

Resiliency and Mitigation Council

Tuesday, February 4, 2025

1:00 P.M.

I. Welcome and Opening Remarks

General Meeting Logistics

- This meeting is being broadcast online and is being recorded.
- The recording and associated meeting materials will be posted on the Council's webpage. Comments in the chat will not be recorded.
- For Council members online, please use the hand raise feature to speak.
- Except for public comment periods, only Council members online will be able to unmute themselves and turn on their camera.
- If public comments are taken, each speaker's time will be limited to 2 minutes to provide everyone who wishes to comment the opportunity to do so.
- To comment, fill out a speaking slip or the Google Form (if you are online).

III. Presentations from Universities

Northern Arizona University



What do we know about resident willingness to adapt to wildfire in Arizona? Social science insights from 2019-2024

Catrin Edgeley, PhD

School of Forestry, Northern Arizona University

Social adaptation to fire – at what scale?



Household



Community



Landscape

Fire Adapted Communities: two conceptions

Policy-based

- Objective, goal, or target
- Umbrella term for adaptation activities
- Implied end goal
- A goal in search of a process

Process-based

- No specific end goal; continual process
- Evolution of local context
- Bottom-up action
- Relying on emergent findings

Community studies conducted 2019-2024

Smoke adaptation

*Parks, Sedona,
Camp Verde*

Firewise and community mitigation

Yavapai Co.

Civic capacity

Patagonia



Post-fire flood insurance

Flagstaff

Home ignition zone work

*Kachina Village &
Mountainaire*

Risk responsibility

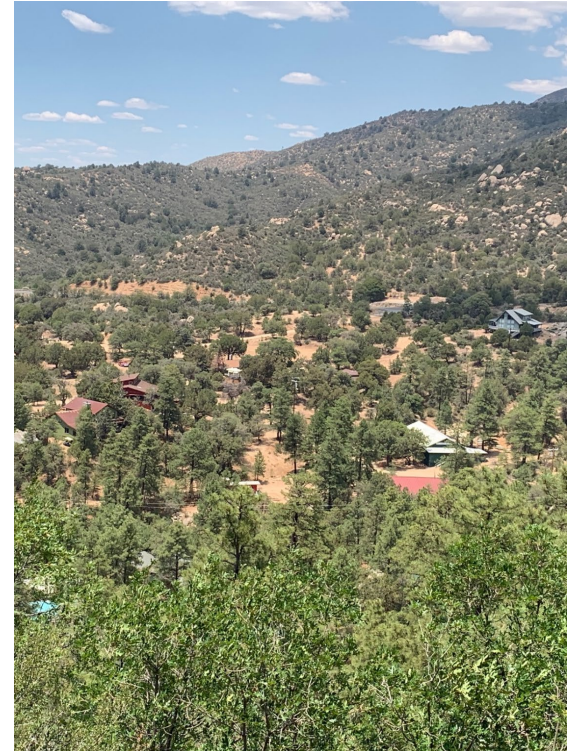
Pinetop-Lakeside

Climate migration

Summerhaven

Theme #1: Mitigation programs must evolve

- Firewise: plateau after 5-10 years
- Checklists and loopholes
- Building mitigation programs that:
 - Acknowledging and incorporating social contexts
 - Build fiscal responsibility
 - Support different combinations of actions



Theme #2: Overreliance on subsidized mitigation

- Grants as a catalyst
- Driving inequities in community adaptation
- A need to diversify funding processes
 - Maintenance plans post \$
 - Explore pay-back mechanisms
 - Motivate with public land match



Theme #3: Build a bridge from knowledge to action

- Behavioral actions easier to motivate than structural
- Connect information with action/tools
 - Smoke adaptation
 - HIZ actions – different levels
 - Community level – dual values
- Use “benchmark” fires to encourage proactive mitigation



Theme #4: Insurance as a (time sensitive) motivator

- Window of opportunity that needs AZ-specific direction
 - What actions to retain coverage?
- Anticipating the cascading consequences of underinsurance
 - Building back bigger
 - Outlining permitting, codes, rebuilding pre-fire



Theme #5: Optimistic risk perceptions

- Before, during, and after
 - Reburn after Schultz Fire
 - Post-fire flood insurance dropped after 2 years
 - Retroactive smoke adaptation
- Developing specific communication that clarifies timing and upkeep of mitigative actions



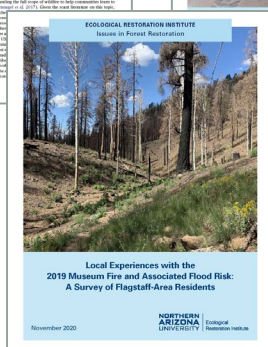
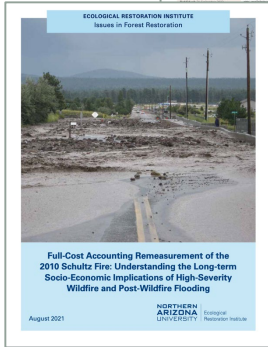
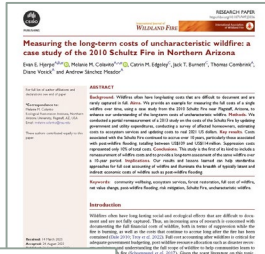
Takeaways

- Current window for innovation – residents willing to explore more “out of the box” solutions
- Southern AZ want to act, but actions are less defined for their ecosystems
- Community identity (process-based FACs) as the missing link



Thank you

- Catrin.Edgeley@nau.edu



CalPoly

Arizona Department of Insurance & Financial Institutions

Resiliency and Mitigation Council:

The WUI Insurance Situation

FRANK FRIEVALT, DIRECTOR

2/4/2025



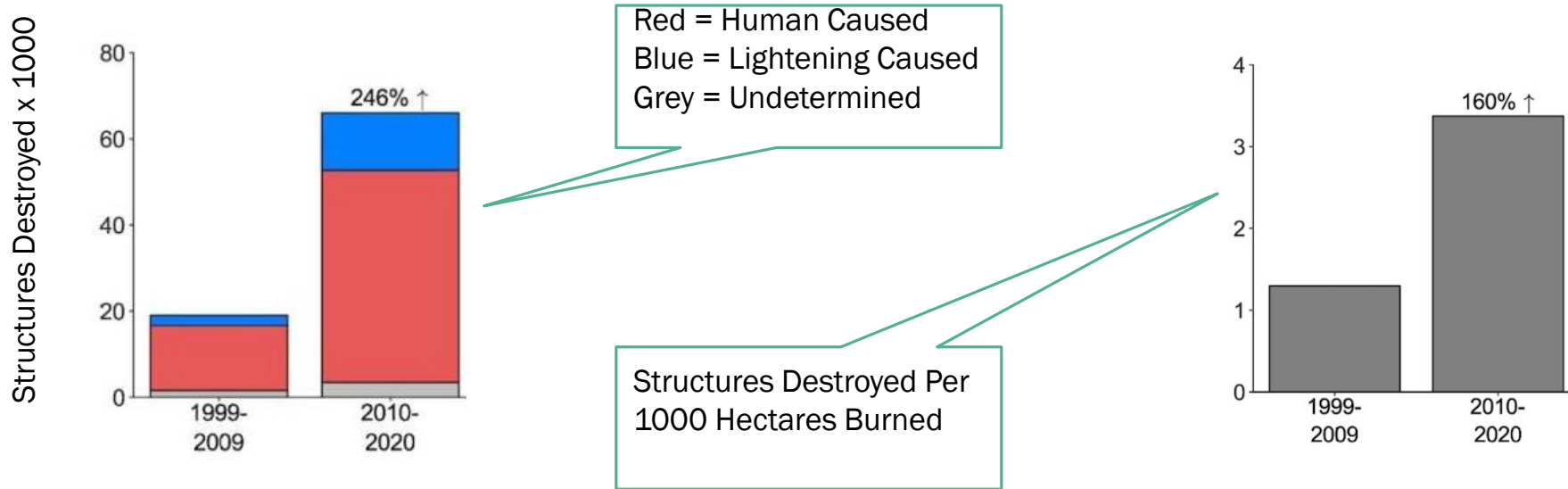
CAL POLY

WUI Fire Institute

COLLEGE OF AGRICULTURE, FOOD
& ENVIRONMENTAL SCIENCES



We are Responding to Unprecedented Property and Life Loss in the WUI



Source: <https://phys.org/news/2023-02-western-wildfires-destroyed-homes-decade.html>



Why Now?

- Significant Increase in Fuel Loading
- More Development in Fire Dependent Landscapes
- Increasing Vapor Pressure Deficit



The wildland-urban interface grows as more people move to the West. The trick, conservationists say, is to learn how to live with fire.

Researchers say that one way to do this is to thin fuel.

In the desert, that means brush and invasive grasses, such as buffelgrass, fountain grass and red brome. In the high country, that means ponderosa pine.

“Two hundred years ago, there were fires every three to five years in the ponderosa pine,” said Rob Marshall of the Nature Conservancy. “And they were surface fires. They were fires that were consuming the grass and burning the bottoms of trees where the bark is 4 inches thick and the trees can withstand it, and there were 20 trees per acre. Now, we have 200 to a thousand trees per acre, in our forests. They’re way too dense.”

Source: <https://cronkitenews.azpbs.org/2020/07/27/fuel-buildup-arizona-communities-wildfire-risk/>



