Protect, Prevent and Prepare with NV Energy

June 24, 2021

Agenda

- Welcome
- Natural Disaster Protection Plan Overview
- Natural Disaster Protection Plan Highlights
- Public Safety Outage Management
- Q&A

Natural Disaster Protection Plan

- The safety of our customers, our employees and the environment is NV Energy's highest priority.

- Changes in the climate and environment are contributing to an increased risk of wildfires and other natural disasters in Nevada, like those seen in other Western states.

- In 2019, NV Energy supported Senate Bill 329, which was passed by the legislature and signed into law, that called for the utility to develop a Natural Disaster Protection Plan (NDPP).

- NV Energy has been working to make our electric grid more resilient in order to help protect our customers and the environment from the risk of natural disasters through its NDPP.

Natural Disaster Protection Plan

Current Consideration	Future Consideration - includes climate-change driven
Winter Storms (esp. with wind) **–** are a priority in the North and Mt. Charleston. Ice can accumulate, causing accidents and poles down. *Increased risk of an avalanche* ***Seiches*** - add landslide as possible cause (in addition to earthquakes); follow on NVE discussion to consider additional bodies of water beyond Lake Tahoe i.e. Lake Mead, Washoe County lakes, etc. ***Monsoons (esp. South NV)*** - may make sense to underground infrastructure or develop a pole stopper program ***Wildfires –*** create increased conditions for landslides BLM tracks annual grass fuel loading – both individually by species and in combination of species ***Earthquakes –*** can cause dam failure; internal discussion to identify dams ***Wind Occurrences*** – can cause higher than usual damage	***Tornadoes –*** include in future plans ***Land Subsidence*** (gradual settling or sudden sinking of the Earth's surface) • Apply to sinkholes? • Include impacts of overpumping / overdrawing aquifers? • Is this something that happens in Nevada or relegated to Arizona? ***Drought*** – ruled out as stand alone; noted that drought can result in future adequacy concerns ***Volcanoes*** – future considerations of NV impacts from Lassen and Mammoth volcanoes; discussed whether earthquakes are an early indicator. GIS overall – use maps to clarify infrastructure impacts

Changing Landscape

Original Forest

Prior to 1870, low-intensity fires burned routinely in the Tahoe Basin. These fires created an open, patchy forest dominated by large trees. The raging, high-intensity wildfires reported in today's newspaper headlines were uncommon.

Logging Era

During the 1870s to 1890s, much of the Tahoe Basin was logged. E.B. Scott in "The Saga of Lake Tahoe" states, "By the fall of 1897 nothing remained at Incline but stripped forest land."

The New Forest

A new forest establishes in the aftermath of the logging era. But now, fire has been effectively eliminated as a natural influence. Without frequent, low-intensity fires to thin dense stands of trees, the forest becomes overcrowded.

1870 1900 2000

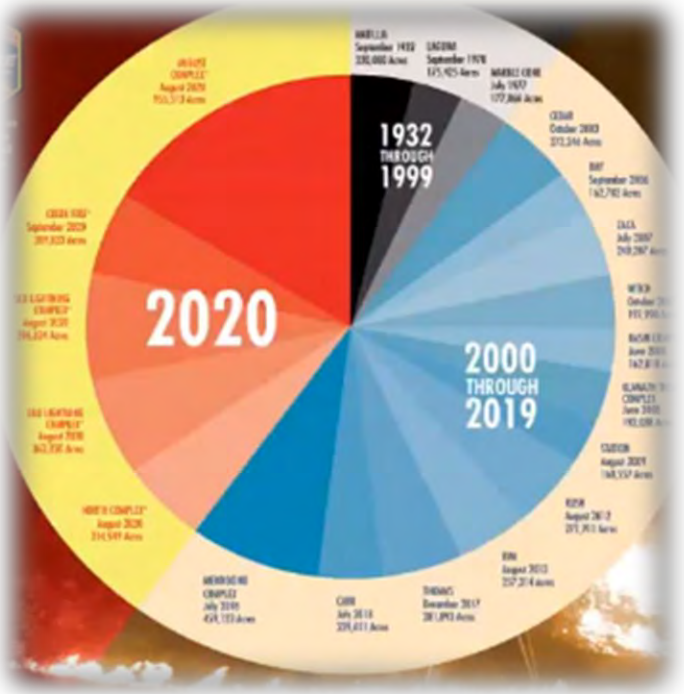
Tahoe's Forest Timeline

Emerald Bay - 1890s

Emerald Bay - 1990s

Increasing Wildfire Risk

- August Complex Fire > 1million Acres.
- > 4 million acres burned in 2020



Natural Disaster Protection Plan Highlights

- Since 2019, we've inspected nearly 40,000 wooden poles in the extreme and high fire risk areas of Nevada, making the needed critical repairs and vegetation management corrections.

