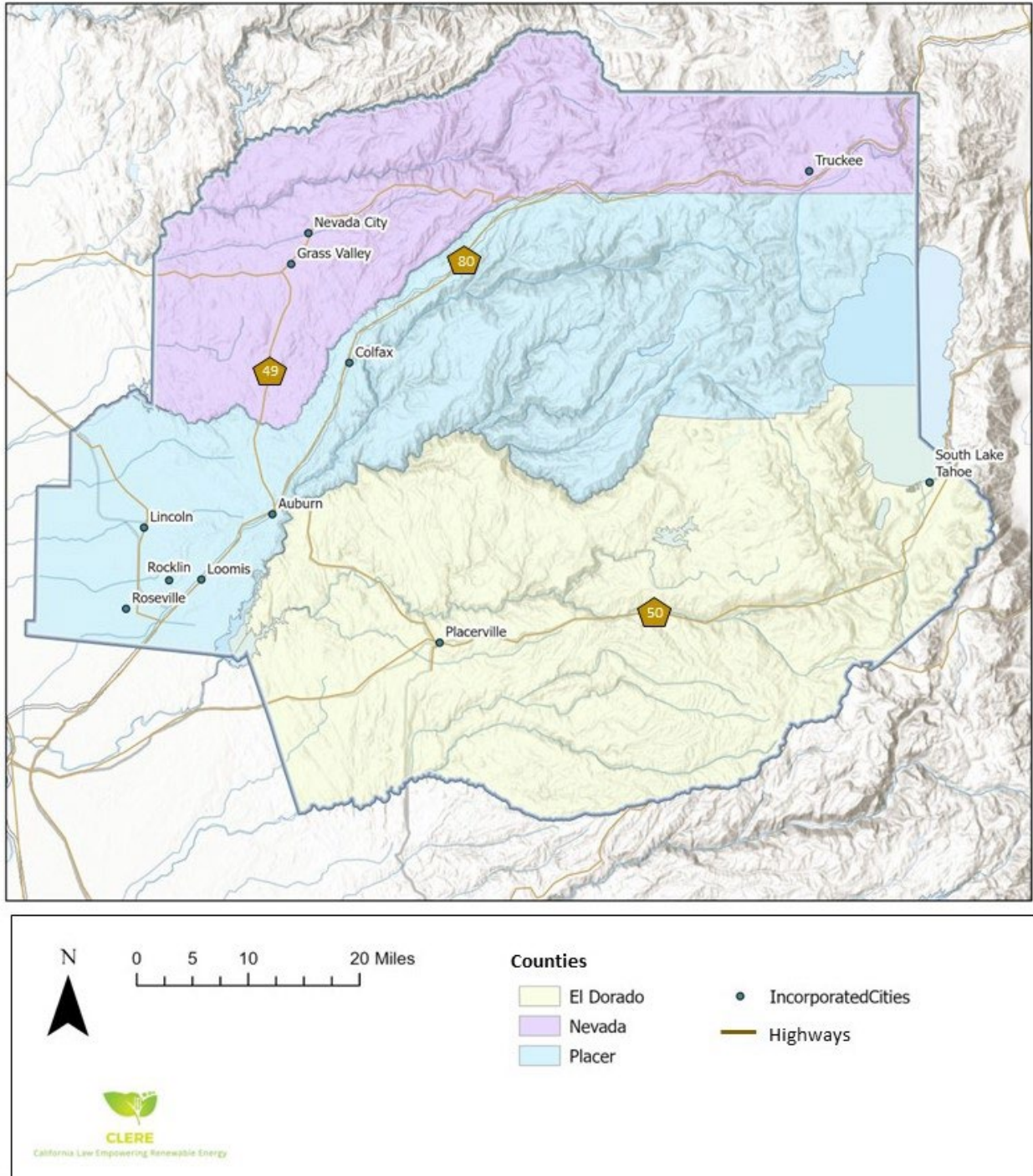
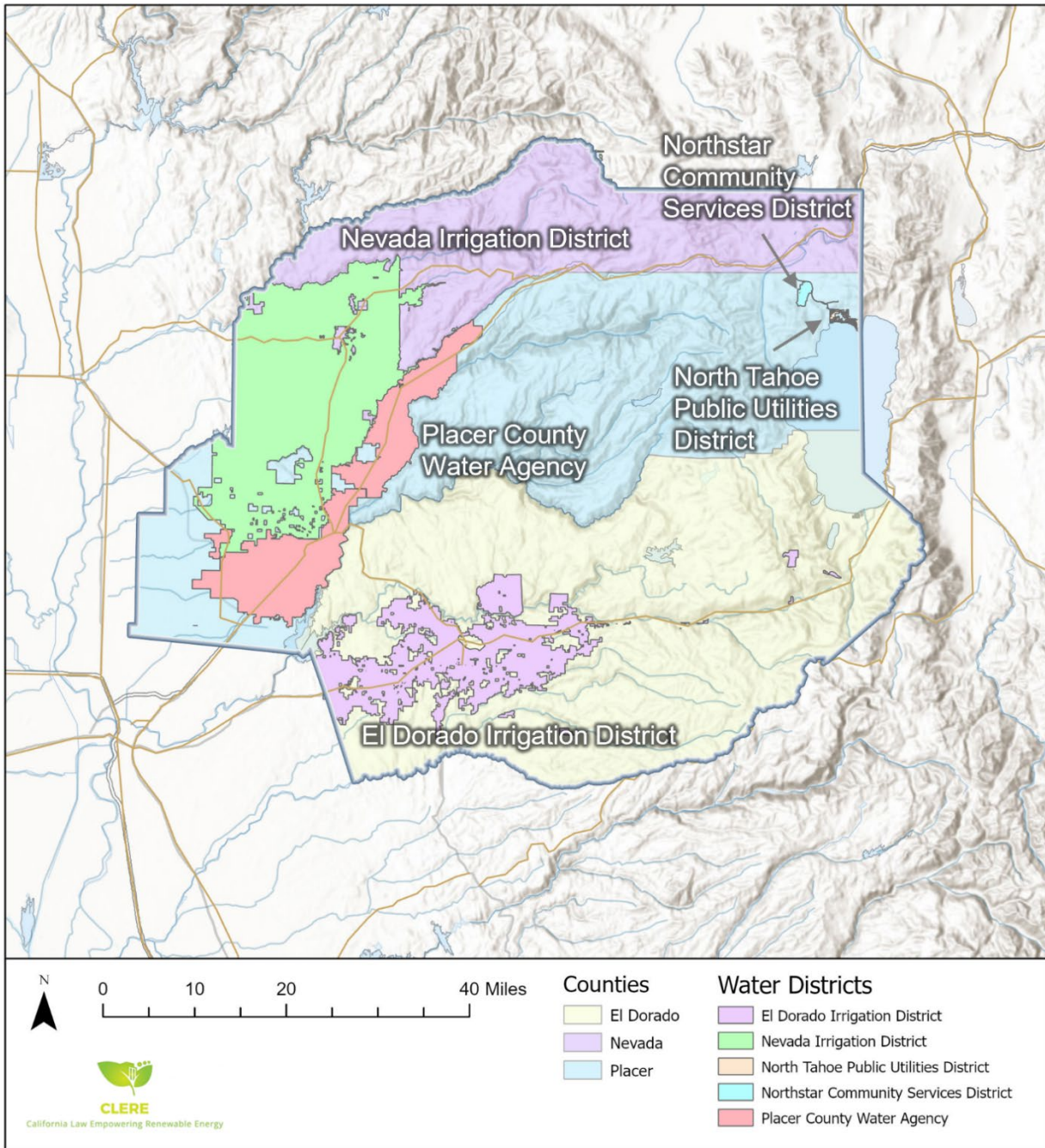




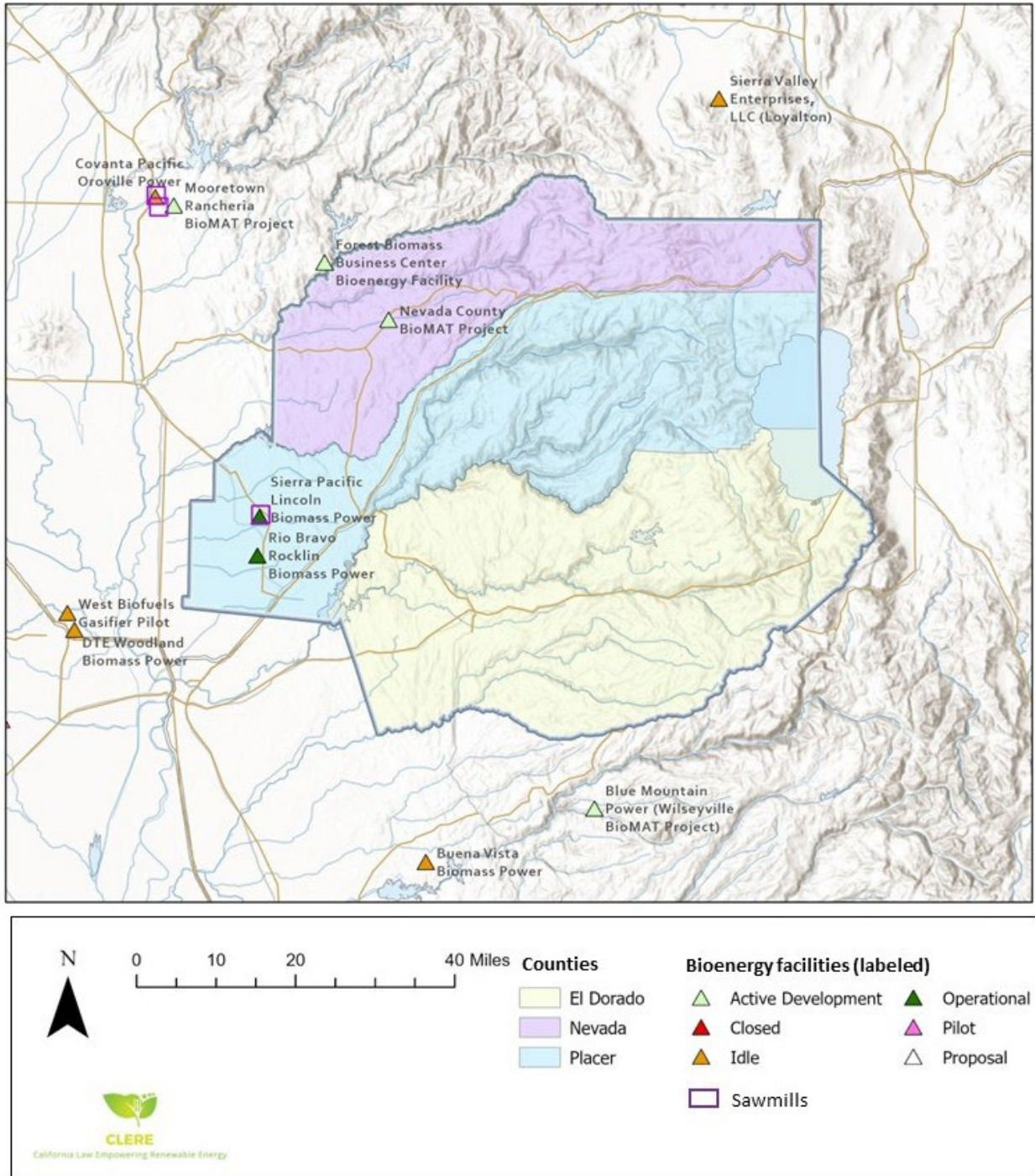
Figure 2. Participating Water Agencies in TCS Boundary



**Table 1. Existing and Proposed Biomass Outlets in the TCS Region**

Name	Status	MW Nameplate	Owner	Facility Type	County
<b>Biomass Power Plant Co-located with Sawmill</b>					
Sierra Pacific Lincoln Biomass Power	Operational	19.2	Sierra Pacific	Medium	Placer
Sierra Pacific Camino	Proposal	--	Sierra Pacific	Medium to large	El Dorado
Black Oak Mine Unified School District (x2)	Proposal	--	Black Oak Mine Unified School District	Small	El Dorado
<b>Biomass Power Only</b>					
Rio Bravo Rocklin Biomass Power	Operational	27.3	IHI Power 50% North American Power Group 50%	Bioenergy	Placer
Honey Lake Power	Operational	32	Greenleaf Power Inc	Bioenergy	Lassen
Sierra Valley Enterprises, LLC (Loyalton)	Re-start	20	Sierra Valley Enterprises, LLC	Bioenergy	Sierra
Blue Mountain Power (Wilseyville BioMAT Project)	Active Development	3	Calaveras Healthy Impacts Products Solutions	Bioenergy	Calaveras
Nevada County BioMAT Project	Active Development	3	Nevada County	Bioenergy	Nevada
Forest Biomass Business Center Bioenergy Facility	Active Development	5	Camptonville Community Partnership	Bioenergy	Yuba
El Dorado Disposal	Proposal	--	El Dorado Disposal	Bioenergy	El Dorado
South Tahoe Refuse	Proposal	--	South Tahoe Refuse	Bioenergy	El Dorado
Cabin Creek	Proposal	--	--	Bioenergy	Placer
Ophir Biomass Electricity Generation Facility	Proposal	---	---	Bioenergy	Placer
<b>Other</b>					
Golden State Natural Resources	Proposal	--	Rural Counties Representatives for California	Pellets	Tuolumne
Eldorado Northern	Proposal	--	--	Small Sawmill	El Dorado
NCS D Thermal Facility	Proposal	--	Northstar CSD	Thermal	Placer
Caldor Fire mobile biomass conversion systems	Proposal	--	--	Multiple	Varies
Alpenglow sawmill and thermal	Proposal	--	Alpenglow	Small	Nevada
<b>Landfills</b>					
Western Regional Landfill	Operational	--	Western Placer WMA	Landfill	Placer
Eastern Regional Landfill Material Recovery Facility and Transfer Station	Operational	--	Tahoe Truckee Sierra Disposal	Landfill	Placer

Figure 3. Bioenergy Facilities and Sawmills in the TCS Region





water systems serve raw water and drinking water customers throughout the County. The major watersheds in the Sierra Nevada region of the County are the Bear River, North Fork American River, Middle Fork American River, and Truckee River. Existing water agency facilities exist throughout the County.

PCWA is the primary water purveyor in Placer County which serves residential and commercial customers and water service providers in western Placer County. PCWA serves more than 41,000 treated water customers; its treated water service area includes an approximate area from west of Highway 65, northeast to Penryn, south to Roseville and Granite Bay, and east to the Folsom Lake State Recreation area. It also includes an area from Auburn east to Applegate, Colfax, and Alta. PCWA provides wholesale treated water to the City of Lincoln, and the California American Water Company. PCWA supplies raw water to the City of Roseville and San Juan Water District. PCWA's services include water resource planning and management, retail and wholesale supply of drinking water and agricultural water, hydroelectric energy production and recreation. PCWA's existing water service facilities include more than 170 miles of irrigation canals, more than 600 miles of pipeline, five reservoirs, eight water treatment plants, and associated distribution facilities .