Western United States Population Density

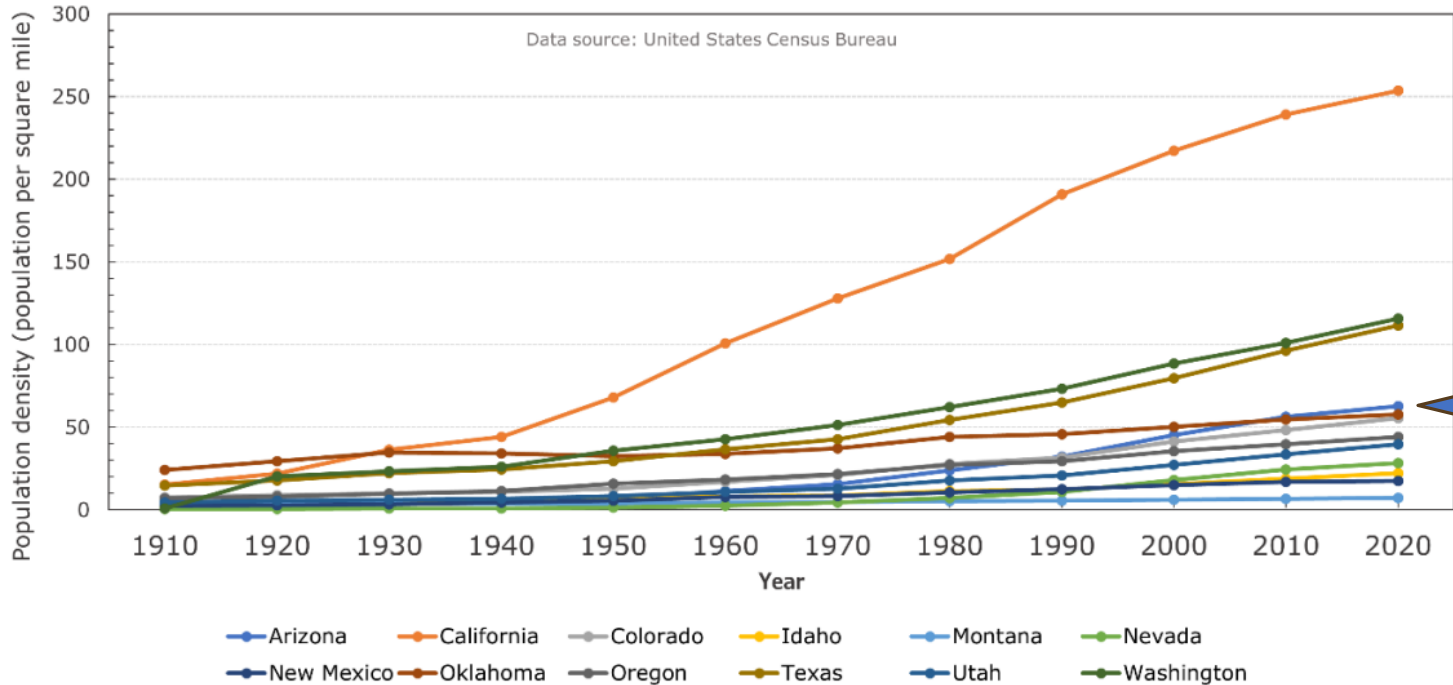


Figure 1: Time history of population density across thirteen western US states. Data source: US Census Bureau

Secondary source: https://ibhs.org/wp-content/uploads/Suburban_Wildfire_Conflagration_WhitePaper.pdf



WUI Losses Are About Speed, Not Intensity

“Therefore, we define fast fires as events that grow >1620 ha on a single day (i.e., maximum FGR > 1620 ha/day). These fast fires represent only 2.7% of all events, yet they account for 89% of the total structures damaged or destroyed.”

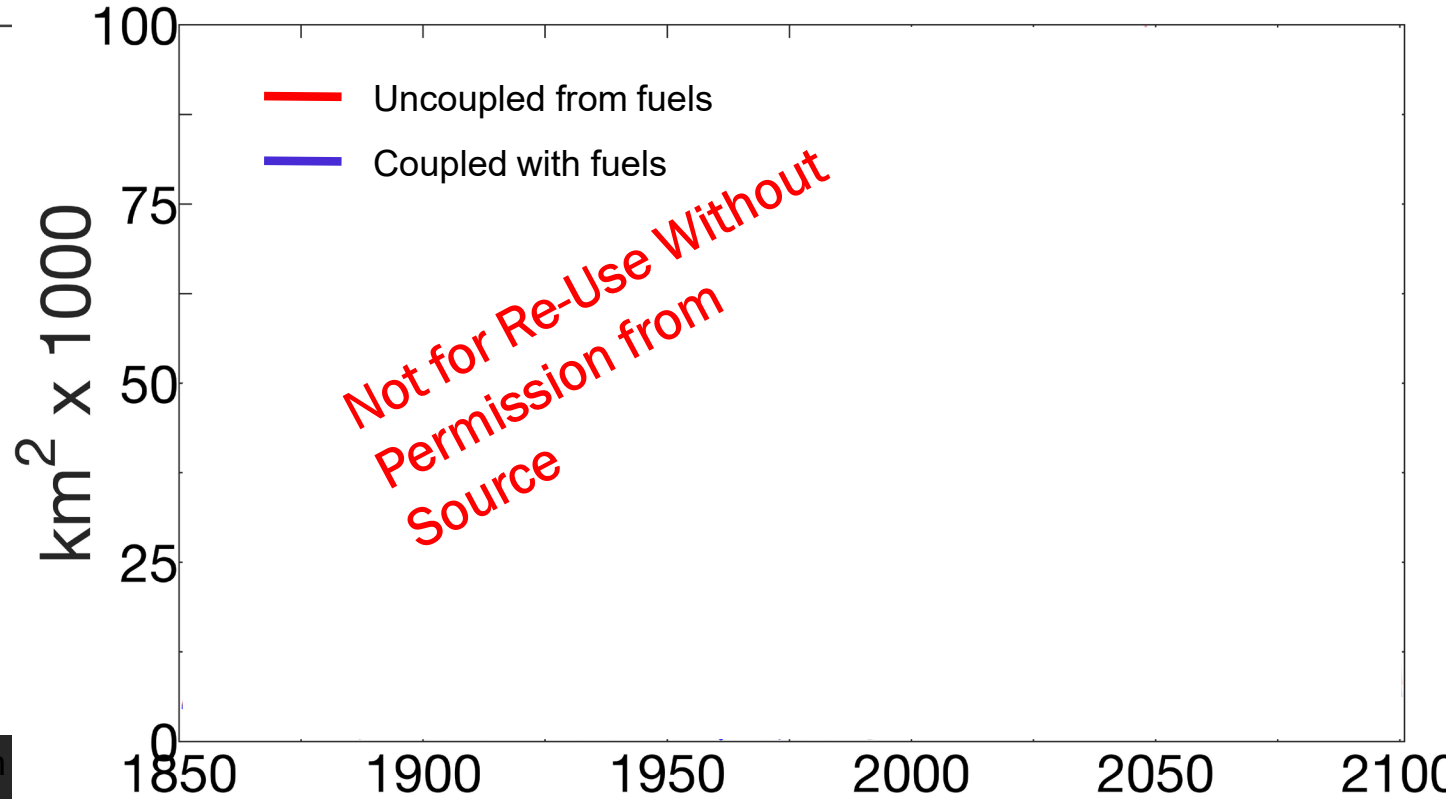
Source: Jennifer K. Balch *et al.*

The fastest-growing and most destructive fires in the US (2001 to 2020). *Science* **386**,425-431(2024). DOI: [10.1126/science.adk5737](https://doi.org/10.1126/science.adk5737)



The Future is Frightening

Forest area burned
(Middle of the road
emissions scenario)

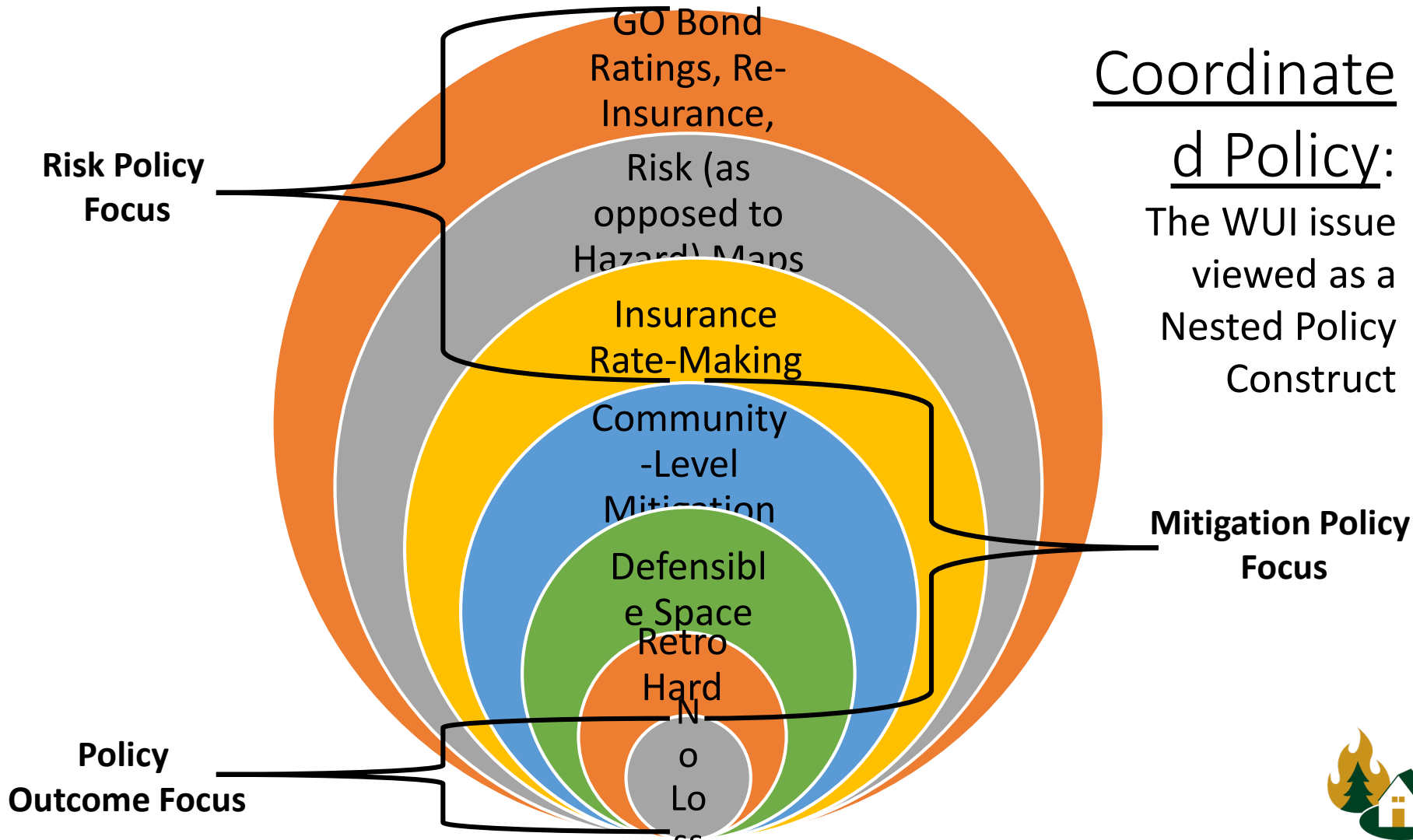


Source: Williams,
Hansen, et al. In Prep.

