

Menu of Adaptation Strategies and Approaches

Developed for Fire Management

Strategy 1: Sustain fire as a fundamental ecological process.

- 1.1. Restore or maintain fire in fire-adapted ecosystems.
- 1.2. Develop fire use strategies in altered or novel ecosystems where fire can play a beneficial role.

Strategy 2: Reduce biotic and abiotic stressors affecting fire regimes.

- 2.1. Remove and prevent establishment of non-native invasive species that alter fuel regimes.
- 2.2. Maintain or improve the ability of forests to resist pests and pathogens that may alter fuel regimes.
- 2.3. Limit, selectively apply, and monitor land uses that increase fire risk or threaten fire resilience.

Strategy 3: Reduce the risk of unacceptable fire.

- 3.1. Protect fire-sensitive and vulnerable ecosystems from fire.
- 3.2. Alter forest structure and composition to reduce the risk and spread of unacceptable fire.
- 3.3. Establish or maintain fuel breaks to stop the spread of unacceptable fire.

Strategy 4: Limit the effects of unacceptable fire and promote post-fire recovery.

- 4.1. Promote habitat connectivity and increase ecosystem redundancy.
- 4.2. Maintain or create fire refugia.
- 4.3. Stabilize and enhance the physical fire footprint.
- 4.4. Promote recovery of native vegetation and habitat.

Strategy 5: Maintain and enhance structural, community, and species diversity using fire and fuel treatments.

- 5.1. Maintain or increase structural diversity from stand to landscape scales.
- 5.2. Promote diversity within and among communities to enhance fire resilience.

Strategy 6: Identify, promote, and conserve fire- and climate change-adapted species and genotypes.

- 6.1. Promote native species and genotypes that are better adapted to future climate and fire regimes, disfavor species that are distinctly maladapted.
- 6.2. Use plant materials from regional areas that have current climate and fire regimes similar to anticipated future conditions.

Strategy 7: Facilitate ecosystem adaptation to expected future climate and fire regimes.

- 7.1. Facilitate the movement of species that are expected to be adapted to future climate and fire regimes.
- 7.2. Use fire as a tool to align existing vegetation communities with changing climate and fire regimes.

Strategy 8: Use fire events as opportunities for ecosystem realignment.

- 8.1. Revegetate burned areas using fire-tolerant and drought-adapted species and genotypes.
- 8.2. Allow for areas of natural regeneration to test for future-adapted species.
- 8.3. Maintain ecosystems that have undergone post-fire type conversion or realignment.

Strategy 9: Promote organizational and operational flexibility.

- 9.1. Develop adaptive staffing and budgeting strategies.
- 9.2. Explicitly consider changing climate and fire regimes during the planning process and adaptive management cycle.
- 9.3. Engage and incorporate values of Indigenous communities in fire management decisions.

Strategy 10: Promote fire-adapted human communities.

- 10.1. Increase fuel reduction treatments in the wildland-urban interface (WUI).
- 10.2. Actively promote broad social awareness and increase education about anticipated effects of climate change on fire regimes.

MORE INFORMATION: This menu of adaptation strategies and approaches can be used within the *Adaptation Workbook decision-support framework* found in Swanston, C.W.; Janowiak, M.K.; Brandt, L. A.; Butler, P.R.; Handler, S. D.; Shannon, P.D.; Derby Lewis, A.; Hall, K.; Fahey, R.T.; Scott, L.; Kerber, A.; Miesbauer, J.W.; Darling, L.; Parker, L.; St. Pierre, M. 2016. **Forest adaptation resources: climate change tools and approaches for land managers, 2nd ed.** Gen. Tech. Rep. NRS-GTR-87-2. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 161 p. doi.org/10.2737/NRS-GTR-87-2.

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This menu was developed through a collaboration of the Northern Institute of Applied Climate Science, Southwest FireClima, and Northern Arizona University. The Northern Institute of Applied Climate Science is a collaborative, multi-institutional partnership led by the USDA Forest Service. Learn more about this menu and others at climatehubs.usda.gov/hubs/northern-forests/topic/adaptation-menus-strategies-and-approaches.

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