PCWA owns and operates the Middle Fork American River Project (MFP) which is a 224 MW hydroelectric generation project (FERC No. 2079) with five interconnected power houses (French Meadows, Hell Hole Dam, Middle Fork, Ralston, and Oxbow Powerhouses); two major storage reservoirs (French Meadows Reservoir, and Hell Hole Reservoir); five diversion impoundments (Duncan Creek Diversion, North Fork Long Canyon Creek Diversion, South Fork, Long Canyon Creek Diversion, Middle Fork Afterbay, and Ralston Afterbay); and five tunnels (Duncan Creek-Middle Fork, French Meadows-Hell Hole, Hell Hole-Middle Fork, Middle Fork-Ralston, and Ralston-Oxbow Tunnels). The MFP also supports recreational facilities operated by the USFS including campgrounds, boat ramps, and trails, and numerous recreational opportunities such as fishing, boating and whitewater rafting. Net revenue generated by the MFP is split between Placer County and PCWA under terms of a joint powers agreement called the Middle Fork Project Finance Authority.

PCWA facilities (including MFP) are within the Middle Fork American River and Rubicon River watersheds and are primarily within forested areas of the Tahoe National Forest and Eldorado National Forest. PCWA has experienced the effects of several devastating wildfires within the County in the past 10 years, the most recent including the American (2013), King (2014), and Mosquito (2022).

#### Northstar Community Services District

NCSD serves residential and commercial customers in the communities of Northstar, Lahontan, Martis Camp, Schaffer's Mill, and Hopkin's Village in northeastern Placer County. NCSD's service area includes two water service systems which cover over 9 acres and which serve 2,500 connections. NCSD's services include potable water under both the Northstar and Martis Valley Water Service systems, sewer collection, solid waste management, recycling services, fire protection, fuels management, snow removal, road surface maintenance, and trail construction and maintenance. NCSD's existing water service facilities include 16.2 miles of water line, 10 pressure reducing stations for four pressure zones, two 1-million-gallon water storage tanks, two 275,000-gallon storage tanks, one 280,000 gallon storage tank, one 180-acre-foot reservoir, and the Northstar Treatment Plant. The Martis Valley Water System includes 50.1 miles of water line, two pressure reducing stations, four booster pump stations, two 1,250 gallons per minute wells, one 250 gallons per minute well, one 600,000-gallon water storage tank,



one 550,000-gallon water storage tank, one 500,000-gallon storage tank, one 325,000-gallon storage tank, and one 215,000-gallon storage tank. NCSD's facilities are located in the Middle Truckee River watershed which falls within the Tahoe National Forest. The water source is surface water from the Big Springs and Sawmill Flat spring systems, with some from the Martis Valley Groundwater Basin.

#### North Tahoe Public Utility District

NTPUD serves residential and commercial customers along the northern Lake Tahoe boundary in eastern Placer County. NTPUD's service area covers 3.4 square miles (2,176 acres) and serves 4,139 connections (Tahoe Main System, Carnelian System and Dollar System). NTPUD services include potable water, irrigation, sewer collection, water treatment, parks and recreation. NTPUD's existing service facilities include 52.4 miles of water line, eight water tanks with 4.65 million gallons of storage, three booster stations, two wells (Park Well and Carnelian Wood Well), one active lake intake, 370 fire hydrants, and the National Avenue Water Treatment Plant. The Tahoe Main System draws from Lake Tahoe (surface water source), as well as a single well. The Carnelian Bay System draws from a single well (groundwater source). The Dollar System is supplied by the Tahoe City PUD Tahoe City system, from five separate source wells. While no facilities are in USFS lands, the area falls within the Lake Tahoe Basin Management Unit. NTPUD has not directly experienced impacts of wildfire, but the Angora Fire (2007) was within the southern portion of the Basin and was a clear admonition regarding the need to protect the water quality of the lake from wildfire effects.

### **3.2.2 Nevada County**

#### Nevada Irrigation District

NID is the primary water purveyor in Nevada County which supplies both treated drinking and raw water to more than 25,000 homes, farms and businesses across a 448-square mile (287,000-acre) service area spanning Nevada, Placer and Yuba Counties. NID owns and operates nine major and 20 minor storage reservoirs, more than 500 miles of canal, six water treatment plants, 18 pump stations, over 400 miles of treated water pipe, 44 water storage tanks, seven hydroelectric plants with 82.2MW capacity, 9 miles of overhead high-voltage power line, and 19 campgrounds with over 240,000 visitors per year.

NID owns and operates the Yuba-Bear Hydroelectric Project (YBP) which encompasses approximately 400 square miles in Sierra, Nevada and Placer Counties, and is primarily located in the Tahoe National Forest. It is located on the Middle and South Yuba River, and the Bear River in the Yuba and Bear River Watersheds (FERC No. 2266). The combined gross water storage capacity of the YBP is about 207,865 acre-feet of water and the electric generation capacity is 79.32 MWs. The YBP is interconnected with PG&E's Drum-Spalding Project Upper and Lower Drum-Spaulding Hydroelectric Projects (FERC 2310 and FERC 14531, respectively), which are also located on the South Yuba and Bear Rivers.

The YBP involves the transfer of water from the Middle and South Yuba River to the Bear River basin. The Bear River is the main source of water for NID's service area. The YBP consists of four powerhouses (Bowman, Dutch Flat, Chicago Park, and Rollins); nine on-stream reservoirs (Jackson Meadows and Milton reservoirs on the Middle Yuba River; Jackson Lake on Jackson Creek; French, Faucherie, Sawmill and Bowman Lakes on Canyon Creek; and Dutch Flat Afterbay and Rollins Reservoir on the Bear River); three off-stream impoundments including Dutch Flat Forebay, Little York Basin and Chicago Park Forebay, five diversion dams (Texas Creek, Clear Creek, Trap Creek, Rucker Creek and Fall Creek), one 9-mile-long, 60-kilovolt transmission line; 17 campgrounds and associated boat launches, trails and

other recreation facilities; and other appurtenant facilities and structures. The River Fire (2021) burned over 2,600 acres, including more than four river miles of the Bear River watershed in Nevada and Placer Counties. NID owns approximately 320 acres within the burn area, including the full extent of burned river miles.

### **3.2.3 El Dorado County**

#### El Dorado Irrigation District

EID is a primary water purveyor in El Dorado County and serves homes, businesses and farms in the unincorporated areas of western El Dorado County. EID's service area covers 220 square miles (140,800 acres) and serves 130,000 residential customers and 150,000 acres of agricultural, urban communities, and rural residences. EID's services include potable water, irrigation water, recycled water, wastewater treatment, hydroelectric energy production, and recreation. EID's facilities include more than 1,112 miles of potable pipeline, 95 miles of recycled water pipeline, 460 miles of wastewater collection pipeline, 27 miles of canals and ditches, 36 potable water storage reservoirs, six raw water storage reservoirs, 38 pumping stations, five water treatment facilities, four wastewater treatment facilities, one 21 MW hydroelectric generation facility (FERC 184; Project 184), one inline hydroelectric generation facility (Reservoir 7), two solar generation facilities (at Eldorado Hills and Deer Creek Wastewater Treatment Facility), and recreational facilities including campgrounds and trails. EID facilities are located within the South Fork American River, Upper Truckee River and North Fork Cosumnes River watersheds and are primarily within forested areas of Eldorado National Forest (ENF) and Lake Tahoe Basin Management Unit in El Dorado, Amador, and Alpine Counties. EID draws primarily from the South Fork American River and North Fork Cosumnes Rivers and their tributaries with additional water rights from tributaries to the Upper Truckee River. EID has experienced the effects of devastating wildfires within El Dorado County in the past 10 years which have directly and indirectly affected their facilities, including the King Fire (2014) and the Caldor Fire (2021).

#### El Dorado County Water Agency

EDCWA is a public agency created under the 1959 El Dorado County Water Agency Act which provides water resource planning and management representing the interests within El Dorado County. EDCWA works with state and federal agencies, water purveyors, land use and watershed manager, communities, and non-governmental organizations and other interested parties to ensure adequate and affordable water in El Dorado County. The service area covers the entire County, including the Tahoe Basin and the west slope of the Sierra Nevada in El Dorado County, and supports nearly 200,000 residents, urban and rural-agricultural communities and businesses. EDCWA does not own or operate facilities – rather, it partners with water providers in the County, including City of Placerville, EID, Georgetown Divide PUD, Grizzly Flats CSD, South Tahoe PUD, Tahoe City PUD, and 141 small water systems. The County has experienced several wildfires which have negatively impacted water systems and generated large amounts of biomass, including the King Fire (2014) and the Caldor Fire (2021).

### **3.2.4 Other Agencies Interviewed**

#### Yuba Water Agency

YWA is a water purveyor in Yuba County and supplies 260,000 acre-feet of water annually to eight water districts in western Yuba County for irrigation use. The water districts serve approximately 60,000 acres of agriculture in the County. YWA's services include irrigation water, hydroelectric energy production and recreation. YWA's facilities include canals and ditches located outside of the forested areas of the

County; storage reservoirs (Lake Francis and New Bullards Reservoir); recreational facilities which include day use, campgrounds, cabins, and trails; and the Yuba River Development Project which is a 361 MW hydroelectric generation facility (FERC No. 2246) and consists of New Bullards Reservoir and two others not owned by YWA (Englebright Reservoir and Lake Wildwood), three dams, tunnels, and two powerhouses. YWA is also the Sustainable Groundwater Management Agency for Yuba County with a SIGMA Plan approved by the California Department of Water Resources. YWA's facilities are located within the Yuba River watershed and are primarily within forested areas of Tahoe National Forest and Plumas National Forest. YWA draws from the Yuba, North Yuba and Middle Rivers, Oregon Creek, and Dobbins Creek. The Yuba River watershed has not experienced catastrophic wildfires – YWA's interest and involvement in biomass aggregation and utilization and forest health are tied to wildfire prevention and watershed resiliency.

#### East Bay Municipal Utility District

EBMUD serves residential and commercial customers in western Contra Costa and Alameda Counties. EBMUD's water service area covers 332 square miles and serves 1.4 million people; the wastewater treatment service area is 88 square miles and serves 740,000 customers. EBMUD services include potable water, recycled water, wastewater treatment, biogas electricity, hydropower, solar energy (internal use), recreation, sewer, and commercial wastewater.

EBMUD owns 54,605 acres of watershed in the East Bay and the Mokelumne River Basin in Amador and Calaveras Counties, including 12,765 surface-acre of water in the reservoirs. Existing facilities include approximately 4,200 miles of pipe, 140 pumping plants, 170 neighborhood tank reservoirs, three aqueduct systems totaling 255 miles, seven reservoirs (Pardee, Comanche, San Pablo, Upper San Leandro, Lafayette, Briones, Chabot), six water treatment plants (El Sobrante, Lafayette, Orinda, Upper San Leandro and Walnut Creek – San Pablo is the sixth, which is currently not in use), one recycled water and wastewater treatment plant, one biogas electricity plant, two hydroelectric facilities at the dams on the Sierra reservoirs (185,000 MW of electricity), and recreational facilities in both the East Bay at Lafayette and San Pablo Reservoirs, and the Sierra foothills at Comanche and Pardee Reservoirs, Mokelumne River day use area, and Comanche Hills Hunting Preserve. The Freeport Regional Water Facility in Sacramento County is a cooperative effort between the Sacramento County Water Agency and EBMUD. EBMUD facilities associated with the project include the intake, pumping plants, pipelines and aqueducts which transport water from the Sacramento River intake to EBMUD's aqueducts for distribution.

The primary water source is from the Upper Mokelumne River watershed in the Stanislaus and Eldorado National Forests, with back up supply from the Sacramento River, and Bayside groundwater. EBMUD's Mokelumne River watershed facilities are located below and west of the National Forest. While EBMUD has not experienced direct wildfire impacts, the Butte Fire (2015) had indirect effects on EBMUD's reservoirs and facilities downstream of the fire footprint.

### 3.3 Legal Authorities and Restrictions

#### 3.3.1 Legal Threshold Questions

In California, a water themed Special District can be created (1) by forming under a general water district act or (2) through a special act of the Legislature. General acts prescribe the duties, responsibilities, and powers of districts that form using its statutory authority. Whether the creation of a Special District happened through the general water district act which then went through an application through the Local Agency Formation Commission (LAFCO) in a district's county or was formed by a special act of the Legislature, some will still be subject to LAFCOs in boundary changes, consolidation, and dissolution.

Five of the eight entities interviewed are governed under the California Water Code. As such, they will have similar governing principals, while the other three are different. All eight of these entities are concerned about the forest health in their regions impacting their infrastructure, and have been investing staff time and resources into reducing their risk. The three threshold legal questions that have been identified as critical to ensuring this work can continue and expand are:

1. Can these agencies fund fuel reduction activities on forested lands?
2. Can these agencies direct how the biomass waste from fuel reduction activities is processed?
3. Can these agencies support biomass to electricity conversion projects?

The first question and second questions can generally be answered with an explanation that applies to all eight of the agencies. The first question needs to be considered through the lens of a "gift of public funds" analysis, which centers on the application of the California Constitution and the nature of public entities. The second question relates to the general powers to contract which are inherent to most special districts, and in this case the answer is the same for all of the water agencies. The third question requires considerations that are agency specific.

Note that biomass can be used for other end uses such as cross laminated timber, wood shavings for pet bedding or niche furniture markets, but the production of electricity is more regulated, which is why it is receiving special attention here.

#### Legal Question 1: Can these agencies fund fuel reduction activities on forested lands?

Public monies cannot be given to private interests under Article XVI, Section 6 of the California constitution. In determining whether an appropriation of public funds or property is to be considered a gift, the primary question is whether the funds are to be used for a "public" or "private" purpose. If they are for a "public purpose," they are not a gift within the meaning of [§6 of art. XVI]. If an expenditure serves a primary public purpose, it is not a gift even if it incidentally benefits an individual. Specifically, according to the California Attorney General's Office, "It has been held that public credit may be extended and public funds disbursed if a direct and substantial public purpose is served and nonstate entities are benefitted only as an incident to the public purpose. The benefit to the state from an expenditure for a public purpose is in the nature of the consideration and the funds expended are therefore not a gift even though private persons are benefitted therefrom" [2005 Cal. AG LEXIS 31, 88 Ops. Cal. Atty. Gen. 213.](#)

Agencies regularly engage in fuel reduction activities on lands that they manage and own, and often include work on adjacent public lands, or other public lands within their borders. It is easy to see that public funds expended on public lands do not inure improper private benefit. Work that occurs on private lands may be more complicated, but as long as the work being done has a strong public purpose (which fire reduction clearly is), then the agencies will not run afoul of the State Constitution. Nevertheless, agencies should exercise caution when funding fuel reduction activities on private lands to ensure strong connection to public benefit.

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*Special Districts can fund fuel reduction, and they can stipulate the fate of the biomass in contract provisions. However, legal teams will need to assess how agencies can support fuel reduction on private property, and the production and sale of biomass to electricity on a case-by-case basis.*

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**Legal Question 2. Can these agencies direct how the biomass waste from fuel reduction activities is processed to determine the fate of the biomass?**

Another tool that can be used to ensure wood waste from fuel reduction projects is not disposed of through open pile burning or left to decay on the forest floor for many years, is to require that it is hauled out when the fuel reduction project is happening. Aside from the economics of this requirement, there is the fundamental question of whether an agency can require specific waste disposal through its contract with the tree service or licensed timber operator. All eight of the water agencies interviewed have broad contracting powers when it comes to effectuating the mission of their agency. Similar to the restrictions mentioned above, the agency can require any contract provisions that require certain utilization pathways. For example, an agency could require that the biomass collected be utilized at an energy facility or composting and mulch processing location or to produce biochar. When considering such a contract requirement, the enforceability of such a provision needs to be considered, and potentially additional indemnification or insurance may be prudent.