Disconnect in Understanding Wildfire Risk

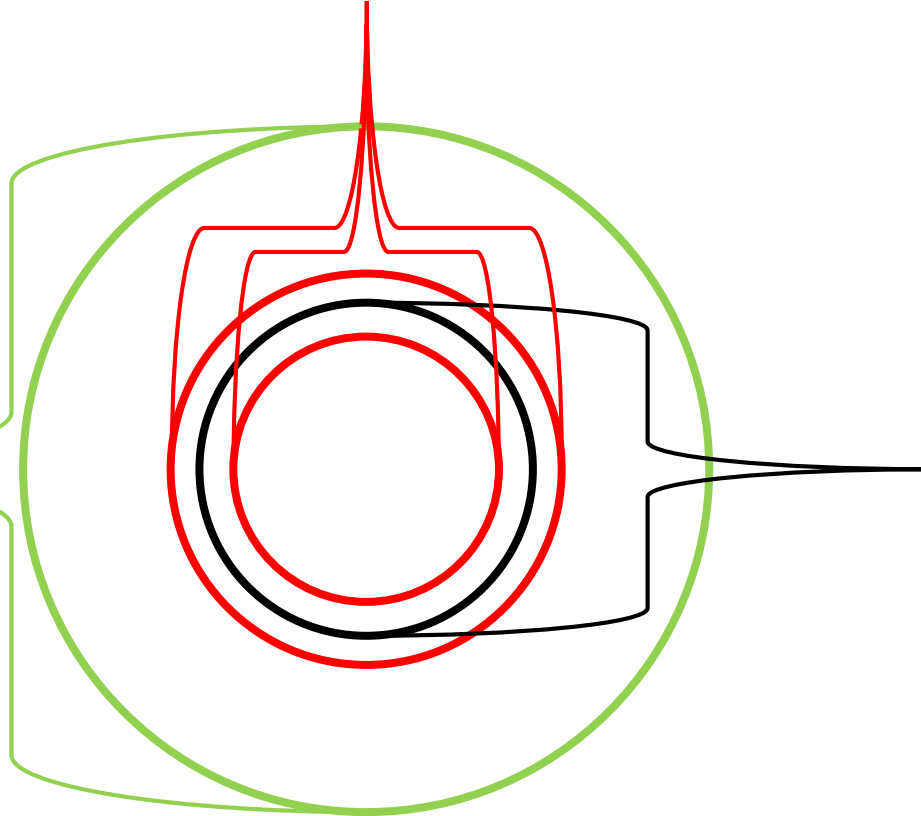
- The “Smiths” and a “Tale of Two Inspections”
- Legacy data and systems won’t work
- We Cannot Suppress, Regulate, or Price Our Way Out of the WUI Conundrum





“Interface” = band within 100’ of WUI Community boundary to 2nd layer of structures with SSD < 50’

“Minimum Travel Time SOI” = 1/2 to 1/4 mile of interface in vegetation landscapes capable of carrying fire.



“WUI Community”
= ≥ 100 structures
where 50% or more
have SSD < 50’