- Increased the frequency of our vegetation management cycles in high fire risk areas. Since 2020, more than 37,000 unhealthy or hazard trees in these areas have been trimmed or removed for safety .

- Installed 30 weather stations and 10 wildfire alert cameras in extreme and high fire risk areas to help improve situational awareness. We are working to install 10 more cameras and are seeking approval to add 35 more weather stations in 2021.

Natural Disaster Protection Plan Highlights

NV Energy has partnered with state and local fire agencies to remove brush, grass and other vegetation from under our power lines and other equipment

Natural Disaster Protection Plan Highlights

Fuels Mitigation and Treatment

- Fuels treatment has occurred in all extreme and high fire risk areas.
- Fuel Breaks with 1,000 feet of clearance from infrastructure
- Resiliency Corridor Zone designations
- Targeted grazing
- Collaborative fuels treatment
- Hazard Tree Removal Project
- Fuel Inventory Mapping
- Pole grubbing & Right Of Way clearing
- Acres treated: ~9,000

Natural Disaster Protection Plan Highlights

Fuels Chipping, Removal & Education

Fire District Cooperative Partnership

Natural Disaster Protection Plan Highlights

Fuels Mitigation and Treatment

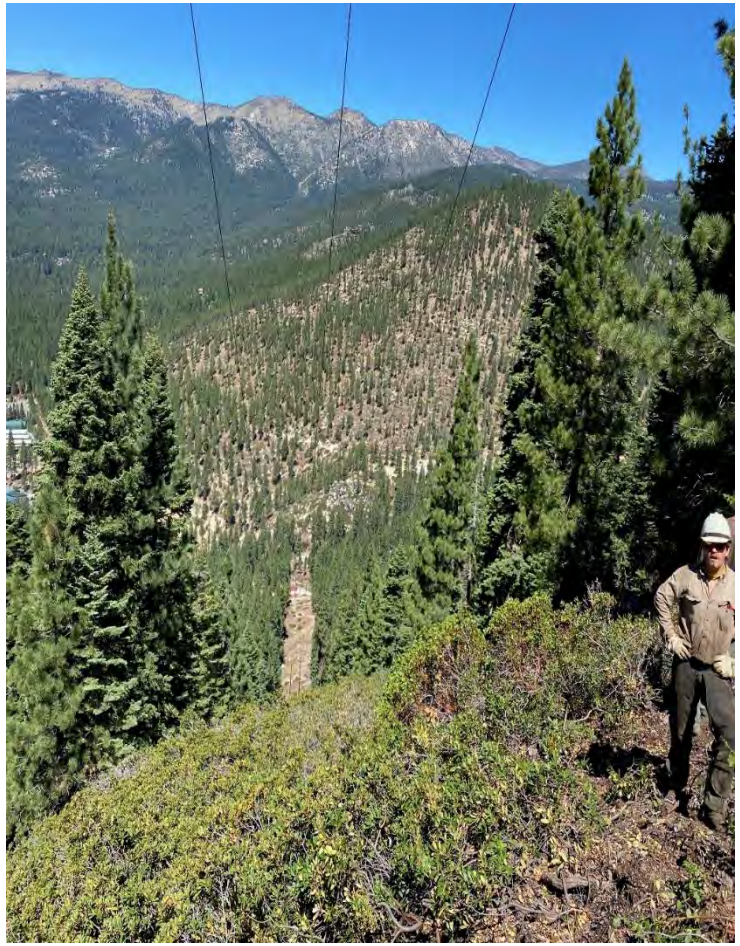
Fuel Breaks

Chipping & Masticator

Natural Disaster Protection Plan Highlights

Fuels Mitigation and Treatment

Right Of Way Clearing



Pole Grubbing

Natural Disaster Protection Plan Highlights

Fuels Mitigation and Treatment

Pole Grubbing

Natural Disaster Protection Plan Highlights

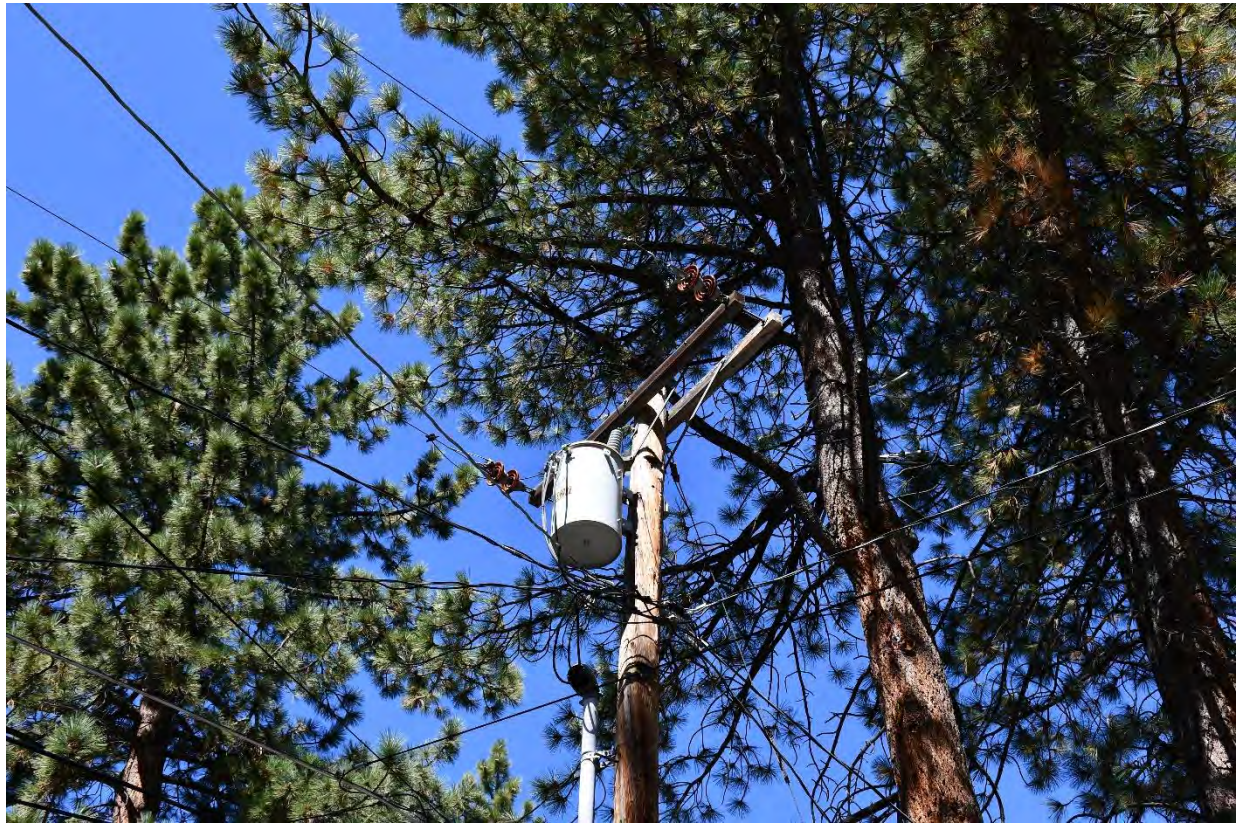
Fire Mesh Wrap Pilot

- 2021 New Construction Standard: Fire mesh to be included on all wood poles in all wildland areas