**Legal Question 3. Can these agencies support biomass to electricity conversion projects?**

The third question presented is more complicated. While many Special Districts have specific enumeration related to the generation of electricity, some have broad language that require deeper analysis. Production of power is a complicated and time-consuming venture that the state and federal government take seriously. Both have passed significant statutes and regulations about energy production, not to mention ancillary environmental laws that may come into play when siting a new facility. This section is not intended to provide an in-depth analysis into the powers of each of these eight agencies on this matter, but rather a general overview, because each agency should have their own legal teams speak for themselves on this topic.

### 3.3.2 Specific Legal Authorities

The following paragraphs provide a brief description of the legal formation and authorities of each of the eight water agencies interviewed, with agency-specific responses to the three legal questions evaluated.

#### Placer County, El Dorado County and Yuba Water Agencies

PCWA, EDCWA, and YWA are three entities that are “County Water Agencies,” as governed by the California water laws. All three agencies have broad implied powers: EDCWA implied powers [Cal Uncod Water Deer, Act 290 § 11](#), PCWA implied powers [Cal Uncod Water Deer, Act 790 § 4](#), and YWA implied powers [Cal Uncod Water Deer, Act 1490 § 4](#), which empower these agencies to do essentially whatever they need to do to carry out the purpose of their agency; namely, to deliver clean water to their citizens. These powers can be interpreted broadly and could cover the ability to pay for fuel reduction work and contract to have that biomass dealt with in certain ways. For reference, all three agencies also have strong contracting authority: EDCWA contracting authority [Cal Uncod Water Deer, Act 290 § 10](#), PCWA contracting authority [Cal Uncod Water Deer, Act 790 § 3.6](#) and YWA contracting authority [Cal Uncod Water Deer, Act 1490 § 3.6](#). The agencies can fund fuel reduction activities on private lands (within the guise of the California Constitution) and contract to have biomass dealt with in any way that they see fit.

A further step an agency could take which would enable the utilization of the biomass waste for bioenergy would be to own or manage a facility or lease property to a company that manages a facility that produces electricity to be sold on the grid. The authority to sell bioenergy is unique, depending on which type of entity in question, and in the case, which of the three county water agencies you are referencing. Of the three County Water Agencies interviewed, PCWA has the broadest power to sell energy. Its enabling Act Section 4.1 ([Cal Uncod Water Deer, Act 790 § 4.1](#)) allows it to broadly sell power, referencing California Water Code provisions 20500, which govern irrigation districts, and confer broad authorities relating to the sale and distribution of electricity. This section says:

The agency shall also have the power to acquire, operate, lease, and control facilities for the generation, transmission, distribution, sale, and lease of electric power, including sale to municipalities, public utility districts, or persons, all in the same manner as irrigation districts formed under the Irrigation District Law (Division 11 (commencing at Section 20500) of the Water Code).

The powers given to PCWA through this cross reference to Irrigation District law give it broad discretion to sell power. While there does not appear to be any caselaw on the subject, there could be further legal research to explore how this cross reference strengthens the District’s actions in the utilities markets. The only limitation relating to such powers is within Section 7.3 of the Act, which requires PCWA to take contracts for the sale of electricity to the Board of Supervisors to approve such contracts, and conduct a public hearing. Apart from the process that may or may not be needed relating to a bioenergy contract approval, nothing within its enabling Act would prevent it from owning, managing, or leasing property to a bioenergy facility that converts biomass to energy, or the sale of such energy to a third party.

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*In some cases, agencies can own bioenergy facilities. However, if this is not possible, the leasing of lands to companies or providing other financial support for fuel reduction and biomass utilization can still be a viable option.*

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EDCWA and YWA each have a provision within their respective enabling Acts relating to hydropower: EDCWA [Cal Uncod Water Deer, Act 290 § 12](#) and YWA [Cal Uncod Water Deer, Act 1490 § 4.1](#). Their sections are narrower in scope and do not cross reference the Irrigation District law. Whether or not these agencies could own or manage bioenergy facilities would need to be determined by their own legal teams. Even if it is concluded that these agencies could not sell bioenergy, the leasing of lands or other financial support for fuel reduction and biomass utilization (even with the eventual use for bioenergy), would not be limited because of these sections.

#### Nevada and El Dorado Irrigation Districts

NID formed in March 15, 1921 when a public election was held, and the Nevada County Supervisors authorized the new district on August 15, 1921. Five years later, in 1926, residents of Placer County chose to join the district. EID was created in 1925 when El Dorado County residents voted to form EID. Both of these agencies are also governed by California Water laws, and are governed under the general powers of an Irrigation District ([Wat. Code, § 22225 \(Deering, Lexis Advance through the 2022 Regular Session\)](#).) These agencies can enter into contracts ([Wat. Code, § 22230 \(Deering, Lexis Advance through the 2022 Regular Session\)](#).) and produce and sell electricity ([Wat. Code, § 22115 \(Deering, Lexis Advance through the 2022 Regular Session\)](#).) As such, NID and EID could pay for fuel treatments on private lands, contract for biomass utilization and participate in bioenergy projects.

#### East Bay Municipal Utility District

EBMUD was organized 100 years ago, under Section 6 of the California Public Utilities Code, which governs Municipal Utility Districts. They also have power to contract ([Pub. Util. Code, § 12721 \(Deering, Lexis Advance through the 2022 Regular Session\)](#)), the power to sell energy ([Pub. Util. Code, § 12801 \(Deering, Lexis Advance through the 2022 Regular Session\)](#)), and even have a specific provision to sell surplus power on the market ([Pub. Util. Code, § 12804 \(Deering, Lexis Advance through the 2022 Regular Session\)](#).) EBMUD can also pay for fuel treatments on private lands, contract for biomass utilization and participate in bioenergy projects.

#### North Tahoe Public Utility District

NTPUD was formed in 1948 under the State of California Public Utilities Code to provide sewer services to the residents of the north shore of Lake Tahoe. Public Utility Districts are governed by a separate statute than the previously described statute governing Municipal Utility Districts. Public Utility Districts are specifically enabled to run electrical utilities ([Pub. Util. Code, § 16461 \(Deering, Lexis Advance through the 2022 Regular Session\)](#).) and sell surplus power ([Pub. Util. Code, § 16473 \(Deering, Lexis Advance through the 2022 Regular Session\)](#).) Note that contracting authority is covered under a separate code, the Public Contract Code ([Pub. Contract Code, § 20202.1 \(Deering, Lexis Advance through the 2022 Regular Session\)](#).) Another unique authority of Public Utility Districts is that they can provide the same services as those covered by a fire district ([Cal Pub Util Code § 16463.5](#)), which could provide for an interesting combination of fuel reduction and fire treatment projects. The NTPUD can also do all three of the activities under discussion.

#### Northstar Community Services District

NCSD was founded in 1990 under Government Code Section 61600 as a local government entity to serve the Northstar region with governmental services. The District currently provides many services as described earlier and are supported by property and parcel taxes, and water, sewer and solid waste user fees. In January 2022, its Board passed a resolution that clarified its authority to fund and implement a project converting biomass to heat. The Resolution is included as Appendix C in its entirety for reference. The Resolution states the District's authorities to provide wildland fire protection and defensible space services as well as the collection, transfer and disposal of solid waste for its constituents. It also says that by constructing and operating a biomass conversion facility, the District could realize a number of benefits consistent with its statutory powers and purposes, including source reduction of solid woody waste, enhanced wildland fire risk mitigation through reduced forest fuels, and incidental heat production to offset fossil fuel use within the District. The Board of the NCSD clearly decided on a bold path forward to deal with the biomass waste from its activities and taken into consideration the value of such work for its region. This legal foundation for its activities could be used by other Community Service Districts that are interested in following suit.

### **3.3.3 Further Work: A Worthy Fourth Question**

What about other uses for biomass besides electricity? What are the limitations of these agencies supporting the sale of mulch, wood chips, or running a small diameter mill? What about the sale of biofuels or other commodities? While none of the enabling acts contemplate such activities, they all have broad implied powers statements that would likely allow some involvement in such business if the agency could demonstrate the public value and relationship to the entity's mission. In order to make these determinations, the legal teams from each agency would need to get involved to help ensure the process met any requirements, but in general, it is safe to say these activities are possible.

## **3.4 Agency Involvement in Forest Biomass Issues**

This section summarizes existing and planned efforts by the water agencies to move the needle on forest health management and to address biomass removal which illustrate the agencies' interest in forest biomass issues. The existing efforts summarized are generally within the past 8 – 10 years. Anticipated involvement in biomass utilization programs, and objectives and justifications associated with forest health and biomass removal efforts are also described. Refer to Table D-1 in Appendix D for the programs.

### **3.4.1 Existing and Planned Efforts in TCS Region**

The primary water purveyors in the TCS Region, PCWA, NID, and EID, manage and operate extensive infrastructure – much of which may have been constructed during the Gold Rush Era – in remote, forested areas of the Sierra Nevada to collect and store surface water as their primary water source. The water collection and storage systems involve the entire watersheds in which they are located, with catchment areas encompassing tens of thousands of acres each. The associated water conveyance systems may involve hundreds of miles of infrastructure through the forests. Additional resources associated with the forest infrastructure may include hydroelectric generation facilities, pumps, treatment plants, and recreation. While the built infrastructure of the smaller water purveyors interviewed (NCSD and NTPUD) is not as extensive as the larger purveyors, they also rely on surface water sources, storage, and infrastructure through forested areas. All the TCS Region agencies



interviewed acknowledged the need for and are involved in existing efforts to improve forest health and wildfire resilience of the watersheds in which their infrastructure is located. The agencies' role and extent of involvement in those efforts was largely dependent on the availability of regional partnering arrangements addressing the same issues.

Through their vegetation management and defensible space programs, the TCS Region agencies have and are planning to treat thousands of acres (across multiple jurisdictions in some cases) to protect and maintain infrastructure, reservoirs, and nearby communities. The work is being completed through a combination of agency implementation and funding, partnerships, and grant funding from implementation organizations such as the Sierra Nevada Conservancy (SNC), Cal FIRE, US Forest Service, The Nature Conservancy (TNC), as well as others and is generally ongoing. In addition, PCWA, Placer County, NID, EID and EDCWA are involved in existing and planned landscape level programs and partnerships to address forest health and fuels reduction at the watershed scale. NCS and NTPUD generally implement fuels treatment on a smaller scale but are interested in forest health at the watershed level. Several of the agencies interviewed are actively investigating opportunities for establishment of biomass utilization facilities or are in the process of implementing a facility. As presented below, these programs demonstrate the role that these agencies play to improve forest health and increasing the feasibility of biomass utilization.

#### Placer County

##### *Placer County Water Agency and Placer County*

Placer County addresses forest health and fuels reduction through numerous County entities. However, in response to the County Board's interest in actively facilitating forest health and wildfire prevention, the County developed the Regional Forest Health Program in 2021. The program coordinates forest management work across all County efforts for a comprehensive approach.

PCWA and Placer County are partners in the French Meadows Forest Restoration Project which is a large-scale, collaborative effort between the US Forest Service, American River Conservancy, SNC, TNC, PCWA, and Placer County to restore lands in proximity to French Meadows Reservoir and reduce the threat of catastrophic wildfire. The project area is 28,000 acres, with approximately 12,000 acres to be treated by mechanical removal of biomass. Most of the logs from French Meadows are being hauled to Sierra Pacific Industries' (SPI's) Lincoln mill, and chips are being taken to a combination of SPI and Rio Bravo in Lincoln, and some chips are left on-site. PCWA and Placer County are also partners in the Fuels Reduction Management Program which dedicates a portion of annual funds to supply grant funding for fuels management activities on non-federal lands that support a reduction in the potential for fire in regional wildland-urban interfaces. PCWA's goal is to accomplish mechanical thinning and hand treatments at a rate of about 1,000 to 3,000 acres per year. The 2022 Mosquito Fire will result in the need for additional post-fire remediation work.

Both agencies are actively participating in efforts to improve forest health and remove biomass residuals. PCWA is evaluating establishing community-scale biomass facilities in the region, including the Ophir biomass electricity generation facility which would use approximately 18,000 – 21,000 bone dry tons (BDT) of feedstock per year, an outlet for treatments on approximately 1,500 to 1,800 acres per year. The facility may qualify for the Bioenergy Market Adjusting Tariff (BioMAT), a feed-in tariff program created in 2012 for small-scale bioenergy facilities generating no more than 5 MW of power.

Placer County prepared the Placer County Sustainability Plan in 2019 which outlines various programs and policies that will be undertaken to achieve the most significant greenhouse gas emission reductions in the unincorporated county (Placer County 2022). The Sustainability Plan includes a policy statement to address wildfire protection and biomass utilization (Kerri Timmer, personal communication, September 14, 2022). Furthermore, Placer County is a partner in the North Tahoe Truckee Biomass Task Force which is a regional effort to reduce catastrophic forest wildfires while reducing local green waste fees for customers and agencies (the Task Force consists of Placer and Nevada Counties, the Town of Truckee, NCS D and the Tahoe Truckee Community Foundation).

The Task Force has a goal of establishing biomass facilities in the region, with both the Cabin Creek biomass electricity generation facility in North Lake Tahoe and the NCS D thermal energy facility at Northstar near Truckee planned (see the description of the NCS D thermal energy facility, below). Ms. Timmer pointed out that the Cabin Creek facility had been presented to the County Board of Supervisors in 2018 but wasn't approved; however, with the current interest by the County Board of Supervisors in biomass utilization and changes in financing, the Public Works Department is leading the County's efforts to revisit the site (personal communication, September 14, 2022).

The County is planning to develop a County-wide power position plan for forest health work to help guide biomass utilization planning in the County. Ms. Timmer also mentioned that the Regional Forest Health Program deals with biomass in more of a policy level than at the individual project level and works with other departments focused on specific facility development to provide advocacy support and expertise. Overall, Placer County is working to find ways to increase forest treatments in the County, and the Regional Forest Health Program is specifically working to support more comprehensive, large scale efforts like the French Meadows Forest Restoration Project (Kerri Timmer, personal communication, September 14, 2022).

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*“The Cabin Creek biomass to electricity facility had been presented to the County Board of Supervisors in 2018 but wasn't approved; however, with the current interest by the County Board of Supervisors in biomass utilization and changes in financing, the Public Works Department is leading the County's efforts to revisit the site.”*  
*- Kerri Timmer, Placer County*

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#### *Northstar Community Services District*

Since 2006, NCS D has implemented fuels management and forest health projects on 2,040 acres within the NCS D boundaries. The NCS D Fire Department is the lead on fuels management projects, which are implemented to protect communities and infrastructure from catastrophic wildfire while enhancing forest health. On average, 150 – 180 acres are treated each season. Funding is from grants and more recently from Measure U, a parcel tax passed in 2021 which will provide annual funds over 10 years for wildfire prevention efforts. Partners include Placer County Air Pollution Control District, Cal FIRE, California Fire Safe Council, SNC, Ready, Set, GO!, Tahoe Mountain Resorts Foundation, Tahoe Truckee Community Foundation, Vail Resorts (Trimont Land Company), Northstar Property Owner's Association, Mountainside Builders (Timberline Highlands LLC), and CAMCO Condominium Association. Treatment types include hand thinning small diameter trees and brush and chipping. Biomass is used by piling logs, pile burning, spreading slash, and hauling to green waste disposal sites in Nevada. As previously

mentioned, along with Placer County, NCS D is a member of the North Tahoe Truckee Biomass Task Force. Furthermore, NCS D is underway on a small biomass thermal energy facility which will use biomass generated by its own forest health activities to heat NCS D building(s). The facility would use up to 3,800 BDT per year and would close the loop on biomass generated by NCS D.