WUI Fire Pathway Taxonomy



Vegetation to Structure

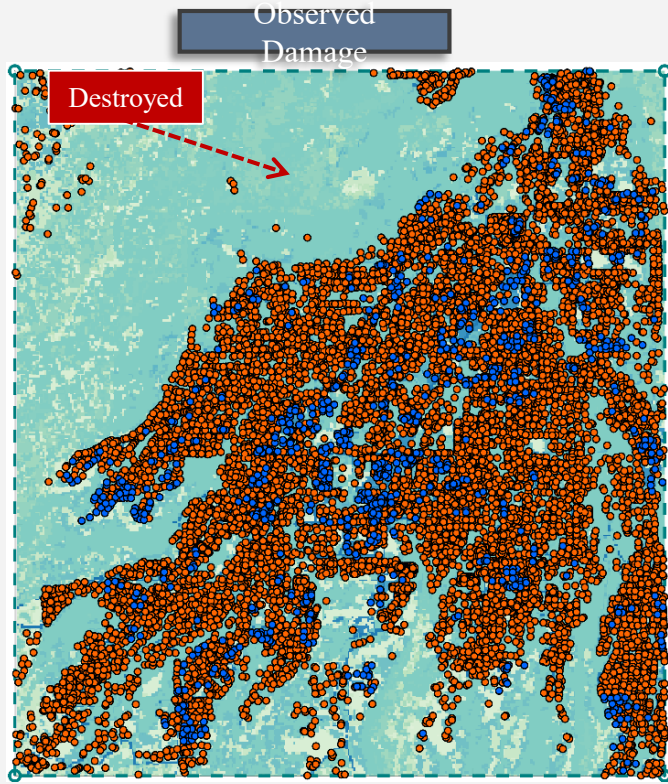
Vegetation
to
Vegetation

Structure
to
Structure

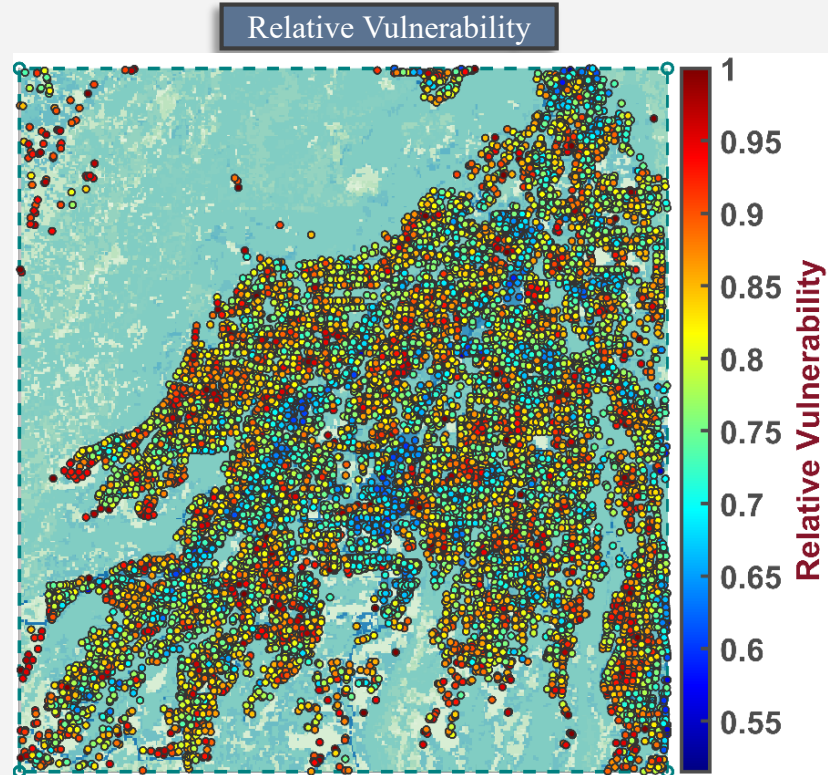
WUI Fire Pathway Disruption



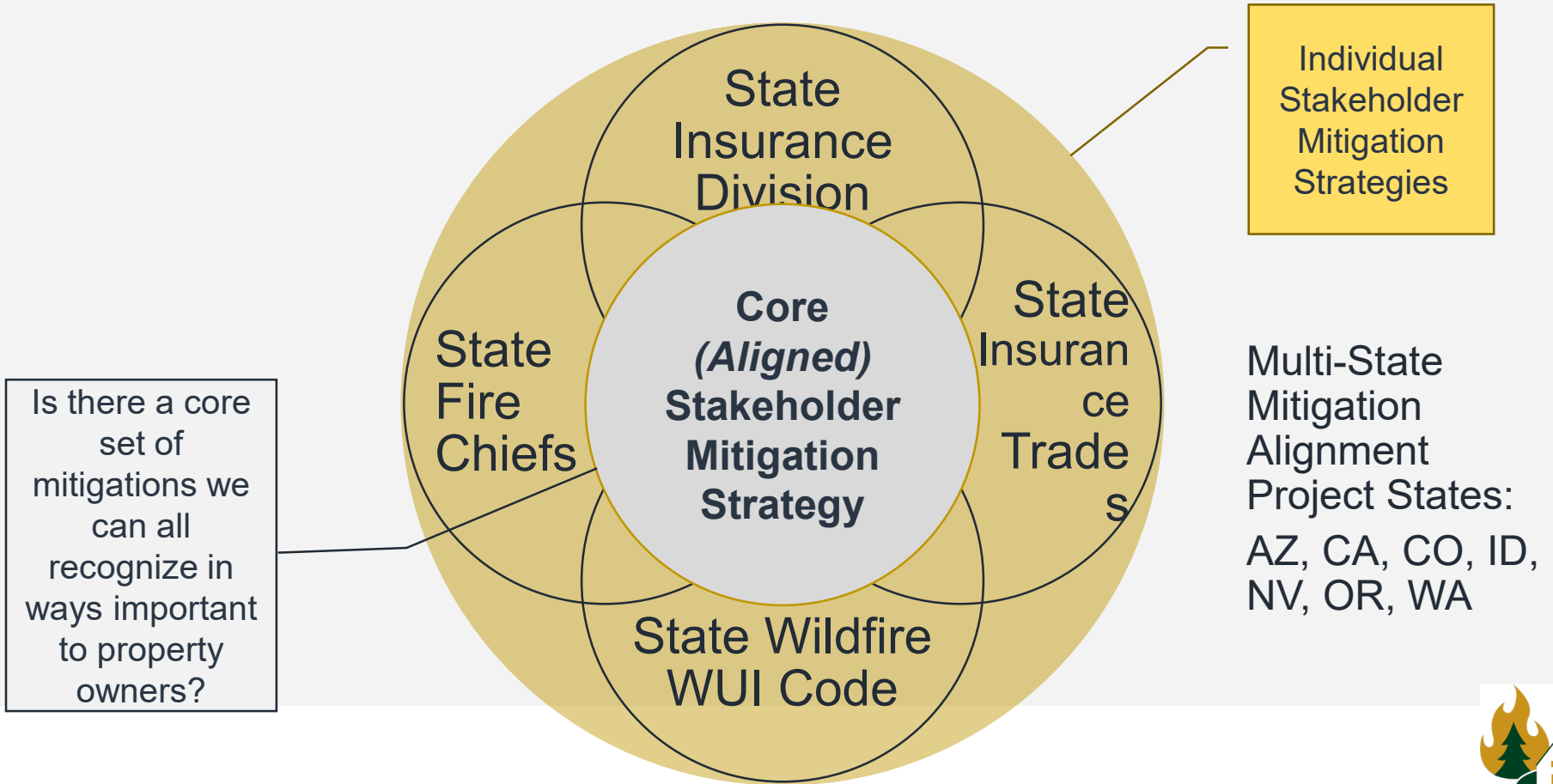
Damage Assessment – 2018 Camp Fire



● Survived ● Destroyed



“Core” Stakeholder Alignment

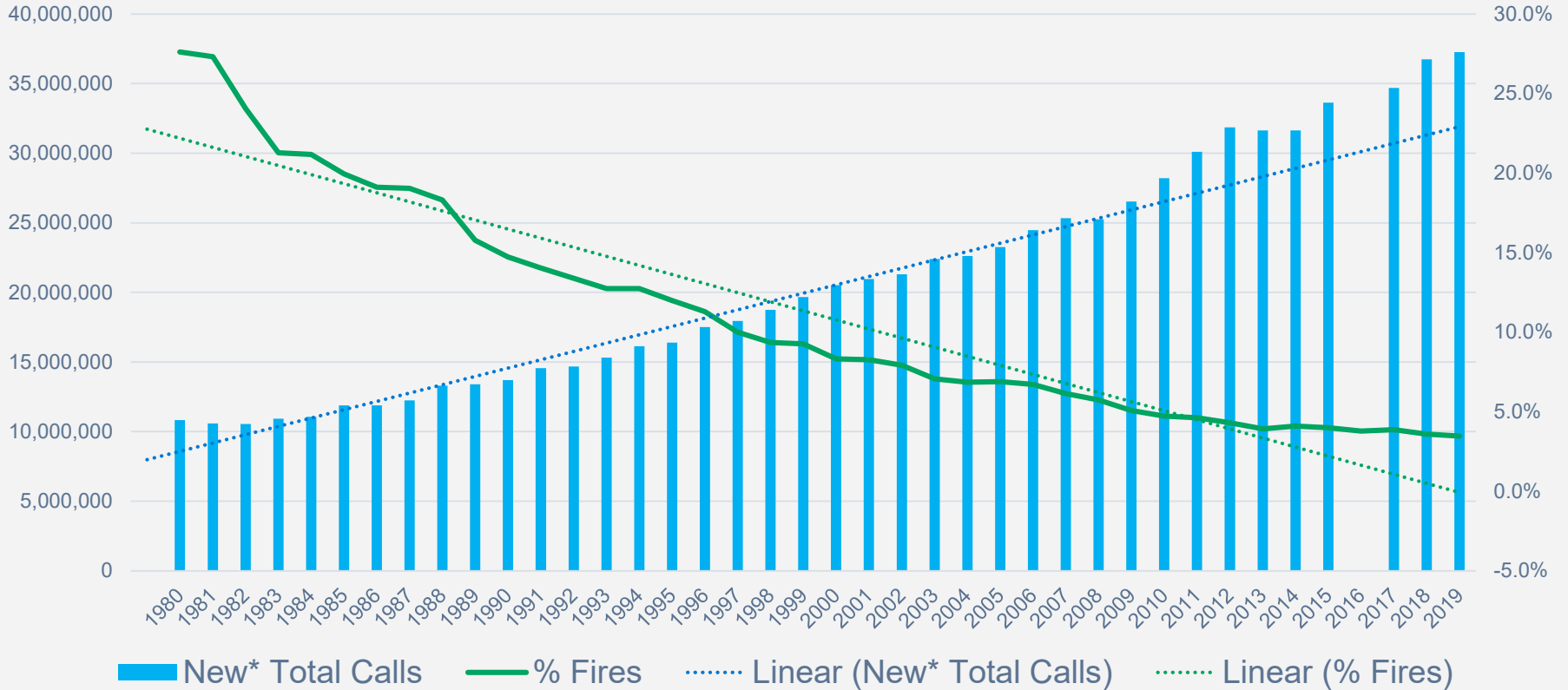


Two Examples Proving We Can Do This.....

- [Insurance Institute for Highway Safety](#)
- Trajectory of US Structure Fires



Trajectory of US Fire Calls for Service 1980-2020



IV. Presentations from Utilities

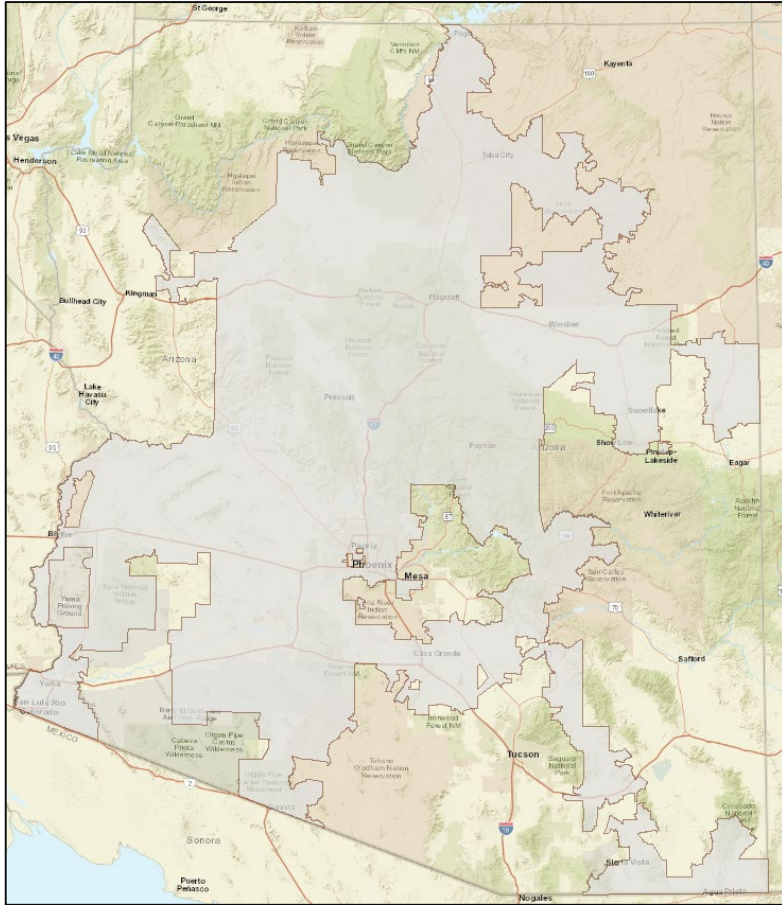
Arizona Public Service (APS)



Forestry Fire and Resource Management

- Andrew Rable – Manager
- Scott Bordenkircher - Director
- February 2025

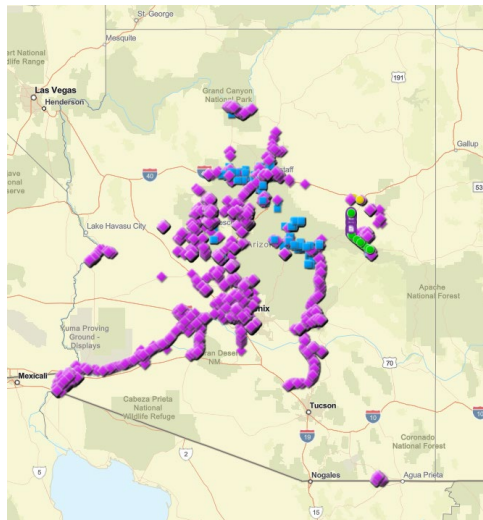




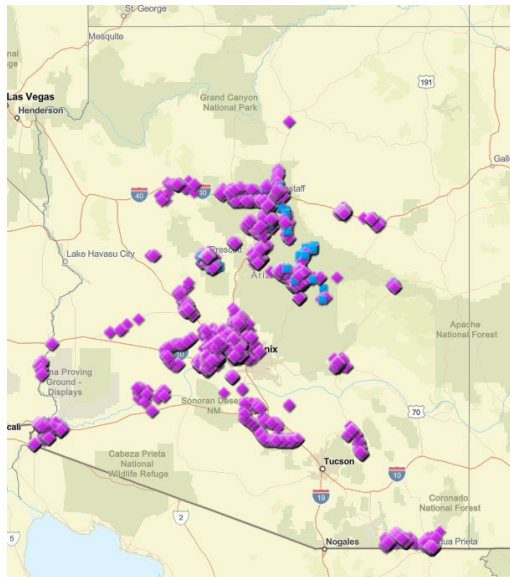
- Largest Electric Utility in AZ
 - 5,000 Transmission Miles
 - 30,000 Distribution Miles
 - 1,500 Feeders
 - 1.4 Million Meters
 - 500,000 Distribution Poles
 - 280,000 Transformers
-
- 85K Equipment Poles in WUI

| Forestry & Resource Management | 3 Year Workplan Overview

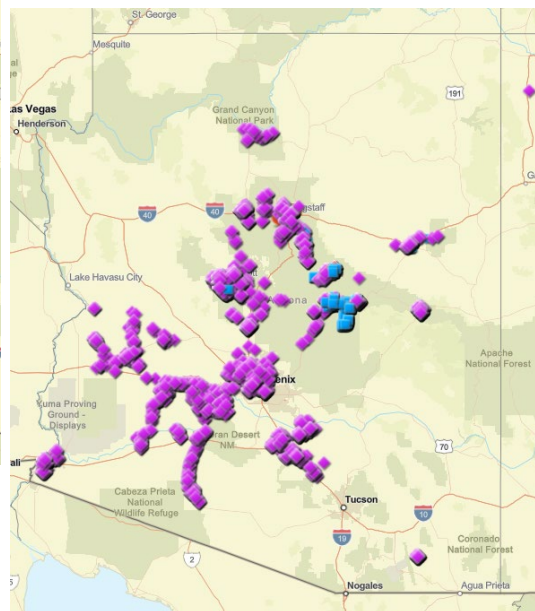
2022



2023



2024



Division	2022	2023	2024	Total
FMT		944	480	1424
METRO	12233	11780	12341	36354
NE	148313	30260	27457	206030
NW	20993	18856	20079	59928
SOUTH	14389	15107	14374	43870
Total	195928	76947	74731	347606

2025 Workplan





Horton Fire January 2025

APS Comprehensive Wildfire Mitigation Plan

Vegetation Management

- Comprehensive right-of-way clearance on maintained cycles
- Defensible space around poles (DSAP)
- Hazard tree program (outside ROW)

Grid Hardening Investments

- Ongoing distribution system upgrades
- High-risk area fire standards
- Fire mesh
- Expulsion limiting fuses
- Steel poles

Asset Inspection

- Enhanced line patrols
- Drone use
- Infra-red scans
- Off cycle patrols

Monitoring and Awareness

- Weather and fire science team
- Advanced fire modeling software
- Cameras and weather stations
- Federal & state agency partnerships

Operational Mitigations

- Non-reclosing strategy
- Fast curve settings
- Public outreach program
- Red Flag Warning protocols
- Public Safety Power Shutoff (PSPS)



Station	Date	Daily Max Temp (*F)	Daily Min Temp (*F)	Max RH (%)	Min RH (%)
Grey Bears 10	11/19/24	53.1 \pm 0.2	25.6 \pm 2.0	65 \pm 3	10 \pm 10
Kirkland Junction 10	11/19/24	57.6 \pm 2.5	27.0 \pm 0.7	72 \pm 3	13 \pm 8
White Spar 10	11/19/24	47.8 \pm 0.4	31.0 \pm 0.8	75 \pm 20	7 \pm 13
Dewey 14	11/19/24	53.0 \pm 0.2	26.2 \pm 2.1	76 \pm 8	14 \pm 7
Copper Canyon 02	11/19/24	60.9 \pm 0.6	24.7 \pm 0.8	63 \pm 1	19 \pm 1
Hayfield Draw 02	11/19/24	60.3 \pm 0.6	27.2 \pm 0.6	58 \pm 2	17 \pm 3
Cornville 02	11/19/24	58.8 \pm 0.7	28.8 \pm 2.0	57 \pm 2	15 \pm 6
Sedona 14	11/19/24	54.4 \pm 1.6	29.8 \pm 0.5	62 \pm 4	15 \pm 9
Kachina 04	11/19/24	43.2 \pm 0.4	13.6 \pm 0.6	88 \pm 1	19 \pm 14
Chino Valley 06	11/19/24	52.6 \pm 2.0	20.7 \pm 1.5	76 \pm 7	13 \pm 4
Grey Bears 12	11/19/24	51.5 \pm 0.8	23.7 \pm 0.7	72 \pm 6	13 \pm 5
Lonesome Valley 10	11/19/24	51.4	26.9	76	19
Elden 02	11/19/24	41.9 \pm 0.1	14.7 \pm 2.3	82 \pm 6	17 \pm 10
Mount Floyd 02	11/19/24	50.3 \pm 1.2	15.9 \pm 2.1	74 \pm 4	8 \pm 12

