

Staff Report

TO: Board of Directors

FROM: Greg Jones, Assistant General Manager
Jennifer Hanson, General Manager

DATE: July 12, 2022

SUBJECT: Plan for Water Workshop – Risk

ADMINISTRATION

RECOMMENDATION:

Open a workshop and provide a presentation describing various risks to District services.

BACKGROUND:

NID is continuing on the Plan for Water (PFW) process, which includes a comprehensive review of available water supply and the long-term impact on varying water demands. Once complete, it is anticipated the PFW will consist of a suite of possible supply and demand management strategies to address a range of future conditions to ensure reliable water supplies.

This workshop will be an informational presentation on some of the risks facing the District. Risks to NID may be subject to any facility or activity, that if adversely affected during a hazard event may result in severe consequences to public health and safety or interrupt essential services and operations for the community. This discussion will seek to understand general risks to the District and to use that knowledge to influence the way we analyze short and long-term District objectives and strategic priorities.

The success of the PFW will be largely dependent on stakeholder involvement. This is an open forum workshop, and public engagement is encouraged.

BUDGETARY IMPACT:

None at this time

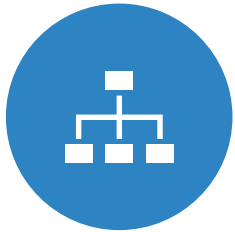
Attachments: (1)

- Presentation on Risks

NID Plan For Water Workshop

Risk : Stage #4

July 12, 2022



Business &
Operations



Regulatory



Financial / Legal



Environment &
Natural Events

Risks to NID : Many Different Forms

RISK Why Should We Care

NID Delivers Water for Life!

Water Services

- ▶ >19,500 Treated Water Service Connections
- ▶ >5,500 Raw Water Connections
- ▶ >100,000 Population Served

Hydroelectric Services

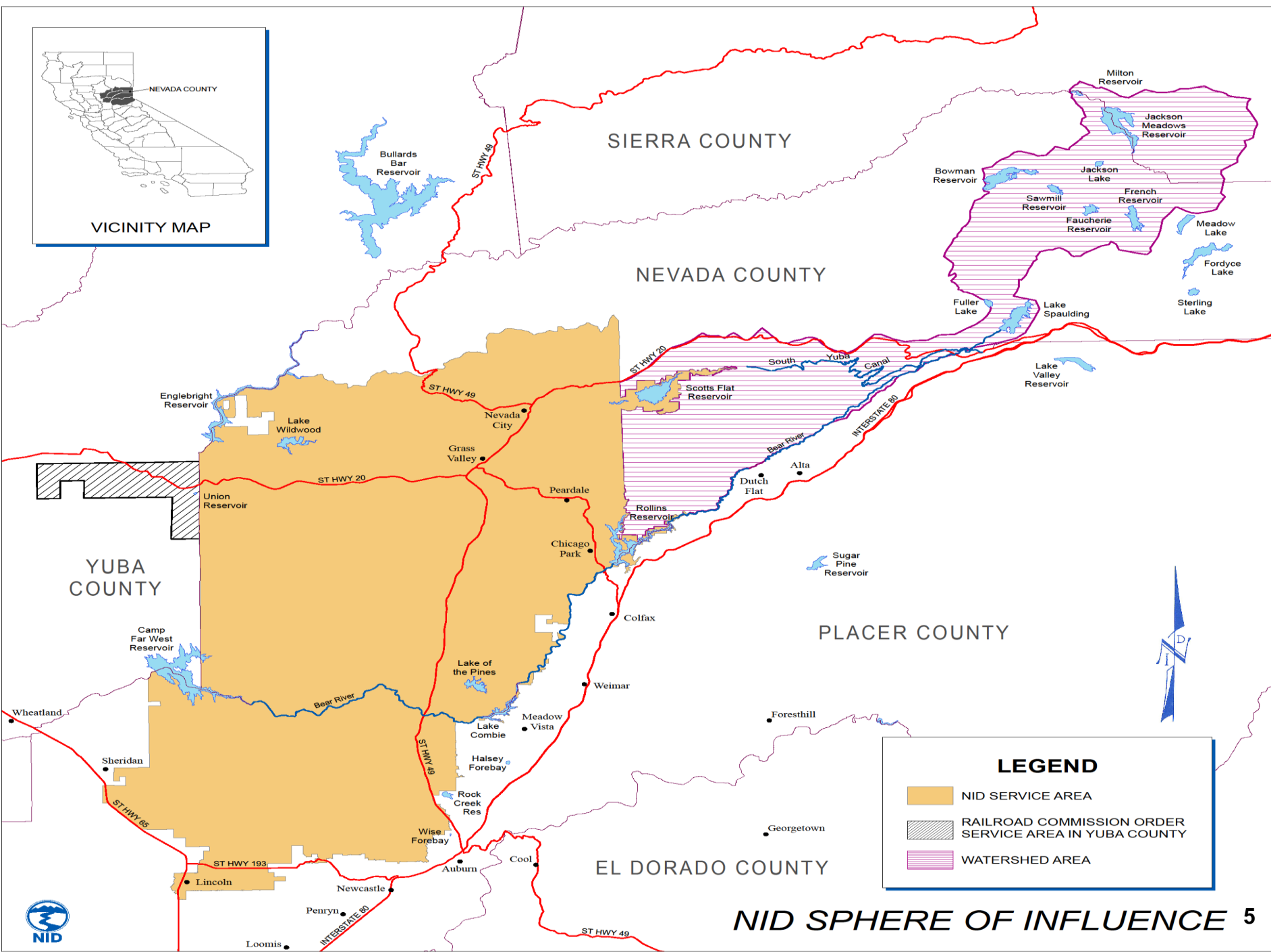
- ▶ 82MW - Enough to Power 60,000 homes
- ▶ Helps to Off-Set Water Rates