*North Tahoe Public Utility District*

NTPUD has a Memorandum of Understanding with the North Tahoe Fire Protection District who leads most of the hazardous fuel reduction work in the NTPUD service area. NTPUD has a goal to treat approximately 135 acres within the NTPUD service area between 2019 and 2022. Funding is from the NTPUD and the Bureau of Land Management Southern Nevada Treatment Public Lands Management Act Grant. The amount of biomass generated annually is minimal and is typically disposed of by pile burning and broadcast chipping.

More broadly, multi-agency partnerships are in place to implement a comprehensive approach to addressing fuels reduction efforts in the Tahoe Basin in which NTPUD's service area is located. The Tahoe Fire and Fuels Team is responsible for implementing the Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy, and is overseen by a multi-agency coordinating group which includes the seven Lake Tahoe Basin fire chiefs, and local executives of the following agencies and institutions: California Tahoe Conservancy (CTC), USFS, CALFIRE, Tahoe Resource Conservation District (RCD), California State Parks, Nevada State Parks, Nevada Division of State Lands, California State Water Resources Control Board, Tahoe Regional Planning Agency, Tahoe Network of Fire Adapted Communities, University of California Division of Agriculture and Natural Resources, University of Nevada Extension College of Agriculture, Biotechnology & Natural Resources. The CTC is generally the lead on non-federal lands and provides a comprehensive approach to handling forest resiliency in the watershed. As such, NTPUD's efforts focus on its own properties and do not need to consider the broader area. NTPUD's ongoing efforts related to forest health and biomass utilization are anticipated to be associated with ongoing fuels treatment and vegetation management within the NTPUD service area, and as needed coordination with CTC and the North Tahoe Fire Protection District. NTPUD's involvement in ongoing forest health and biomass utilization projects within NTPUD's boundaries or watershed would be expected to be limited to coordination and funding, if needed.

Nevada County

*Nevada Irrigation District*

NID has several projects to reduce fuels and improve forest health surrounding Scotts Flat and Rollins Reservoirs, and to conduct wildfire recovery and improve forest health in the Bear River Watershed. Primary NID partners include Cal FIRE, SNC, USFS and CSU Sacramento. The Scotts Flat Fire Fuels Treatment and Healthy Forests Project is a collaborative effort with SNC to reduce wildfire risk and improve forest resilience at Scotts Flat Reservoir. The project is multi-phased, with a total of 500 acres to be treated. The treatments have included timber harvest, thinning and mastication. Timber was previously sold to SPI (2017 – 2019); however, SPI isn't currently able to accept NID's timber due to the current market. Woody biomass was also previously taken to Rio Bravo but was found to be economically infeasible. Therefore, biomass materials generated from the treatments that were previously sold to SPI and Rio Bravo are now primarily masticated, chipped and spread.

The Rollins Reservoir Wildfire Risk Reduction and Hazard Tree Removal Project was funded by two subsequent grants awarded by Cal FIRE's California Forest Improvement Program (CFIP) and consisted of two phases to conduct understory fuels reduction and hazard tree removal on 183 acres in and surrounding the Peninsula, Orchard Springs and Long Ravine Campgrounds. Work to complete understory fuels reduction and hazard tree removal from NID-owned lands around the reservoir has been ongoing for the past 6 years and is planned to be maintained.

Following the 2021 River Fire, NID conducted immediate post-wildfire remediation on 80 acres of affected NID land and partnered with SNC to complete remediation and forest thinning on an additional 150 acres which commenced this year. NID subsequently received Cal FIRE CFIP grant funding for the Bear River Watershed Fire Fuels Reduction Project which includes fuels reduction activities on 125 acres. Burned trees from the River Fire are being masticated, lopped and scattered, and additional forest materials are being masticated, chipped and spread. None of the biomass residuals generated from River Fire recovery efforts are planned to be hauled to a utilization facility.

NID recognizes the need and benefit of managing the watersheds as the source of water supply and to provide a sustainable supply of water for the growing communities they serve. NID is responding by expanding watershed management, encouraging water conservation, and safeguarding their storage reservoirs. NID's planned and ongoing activities surrounding forest health and biomass removal include continuing ongoing treatments and maintenance around remote facilities and reservoirs within NID's ownership, as well as preparation of a forest management plan which is currently underway and is expected to be ready in 3 – 5 years.

NID has identified a need to treat approximately 10,000 acres of NID lands within the watershed. Mr. Greg Jones also stressed the importance of working across jurisdictions to address the watershed (personal communication, September 21, 2022). NID is in the process of entering into a Master Stewardship Agreement with the USFS. NID also noted biomass utilization opportunities including biomass offtake through the Biomass Renewable Auction Mechanism (BioRAM) Program which requires the California Public Utilities Commission to take actions resulting in the execution of Power Purchase Agreements between the Investor Owned Utilities and biomass electricity generating facilities in the state. The BioRAM agreements are specific to biomass consumption of forest fuel from California's designated High Hazard Zone areas, which is where nearly all of NID's forest fuels reduction projects are located.

Furthermore, Rio Bravo has initiated contact with NID for a wood chip purchase and sale agreement. The agreement specifies that NID would deliver a maximum of 7,500 BDT of wood chips annually. NID has coordinated with the Nevada County Fire Safe Council regarding development of a biomass utilization facility – they discussed a curtain burner and other micro-biomass plants that could be posted in different locations in the area, but nothing has developed beyond conversations. Mr. Jones noted that while there's interest, there are challenges with moving to resolve some of the fundamental concerns/information needs, largely due to lack of funding and expertise.

Challenges are associated with determining feedstock commitments needed to bring a facility to operation, concerns about the financial return, and the process of developing partnerships to secure feedstock (personal communication, September 21, 2022).

El Dorado County

*El Dorado Irrigation District*

EID has numerous projects to reduce fuels and improve forest health surrounding Sly Park Recreation Area and in the Caples Creek watershed. Additionally, EID has conducted post-fire recovery from the 2014 King Fire and the 2021 Caldor Fire. Partners include Cal FIRE, SNC, ENF, El Dorado/Georgetown Divide Resource Conservation District and industrial timberland owners, such as SPI. EID is also a partner in the South Fork American River Cohesive Strategy (SOFAR Cohesive Strategy)<sup>2</sup> and provides information to assist the organization in their efforts to evaluate potential biomass utilization solutions. Since 2014, EID has conducted various fuels treatment projects at the Sly Park Recreation Area using a number of programs and funding mechanisms, including EID funds, Cal FIRE, and SNC grants to achieve over 1,100 acres treated over that time. Biomass is typically piled and burned, masticated, chipped, or lopped and scattered, although large capital-funded projects have included off-hauling vegetation.

Cal FIRE implements a Sly Park Vegetation Management Program—which has been in place since the 1980's and may be one of the oldest continuously running Cal FIRE vegetation management programs in the State—which and typically relies on prescribed burning to treat excess understory fuels. The Caples Creek Watershed Ecological Restoration Project was a forest health and restoration project on 8,800 acres in the Eldorado National Forest. It conducted 25 acres of meadow and aspen restoration over an initial four years, and continued with additional treatments over a 10 – 15 year extension. EID partnered with SNC and ENF for funding and implementation. Biomass was disposed of through pile burning which trended toward broadcast burn. The burn occurred beyond treatment lines and was eventually declared a wildfire and suppressed at approximately 3,400 acres. The remainder of the areas to be treated were burned by the 2021 Caldor Fire before they could be completed.

In addition to EID's Vegetation Right-of-Way Program which includes hazardous fuel reduction projects on approximately 585 acres, EID has implemented the Weber Lake Vegetation Management Project and the Camp 5/Flume 46 Vegetation Management Project, both funded by Cal FIRE. The Weber Lake project included fuels reduction on over 350 acres while the Camp 5/Flume 46 project included fuels reduction on 74 acres. Biomass for both was handled through mastication and lop and scatter. At Flume 46, the biomass was piled and burned. Post-King Fire hazardous fuels reduction treatments were conducted downslope of Camp 5 using EID funds and tying into the SOFAR Cohesive Strategy Fire Adapted 50 project led by the El Dorado/Georgetown Divide Resource Conservation District.

EID is currently implementing post-Caldor Fire work, using EID funds, to remove hazard trees and to replace and restore water conveyance systems destroyed by the Caldor Fire. Over 1,800 hazard trees were identified along the El Dorado Canal, Project 184 access roads, El Dorado Canal, and Mormon Emigrant Trail to Camp Creek Tunnel. Regarding ongoing involvement in biomass utilization strategies, EID will continue to coordinate with the SOFAR Cohesive Strategy and provide as-needed information and support and will consider programs as they become available but does not otherwise anticipate taking an active role.

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<sup>2</sup> The SOFAR Cohesive Strategy is a collaborative of diverse organizations working together to initiate the National Cohesive Wildland Management Strategy on 410,000 acres of the South Fork American River watershed in ENF.

#### *El Dorado County Water Agency*

EDCWA is extensively involved in bringing agencies together to address watershed health and biomass utilization in El Dorado County. EDCWA is involved in several post-Caldor Fire recovery efforts including hazard tree removal and watershed restoration. EDCWA is responsible for project initiation, securing funding, and working with agency partners to implement the projects. EDCWA, in partnership with the El Dorado /Georgetown Divide RCD was awarded the WaterSMART grant to ensure the Grizzly Flats communities has a safe and reliable water supply following the Caldor Fire. EDCWA is working with the County to identify school sites for small biomass utilization facilities and is part of the Biomass Work Group of the SOFAR Cohesive Strategy. EDCWA is working to facilitate the creation of a new watershed management group to comprehensively and collaboratively address land use, forest health, and biomass across jurisdictions at the landscape level. Part of its role in the County is to provide legislative and advocacy support regarding issues relevant to the water agencies in the County.

### **3.4.2 Existing and Planned Efforts of Other Agencies Interviewed**

#### Yuba Water Agency

YWA is extensively involved in forest health, fuels reduction and biomass utilization in the North Yuba River watershed. YWA is a collaborative partner in the North Yuba Forest Partnership which was formed to plan, analyze, finance and implement forest restoration across 275,000 acres of the North Yuba River watershed. Partners include the Tahoe National Forest, TNC, South Yuba River Citizens League, Camptonville Community Partnership, Nevada City Rancheria Nisenan Tribe, National Forest Foundation, Sierra County, and Blue Forest Conservation. Additional partners are at the project level. The program duration is 20 years, and projects under this program receive funding from the Forest Resilience Bond and various public and private sources.

YWA provides funding to projects under this program, including the Camptonville Biomass Plant which is a 5 MW biomass plant which will use 40,000 BDT per year; the Yuba Project which is a project to enhance watershed health, improve wildlife habitat, reduce risk of high-severity wildfire, and increase forest resilience on 14,545 acres (YWA is providing \$300,000 per year for 5 years); and the Trapper and Pendola Projects which are projects to enhance watershed health, improve wildlife habitat, reduce risk of high severity wildfire, and increase forest resilience on approximately 16,600 acres. The Yuba Foothills Healthy Forest Project is to reduce fuels on 5,375 acres near several communities in Yuba County foothills with limited resources. The project received a transportation subsidy for 2020 and 2021 which allowed the biomass to be transported to Wheelabrater Shasta Energy Company, Inc. in Anderson for those two years. Since then, biomass is masticated and left in the forest. YWA is the grant administrator and coordinator.

YWA also administers the Community Impact Program Grant and Loan Program which provides funding for projects aligned with the priorities and objectives of the agency's 5-year Strategic Plan (YWA 2022; refer to "Areas of Funding" at the source cited). Watershed forest restoration and fuel load reduction for control of potential forest fires, including biomass disposal are included policies. YWA also provides funding for the council coordinator/executive direction position with the Yuba Watershed Protection and Fire Safe Council, and the watershed coordinator position with the South Yuba River Citizens League. YWA will continue to identify and secure funding for additional high-priority projects in the North Yuba River watershed to achieve the total acres of planned restoration and will continue to provide grant funding through the Community Impact Program Grant and Student Loan Program.

East Bay Municipal Utility District

EBMUD implements separate watershed management programs for the Mokelumne territory and the East Bay territory which are implemented to reduce fuels to mitigate the wildfire threat to communities and critical water conveyance structures. Neither of the areas generate significant amounts of biomass – the Mokelumne territory is outside of the forest and is managed primarily through grazing leases, with some vegetation thinning (largely non-woody) and prescribed burning. EBMUD has implemented a 1,400 acre shaded fuel break in the East Bay territory through collaboration with the Moraga Orinda Fire District and using Cal FIRE Conservation Crews for implementation.

The East Bay territory has some wooded areas around San Pablo Reservoir where pines are experiencing die-off. The hazard trees are being treated to abate potential risks to the nearby communities. Woody biomass generated is typically minimal and is piled and burned or chipped and spread. EBMUD investigated multiple options including: log deck burning which requires a multi-day burn permit from the Air District; using a curtain burner at the site; using a whole tree chipper and then hauling the chips from the site. The curtain burner and chipper needed equipment to treat the biomass on the site were not readily available due to the location of the site in the region, and costs associated with bringing equipment from outside of the area were significant. The agency was also concerned with the environmental impact associated with staging and hauling logs or chips from the site. EBMUD was successful in securing a multi-day burn permit from the Bay Area Air Quality Management District, which was a positive collaborative effort, and is more cost effective and efficient than the other options considered (Charles Beckman, personal communication, November 1, 2022).

EBMUD had also been approached by a company interested in taking the wood from their treatments around San Pablo Reservoir to a wood products processing plant in the Jamestown area (Tuolumne County); however, the company found that the costs associated with transporting the wood was not economically feasible.

EBMUD funds its vegetation management and watershed management programs through its operational budget, with use of capital funds for large and one-time projects. EBMUD's ongoing efforts related to forest health and biomass utilization are anticipated to be conducted as needed within EBMUD's service area and through coordination with the local fire protection districts, and continued participation in UMRWA. Under a 2016 Master Stewardship Agreement with the USFS, UMRWA serves as lead partner for contracting forest fuel reduction and restoration projects. UMRWA has also secured grant funding from SNC, with USFS expenditures, and is lead agency for contracting forest fuels and restoration treatments on nearly 2,200 acres within the upper watershed and will continue to seek opportunities to augment local funding for water resource projects and forest health initiatives that serve the interests of its member agencies (UMRWA 2022a). EBMUD is also a member of the Mokelumne-Amador Calaveras (MAC) Integrated Regional Water Management (IRWM) Group. MAC-IRWM is facilitated by UMRWA and was formed pursuant to the State Integrated Regional Water Management Act of 2002, and which was responsible for preparation of the MAC IRWM Plan. The 2018 MAC IRWM Plan (as amended in 2022) includes goals and objectives related to managing fire fuels to reduce wildfire impacts (UMWRA 2018, 2022b).

