

N-7. Wildfire Resilience and Management



GHG Mitigation Potential



Variable reduction in GHG emissions from natural and working lands

Co-Benefits (icon key on pg. 34)



Climate Resilience

Wildfire resilience and management techniques can reduce wildfire risk, enhance post-wildfire recovery, and improve air quality. This measure could also improve the health and function of natural lands, which reduces the urban heat island effect and flooding, improves water quality, and provides recreational spaces that improve health and community resilience. Increasing wildfire resilience and management can also protect wildlife habitat and migration corridors in the face of increasing temperatures and changing precipitation patterns.

Health and Equity Considerations

Programs to reduce wildfire smoke exposure should consider and address any impacts on vulnerable populations, including outdoor workers and the unhoused, who are disproportionately exposed to wildfire smoke.

Expanding Indigenous cultural burns across forested lands could promote sustainable forest growth and make forests more resilient.

Measure Description

This measure involves implementing fuel treatments in forested areas to minimize the likelihood of severe or catastrophic wildfire behavior, thereby minimizing pyrogenic carbon emissions during a wildfire event. The vast majority of carbon emissions from wildfire events originate from live tree biomass that primarily exists in the overstory canopy. Implementing fuel treatments has the short-term effect of releasing more carbon emissions as understory, ladder fuels, and forest fuel loads are burned. However, in the long term, treated stands produce fewer emissions compared to untreated stands because treated stands produce low to moderate fire severity that does not disturb the carbon stock in the overstory canopy. Untreated stands are far more likely to experience severe behavior that ignites the canopy and releases the stored carbon in the overstory.

Scale of Application

Project/Site and Plan/Community

Implementation Requirements

See measure description.

Cost Considerations

The costs of implementing fuel treatment applications in forested woodlands varies widely based on the size and accessibility of the treatment area, the amount and type of surface fuels, the specific treatment method(s) employed and underlying topographic characteristics. While costs associated with fuel treatment implementation can be significant, particularly for large scale projects, they may be offset by a variety of grant funding available at the federal and state levels for managing surface fuels to minimize wildfire hazards.

Expanded Mitigation Options

This measure can be paired with Measure N-3, *Implement Management Practices to Improve the Health and Function of Natural and Working Lands*, to comprehensively improve the health of natural and working lands. In some cases, this measure could be paired with Measure E-26, *Biomass Energy*, because some types of fuel removed from the understory during measure implementation could provide biomass energy fuel, if facilities are in close proximity.





GHG Reduction Formula

Although this measure is quantifiable, the methods to quantify the measure are complex and require a substantial amount of computation that cannot reasonably be completed manually. For these reasons, no GHG reduction methods are included here, but users can use CalEEMod to quantify reductions associated with the measure.

Quantified Co-Benefits

None quantified. Successful implementation of this measure could achieve improved air quality, improved public health, and improved ecosystem health.

Sources

- Fargione, J. E., Bassett, S., Boucher, T., Bridgham, S. D., Conant, R. T., Cook-Patton, S. C., et al. (2018). Natural climate solutions for the United States. *Sci. Adv.* 4, eaat1869. Available: Natural climate solutions for the United States | Science Advances.
- C. Wiedinmyer, M. D. Hurteau, Prescribed fire as a means of reducing forest carbon emissions in the western United States. *Environ. Sci. Technol.* 44, 1926–1932 (2010). Available: Prescribed Fire As a Means of Reducing Forest Carbon Emissions in the Western United States | Environmental Science & Technology (acs.org).