- Fire Mesh test occurred on January 21, 2021
  - Pole burned for 10 minutes with only exterior damage
- Muller 1295 Pilot executed in early 2021
  - 168 poles were wrapped

Selective Undergrounding Plan & Collaboration

NDPP Selective Undergrounding Plan

- Stakeholder Input
- Circuit Map Review
- Risk Score Template by Circuit
- Stakeholder Comments
- Final Ranking



Natural Disaster Protection Plan

Other Ways NV Energy is Working to Improve Grid Resiliency and Safety

- Hired two fire mitigation specialists
- Evaluating the use of covered conductor
- Installing non-expulsion fuses
- Replacing wood poles with iron and steel poles in some locations
- Rebuilding circuits in full or in part
- Eliminating tree attachments
- Using drone inspections of equipment and vegetation

Drone Technology

- Drones are being used by NV Energy to inspect our lines and right-of-ways.

- Drones help us
  - Reach hard to access places
  - See where we have vegetation issues, right-of-way needs clearing
  - Identify hot spots through thermal imaging
  - Perform field observations from the office
  - Identify where repairs are needed

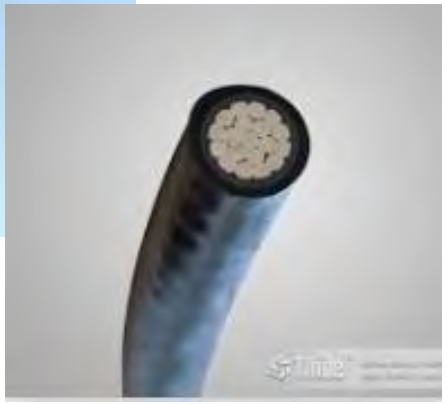
- Drones cameras have great zooming capabilities
  - Can zoom in from 400 feet above the line and clearly view labels/tags on electrical equipment as well as details on the ground

Drone Technology

Covered Conductor

- Electrical networks generally make use of uninsulated (bare) conductors.
- Insulated (covered) conductor systems may help reduce the fire risk by reducing the risk of contact between conductors or fallen/wind driven trees/branches resulting in a path to ground causing arcing and sparking.