Recreation Services

- ▶ 8 Recreational Reservoirs in Sierra Nevada

Any facility, including infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in severe consequences to public health and safety or interrupt essential services and operations for the community at any time. (2021 Placer County LHMP)

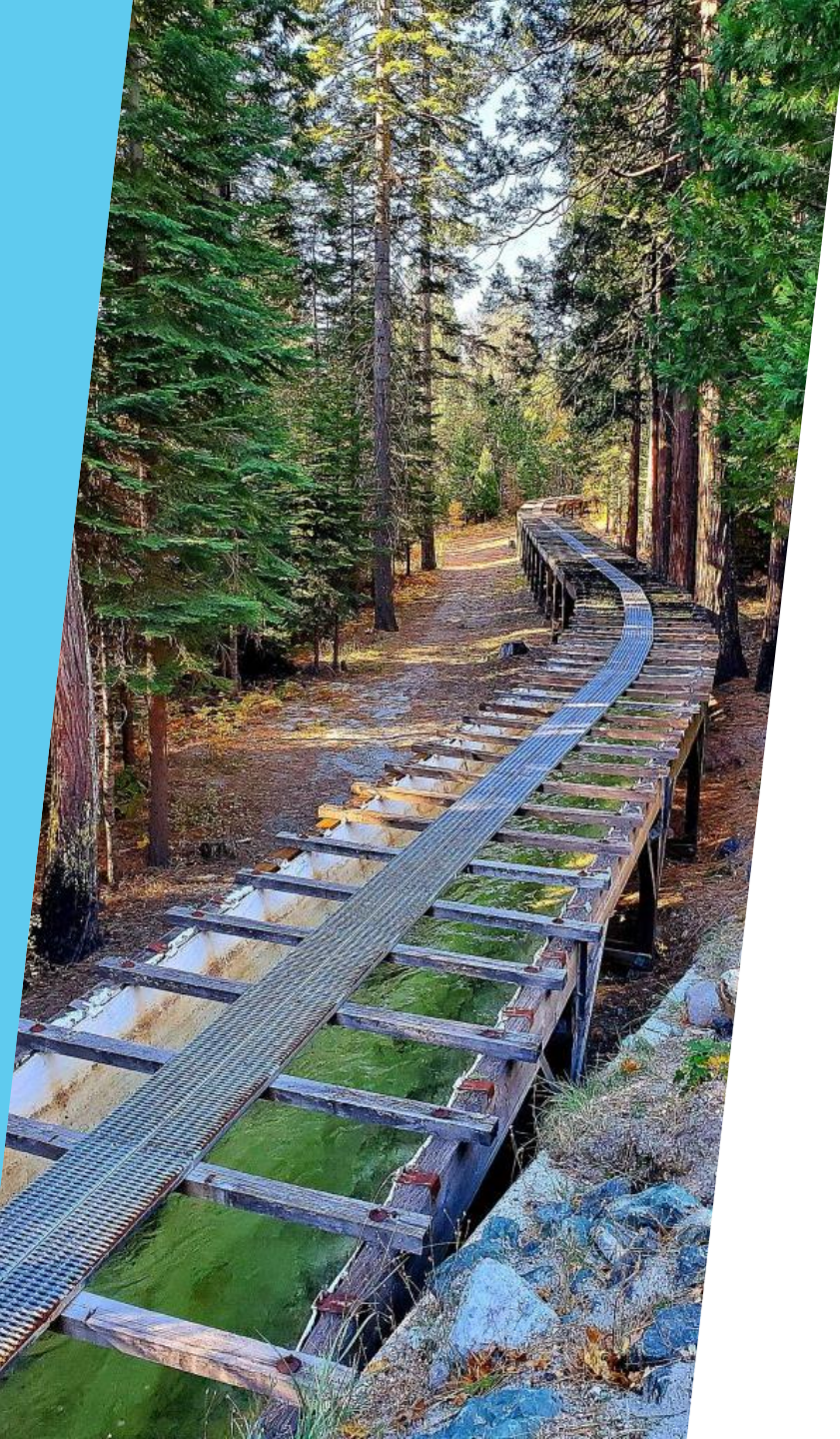




LEGEND

- NID SERVICE AREA
- RAILROAD COMMISSION ORDER SERVICE AREA IN YUBA COUNTY
- WATERSHED AREA





RISK Business & Operations: Critical Facilities & Aging Infrastructure

Water Treatment

- ▶ 6 Water Treatment Plants

Water Conveyance

- ▶ 500 Miles of Canal
- ▶ 400 Miles Treated Water Pipes
- ▶ 8 Storage Reservoirs

Power Generation

- ▶ 7 Powerhouses

Facilities

- ▶ Buildings, Workshops, Pump Stations, Water Tanks, Campgrounds, Gauging Stations, etc.

Fleet

- ▶ Passenger Vehicles, Heavy Equipment, Trailers, Snowmobiles, Boats, etc.

RISK Business & Operations: Public Safety

- ▶ **Water Quality Health & Safety**
 - ▶ Population of >100,000 Served
 - ▶ 26,000 Treated Water / 6,000 Raw Water Customers
- ▶ **Recreational Visitation**
 - ▶ 19 Campgrounds and Dispersed Camping
 - ▶ >300,000 Annual Recreation Visitors to NID Sites
- ▶ **Dam Safety**
 - ▶ 15 Dams Classified “High” to “Low” Risk (DSOD/FERC)
- ▶ **Forested Lands**
 - ▶ > 10,000 Acres Owned

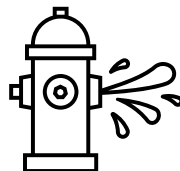
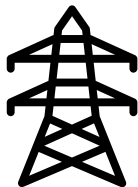