The North Fork Mokelumne Watershed Erosion Control and Water Quality Restoration Project was included in the 2022 project list for planning and implementation and may include fuels reduction and generation of biomass (UMRWA 2022b). UMWRA is also facilitating a phased, landscape level program

known as the Forest Projects Plan to improve forest health and resilience on USFS lands in and adjacent to the Mokelumne River watershed in partnership with the Eldorado and Stanislaus National Forests, and the Amador Calaveras Consensus Group, a regional forest collaborative. Phase I consists of fuels reduction activities on 25,671 acres, with implementation expected to begin in 2023 and take 5 years to complete. Phase II includes additional forest management actions such as forest thinning and aspen and meadow restoration within a 220,000-acre study area. Planning for this phase is currently underway and is expected to take two to three years to complete and will be followed by implementation. EBMUD's involvement in both projects are unconfirmed. EBMUD may provide coordination support and seek grant funding for regional forest health and biomass utilization projects as needed or as required by other entities.

### **3.4.3 Anticipated Participation in Biomass Utilization Efforts**

To understand the role the agencies anticipated having in ongoing biomass utilization efforts and the associated interests, the agencies were asked about the circumstances surrounding biomass being left in the forest rather than being removed to a utilization facility and whether the current methods were meeting their watershed health objectives. The agencies were also asked whether they would participate in a long term, economically viable contract for biomass removal, how that would affect their current efforts, and whether they have considered sponsoring or being involved in a biomass utilization project.

As demonstrated by the existing and planned forest health and fuels reduction projects described in Sections 3.4.1 and 3.4.2, water agencies are involved in generation of forest biomass. The agencies recognized the role biomass disposal plays in forest health and fuels reduction activities; however, the importance of removing the biomass from the forest or the objective to participate in biomass aggregation and utilization varied between the agencies – largely based on the amount of biomass generated annually by the agency, the value placed by the agency and its constituents on environmental missions and climate resiliency, potential availability of funding, and the availability of knowledgeable staff to support forest health/biomass utilization work. While not all agencies would take a lead role in developing outlet solutions for biomass, all agencies would participate in a long-term (10 to 20 year), economically viable contract for biomass removal to an outlet where economically reasonable and logistically feasible.

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*While not all agencies would take a lead role in developing outlet solutions for biomass, all agencies would participate in a long-term (10 to 20 year), economically viable contract for biomass removal to an outlet*

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#### TCS Region

Most of the TCS Region agencies identified removing biomass from the forest as an important factor in achieving forest health objectives for the watersheds on which they rely. Without those outlets, as described in Section 3.6, the agencies are unable to meet their forest health objectives, which for some agencies involve increasing the pace and scale of forest health projects. Those agencies are actively engaged in and are pursuing solutions, including investigating outlet options and pursuing outlet opportunities.



As previously described, PCWA is evaluating the Ophir biomass electricity generation facility which would use approximately 18,000 – 21,000 BDT of feedstock per year, facilitating treatment of approximately 1,500 to 1,800 acres per year. Placer County noted that in addition to the Cabin Creek biomass electricity generation facility, there is additional strong interest at the County level and participation in regional consortiums intended to help facilitate development of biomass outlets. The County's Sustainability Plan includes a policy statement to address wildfire protection and biomass utilization (Kerri Timmer, personal communication, September 14, 2022<sup>3</sup>). Both agencies noted during their interviews that biomass removal is an essential component of the French Meadows Forest Restoration Project and is necessary to achieve the objectives of the project and future and ongoing work in the County. Placer County noted that with a viable outlet, the pace and scale that work could be completed would likely increase. Ms. Timmer pointed out, however, that especially for currently unplanned projects, having a place to take the materials is only one factor in consideration of whether or not more work could be done in a timely manner since projects to increase pace and scale require funding sources, project partnerships, and planning which all take time to develop (personal communication, September 14, 2022). The County's Regional Forest Management Program is in the process of developing a plan to address these procedures and to help facilitate processes for future work and , in combination with a viable outlet, could potentially put the County in a position to contribute to an increase in pace and scale of forest health projects.

While NID supports efforts to remove biomass from the forests, NID's consideration of sponsoring or partnering in efforts to develop biomass utilization facilities haven't moved past conversations due to lack of experience and funds (refer to Section 3.3.1). Mr. Greg Jones stressed during the interview, however, the importance of removing biomass from the forest and finding a solution to addressing the roadblocks to utilization (personal communication, September 21, 2022). With a biomass outlet, Mr. Jones thinks NID would increase the amount of forest programs and projects that could be done in a year and would hire staff to allow more internal capacity. Having a steady outlet would allow NID to conduct a steady rate of generation. NID's Master Stewardship Agreement (MSA) with the USFS and forest management plan which is underway could, in combination with a viable outlet, potentially put NID in a position to contribute to an increase pace and scale of forest health projects.

NCSD considers the closed-loop model it is currently developing through their proposal of a biomass thermal energy facility will demonstrate successful biomass utilization in the region at the small scale that is needed (Mike Staudenmayer, personal communication, October 18, 2022). NCSD produces a small amount of forest biomass but is partnering with regional waste sources to provide needed feedstock for the heating system. While NCSD does not see their project generating new biomass demand, the project could be replicable outside of the region (Mike Staudenmayer, personal communication to Christiana Darlington, January 4, 2023).

NTPUD also uses some of its forest biomass for erosion control. NTPUD is in an area with existing multi-jurisdictional programs which are addressing forest health and biomass utilization. While NTPUD tangentially benefits from those programs, its objectives and investments are primarily focused elsewhere. As described in Section 3.3.1, NTPUD anticipates its ongoing involvement in biomass

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<sup>3</sup> information about the Plan is available at: <https://www.placer.ca.gov/5928/Placer-County-Sustainability-Plan>

utilization to be limited to taking care of its own project but can provide advice and input on other regional projects if needed.

EID noted that while removing biomass from the forests can be important, chipping and spreading and mastication are important for slope protection. EID is generally able to meet its current objectives using masticating, chipping and spreading, and pile burning to use biomass. Inefficiencies associated with biomass hauling are further exacerbated by the steep terrain and challenging road access in which a substantial portion of EID's infrastructure is located. Mr. Dan Corcoran mentioned that EID does not have the capital and would not be situated properly to lead a biomass utilization project; however, where economically feasible and where it would not hinder project progress, EID would consider participation in a contract with an outlet and could include a provision in their agreement with the contractor to require use of the outlet (personal communication, October 5, 2022). While EID would continue to provide information to programs such as the SOFAR Cohesive Strategy in efforts to find biomass utilization solutions, its ongoing participation is anticipated to be limited to discussions and meeting participation. Mr. Corcoran also shared that the Vegetation Right-of-Way Program has a GIS analysis of the material that would be generated, the production rate, and the amount of material being chipped. Using this information, EID has confirmed it has the capacity to meet the production rate which could provide a reliable source to an outlet, if economically viable (personal communication, October 5, 2022). The information can also be used for feedstock analyses.

EDCWA noted that their anticipated role in ongoing biomass utilization efforts would be to facilitate and support those efforts – initiating projects, seeking funding, developing working groups, and advocacy. As previously mentioned, EDCWA lobbies for changes in laws or legislation that create roadblocks to beneficial activities. EDCWA is involved in finding biomass utilization solutions to meet the needs of the County and considers the current efforts by the TCS Pilot Project to develop a regional solution to be a more stable and sustainable solution for handling biomass. In response to the Caldor Fire in particular, EDCWA is initiating and coordinating significant fire recovery and forest health projects.

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*Collectively, agencies interviewed in this report account for approximately 36,000 to 40,000 acres of forest treated or are currently underway within the TCS Region for the purpose of reducing the risk of wildfire impact.*

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In summary, PCWA, Placer County, NID, EID, and EDCWA acknowledged that although a viable, long-term contract with a biomass utilization outlet would provide an opportunity to increase work in the forest, planning for an increase in pace and scale would require resolution of other challenges to ensure good use of the contract. Further, the anticipated increase in the number of acres treated annually per the State-USFS one million acre strategy will likely generate more material that will require additional biomass removal to achieve the State's goals. Current disposal methods (broadcast chipping, pile burning) may not be sufficient or feasible at a larger scale.

#### Other Agencies Interviewed

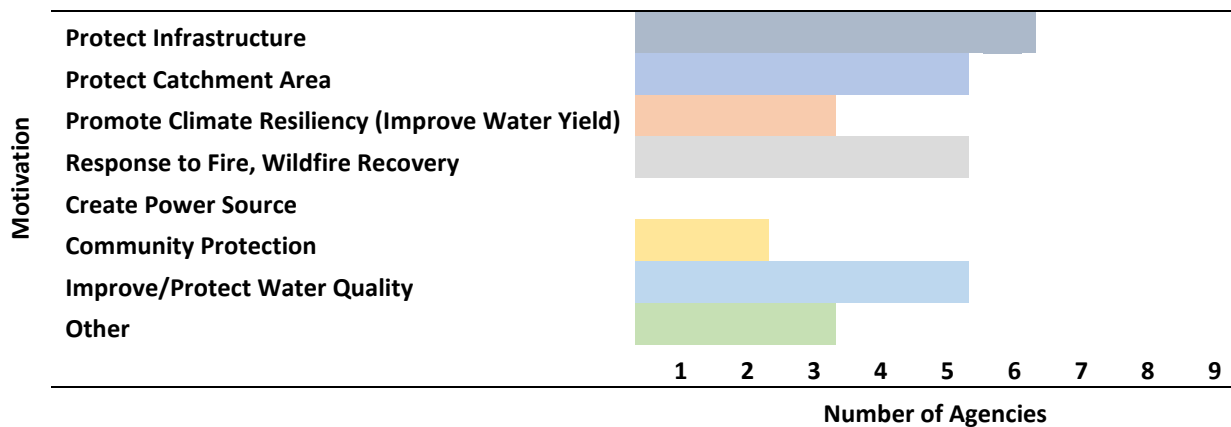
YWA plans to continue to take a lead role in forest health and biomass utilization in the region. YWA will continue to seek opportunities to support and fund projects to achieve the forest health and resiliency goals for the North Yuba River watershed and will consider biomass utilization facility opportunity proposals as they are presented.

As described in Section 3.3.2, EBMUD anticipates its ongoing involvement in biomass utilization to be in accordance with its existing watershed management and vegetation management plans, and through ongoing involvement with UMRWA, with additional coordination and support in seeking grant funding potentially provided if needed. The 2018 MAC Plan (as amended in 2022) identifies removal of biomass from forested landscapes, identified in the Plan as a “conflict” associated with water resource issues and includes goals and objectives related to managing fire fuels to reduce wildfire impacts (UMWRA 2018, 2022); however, at this time, neither EBMUD nor UMRWA are involved with development of biomass utilization infrastructure.

### 3.4.4 Objectives and Justifications for Existing and Planned Efforts

The agencies interviewed were asked to provide objectives and justifications used as rationale for their existing and planned efforts. The agencies were asked to identify the top three primary motivations for investing in forest management and biomass removal projects from a list of options including: protecting infrastructure; protecting the catchment area; promoting climate resilience (improving water yield); response to fire, wildfire recovery; creating a power source; community protection; and improving water quality. The results of the responses are summarized in Figure 4.

**Figure 4. Water Agency Motivations for Forest Management and Biomass Removal Projects**



As is demonstrated by the existing and planned efforts described above and supported by discussions during the interviews, the objectives of the forest health and fuels reduction activities undertaken by the water purveyors are overwhelmingly to protect the infrastructure and catchment areas they rely on, as well as the quality of the water from those sources. Additional objectives (and benefits) of the existing and planned activities are to provide community protection through strategically placed defensible space along the wildland urban interface (WUI), and increased water yield and climate resilience as a result of improved forest structure. Agencies impacted by recent catastrophic wildfires also identified wildfire recovery and improving water quality as a top motivation.

The justifications given for conducting forest health and fuels reduction activities to avoid catastrophic wildfire impacts were largely based on the cost associated to replace the infrastructure, service interruptions (water and/or electricity), and impacts to water quality. NID noted they have approximately \$1 billion worth of infrastructure. In a recent analysis conducted by the agency, it was estimated that the cost to replace a 12-mile section of an above-ground flume along Highway 20 would be about \$500 million. As described in Section 3.4, below, EID is repairing damage to flumes destroyed in the Caldor Fire, with an estimated cost of \$23 million. PCWA sustained a cost of millions of dollars annually for several years to address damage following the King Fire. EDCWA also specifically mentioned the impacts wildfire have on the economy due to loss of tourism. The rivers, lakes, and reservoirs and surrounding environment that the water agencies rely on provide significant recreation and tourism opportunities – some of which is managed by the water agencies. YWA has not experienced a catastrophic wildfire but justifies actions to avoid wildfire impacts in the watershed based on a record water year in 2017 which deposited sediment and debris into the reservoirs. In 2017, YWA had about \$4 million of sediment removal work and about \$1 million of woody material removal work. It's anticipated that the cost to remove sediment and debris following a catastrophic wildfire would be much higher –not including the cost to repair and replace damaged infrastructure and facilities.

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*In 2017, YWA had about \$4 million of sediment removal work and about \$1 million of woody material removal work. It's anticipated that the cost to remove sediment and debris following a catastrophic wildfire would be much higher – not including the cost to repair and replace damaged infrastructure and facilities.*

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The justifications given for participating in and pursuing removal of biomass from the forests to an outlet are tied to the amount of existing biomass in the forests – either treated (piled or broadcast/spread) or waiting to be treated (standing). The agencies identified the need to get excess biomass out of the forests to reduce the risk of wildfire and to reduce methane emissions associated with decomposition, and to reduce the volume of debris that can potentially enter waterways. NCSO specifically noted that pile and broadcast burning create issues with air quality, and with limitations on burn days, it can be challenging to get the work completed. EDCWA specifically mentioned that some of the piled logs generated from the Caldor Fire area are the size of large office building complexes. The piles create their own hazards associated with safety (where accessible by the public) and wildfire risk.

### 3.5 Wildfire Impacts or Actions Taken to Avoid Wildfire Impacts

The TCS Region agencies interviewed identified multiple stand-replacing wildfires in the past 10 years (2013 – 2022) that have had a direct or indirect impact on their catchment area and infrastructure. Refer to Table 2 for a summary of acres burned per TCS Region agency and Figure 5 for watersheds within the TCS Region and major wildfires over the past 10 years.