Salt River Project (SRP)



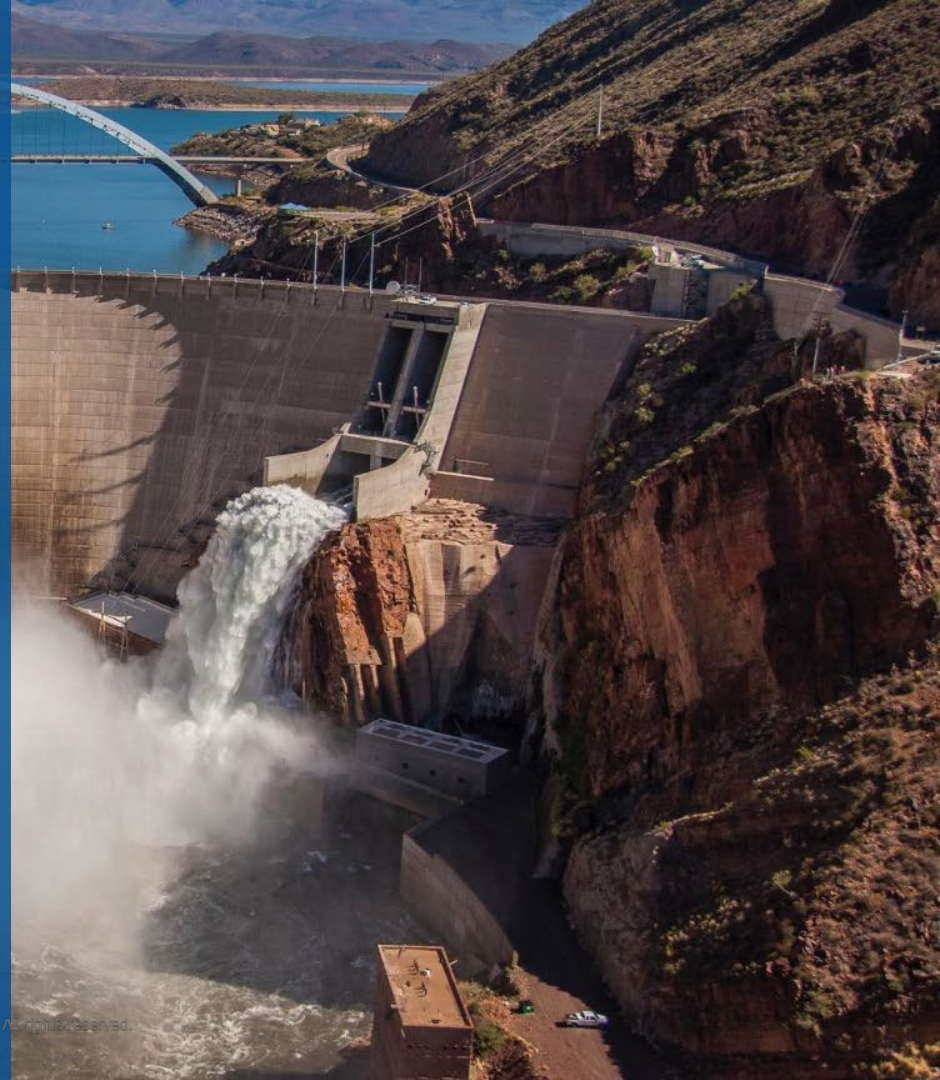
SRP Forest Management and Wildfire Mitigation Efforts

**DIFI Resiliency and Mitigation
Council**

Elvy Barton | February 4, 2025

What is SRP?

- One of the nation's largest public power utilities
- Provide reliable, affordable water and power to more than **2 Million** people
- The largest raw-water supplier in the Valley, delivering about **800,000** acre-feet of water annually
- Managing a **13,000** square-mile watershed











SRP Wildfire Mitigation

• Goals:

- Reduce risk of SRP facilities being involved in a wildfire
- Protect SRP infrastructure from wildfires

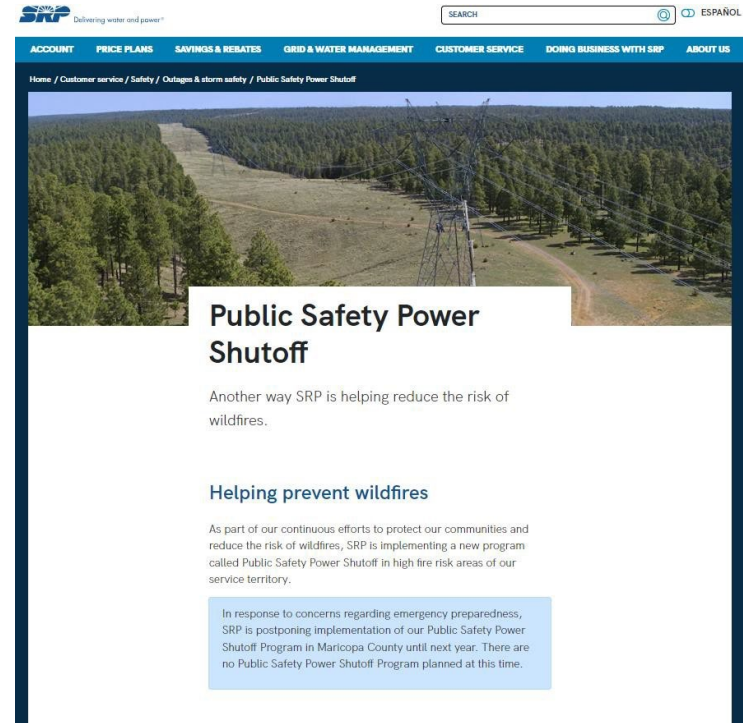
• Wildfire Mitigation Plan Core Elements:

- Situational Awareness 
- Operational Practices 
- Emergency Response/ Public Safety Power Shutoff 
- Vegetation Management 
- System Hardening and Ruggedization 
- Communications and Outreach 
- Condition Management 
- Metrics 



Public Safety Power Shutoff (PSPS)

- Plan in place for high potential areas located in Maricopa and Gila Counties
- Key Aspects
 - Data Driven, Defined Criteria
 - Conditions Monitoring, Weather Stations
 - Communication, Internal/ External
 - Public Safety Partners Collaboration
 - Incident Command Team
 - Circuit Segmentation



SRP Delivering water and power

SEARCH

ESPAÑOL

ACCOUNT PRICE PLANS SAVINGS & REBATES GRID & WATER MANAGEMENT CUSTOMER SERVICE DOING BUSINESS WITH SRP ABOUT US

Home / Customer service / Safety / Outages & storm safety / Public Safety Power Shutoff

Public Safety Power Shutoff

Another way SRP is helping reduce the risk of wildfires.

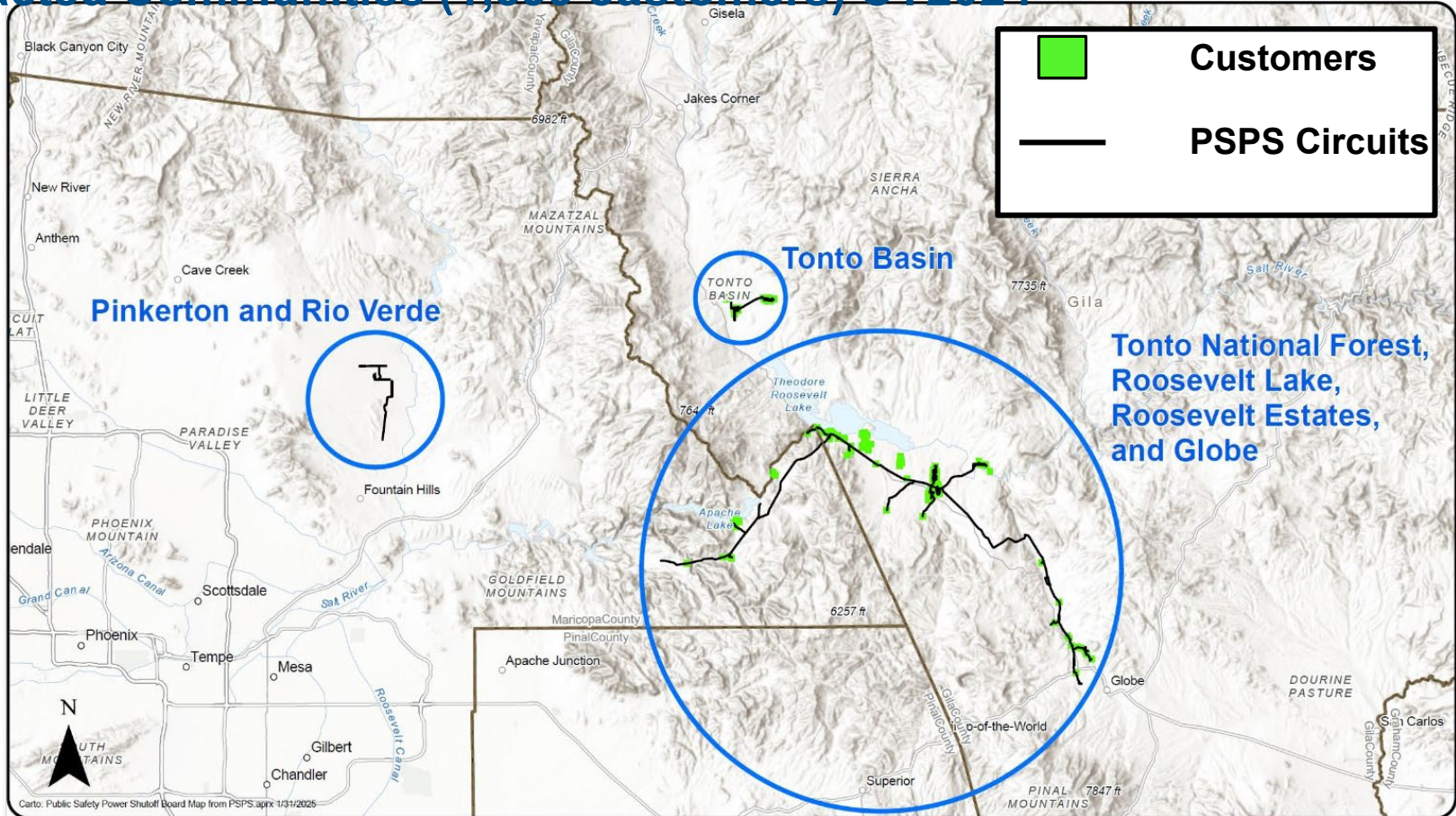
Helping prevent wildfires

As part of our continuous efforts to protect our communities and reduce the risk of wildfires, SRP is implementing a new program called Public Safety Power Shutoff in high fire risk areas of our service territory.