Covered



Bare

Covered Conductor Systems

Public Safety Outage Management (PSOM)

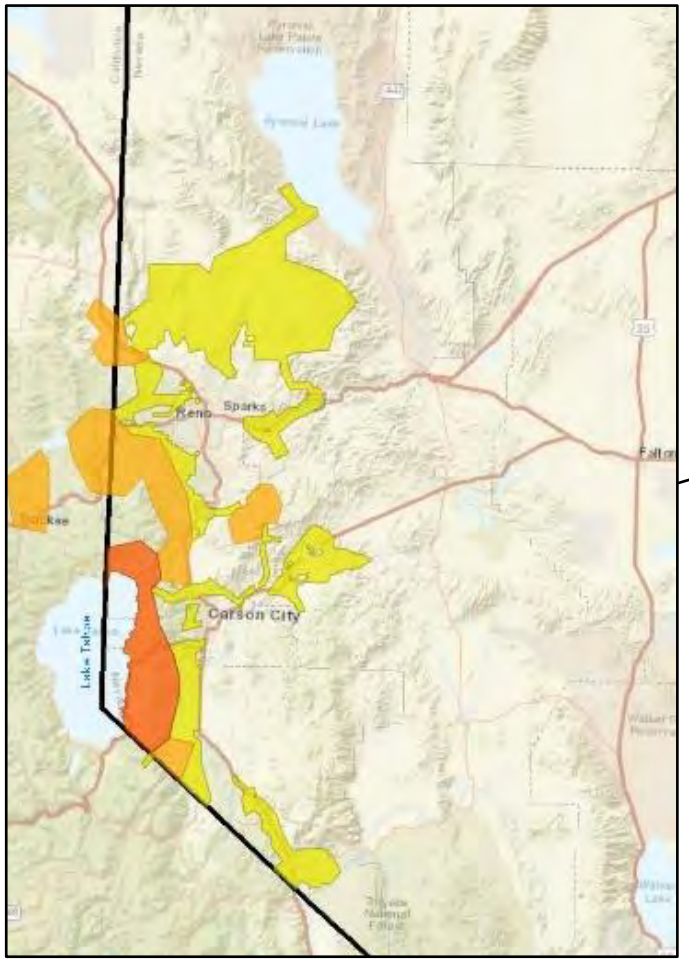
- Public Safety Outage Management (PSOM), or **proactive de-energization**, is an important measure of defense to reduce wildfire risk.

- PSOM was approved for use in **extreme fire-risk zones in Nevada encompassing Mt. Charleston and the Lake Tahoe basin**, which are categorized as Tier 3 zones. We are seeking approval to expand PSOM to elevated fire-risk areas of Nevada, which are categorized as Tier 2 and Tier 1-Elevated.

