# Rural Communities and Forests: Building Resiliency in a Changing Climate

Michael Pickard Sierra Nevada Conservancy

Capital Region Climate Readiness Collaborative

Quarterly Meeting

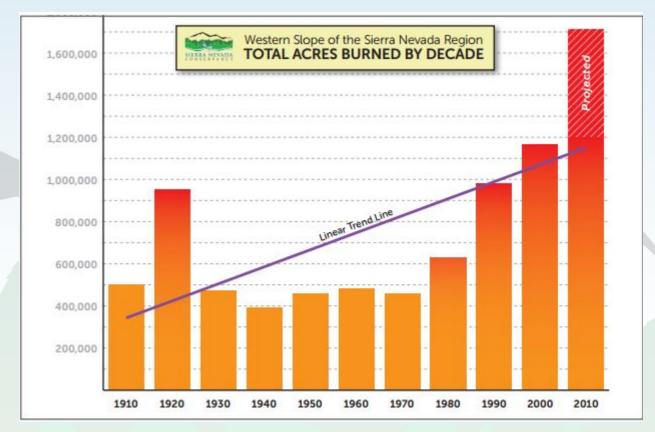
4/25/2017

### Wildfire



 One of the most prominent threats to rural communities in the region

- Greater burner area this decade than in previous
- Earlier spring =
   increased wildfire
   activity and longer
   fire seasons



Source: SNC State of the Sierra Nevada's Forest Report

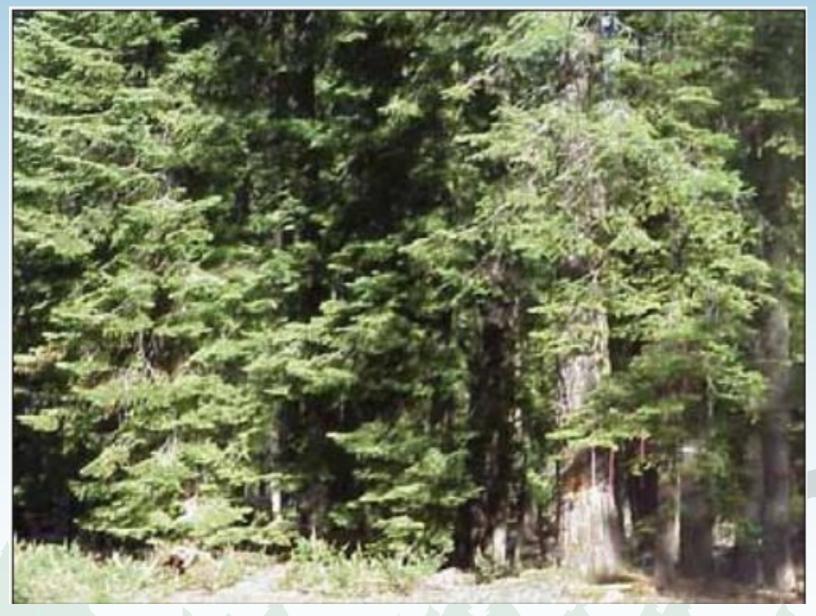
www.SIERRANEVADA.ca.gov

### Wildland Urban Interface

- Communities spread throughout the Sierra Nevada Forests
- Many of our rural communities live in High Fire Threat areas
- Health and resiliency of our communities is intimately connected to the health of our forests.



### Overstocked Forests



Source: Managing Sierra Nevada Mixed Conifer Forests

- Years of fire suppression have left many forests too crowded and unhealthy
- Higher density of small diameter trees
  - Species composition shifting towards more fir and cedar dominated forests

## Tree Mortality

#### Result of:

- Overstocked forests
- Hot, dry summer temps
- Prolonged drought
- Allowed for astronomical population growth of western and mountain pine beetle attacks