In response to concerns regarding emergency preparedness, SRP is postponing implementation of our Public Safety Power Shutoff Program in Maricopa County until next year. There are no Public Safety Power Shutoff Program planned at this time.

Public Safety Power Shutoff (PSPS)

Impacted Communities (1,599 customers) CY2024



Vegetation Management

- Transmission Lines (500kV, 230kV, 115kV)
 - Annually
- Distribution Lines (69kV, 22kV, 12kV)
 - 2-year cycle
- Integrated Vegetation Management Practices
 - Fuels clearing/ Fuels reduction
 - Defensible space around poles



SRP Vegetation Management – Forest



Unhealthy v. Healthy Forests



- Dense
 - Competition for limited resources
 - 100s-1000s of TPA
-
- More space between trees
 - Less competition, more resilient trees
 - Herbaceous understory
 - Ideally 50-100 TPA

2035 Forest Health Goal

- Increase SRP's leadership role in forest restoration treatments through partnerships, influence, education and support for industry to thin **800,000** acres total by 2035



Collaboration and Partnerships



BUREAU OF RECLAMATION



NFWF



CONSERVATION FIRST...USA



National Forest Foundation



PEPSICO



Meta



EdgeCore
Digital Infrastructure



SWIRE COCA-COLA

Forest Thinning Accomplishments



Engaged 20+ funding & implementation partners



Leveraged over \$21M in partner funding and commitments to date



Funded 87K acres across the Tonto, Coconino, & Prescott National



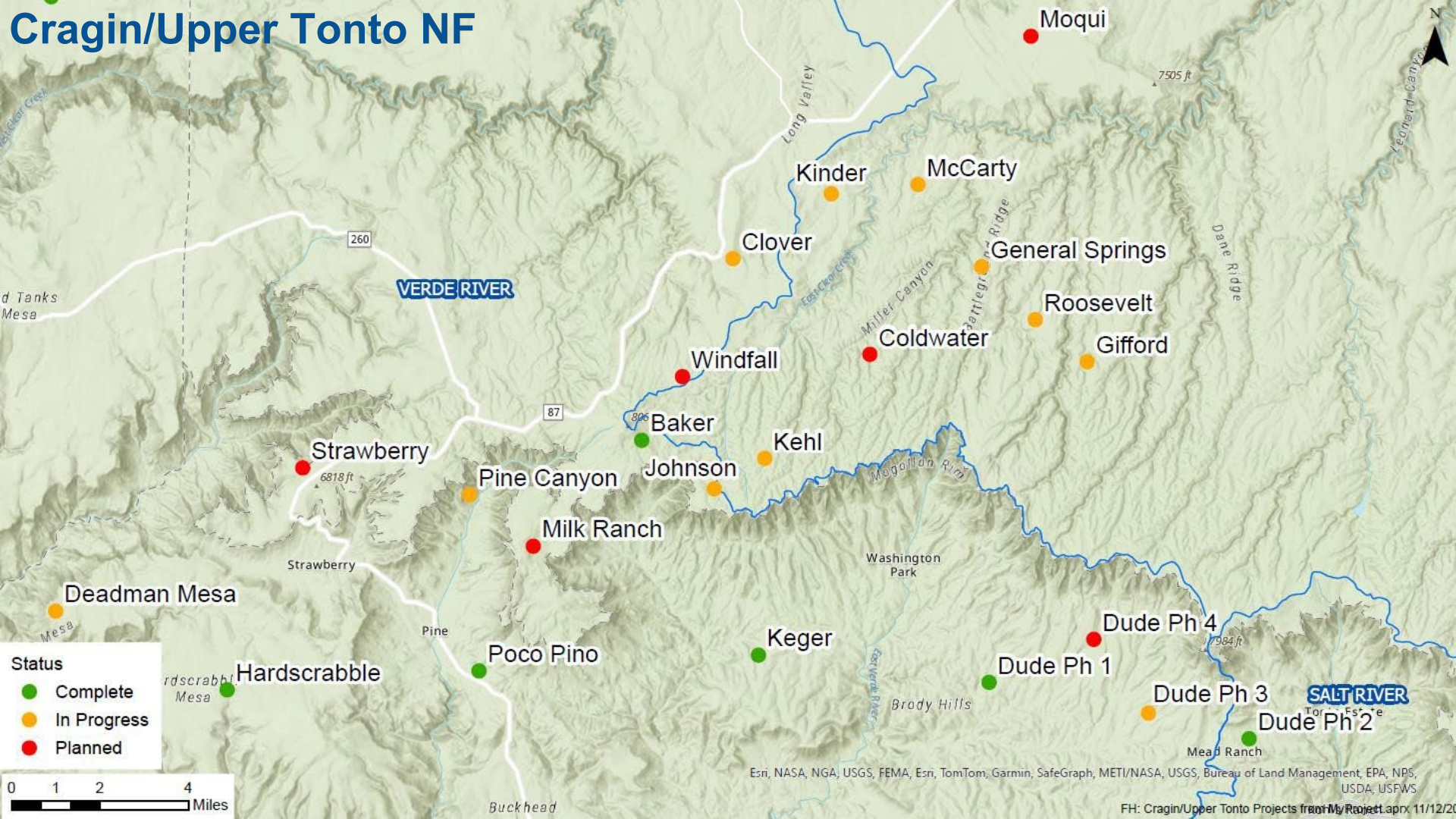
Forests Committed to partnering on an additional 56K acres over the next



10 years Completed over 14k acres of forest thinning on 3 National Forests

thank you!

Cragin/Upper Tonto NF



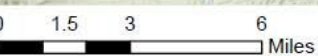
Tonto NF



VERDE RIVER

SALT RIVER

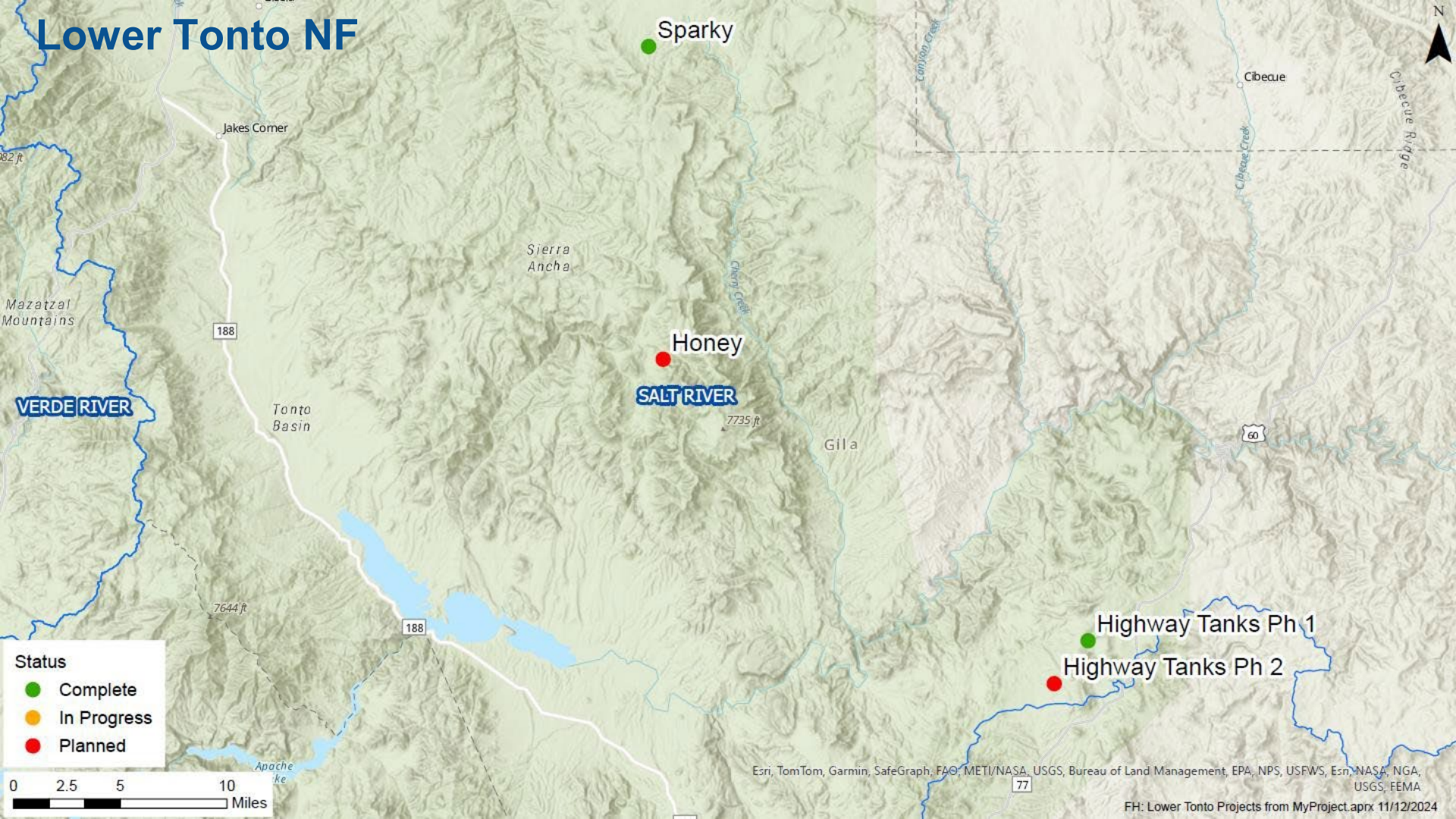
- Status**
- Complete
 - In Progress
 - Planned



Esri, NASA, NGA, USGS, FEMA, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS

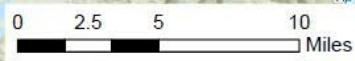
FH: Tonto Projects from MyProject.aprx 11/12/2024

Lower Tonto NF



Status

- Complete
- In Progress
- Planned



Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS, Esri, NASA, NGA, USGS, FEMA