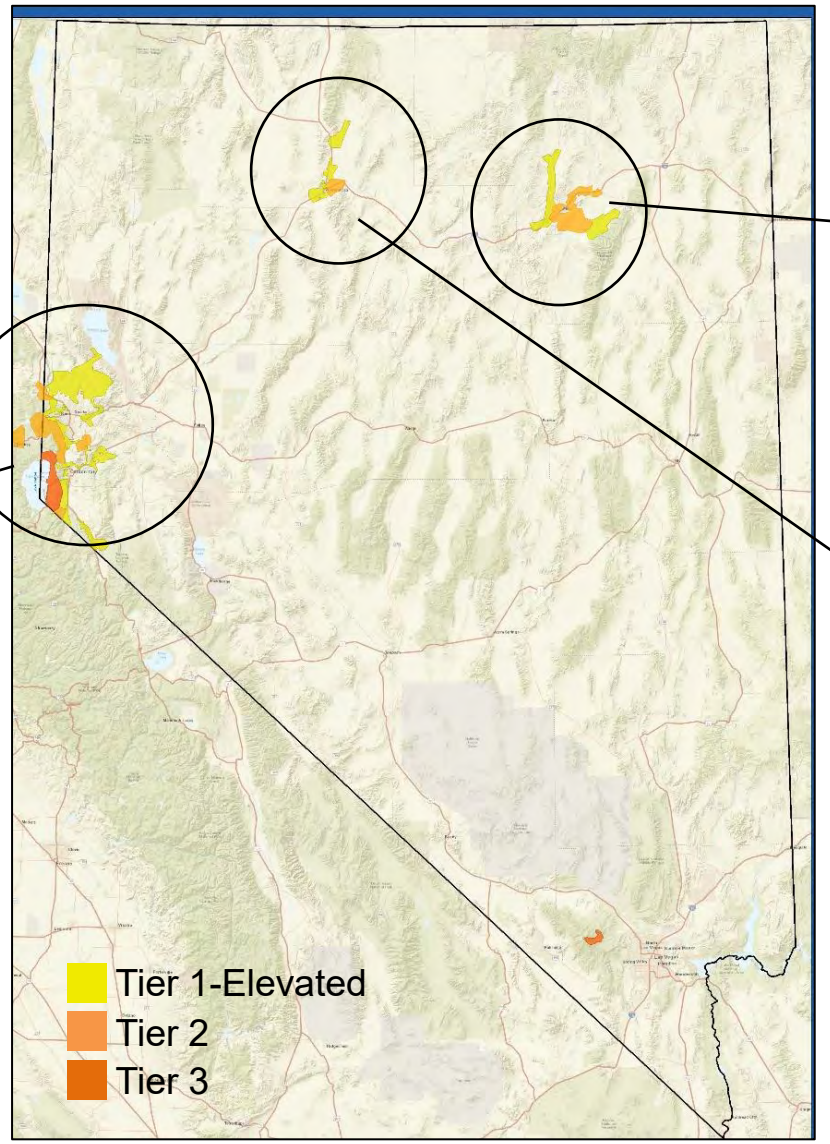
- During a PSOM event, **power is temporarily shut off for safety** in order to help prevent power lines, or debris blowing into power lines, and other equipment from causing a wildfire when certain environmental conditions are met and an evaluation of risk is done with local emergency management teams and other stakeholders.

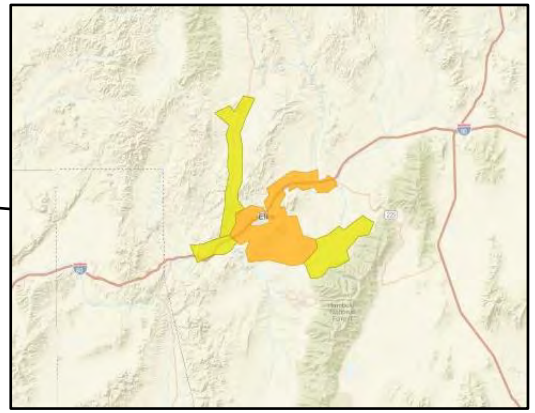
- Re-energization occurs when:
  - The **likelihood of a natural disaster has decreased**, and PSOM thresholds will not re-accelerate
  - After NV Energy conducts inspections of all Tier 3 infrastructure and takes all corrective actions necessary **to ensure it is safe to restore power**.