Source: M. Pickard

### Fuels Reduction

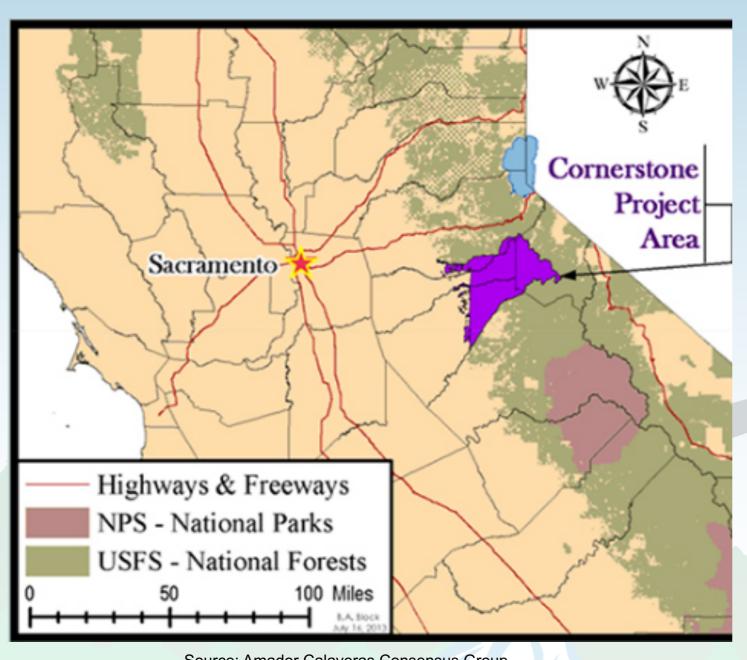
- PRC 4291 100-ft clearance around structures
- Fuelbreaks are used to break continuity of fuels and drop a canopy fire to the ground



Source: SNC State of the Sierra Nevada's Forests Report

 Provides access for emergency personnel

# Large Landscape Forest Restoration



- Need to increase pace and scale of management and restoration work
- CollaborativeStrategies
- Wide range of partners brings multiple benefits into individual projects

Source: Amador Calaveras Consensus Group

# Tree Mortality Relief

- TM relief efforts
   being coordinated
   on state and local
   levels
- Big focus on removing dead trees from damaging public infrastructure
- Private landowners receiving grants from NRCS, CAL FIRE, and SNC



Source: M. Pickard

### Forest Products/Bioenergy



Mariposa Biomass Project Awarded \$5 Million CEC Grant

- Biomass power generation gaining new traction
- BioRAM contracts
- New, innovative wood products emerging

# Watershed Improvement Program







www.RestoreTheSierra.org

### Works Cited

- Bentz, B. J., Régnière, J., Fettig, C. J., Hansen, E. M., Hayes, J. L., Hicke, J. A., Kelsey, R. G., Negron, J. F., Seybold, S. J. (2010). Climate change and bark beetles of the western United States and Canada: direct and indirect effects. *BioScience*, 60(8), 602-613.
- CAL FIRE FRAP
- CAL FIRE. (2016). Mariposa-Madera-Merced Unit Strategic Fire Plan.
- Hurteau, M., & North, M. (2009). Fuel treatment effects on tree-based forest carbon storage and emissions under modeled wildfire scenarios. Frontiers in Ecology and the Environment, 7(8), 409-414.
- Knapp, E. E., Skinner, C. N., North, M. P., & Estes, B. L. (2013). Long-term overstory and understory change following logging and fire exclusion in a Sierra Nevada mixed-conifer forest. Forest Ecology and Management, 310, 903-914.
- Knapp, E. E. (2015). Long-term dead wood changes in a Sierra Nevada mixed conifer forest: Habitat and fire hazard implications. Forest Ecology and Management, 339, 87-95.
- North, M. (2012). Managing Sierra Nevada forests.
- North, M., Brough, A., Long, J., Collins, B., Bowden, P., Yasuda, D., Miller, J., Sugihara, N. (2015). Constraints on mechanized treatment significantly limit mechanical fuels reduction extent in the Sierra Nevada. *Journal of Forestry*, 113(1), 40-48.
- Sierra Nevada Conservancy. (2017). State of the Sierra Nevada's Forests Report.
- Westerling, A. L., Hidalgo, H. G., Cayan, D. R., Swetnam, T. W. (2006). Warming and earlier spring increase western US forest wildfire activity. science, 313(5789), 940-943.

# Thank you

**Questions or Comments?** 



Source: M. Pickard