**Table 2. Number of Wildfires and Acres Burned over Past 10 Years per TCS Region Agency**

TCS Region Agency	2012-2020		2021		Total Acres
	Acres Burned	Number	Acres Burned	Number	
Placer County Water Agency	874	10	867	1	<b>1,741</b>
Northstar Community Services District	-	-	-	-	-
North Tahoe Public Utilities District	-	-	-	-	-
Nevada Irrigation District	2,220	28	1,568	1	<b>3,788</b>
El Dorado Irrigation District	2,394	5	1,693	1	<b>4,087</b>
<b>TOTAL</b>	<b>5,488</b>	<b>43</b>	<b>4,128</b>	<b>3</b>	<b>9,616</b>

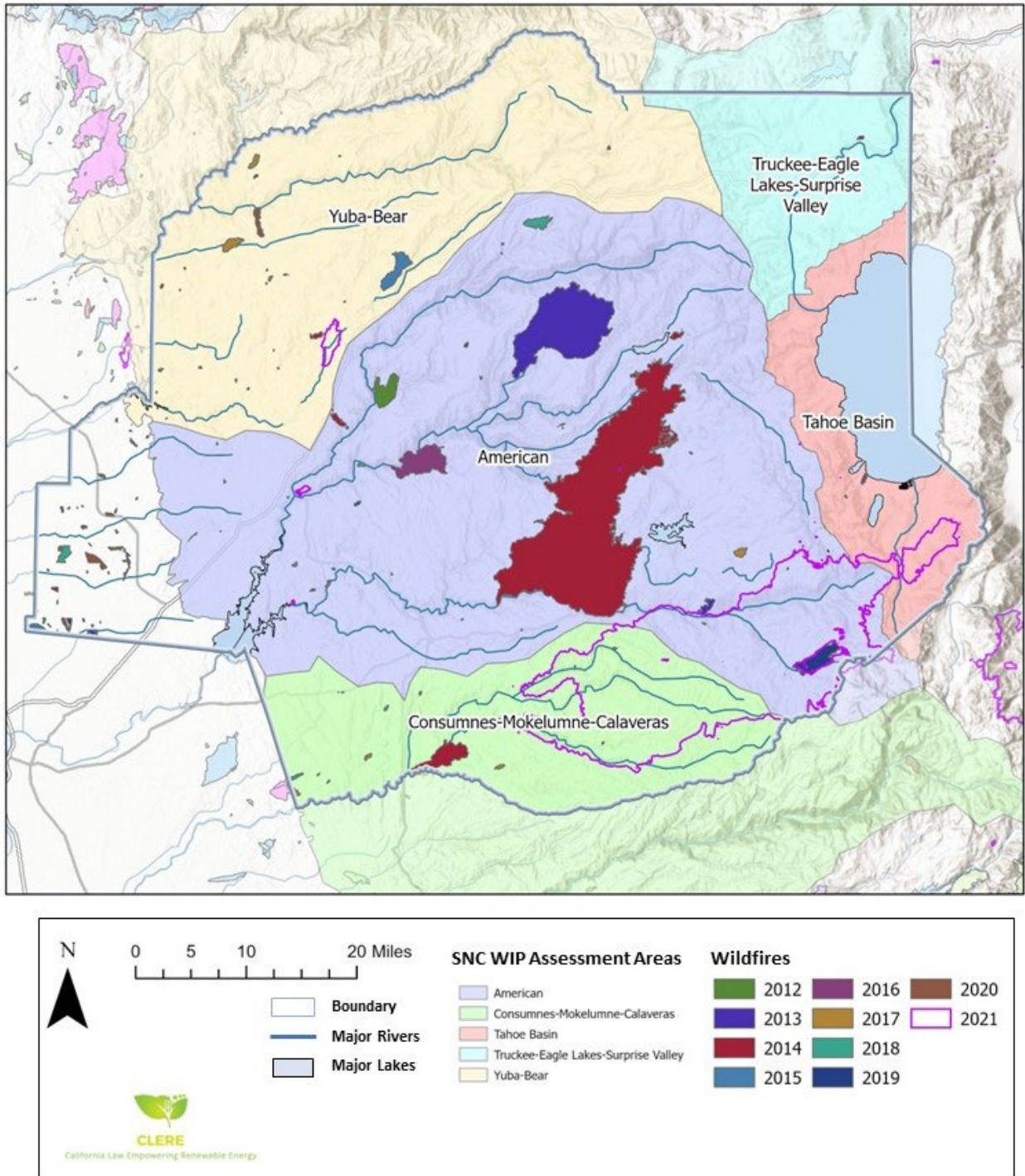
The 2014 King Fire burned over 97,000 acres of the Middle Fork and South Fork American River watersheds in El Dorado and Placer Counties. PCWA owns and operates French Meadows and Hell Hole Reservoirs and the associated hydropower and municipal drinking water facilities, which suffered significant damage from the fire. The post-fire erosion from the fire resulted in major, ongoing damage to reservoirs and infrastructure at a cost of millions of dollars per year. EID’s facilities were not directly impacted by the King Fire, but excessive sedimentation from erosion of burned soils and burned woody debris impacted water quality.

The 2021 River Fire burned over 2,600 acres, including more than four river miles of the Bear River watershed in Nevada and Placer Counties. NID owns approximately 320 acres within the burn area, including the full extent of burned river miles. The 2021 Caldor Fire burned over 221,000 acres in El Dorado, Amador, and Alpine Counties, affecting the South Fork American River watershed, the Cosumnes River watershed and Trout Creek and Upper Truckee River watersheds around the Lake Tahoe Basin. The fire demolished two-thirds of homes and structures in Grizzly Flats, two intakes and the surrounding watersheds which provide the water supply. The fire impacted sections of EID’s El Dorado Canal that delivers Project 184 water supplies from high elevation lakes. Flumes 4, 5, 6, and 30 were destroyed. EID was unable to deliver water through the El Dorado Canal for nearly 10 weeks. The cost to repair the damage caused by the fire is estimated at \$23 million. In addition to the direct impacts to infrastructure, EID is dealing with the issues from sedimentation and debris in the system and compliance with drinking water regulations, which may require capital upgrades in the water treatment facilities due to the total level of carbon following the fire.

While NTPUD and NCS D have not experienced direct wildfire impacts, the potential risks and subsequent issues and costs associated with infrastructure damage, service disruptions, water quality, and risk to watershed health have become clear.



Figure 5. Watersheds in TCS Region with Wildfires over Past 10 Years



All agencies interviewed noted that there is ever increasing interest and support by the agency Boards, stakeholders, and the public for investing resources in improving forest health and conducting fuels reduction – even in the remote areas of their territories – because of the catastrophic wildfires in the past 10 years. The previously described fuels reduction and forest health programs in which the interviewed agencies are part of illustrate the actions taken by these agencies to avoid wildfire impacts. The programs described above identify approximately 36,000 to 40,000 acres of forest treated or are currently underway within the TCS Region for the purpose of reducing the risk of wildfire impact.<sup>4</sup> Note that this figure does not account for the state’s one million acre strategy and anticipated increase in the pace and scale of forest restoration treatments.

### 3.6 Challenges and Lessons Learned

The agencies interviewed noted several challenges associated with implementation of forest health and biomass utilization. Those challenges were largely related to:

- (1) lack of outlets for biomass
- (2) economic infeasibility associated with using existing outlets,
- (3) project developments,
- (4) availability of skilled workers and equipment and associated costs,
- (5) securing adequate funding for projects and/or the grant process, and
- (6) regulations and policies associated with USFS lands and Air District regulations.

All agencies identified challenges associated with a lack of outlet for biomass. While most agencies have used the limited outlets in the region in the past to support biomass disposal, the market is currently saturated, and contracts with existing facilities are not readily available.

The recent wildfires create an even more urgent need to remove extreme amounts of green and fire salvage biomass and timber from the forests. EDCWA specifically mentioned that the Caldor Fire is expected to generate 150 million board feet of timber, but there is nowhere to take it. The agencies also noted that when the existing outlets are used, low return makes the cost of aggregating and transporting the biomass the relatively long distances to the outlets economically infeasible. NID further described that the rate for logs have gone decreased which affects their ability to remove the logs from the forest. Placer County has experienced a lack of interest by contractors for projects involving hauling biomass due to the associated risk of costs – transportation related costs, and wages for workers to drive long distances and potentially wait for a long time to drop the materials.

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*“There are challenges stemming from a lack of a comprehensive, regional program and lack of existing communication between agencies. This can result in multiple partnerships and organizations working on the same issues and goals within a similar geographic area separately, and seeking the same funding opportunities rather than working together to achieve the desired outcomes.” – Kenneth Payne, El Dorado County Water Agency*

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<sup>4</sup> Note that the estimated acres are not all inclusive but are provided to give a general sense of scale. Acreages for several planned programs, projects initiated by EDCWA, and ongoing vegetation management are not included.

The agencies also identified contracting complications associated with who can take the wood based on the associated partners. As a federal agency, USFS is limited in the outlets they can use and have specific contracting requirements. One factor may be based on whether or not the materials will be exported. Contracting complications based on these limitations over the course of a project can affect project progress and can also further discourage interest by contractors to participate in the project. The lack of existing outlets for biomass removal, economic infeasibility, and/or limited contracting opportunities based on the saturated market and/or project partners affects the rate at which fuels reduction and forest health projects can be implemented and the ability of agencies to meet their resource management objectives.

Several of the agencies identified project development and coordinating across jurisdictions to achieve comprehensive results a need and a challenge. The time, planning, and effort to initiate programs, create partnerships, source funding, find skilled vendors and contractors, and implement contracts was not something all agencies felt they had the internal resources to handle effectively. Some agencies, such as EDCWA, facilitate partnerships and multi-jurisdictional programs as a primary role; however, for others it is more of a challenge to initiate internally. Placer County noted a need for regional planning and a need to develop a comprehensive plan to prioritize and guide County efforts, however, County funds are currently not available for the planning phase – the Regional Forest Management Program relies on grant funding for project work, including the planning phase. Placer County also noted limited staff which limits capacity to manage and implement projects at the pace and scale needed.

Several agencies noted a lack of internal funding and expertise to find and manage new and different projects related to forest health, fuels reduction, and biomass utilization. EDCWA also noted that there are challenges stemming from a lack of a comprehensive, regional program and lack of existing communication between agencies. This can result in multiple partnerships and organizations working on the same issues and goals within a similar geographic area separately and seeking the same funding opportunities rather than working together to achieve the desired outcomes. Other challenges associated with cross-jurisdictional and comprehensive projects are associated with multiple funding sources based on the activities and the jurisdictions. When implementing at a large scale, tracking the activities based on the funding source and jurisdiction can be challenging.

Several of the agencies identified the lack of trained and skilled workers and adequate equipment available to do the work, and the cost of labor (note that at the time of the interviews, AB 1717 which would expand the definition of “public works” for the purpose of payment of prevailing wages to include fuel reduction work paid for by public funds was proposed but was vetoed by Governor Newsom on September 28, 2022). In particular, the number of workers and amount of equipment available to do the work becomes reduced during the fire season, which is becoming longer over time, and which affects the pace that work is completed. Furthermore, long lead times on equipment and lack of available workers for the duration of a project can result in funding expiring before the project is completed. In response to these challenges, EID funded and procured a tractor/excavator to cut and chip 20-inch diameter trees.

Agencies also identified that USFS policies related to wildfire risk further limit the number of work days. Agencies are experiencing barriers to finding contractors and the appropriate equipment for remote and steep environments, which is challenging to access and treat, and the biomass is challenging and costly to remove. This is further exacerbated by unwillingness from contractors to work on projects conducted



in accordance with USFS work policies which constrain their working days due to the agency's Project Activity Levels for industrial precautions, as well as the previously mentioned challenges associated with contracting.

While the agencies have some annual budget allocated towards forest health, fuels management and biomass utilization, they also rely on grant funding to advance the balance of work needed to accomplish the objectives. Several agencies identified challenges associated with securing grant funding and/or the process. The challenges were associated with the means needed to secure the funding which takes away from resources dedicated to program planning and implementation, and the need to have CEQA/NEPA approvals completed before applying for the grant which requires agency time and financial support. Several agencies also noted that the grants are becoming more competitive, resulting in less success and higher risk associated with the investment to apply. A few of the agencies noted that the grant funding is relatively short term which also means a potential lack of guaranteed funding for the duration of the work needed to meet forest health objectives and to meet the production rates and quantities required to support a long-term contract with an outlet.

For agencies evaluating or implementing biomass utilization facilities, challenges identified were related to lack of experience or a clear pathway to follow for permitting and obtaining power purchase agreements, liability, funding, and a few of the agencies also noted that Air District Regulations constrain the type of biomass utilization technology able to be used.

The agencies were also asked for lessons learned from their existing programs. Individual agencies provided responses including the following:

- Good working relationships between partners help with funding, working conditions, contracting.
- Agencies with adequate revenue resources – through rate payers or other sources such as hydroelectricity – may have opportunities to use revenue to fund forest health, biomass removal and/or utilization projects.
- Adequate grant funding has been found to be the most successful for comprehensive efforts where existing plans were in place, but multiple funding sources are needed for the duration of the project.
- While planning and prioritizing is important, it's also important to get the work in the forests started, even if the details of highest priority areas are being worked out.
- YWA noted that one solution may not work for all water agencies since each agency is dealing with different factors that may be specific to their own watershed or other circumstances.

### **3.7 Additional Information**

Additional information from the agencies that could contribute to concepts supporting water agencies advancing forest health and biomass utilization is presented here.

The agencies interviewed are involved in existing and, in some cases, extensive partnerships to achieve the forest and watershed health objectives. These partnerships and arrangements involve all levels of government, various organizations, and private stakeholders. All agencies interviewed, however, noted that they have not experienced much involvement with the Tribes on these issues, although there is an increasing interest from the Tribes in participation and none of the agencies expressed concern over

partnerships involving Tribes. NID is working with the Tribes to implement Tribal burns in addition to or in lieu of Cal FIRE and USFS prescribed or broadcast burns.

The agencies also noted other collaborative interagency efforts in the region which are addressing forest health and, in some cases, biomass utilization – typically at the watershed level or smaller – which may provide useful information while looking at models or organizational structures for the TCS Pilot Project. As previously mentioned, Placer County and NCSO are partners in the North Tahoe Truckee Biomass Task Force which is specifically looking at ways to address biomass and associated costs. EID and EDCWA are involved in the SOFAR Cohesive Strategy which includes a biomass working group that EDCWA is involved in to address biomass generated by forest health and fuels reduction projects in the South Fork American River watershed. NTPUD noted that forest health and biomass issues for the Tahoe Basin are handled through strategic initiatives funded and launched by the California Tahoe Conservancy in collaboration with other state, federal, local and private partnerships.

The Cosumnes, American, Bear, Yuba (CABY) IRWM Group is a collaborative planning group working to improve water management across all jurisdictions within the four watershed region (Cosumnes, American, Bear, and Yuba) which form a major drainage area of the western slope of the Sierra Nevada and significantly overlap the TCS Region. The CABY IRWM Group is comprised of more than 30 organizations representing water supply, conservation, recreation, agriculture and community interests, as well as federal and local government agencies. PCWA, Placer County, NID, EID, and EDCWA are members of CABY IRWM. The 2021 CABY IRWM Plan includes strategies to increase climate resiliency, including supporting and developing projects to provide timber, wood or biomass in partnership with existing and emerging facilities to achieve ecologic objectives, hydrologic benefits, and economic viability (CABY IRWM Group 2021). NID highlighted that IRWM Groups can provide funding opportunities and share helpful resources to help coordinate complimentary projects within the desired watershed for a more complete and effective treatment of the landscape, including forest management and fuel reduction activities.