RISK Matrix Overview *

Critical Facilities & Aging Infrastructure

	Probability	R&R Cost	Loss of Water Supply / Disruption to Delivery Service	Loss of Hydroelectric / Sales Revenue	Regulatory Health & Safety	Potential Causes
Minor South Yuba Canal Failure	Likely	> \$10M	Moderate	> \$1M	Minor	* Landslide/Avalanche * Wildfire * Material Failure
Catastrophic South Yuba Canal Failure	Possible	> \$25M	Severe	> \$5M	Severe	* Landslide/Avalanche * Wildfire * Material Failure
General Canal Failure	Very Likely	> \$1M	Minor	< \$1M	Minor	* Extreme Weather Events * Aging Canal System * Public Influence
TW Main Failure	Very Likely	> \$1M	Moderate	< \$1M	Major	* Aging Infrastructure * 3rd Party at Fault
WTP Canal Intake Failure	Possible	> \$1M	Moderate	< \$1M	Major	* Extreme Rain Events * Aging Canal System * Public Influence
Complete Dam Failure	Unlikely	> \$25M	Severe	> \$5M	Severe	* Aging Infrastructure * Lack of Prev. Mtnc.
Complete Hydro Turbine Failure	Unlikely	> \$25M	Major	> \$5M	Moderate	* Aging Infrastructure * Lack of Prev. Mtnc.
MITIGATION ACTIONS - Min. Annual Maintenance Budget / Capital Improvement Plan / Emergency & Standard Materials On Hand / Adequate Insurance Levels						
	Probability Key: Unlikely: Probably never will occur Possible: May occur at some time Likely: Expected at some time Very Likely: Expected to occur soon		Loss of Water Supply Key: Minor: Supply loss < 1 week of Demand & Minimal disruption to local delivery area Moderate: Supply loss < 1 month of Demand & Noticeable disruption to local delivery area Major: Supply loss = 3 months of Demand & Widespread disruption to regional delivery area Severe: Supply loss > 3 months of Demand & Widespread disruption to NID service delivery area		Regulatory Health & Safety Key: Minor: Minor disruption to raw water delivery Moderate: Noticeable disruption to raw water delivery Major: Disruption to TW delivery Severe: Widespread disruption to TW delivery	

* Not a final Risk Matrix product or complete list of Risks and District Services effected, created in preparation for the Strategic Planning process.



RISK

Business & Operations: Human Resources, Employees & Culture

Employee Safety & Training

- ▶ > 50 Employee Safety Training Courses
 - ▶ Bloodborne Pathogens to Workplace Ergonomics
- ▶ Injuries & Accidents

Talent Recruitment & Retention

- ▶ Competitive Wage & Benefits
- ▶ Retirement Benefits
- ▶ Career Opportunities & Growth

Organizational Culture

- ▶ Great Place to Work
- ▶ Flexibility & Opportunity
- ▶ Productivity



RISK Business & Operations

Cyber Security & IT Infrastructure

- ▶ SCADA (Treatment & Hydro)
- ▶ Passive / Active Network Attacks
 - ▶ Attempt >10,000/month
 - ▶ 2021 Event
- ▶ Customer Protections
- ▶ Legacy Technology

Physical Facilities Security

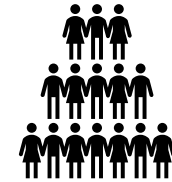
- ▶ Theft / Vandalism
- ▶ Remote Sites / Cameras



RISK Matrix Overview *

Human Resources, Employee & Culture

	Probability	Cost to District
Labor, Benefit & PERS Increases	Very Likely	> \$10M
	MITIGATION ACTIONS - Annual Labor Projections / Sustainable Revenue / Reserve Balances	
Workers Compensation Claims	Very Likely	< \$5M
	MITIGATION ACTIONS - Employee Training / Safety Review / OSHA Standards	
Office Facilities Upgrades	Likely	> \$5M
	MITIGATION ACTIONS - OSHA & Accessibility Standards	
IT Systems Upgrades	Likely	> \$1M
	MITIGATION ACTIONS - IT Infrastructure Plan	
Probability Key: Unlikely: Probably never will occur Possible: May occur at some time Likely: Expected at some time Very Likely: Expected to occur soon		