Expanded PSOM Areas

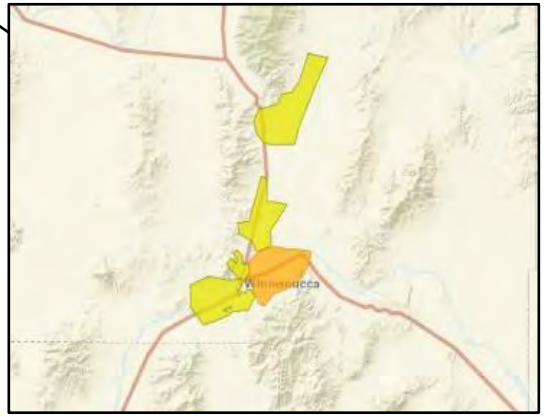


Washoe, Carson and Douglas County



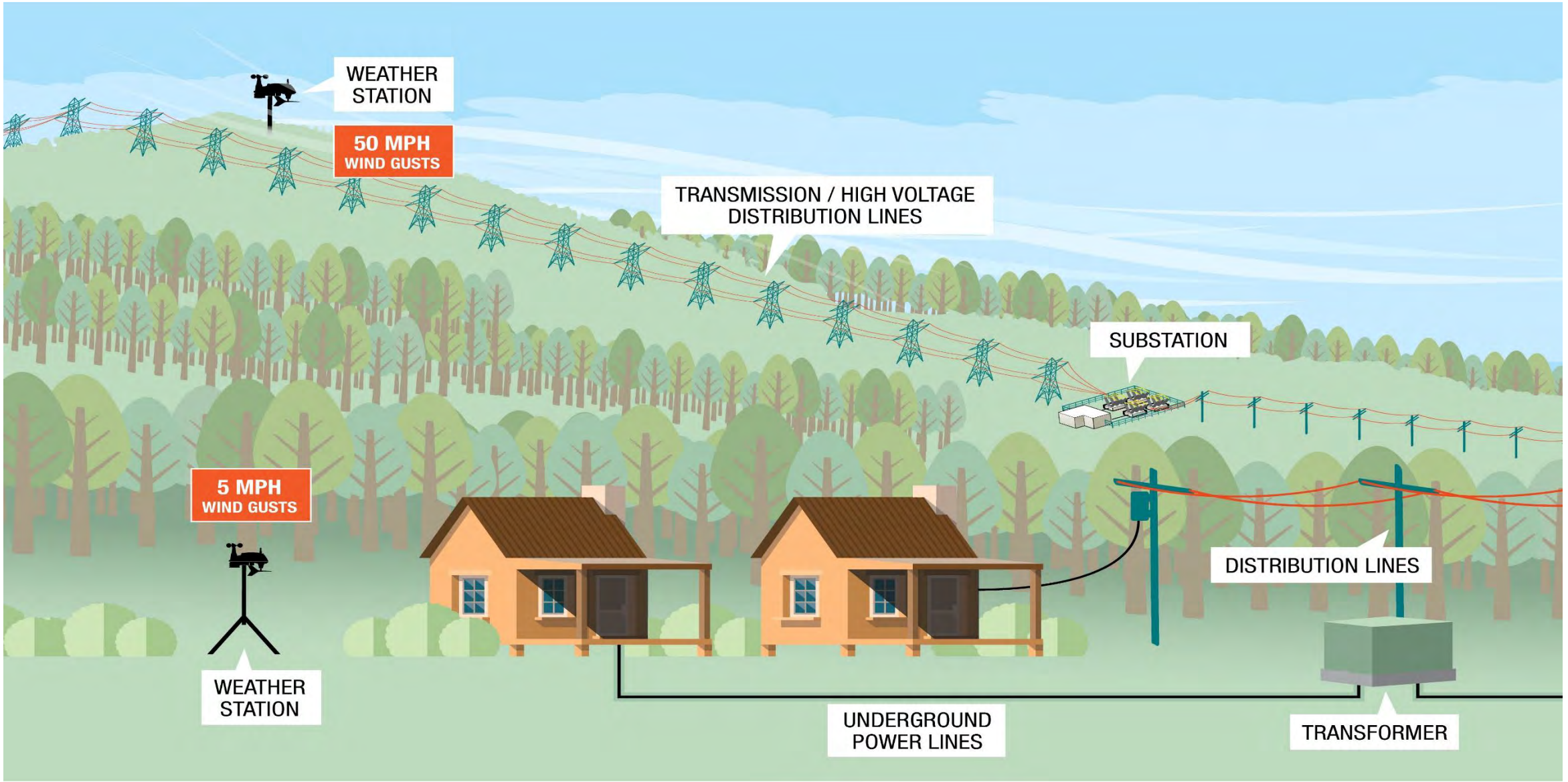


Elko County



Humboldt County

PSOM – System Evaluation



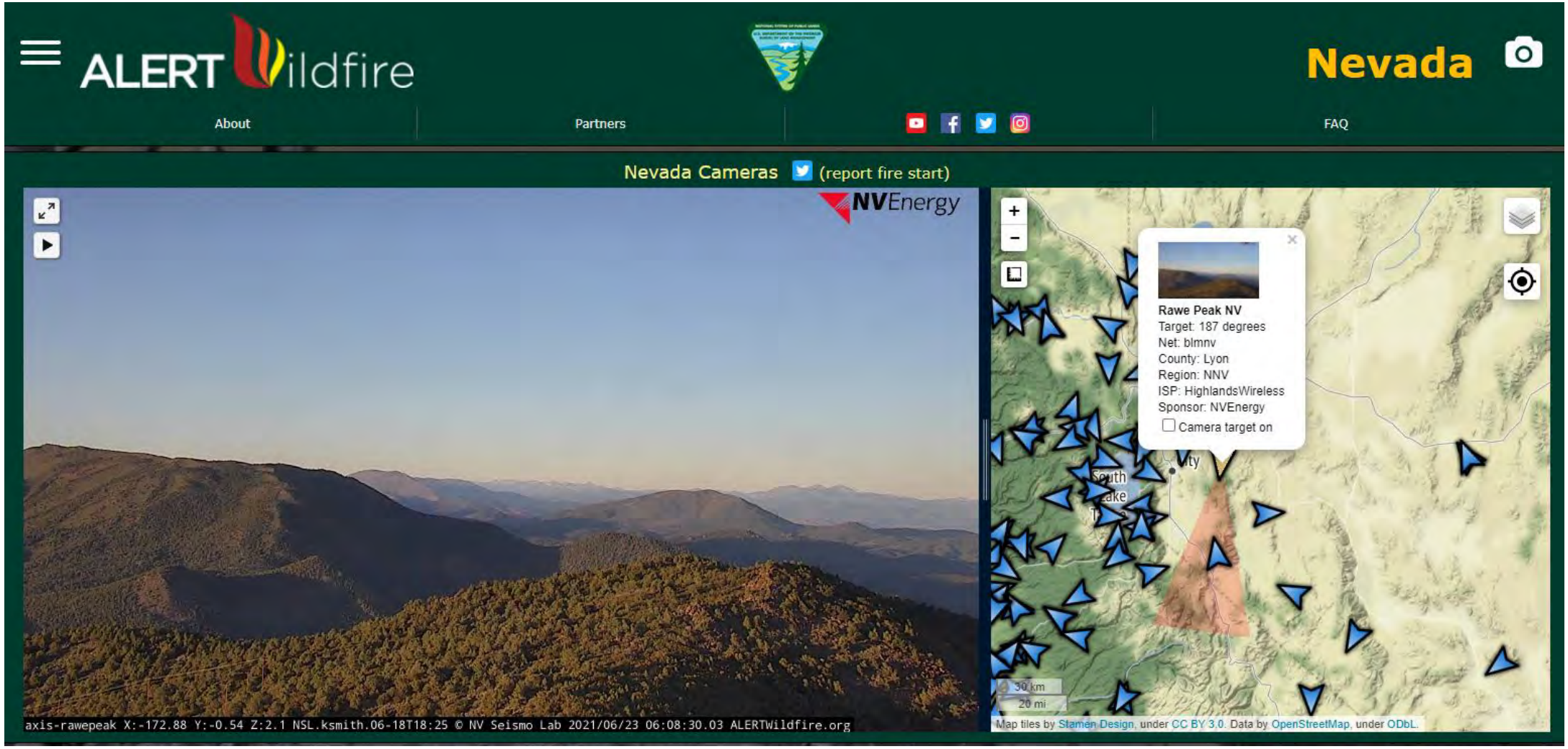
Weather Stations

Weather stations are cellular enabled solar + battery powered providing the following:

- Ambient Temp & Dew Point
- Rel. Humidity
- Wind Speed (sustained and gust)
- Wind Direction
- Fuel / Soil temp and moisture
- Rain Gauge

Wildland Fire Cameras

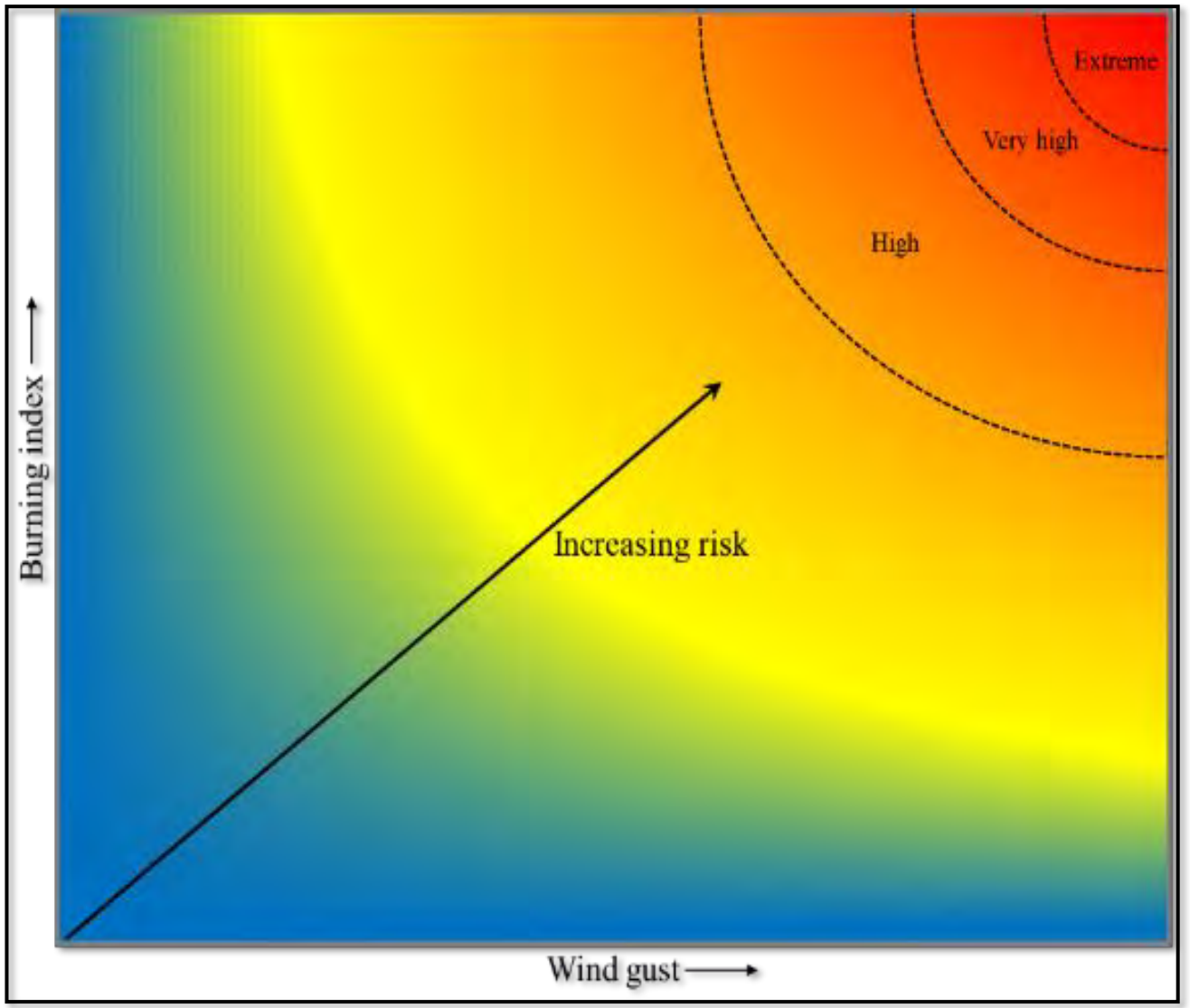
- Alert wildfire site - shared public-private partnership of a publicly available camera system network