## 4.0 SUMMARY/FINDINGS

The results of the interviews identified that water agencies play a key role in initiating, implementing, and maintaining forest health and wildfire resiliency of their territories (and associated watersheds in some cases), with an ever growing interest and support by the agencies and their constituents. These agencies have or are developing objectives for forest health, fuels reduction, and biomass solutions worked into their planning framework, which demonstrate accepted justification for these activities. The importance of removing the biomass from the forest or the objective to participate in biomass aggregation and utilization varied between the agencies – largely based on the amount of biomass generated annually by the agency, the value placed by the agency and its constituents on environmental missions and climate resiliency, potential availability of funding, and the availability of knowledgeable staff to support forest health/biomass utilization work.

Based on the results of the legal research, all of the agencies interviewed have broad implied authorities and contracting powers, which means they can fund fuel reduction activities on private and public lands, direct how biomass that is derived from their projects is disposed or utilized, and can support biomass utilization projects, although the direct sale of electricity is somewhat more limited for some agencies.

Because of their reliance on critical water supplies from remote regions, and critical infrastructure through those regions, water agencies have demonstrated justification for forest management work beyond WUIs which may be more challenging for other entities, such as Counties, RCDs, Cal FIRE and others, to justify. In addition, water agencies have annual funds available for forest health and fuels reduction activities which are tied to a steady revenue source. The annual funding allows a certain amount of work to be completed, even with a lack of outside funding sources. As a result, water agencies are potentially reliable and sustaining sources of biomass for outlets in the region.

For most agencies interviewed, removal to an outlet is the preferred method of biomass disposal, and all agencies would participate in a long-term, economically viable contract for biomass removal to an outlet where economically reasonable and logistically feasible. Because water agencies do not need to demonstrate a profit, or in some cases, a full return on the cost of removal, there may be more flexibility in the return rates when compared with other agencies that rely on sales to generate revenue.

The agencies expressed, however, that the lack of outlets, the cost of transportation, and the low return on the product have made biomass removal to an outlet logistically and economically challenging. Furthermore, the remoteness and challenging terrain of some watersheds and facilities add to the challenges associated with removal to an outlet. Of the nine agencies interviewed, six (five within the TCS Region, and one of the other agencies interviewed) are actively investigating or are in the process of implementing biomass utilization projects either through their agency or as part of a partnership to address the need for an outlet near the source, demonstrating the interest and need for such outlets by water agencies. Refer to Section 3.1 for existing and planned biomass utilization facilities in the region.

PCWA and Placer County are actively involved in and expect to continue to be involved in finding solutions to address biomass utilization pathways in the region, and to work towards an increase in pace and scale of forest projects. EDCWA is similarly involved in El Dorado County and is coordinating fire recovery and forest health projects, and biomass utilization strategies in response to the Caldor Fire.

NID is pursuing pathways (MSA with the USFS and preparation of a forest management plan), which are expected to position it for an increase in pace and scale. Due to their existing relationships with other planning entities, NTPUD and EID are anticipated to continue to plan and implement forest health and fuels reduction activities generally consistent with current procedures, or in accordance with best practices developed by applicable regional programs (the forementioned relationships are NTPUD's relationship with CTC and EID's relationship with EDCWA and the SOFAR Cohesive Strategy). Although EID will continue to participate in SOFAR Cohesive Strategy meetings and would consider contracting with an outlet, if economically viable.

NCSO is in the process of developing a thermal biomass utilization facility which would use biomass generated by NCSO. NCSO considers it to be a potentially scalable model and would participate in biomass-related consortiums to share experience and ideas but does not see a need for sponsoring other projects in the region.

Although PCWA, Placer County, NID, EID, and EDCWA acknowledged that a long-term contract with a biomass utilization outlet would provide an opportunity to increase work in the forest, planning for an increase in pace and scale would require resolution of other challenges to ensure good use of the contract.

The agencies interviewed noted other efforts in the TCS Region and more broadly with overlapping efforts to address forest health and which are in some cases looking at biomass utilization solutions at varying scales – mostly at the watershed level or smaller. These include: the CABY IRWM Group, North Tahoe Truckee Biomass Task Force, SOFAR Cohesive Strategy (SOFAR/EDC Biomass Work Group). In addition, the North Yuba Forest Partnership and UMWRA are watershed scale organizations YWA and EBMUD are involved in (respectively). This information may be useful when looking at models or organizational structures for the TCS Pilot Project.

## 5.0 CONCLUSION

As previously mentioned, water agencies play a key role in initiating, implementing, and maintaining forest health and wildfire resiliency of their territories (and associated watersheds in some cases), with an ever growing interest and support by the agencies and their constituents. The future pace and scale of restoration treatments in the region may increase in keeping with the State-USFS shared stewardship goal of one million acres treated per year. The legal research clarified that the agencies are well equipped with statutory powers that can enable them to do work in this arena. The interview responses suggested that the agencies are generally focused on current fuels reduction and forest health treatment levels – largely due to existing challenges and constraints – although current and anticipated planning efforts by PCWA, Placer County, NID, EID and EDCWA suggest these agencies may be positioned in the future for an increase in pace and scale. These agencies acknowledged that a long-term contract with a biomass utilization outlet would provide an opportunity to increase work in the forest, but as previously mentioned, planning for an increase in pace and scale would require resolution of other challenges to ensure good use of the contract.

The information used in this report will be used in future work by PCWA as pathways to reinforcing and facilitating feedstock supply logistics for woody biomass are explored and considered under the TCS Pilot Project, and as the potential public entity is outlined.

## 6.0 RESOURCES

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## **APPENDIX A AGENCY CONTACTS**

**Table A-1. Agency Contacts**

Contact Name, Title	Date of Interview	E-mail	Phone Number
<b>Placer County Water Agency</b>			
Tony Firenzi, Director of Strategic Affairs	9/7/2022	tfirenzi@pcwa.net	(530) 823-4850
Darin Reintjes, Director of Resource Management	9/7/2022	dreintjes@pcwa.net	(530) 823-4850
<b>Placer County</b>			
Kerri Timmer, Regional Forest Health Coordinator	9/14/2022	ktimmer@placer.ca.gov	(530) 889-7381
Patty Armenteros, Senior Operations Analyst, Regional Forest Health	9/14/2022	parmente@placer.ca.gov	(530) 273-6185 x 5026
<b>Northstar Community Services District</b>			
Mike Staudenmayer, General Manager	10/18/2022	mikes@northstarcisd.org	(530) 550-6128
<b>North Tahoe Public Utility District</b>			
Bradley Johnson, General Manager	10/19/2022	bjohnson@ntpud.org	(530) 546-4212 x 5410
<b>Nevada Irrigation District</b>			
Greg Jones, Assistant General Manager	9/21/2022	jonesg@nidwater.com	(530) 273-6185 x 5026
<b>El Dorado Irrigation District</b>			
Dan Corcoran, Director of Operations	10/5/2022	dcorcoran@eid.org	(530)622-4513
<b>Yuba Water Agency</b>			
Willie Whittlesey, General Manager	10/12/2022	wwhittlesey@yubawater.org	(530) 741-5000
<b>East Bay Municipal Utility District</b>			
Charles Beckman, Manager of Watershed and Recreation	11/15/2022	charles.beckman@ebmud.com	(209) 772-8203
Justin Mynk,	10/27/2022	justin.mynk@ebmud.com	(209) 772-8258



## **APPENDIX B INTERVIEW QUESTIONS**

The below questions are in support of a study being conducted in support of the Tahoe Central Sierra California Forest Residual Aggregation Market Enhancement (Cal FRAME) Pilot Project lead by the Placer County Water Agency (PCWA) and funded by the Governor's Office of Planning and Research. An element of the project involves assessing the potential role of water agencies within the Tahoe Central Sierra region as it relates to forest health and feedstock availability. Specifically, the handling of forest residuals such as branches, leaves, and small diameter trees (less than 10 inches diameter at breast height) resulting from forest health and fuels reduction activities. The information generated based on feedback received from the participating water agencies will be combined with other research to help inform potential approaches for biomass feedstock aggregation on a regional scale, and how the associated entity may be structured and function.

We have prepared responses to Agency Information questions where information is readily available. Please review and provide any revisions or edits as needed – they can be provided in writing and/or during our interview. Please be prepared to discuss the Study Questions during the interview.

### Agency Information

1. **Agency Name:**
2. **Contact Name, Title, E-mail, Phone Number:**
3. **Water agency service location and size:**
4. **Services (potable water, irrigation, hydroelectricity, recreation, other):**
5. **Watershed(s) (facility location and water source):**
6. **National Forest(s):**
7. **Brief Summary of Facilities (Note that the facility descriptions focus on those located in areas with existing forest health or biomass utilization programs or in areas we expect may benefit from such programs):**
8. **Existing program(s) being implemented by your agency related to forest health management and biomass removal. Please edit and/or identify additional programs as appropriate.**
9. **Description of planned program(s) related to forest health management and biomass removal. Please include the following details if readily available: size of project in acres, funding source(s), project partners and the role of your agency, jurisdiction(s), the purpose/objective and justification for the program, the type (wildfire recovery, fuels treatment, forest health, vegetation maintenance, etc.); include treatment types and specify how biomass is handled (piled and burned, transported to a facility, decked, etc.).**

### Study Questions

1. **Select the top three motivations for investing in forest management and biomass removal projects. If not listed here, please provide a description.**
  - a. **Protect infrastructure**
  - b. **Protect catchment area**
  - c. **Promote climate resilience (improve water yield)**
  - d. **Response to fire, wildfire recovery**

- e. Create power source
  - f. Community protection
  - g. Improve water quality
2. Does your agency recognize a cost benefit to avoiding wildfire impacts to infrastructure and the watershed? If so, please characterize those benefits.
  3. What wildfire impacts has your agency and its facilities sustained? If applicable, what actions is your agency taking in support of avoided wildfire impacts to water system infrastructure and local and downstream water users?
  4. Is biomass generated by your agency's projects being handled in a way that meets your agency's forest health/watershed objectives? If not, what are the limitations?
  5. Does your agency have partners in forest health and biomass utilization – do you collaborate with other levels of government? Do you work with nonprofit organizations or Tribes?
  6. What are the funding sources for this work - state, federal, and/or local? Are these funding sources stable through the planned project?
  7. What are the challenges, limitations or hurdles that were or are being experienced in development of the program? How are these affecting plans for future forest management and biomass utilization?
  8. If you were offered a long-term, economically viable contract for biomass removal, how would that change your future plans for forest management/would your agency participate in a program like that?
  9. What role do you see for your agency in forest health and biomass utilization in the future? Has your agency ever considered sponsoring or being involved with a biomass waste utilization project?

**APPENDIX C**  
**NORTHSTAR COMMUNITY SERVICES DISTRICT**  
**RESOLUTION REGARDING**  
**BIOMASS CONVERSION FACILITY**

**A RESOLUTION OF THE BOARD OF DIRECTORS OF THE NORTHSTAR COMMUNITY SERVICES DISTRICT  
TO COMMENCE PLANNING AND DEVELOPMENT OF BIOMASS CONVERSION FACILITY**

WHEREAS, the Northstar Community Services District (“District”) is a community services district, organized and operating under the authority of Government Code sections 61000 *et seq.*; and

WHEREAS, pursuant to its authority under Section 61100(d) of the Government Code, the District provides wildland fire protection and defensible space services including forest fuel reduction through the chipping of woody biomass, which becomes organic solid waste; and

WHEREAS, pursuant to Section 61100(c) of the Government Code, the District is authorized to “[c]ollect, transfer, and dispose of solid waste, and provide solid waste handling services, including, but not limited to, source reduction, recycling, and composting activities, pursuant to Division 30 (commencing with Section 40000)” of the Public Resources Code; and

WHEREAS, Section 40051 of the Public Resources Code directs state and local agencies to “[m]aximize the use of all feasible source reduction, recycling, and composting options, in order to reduce the amount of solid waste that must be disposed of by transformation and land disposal,” with source reduction ranked the highest priority among the promoted waste management practices; and

WHEREAS, “[n]otwithstanding any other provision of law,” Section 40059 of the Public Resources Code bestows upon the District the authority to determine all aspects of solid waste handling which are of local concern, “including, but not limited to, frequency of collection, means of collection and transportation, level of services, charges and fees, and nature, location, and extent of providing solid waste handling services;” and

WHEREAS, the District is considering biomass conversion as a solid waste handling service to increase the efficiency and effectiveness of its source reduction capabilities through the controlled combustion of wood, wood chips, and woody waste; and

WHEREAS, by constructing and operating a biomass conversion facility, the District could realize a number of benefits consistent with its statutory powers and purposes, including source reduction of solid woody waste, enhanced wildland fire risk mitigation through reduced forest fuels, and incidental heat production to offset fossil fuel use within the District.

NOW, THEREFORE, THE BOARD OF DIRECTORS hereby resolves and orders as follows:

1. The District is hereby authorized to explore the planning, development, and financing of a biomass conversion facility and the potential sale of heat incidentally generated by the conversion process, pursuant to the District’s solid waste handling powers.
2. Any such facility or project developed pursuant to this Resolution shall require adequate environmental review under the California Environmental Quality Act and compliance with all applicable state and local regulations.

3. The District's General Manager and staff are authorized and directed to take all actions necessary for or incidental to the express or implied powers of the District to implement this Resolution.

PASSED AND ADOPTED on January 19, 2022.