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RISK Regulatory

District-Wide

- ▶ Occupational Safety and Health Administration
- ▶ Permitting - Local and State
- ▶ Air Quality Control / Transportation

Treated Water Quality

- ▶ State and Federal Public Health Standards
 - ▶ California Environmental Reporting System (CERs)
 - ▶ Northern Sierra Air Quality Management District (NSAQMD)
 - ▶ Department of Water Resources (DWR)
 - ▶ Nevada & Placer Co's Department of Public Health
 - ▶ State Water Resources Control Board - Division of Drinking Water (SWRCB)



RISK Regulatory

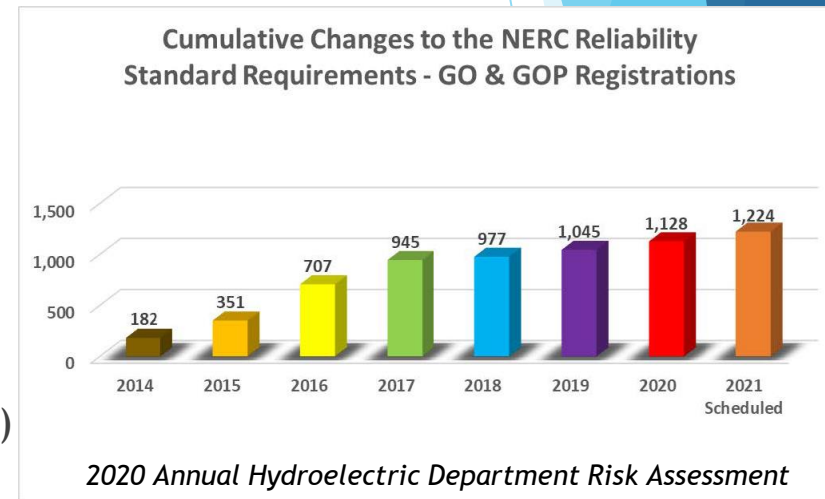
Hydroelectric

Regulatory risks such as reliability, security initiatives, dam safety, environmental, compliance, and re-licensing. Compliance falls to the following agencies:

- ▶ Federal Energy Regulatory Commission (FERC)
- ▶ U.S. Forest Service (USFS)
- ▶ U.S. Fish & Wildlife Service (USFWS)
- ▶ U.S. Geological Survey (USGS)
- ▶ Federal Communications Commission (FCC)
- ▶ North American Electric Reliability Corp (NERC)
- ▶ Western Electricity Coordinating Council (WECC)
- ▶ California Independent Systems Operator (CAISO)
- ▶ California Department of Fish & Wildlife (CDFW)
- ▶ California Energy Commission (CEC)

Dam Safety

- ▶ CA Department of Water Resources Division of Safety of Dams (DSOD)





RISK Regulatory

Water Rights & Use

- ▶ CA Emergency Declarations
- ▶ Curtailments / Bay-Delta Plan
- ▶ Unimpaired Flow / Voluntary Agreements
- ▶ Permits & Authorizations
- ▶ Federal / State / Local / NGO / Community Groups