Prescott NF



Drake Ph 1

Drake Ph 2

Smith Butte

Wineglass

Page Flat

VERDE RIVER

Christina/Goodard

Apache Maid

Log Springs Ph 1

Log Springs Ph 2

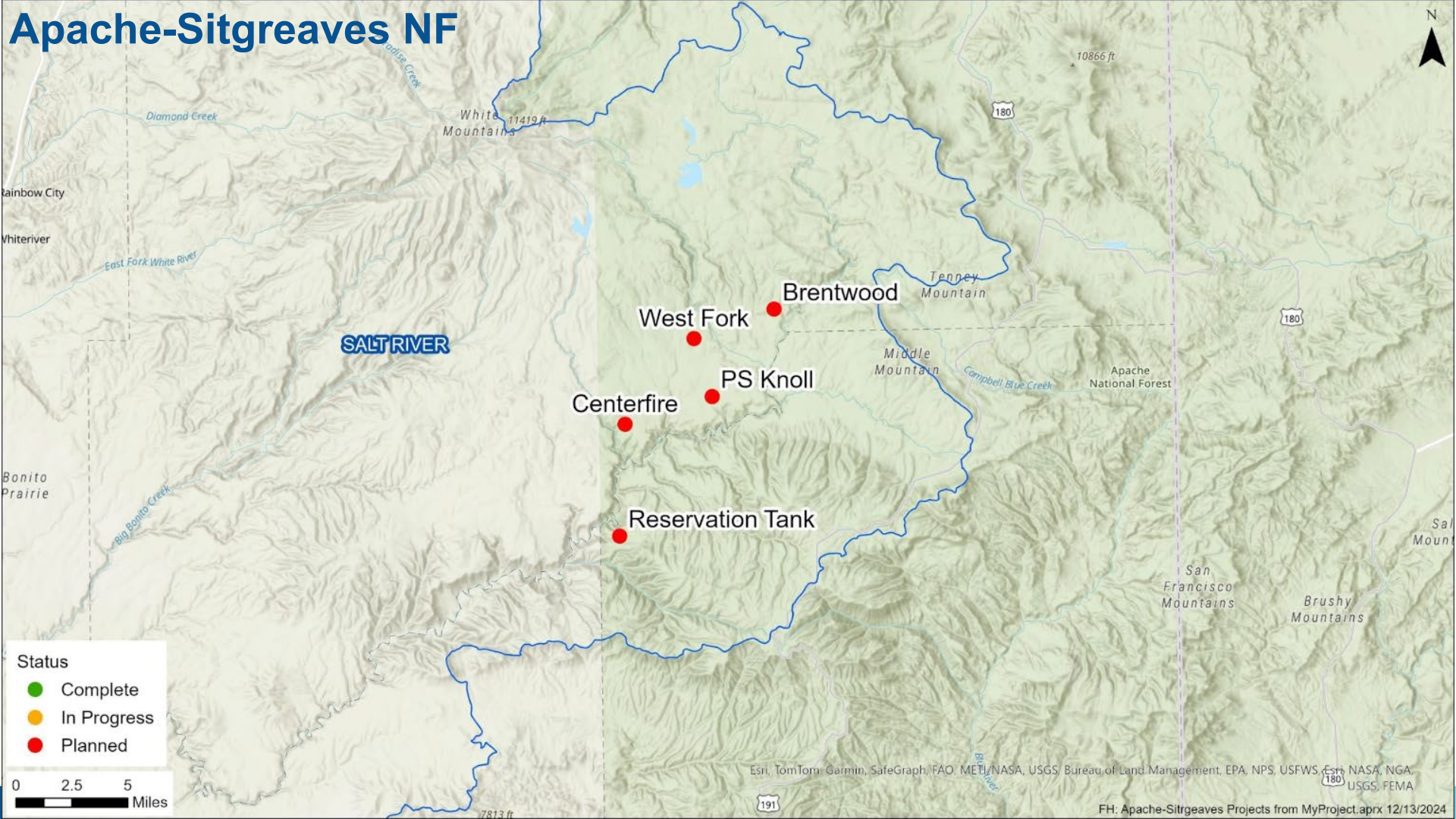
Log Springs Ph 3

Beaver Creek Ph 3

Beaver Creek Ph 2

Beaver Creek Ph 1

Apache-Sitgreaves NF



Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS, Esri, NASA, NGA, USGS, FEMA

Tucson Electric Power (TEP)



UNS Energy Corporation

A Fortis Company

Overview of Asset, Vegetation, and Wildfire Management

Larry Robinson

Director, Engineering and Project Management

Feb 2025

Agenda



Overview



Mitigation Plan Update



Asset Management Programs



Transmission & Distribution Inspections



Vegetation Management



2025 Priorities

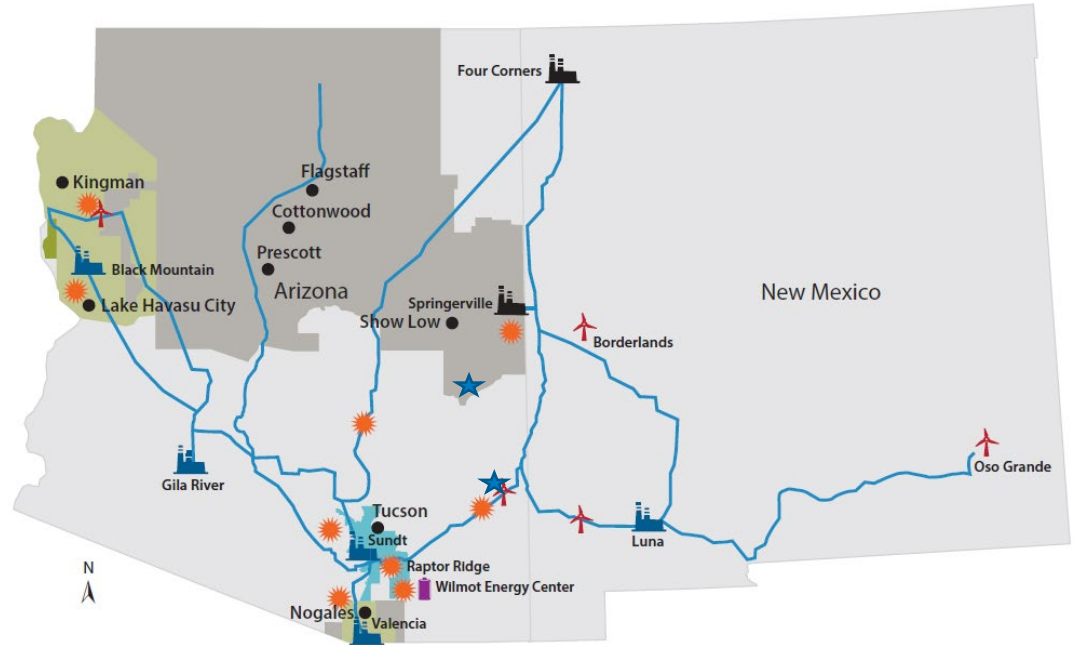
Company Overview

Tucson Electric Power

- Over 1,600 employees
- 446,000 customers in Pima County + Fort Huachuca U.S. Army Base in Cochise County
- Serving Tucson 125+ years

UniSource Energy Services

- Electric and natural gas service
- Over 320 employees
- 269,000 customers in Northern and Southern Arizona



SERVICE AREAS

Tucson Electric Power

UniSource Gas

UniSource Electric

UniSource Gas & Electric

Transmission Line

Coal-Fired Power Plant

Natural Gas-Fired Power Plant

Solar Arrays

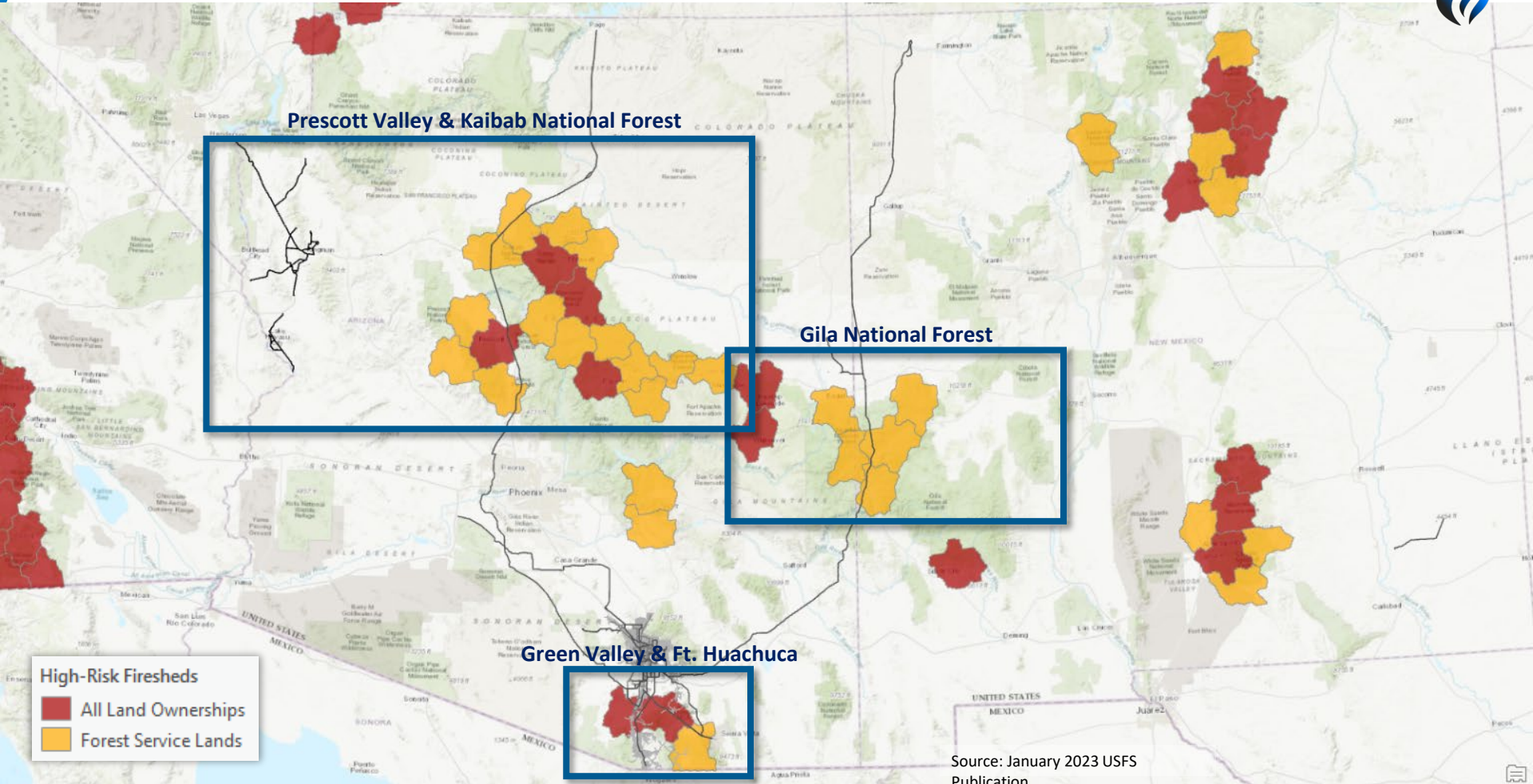
Wind Turbines

Battery Storage

TEP/UniSource Offices

BA Service Customer

USFS HIGH RISK FIRESHEDS & TEP/UNSE FACILITIES



Prescott Valley & Kaibab National Forest

Gila National Forest

Green Valley & Ft. Huachuca

High-Risk Firesheds

- All Land Ownerships
- Forest Service Lands

Source: January 2023 USFS Publication

WILDFIRE RISK MONITORING & RESPONSE



Monitoring

- Daily monitoring of new and existing fires (April to September)
- Wildfire threat reporting
- Active fire mapping
- On-site monitoring when and where needed