**APPENDIX D**  
**PROGRAMS RELATED TO FOREST HEALTH, FUELS**  
**REDUCTION AND BIOMASS UTILIZATION**

Water Agency	Project Name	Date(s)	Type	Size (acres)	Funding Source(s)	Cost (if available)	Project Partners	Water Agency Role	Project Objective	Treatment Type	How is Biomass Handled
PCWA/Placer County	French Meadows Restoration Project	2019 - current	Forest Health/Fuels Treatment	28,000 (12,000 treated)	Placer County & PCWA through Middle Fork Project, USFS, CAL FIRE and SNC, private donors through TNC		Tahoe National Forest, American River Conservancy, Sierra Nevada Conservancy, Placer County Water Agency, The Nature Conservancy, Sierra Nevada Research Institute, and Placer County	Inspiration, Funding	Reduce threat of catastrophic wildfire in critical watershed (French Meadows Reservoir)	mechanical thinning, mastication, hand thinning, reforestation, and prescribed fire	mechanical removal, prescribed fire
PCWA/Placer County	Middle Fork American River Project Fuels Reduction Management Program		Forest Health/Fuels Treatment		PCWA		Placer County, PCWA	Funding	Reduce threat of catastrophic wildfire in critical watershed (French Meadows Reservoir)	mechanical thinning, mastication, hand thinning, reforestation, and prescribed fire	
PCWA	Middle Fork American River Watershed Restoration Project	2021 - current	Forest Health/Fuels Treatment	494	SNC 1337 for 494 acres on federal lands		PCWA	Implementation	Reduce threat of catastrophic wildfire in critical watershed (French Meadows Reservoir)		
Placer County	Regional Forest Health Program										
Placer County	Numerous programs related to air quality, firewise communities and tree mortality										
Placer County/NCS	North Tahoe Truckee Biomass Task Force	8/2022 - Current	Forest Health/Fuels Treatment					Partner	Complete integrated infrastructure and fuel supply study which will lay the framework for potential biomass facilities by Placer County, Town of Truckee/Airport District, and NCS. Establish and understanding of the current biomass fuel availability and its long term sustainability. Analyze: effectiveness of biomass for renewable energy and heating; centralize biomass processing; reduce the overall cost of biomass disposal; reduce GHG from open pile burning and long trucking routes.		
Placer County/NCS	North Tahoe Truckee Biomass Task Force - Green Waste Integrated Infrastructure and Fuel Supply Study	8/2022 - Current	Organization		Tahoe Truckee Community Foundation (primary). Town of Truckee, NCS, County of Nevada, Placer County	\$19,000		Funding	Study of the current biomass fuel available and long term sustainability, with infrastructure study to lay the framework for integrating potential biomass facilities by the County, Truckee and NCS.	NA	NA
EID	Caples Creek Watershed Ecological Restoration Project	2017 - 2020/21, applications for 10-15 year extension	Forest Health/Restoration	8,800 with 25 meadow and aspen restoration (3,400 acre wildfire from prescribed burn)	Sierra Nevada Conservancy Proposition 1 Grants Program; USFS for fire suppression	\$1.1M + additional for fire suppression	Sierra Nevada Conservancy, Eldorado National Forest Implementation by: USFS, California Conservation Corps, California Association of Local Conservation Corps, Generation Green, Washoe Tribe, other organizations providing field support	Lead Agency, Implementation	Primary objective to maintain forest health and water quality in critical water supply watershed. Secondary objective Pprevent potential impacts to facility District infrastructure in vicinity and nearby high value real estate (Kirkwood).	prescribed fire, meadow restoration, aspen enhancement	pile burning, with successive efforts trending toward broadcast burn
EID	Sly Park Vegetation Management Program	2011 - to current? Possibly since 80s	Vegetation Management	272	CALFIRE?		EID, CALFIRE, SPI	Collaborative Partner	Maintain WUI between District, USFS, private industrial and Pollock Pines community. Protect the park, water supplies, and surrounding communities against risk of catastrophic wildfire.	hazard tree removal, mastication, hand thinning and commercial salvage and select harvest to achieve shaded field break conditions	pile burning and chipping, prescribed burn
EID	Sly Park Fuels Treatment Area	2014 (?)	Fuels Treatment	20	CALFIRE Grant 14-01		EID, CALFIRE, SPI	Lead Agency, Implementation	Protect the park, water supplies, and surrounding communities from catastrophic wildfire. Treat areas not covered by CALFIRE treatments under VMP.	mechanical thinning, hand thinning, tree pruning	pile burning and chipping
EID	Sly Park Phase 1A Treatment Area	2018 - 2020	Fuels Treatment	168	CALFIRE Grant		EID, CALFIRE, SPI	Lead Agency, Implementation	Protect the park, water supplies, and surrounding communities from catastrophic wildfire. Treat areas not covered by CALFIRE treatments under VMP.	mechanical thinning, hand thinning, tree pruning	pile burning and chipping
EID	Sly Park shoreline	2019 - 2021	Fuels Treatment	118	CALFIRE Grant 2017-18		N/A	Lead Agency, Implementation	Reduce fuels to mitigate the wildfire threat to communities and critical water storage facilities	hand thinning, chip, pile and burn	pile burning and chipping
EID	Sly Park canopy reduction (shorline area)	2021	Fuels Treatment	118	EID		N/A	Lead Agency, Implementation	Reduce fuels to mitigate the wildfire threat to communities and critical water storage facilities		
EID	Sly Park insect salvage	2022	Fuels Treatment/Hazard Tree Removal	118	EID		N/A	Lead Agency, Implementation	Remove hazard trees to reduce threat to public and worker safety and mitigate the wildfire threat to communities and critical water storage.		
EID	El Dorado Irrigation District Vegetation Management Project (Sly Park, Weber Lake, Camp 5 Maintenance Area, Flume 46 on El Dorado Canal)	2019 - 2021	Fuels Treatment	570	CALFIRE CCI		CALFIRE, others	Lead Agency, Implementation	Reduce fuels to mitigate the wildfire threat to communities and critical water storage facilities	mechanical thinning, hand thinning, tree pruning	mastication, lop and scatter (Camp 5); pile burning (Flume 46)
EID	Post King Fire Hazardous Fuels Treatments at Camp 5	2015	Post-Fire Hazard Trees/Fuels Treatment		EID		Tie in to Fire Adapted 50 (El Dorado Resource Conservation District)	Lead Agency, Implementation	Reduce fuels to mitigate the wildfire threat to communities and critical water conveyance structures	hazard tree removal, mechanical thinning, hand thinning, tree pruning, remove fuel ladders	mastication
EID	Vegetation Right-of-Way Management Program		Vegetation Management	est 585	EID		Tie in to other fuels reduction projects (various jurisdictions)	Lead Agency, Implementation	Facilitate access for inspection, maintenance and repair, and provide benefits to WUI	vegetation removal, thinning	mastication?
EID	Flumes: Rebuilding after the Caldor Fire	currently underway	Post-Fire Hazard Trees/Fuels Treatment	est 1,800 trees	EID		N/A	Lead Agency, Implementation	The hazard trees present risk to public and worker safety, and threaten additional damage to the District's critical water conveyance structure	hazard tree removal	
EID	Fire Adapted 50 - Sly Park Vegetation Management Project Phase II	2018	Fuels Treatment	260	SNC	\$500,000 by SNC	SNC (funding), El Dorado RCD (Lead Agency)	Collaborative Partner		mastication, feller-bunding and skidding, slashing, hand piling, tractor piling, pruning	mastication, pile burning, chipping



EID	Camino to Pollock Pines Fuel Break		Fuels Treatment		CALFIRE, USFS		El Dorado RCD, CALFIRE, ENF	Collaborative Partner	Create shaded fuel break across jurisdictions	mechanical thinning, hand thinning, tree pruning	pile burning and chipping
EID?	Weber Creek SP-1, Phase One Fuels Reduction Project	2017	Fuels Treatment		CALFIRE Grant #5GS15146						
NID	Scotts Flat Fire Fuels Treatment and Healthy Forests Project	7 years; current phase 2019 - 2022 (3 years)	Fuels Treatment	500 treated	SNC - Watershed Improvements Grants Program	\$1M	SNC (funding and Lead Agency)	Applicant, Implementation	Reduce fuels to mitigate the wildfire threat to communities and critical water conveyance structures	timber harvest, mastication, hand thinning	Previously sold to SPI and Rio Bravo; now, mastication, chip and spread
NID	Bear River Wildfire Recovery Project (multiple phases)	2021	Post-Fire Hazard Trees/Fuels Treatment	230	NID (80 acres); SNC (150 acres); CALFIRE CFIP (125 acres)		SNC (funding); CALFIRE (funding)	Applicant, Implementation	Post-fire habitat recovery, improve wildlife habitat, reduce the risk of high-severity wildfire.	hazard tree removal, thinning, mastication	trees are masticated, lopped and scattered; woody biomass masticated, chipped and spread
NID	Rollins Reservoir Wildfire Risk Reduction and Hazard Tree Removal Project (two phases)	2016 - current	Fuels Treatment/Hazard Tree Removal	183	CALFIRE CFIP (2x)		CALFIRE (funding)	Applicant, Implementation	Reduce fuels to mitigate the wildfire threat to communities, critical water and power infrastructure, and campgrounds, and to promote watershed health.	fuels reduction	
NID	English Meadow Floodplain Restoration Project	2021 - current	Forest Health/Floodplain Restoration	380	SNC and TWC		Plumas Corps, Sacramento State University, TNC, Under the Trees, Inc., SNC (funding), TWC (funding)	Lead Agency, Implementation	Improve hydrologic function, habitat enhancement, and catastrophic wildfire risk reduction.		
YWA	Community Impact Program Grant and Loan Program	2020 - 2025	Funding for Forest Health/Biomass Removal	NA	YWA - Board allocation		None (Grantees include Non-profits, Tribes, and other government agencies)	Funding	Funding for projects aligned with the priorities and objectives of the 5-year Strategic Plan. Watershed forest restoration and fuel load reduction for control of potential forest fires, including biomass disposal are Community Impact Grant and Loan Program Policy Page 3 of 7 Adopted: October 6, 2020.		
YWA	Watershed Resilience Program North Yuba Forest Partnership (NYFP)	20 years	Forest Health/Restoration	275,000	Forest Resilience Bond, public sources, private sources		USFS, The Nature Conservancy, South Yuba River Citizens League, Camptonville Community Partnership, Nevada City Rancheria Nisenan Tribe, National Forest Foundation, Sierra County, and Blue Forest Conservation	Collaborative Partner - Bullards Bar Reservoir	Collaboratively plan, analyze, finance and implement forest restoration across 275,000 acres of the North Yuba River watershed. Bullards Bar Reservoir -	thinning, prescribed fire	piled and burned; overarching goal is to switch from open piling and burning to using an outlet
YWA	Camptonville Biomass Plant	Under development	Biomass Utilization	40,000 BDT per year	Fiscal funding from Camptonville Community Partnership, grant funding (various), Private Funding		See Word document	Supporting Partner, Funding	Biomass plant to provide outlet for forest biomass generated from forest health projects in the Yuba River Watershed and use it to generate clean electricity, creating a regional market for forest waste material.		
YWA	Yuba Project	2019 - 2023	Forest Health/Restoration	14,545 in NYFP area	Forest Resilience Bond, CALFIRE, Yuba Water Agency		Tahoe National Forest, National Forest Foundation, Blue Forest Conservation, Yuba Water Agency, CALFIRE,	Funding (\$300,000 per year for 5 years), Collaborative Partner (project beneficiary)	Enhance watershed health, improve wildlife habitat, reduce risk of high-severity wildfire, and increase forest resilience.	Forest Service is conducting piling and burning or is pending. USFS had a contract with the facility in Susanville, and hauling in log form. Biomass utilization wasn't part of the initial project design, but was implemented later. Forest Service or NFF took care of the biomass utilization.	commercial timber, pile burning, prescribed fire
YWA	Trapper Project	2021 - TBD (several years)	Forest Health/Restoration	15,473 in NYFP area	Forest Resilience Bond	\$25M (Yuba II)	Tahoe National Forest, National Forest Foundation, Blue Forest Conservation, World Resources Institute, BEF	NYFP Partner; Funding (\$600,00 per year for 10 years - shared with Camp-Pendola Project), Collaborative Partner (project beneficiary)	Reduce risk of high severity wildfire and improve ecosystem health.		pile burning (unconfirmed)
YWA	Camp-Pendola Project	2021 - 2025	Post-Fire Restoration	1,200 in NYFP area	Forest Resilience Bond	\$25M (Yuba II)	Tahoe National Forest, National Forest Foundation, Blue Forest Conservation, World Resources Institute, BEF	NYFP Partner; Funding (\$600,00 per year for 10 years - shared with Trapper Project), Collaborative Partner (project beneficiary)	Post-fire habitat recovery, improve wildlife habitat, reduce the risk of high-severity wildfire.		pile burning (unconfirmed)
YWA	Yuba Foothills Healthy Forest Project	2020 - 2024	Fuels Treatment	5,375 in 71,000 project impact zone	CALFIRE	\$4.5M	Yuba Water Agency, Plumas National Forest, Yuba Watershed Protection and Fire Safe Council, private timber companies and landowners	Grant administrator, coordinator	Reduce fuels to mitigate the wildfire threat to communities.		Subsidy in 2020 and 2021 allowed them to transport chip material in Wheelabrator Shasta Energy Company, Inc. in Anderson, Shasta Company.
YWA	Yuba Watershed Protection and Fire Safe Council	2014 - current	Organization	NA	Various, including YWA	NA	NA	Funding council coordinator/executive director position and grant funding for projects			

YWA	South Yuba River Citizens League Watershed Coordinator match funds	2 years (4 years with YWA funding)	Organization	NA	Department of Conservation Grant, YWA match funds	NA	NA	Provide match funding for Watershed Coordinator position			
NTPUD	North Tahoe Regional Park and District Facilities Forest Fuels Management Program North Tahoe Community Wildfire Protection Plan	2019 - 2022 (3 years)	Fuels Treatment	135	BLM Southern Nevada Public Lands Management Act Grant; NTPUD	\$500,000	North Tahoe Fire Protection District, NTPUD, North Lake Tahoe Fire District, Tahoe Fire and Fuels Team, California Tahoe Conservancy	Funding, Project Partner	Reduce hazardous fuels on at least 135 acres in WUI.	Hand thin, pile burn, mechanically treat 135 acres	pile burning, chip and scatter
NCS	Measure U	2021 - 2031 (10 years)	Funding for Wildfire Prevention		NCS	\$450,000 annually	NPOA, Vail Resources, Mountainside Builders, CAMCO Condominium Association	Funding, Project Partner	Provide \$450,000 annually in local funding for wildfire prevention efforts.	Treatments determined by project.	Biomass utilization determined by project.
NCS	Northstar Fuels Reduction/Forest Enhancement Projects	2006 - current	Post-Fire Hazard Trees/Fuels Treatment	150 - 180 per year	Measure U (797 acres); various grant		Placer County Air Pollution Control District, CAL FIRE, California Fire Safe Council (CFSC), Sierra Nevada Conservancy (SNC), Ready, Set, GO!, Tahoe Mountain Resorts Foundation, Tahoe Truckee Community Foundation, Vail Resorts (Trimont Land Company), Northstar Property Owner's Association (NPOA), Mountainside Builders (Timberline Highlands LLC), and CAMCO Condominium Association	Funding, Project Partner	Prevent a catastrophic wildfire in the open space/comon areas, while enhancing the overall health of the forest.	hand crew, thinning, and chipping	piling logs, pile burning, spread slash, hauling
EBMUD	East Bay Watershed Master Plan		Watershed Health	29,000	EBMUD		Diable Fire Safe Council, Alameda and Contra Costa Counties, local fire districts, CAL FIRE Conservation Crews (implementation)	Funding, Lead Agency, Implementation	Long term management of the long-term management direction for District-owned lands and reservoirs that will ensure the protection of the District's water sources and preserve environmental resources on the District's lands, and to identify compatible public uses.		piled and burned, chipped and spread
EBMUD	Mokelumne Watershed Master Plan		Watershed Health	28,000	EBMUD		grazing leasees	Funding, Lead Agency, Implementation	Long term management of the long-term management direction for District-owned lands and reservoirs that will ensure the protection of the District's water sources and preserve environmental resources on the District's lands, and to identify compatible public uses.		grazing, pile and burn, prescribed burning
EBMUD	North Orinda Shaded Fuel Break		Fuels Treatment	1,400			Moraga Orinda Fire District, CAL FIRE Conservation Crews	Funding, Lead Agency, Implementation	Reduce fuels to mitigate the wildfire threat to communities and critical water conveyance structures	hand crew, thinning, and chipping	piled and burned, chipped and spread
EBMUD	San Pablo Reservoir Pine Removal		Hazard Trees/Fuels Treatment		EBMUD		Moraga Orinda Fire District, CAL FIRE Conservation Crews	Funding, Lead Agency, Implementation	Reduce fuels to mitigate the wildfire threat to communities and critical water conveyance structures		
EBMUD	Upper Mokelumne River Watershed Authority		Organization	352,000	Various			JPA member	Collaboration on watershed projects to protect and improve water quality, watershed planning, legislative advocacy, and utility-related matters		