RISK Matrix Overview *

Regulatory

	Probability	Cost to District (Loss of Revenue)	Loss of Water Supply / Disruption to Delivery Service	Regulatory Health & Safety	Potential Causes
Unimpaired Flow / Voluntary Agreement	Likely	> \$20M	Severe	Moderate	* Climate Change / Drought * Regulatory Demands
Curtaiments	Very Likely	> \$10M	Major	Moderate	* Climate Change / Drought * Regulatory Demands
Power Purchase Agreement Changes	Very Likely	> \$20M	Unknown	Unknown	* Change in Energy Markets * Sunsetting PPA's
Inreased Regulatory Expense	Likely	> \$5M	Unknown	Unknown	* Federal, State & Local Agencies
MITIGATION ACTIONS - Capital Lobby & Advocacy / Regional Cooperation / Legal Representation					
	Probability Key:		Loss of Water Supply & Disruption to Delivery Service Key:	Regulatory Health & Safety Key:	
	Unlikely: Probably never will occur		Minor: Supply loss < 1 week of Demand & Minimal disruption to local delivery area	Minor: Minor disruption to raw water delivery	
	Possible: May occur at some time		Moderate: Supply loss < 1 month of Demand & Noticeable disruption to local delivery area	Moderate: Noticeable disruption to raw water delivery	
	Likely: Expected at some time		Major: Supply loss = 3 months of Demand & Widespread disruption to regional delivery area	Major: Disruption to TW delivery	
	Very Likely: Expected to occur soon		Severe: Supply loss > 3 months of Demand & Widespread disruption to NID service delivery area	Severe: Widespread disruption to TW delivery	

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RISK

Regional Environmental & Localized Events

Climate Change : Reduced Snowpack, Drought & Reduced Water Availability

- ▶ Sierra Nevada is the headwaters for California providing **60% of the water** supply for the state.
- ▶ Significant reductions in snowmelt due to wintertime warming of **1-2°C** increasingly likely. (UC Irvine Mountain Snowpack and IPCC special report, 2018).
- ▶ Climate change exacerbates other hazards, such as drought, extreme heat, flooding, wildfire, and others.

RISK Regional Environmental & Localized Events

Catastrophic Wildfire / Tree Mortality

- ▶ Wildfire is an increasing threat to watersheds in the Sierra Nevada and throughout California due to forest conditions, human behaviors and our warming climate.
- ▶ 129 million dead trees on 8.9 million acres, 85% in the Sierra Nevada. Wildfire now occurring year-round, **Nevada County is a high risk community.** (USFS and CAL FIRE, 2017).



RISK Matrix Overview *

Regional Environmental & Localized Events

	Probability	Cost to District (Loss of Revenue)	Loss of Water Supply / Disruption to Delivery Service	Loss of Hydroelectric / Sales Revenue	Regulatory Health & Safety	Potential Causes
Multi-Year Drought	Likely	> \$10M	Severe	> \$5M	Major	* Climate Change
Catastrophic Wildfire	Likely	> \$25M	Severe	> \$5M	Major	* Climate Change * Public Influence
Extreme Weather Events	Very Likely	> \$1M	Moderate	> \$1M	Moderate	* Climate Change * Land Use Planning
MITIGATION ACTIONS - Drought Contingency Plan / Capital Improvement Plan / Back-up Power Systems / Emergency Action Plan / Forest Management Plan / Budget Resources						
	Probability Key: Unlikely: Probably never will occur Possible: May occur at some time Likely: Expected at some time Very Likely: Expected to occur soon		Loss of Water Supply & Disruption to Delivery Service Key: Minor: Supply loss < 1 week of Demand & Minimal disruption to local delivery area Moderate: Supply loss < 1 month of Demand & Noticeable disruption to local delivery area Major: Supply loss = 3 months of Demand & Widespread disruption to regional delivery area Severe: Supply loss > 3 months of Demand & Widespread disruption to NIDservice delivery area		Regulatory Health & Safety Key: Minor: Minor disruption to raw water delivery Moderate: Noticeable disruption to raw water delivery Major: Disruption to TW delivery Severe: Widespread disruption to TW delivery	

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RISK Mitigation & Planning

▶ Employee Training

- ▶ Injury & Illness Prevention Plan
- ▶ Secession Planning

▶ Operational Planning & Preparation

- ▶ Capital Improvement Planning
- ▶ Emergency Action & Response Plans
- ▶ Dams Public Safety Plans
- ▶ County Hazard Mitigation Plans
- ▶ Emergency Evac & Treatment Response Plans
- ▶ Drought Contingency Plan
- ▶ IT Infrastructure Plan

▶ Strategic Direction & Budget Resources



**THANK YOU
QUESTIONS?**