PSOM Criteria Update for Tier 3 (Extreme Fire Risk)

NV Energy has proposed to modify criteria thresholds to align with the present wildfire risk across all Tiered areas

- Incorporating the **Burning Index**, which is derived from a combination of fire spread and energy release component (dryness of fuels)
- Two-part test allows for efficient way to combine both criteria into a single risk score
- Provides granular quantitative analysis for lower wildfire tiers with smaller scope and scale of impact



Burning Index Explained

Flame length	Interpretation
Less than 4 feet (BI 40 or less)	Fires can generally be attacked at the head or flanks by firefighters using hand tools. Handline should hold fire. Most prescribed burns are conducted at 0 – 3 feet.
4 to 8 feet BI 40 to BI 80	Fires are too intense for direct attack on the head with hand tools. Handline cannot be relied on to hold the fire. Bulldozers, engines, and retardant drops can be effective.
8 to 11 feet BI 80 : BI 110	Fire may present serious control problem: torching, crowning, and spotting. Control efforts at the head will probably be ineffective.
More than 11 BI more than 110	Crowning, spotting, and major fire runs are probable. Control efforts at the head of the fire are ineffective.

PSOM Criteria Activation Update

Proposed Quantitative Criteria Enhancement for Tier 3

- The prior criteria lead to a statistically significant increase in outage occurrence
- The proposed modification is to move to a two-part test using **Wind Gust Speed** and the NFDRS **Burning Index** (BI)
  - BI is a widely used fire danger index that incorporates ERC and the fire spread rate into a single *value (i.e., how dry the fuels are and how fast a fire would grow if ignited)*

Proposed PSOM Criteria

Region	BI	Wind gust (mph)
North (Greater Lake Tahoe)	> 70	> 40 mph
South (Mount Charleston)	> 70	> 45 mph

PSOM Qualitative Criteria

In addition to the numbers, NV Energy looks at **various qualitative factors** that include:

- Condition of vegetation and fuel dryness in and along the rights-of-way
- Input from key customers
- Readiness of utilities and telecommunications providers
- Field observations and input from local fire agencies
- National Weather Service input
- Expected duration of conditions
- Customer Resource Center readiness
- Condition of infrastructure

Public Safety Outage Management Readiness

- Ensure we have your **updated contact information** at **nvenergy.com/myaccount**.
- **Call 775-834-4444 to** sign up for our **Green Cross Program if you depend on electricity** for 24/7 life support equipment. We will provide advance notification of any planned outage.
- Have a **personal outage safety plan** in place for every member of your household including pets and livestock.
  - “Go-bag” that includes batteries, flashlights, charging devices, water, food, etc.
- **Sign up for emergency alerts** from your county so that you can be informed of other wildfire safety-related updates.
- More outage preparedness and fire safety **tips are available at nvenergy.com/psom** and **livingwithfire.com**.

Q&A

Email questions to ndpp@nvenergy.com
Visit nvenergy.com/psom for more information