Response

- Electrical & fire safety training
- Incident command and communication protocol drills
- Regional fire preparedness annual meetings with federal, state and local agencies & first responders
- Business Continuity Plan annual review
 - Response
 - Communication: internal & external
 - Collaboration



Wildfire Mitigation Plan – Key Components

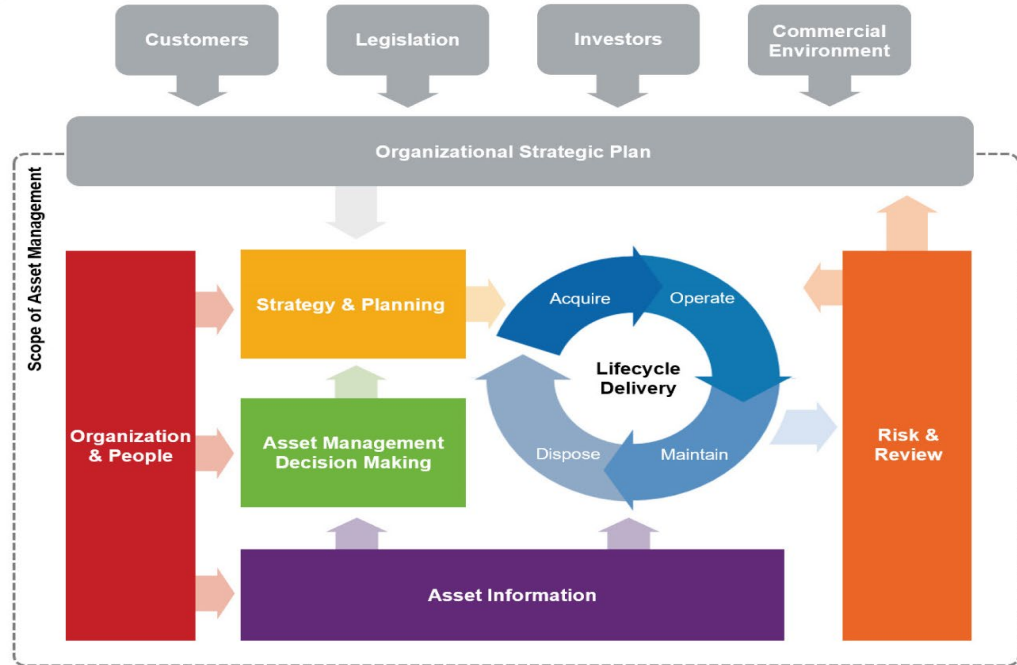
Focus: Drive down the likelihood of ignition from an electrical facility that could spread and grow into a significant wildfire



ASSET MANAGEMENT



- Elements include people, processes, and tools
- Performance improvements
- Cost improvements
- Management of risk
- Reliable decision making
- Assurance of business growth and improvement
- Enhanced stakeholder confidence



ASSET MANAGEMENT PROGRAMS



Substation

- Asset health index calculation & monitoring
- Routine and frequent inspections
- Federal reliability standards compliance
- Oil circuit breaker
- Distribution breaker
- Relay and communication equipment



Transmission Line

- Ground, drone, and aerial patrols
- Anchors
- 138kV wood pole



Distribution Line

- Distribution visual inspection
- Distribution wood pole
- Underground pull box
- Downtown underground
- 200-amp underground cable
- Live-front transformer

DISTRIBUTION LINE INSPECTIONS

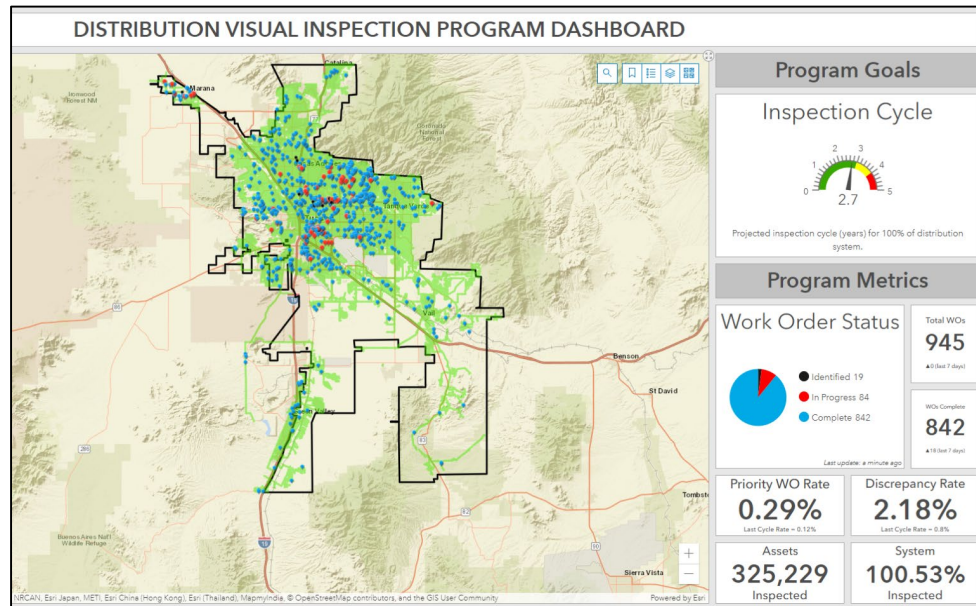


- **TEP Distribution Visual Inspection Program**

- Ground patrols started in December 2018 (3-year cycle target)
- 1,345 priority work orders addressed to date (15% of all priority work)

- **UNSE Distribution Line Inspections**

- Yearly aerial inspection of remote areas - 5 circuits
- Ground patrol of critical circuits – 3 circuits/district



VEGETATION MANAGEMENT PROGRAM



TEP

- Clear cut entire 345kV system in 2014
 - 330 feet conductor to conductor
 - Monitored during aerial and ground inspections
 - Programmatic Environmental Assessment from US Forest Service
- Distribution System – 6-year trim cycle transitioning to 4-year cycle by 2028
- Transmission
 - Aerial patrols – twice a year
 - Ground patrols – 5-year cycle

UNSE

- Santa Cruz County
 - Ground patrols – once a year in forested areas
 - Distribution System – 5-year trim cycle
- Mohave County
 - 69kV system patrolled by helicopter once a year
 - Distribution System – 5-year trim cycle



2024 VEGETATION MANAGEMENT IMPROVEMENTS

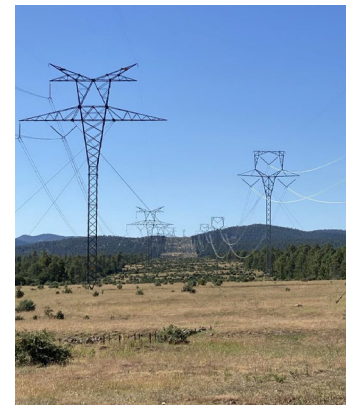


TEP

- Increased distribution contract tree trimming crews from 6 crews to 8 crews in June 2024 in support of reducing the 6-year cycle to a 4-year cycle
- Increased coordination with Distribution Visual Inspection program
- Utilizing drone capabilities
- Planned distribution vegetation maintenance focus on US Forest Service wildland fire high risk areas. A detailed fire risk hazard analysis is underway for TEP and UES facilities in 2025

UNSE

- Using ArcGIS Collector mobile application to better document and perform patrolling activities
- Patrolling efforts are prioritized to high-risk wildfire areas



2025 PRIORITIES



ENHANCED SITUATIONAL AWARENESS

Wildfire Detection System

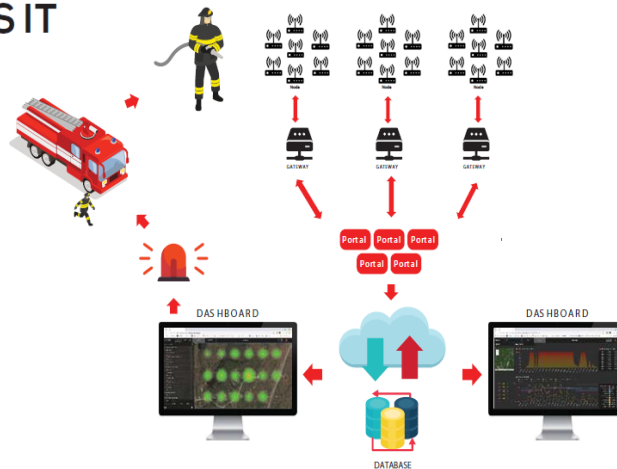
- Chemical, optical and environmental sensor array
- GPS based monitoring
- Smart, wireless communication protocol
- Weather Stations
- Cameras

Pilot Project (June – December 2024)

- Two 2-mile-long locations on 345kV lines near Alpine, AZ
- One 2-mile-long location on Fort Huachuca 138 kV line near Sonoita, AZ



HOW DOES IT WORK?



2025 PRIORITIES



GRID HARDENING, RUGGEDIZATION, AND VEGETATION MANAGEMENT

Technologies under evaluation

- Non-expulsion fuses
- Trip-Savers
- Fault Timers
- Vacu-Fuses
- Intellirrupters



Vegetation Management

- Create an on-line dashboard
- Expand the use of herbicides
- Investigate alternate vegetation clearing methods
- Evaluate the tree trimming maintenance cycle



V. Council Remarks & Discussion

VI. Public Comments

Public Comment Logistics

- If you have not done so, please fill out a speaking slip or the Google Form (if you are online) to comment.
- Due to a full agenda, speakers will be limited to 2 minutes each.
- Online comments will be taken after in-person comments.
- Online attendees will be able to unmute themselves and turn on their camera.
- When providing comments, please first identify yourself and who you are representing, if applicable.
- The Council will not be answering any questions during the public comment period but may request that any matters presented be reviewed by Council staff or placed on an upcoming agenda.

VII. Closing Remarks and Next Meeting Logistics

Next Meeting Logistics

- The Council will normally meet monthly on the second Wednesday of each month at 1:00 P.M., unless otherwise noted in the agenda. All scheduled meetings are posted on the Council's webpage. The following meetings will not be held on the second Wednesday of the month:
 - Tuesday, April 8, 2025
 - Thursday, May 15, 2025
 - Tuesday, July 8, 2025
- The next Council meeting is scheduled for March 12th at 1:00 P.M.
- We will continue the discussion around wildfire resiliency and mitigation research.

Contact Information

For inquiries or written comments, please contact Resiliency and Mitigation Council Staff: RMCouncil@difi.az.gov

Council Webpage: <https://difi.az.gov/resiliency-and-mitigation-council>*

* Includes a link to sign up for the Council's mailing list.



Use the camera on your phone to scan this code for a direct link to the Council Webpage