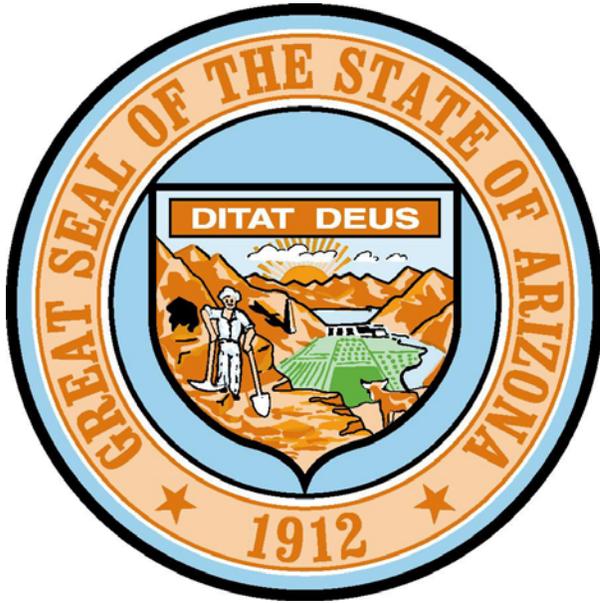


The Report of the
**Governor's Arizona Forest Health Oversight
Council**



Executive Order 2003-16

**State of Arizona Governor
Janet Napolitano**

MARCH 2004

Staff resources provided by:



ARIZONA DEPARTMENT OF COMMERCE

Our Job is JOBS!

FOREWORD

The following recommendations of the Governor's Forest Health Oversight Council identify the legislative, executive, congressional and private actions required to successfully implement the Governor's Forest Health and Safety Action Plan for Arizona. They represent both the short term and long term response needed to solve the challenges posed by degraded forests and unnatural wildfire.

These recommendations are the result of seven months of in-depth study, research, presentations and citizen input. They have the unanimous support of members of the Council and, each recommendation is as important as the other to addressing the health of our forests and protection of our communities. They are not listed in order of priority. The Council and this report have also benefited from the work of four subcommittees (Monitoring and Evaluation, Economic Utilization, Zoning and Implementation, and Education) and the information provided by our sister Council, the Governor's Forest Health Advisory Council.

The recommendations are designed to ensure that state and local resources are supported and aligned effectively to address forest health and unnatural wildfire problems. They also recognize that the state government cannot operate alone. Of the 944,000 acres of forest burned in Arizona since 2000, nearly 828,000 were on federal land. In 2003 alone, 176,000 of the 179,000 acres of land that burned were federally controlled. Although the majority of Arizona's forests are controlled by the federal government, the condition and management of these lands pose a significant challenge to the State Land Department, which is responsible for fire protection on 22 million acres of state and private lands adjacent to the federal estate.

Significant responsibilities for the solutions to the forest health and wildfire problems are rooted in the actions of the federal land management agencies. We urge the federal government to apply the same level of urgency and effectiveness to forest management that exemplifies their incident command approach to fighting fire.

However, even if the government agencies do their best to reduce the risk of unwanted fire it is a fact of life that we live in fire-prone forests. Private landowners, through their own actions, play a large role in protecting their property and homes. Research shows that there are many actions that can be taken to create "defensible space" around homes. Everyone must do their part.

As co-chairs for the Council, we are proud to represent the hard work of the Council to you.

Tom O'Halleran
Representative and Co-chair

Diane Vosick
Co-chair

Forest Health Oversight Council

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

EXECUTIVE SUMMARY

**CHAPTER 1:
BACKGROUND**

**CHAPTER 2:
THE OVERSIGHT COUNCIL AND ITS MISSION**

**CHAPTER 3:
THE RELATIONSHIP OF “THE GUIDING PRINCIPLES FOR
FOREST ECOSYSTEM RESTORATION AND COMMUNITY
PROTECTION” TO THE RECOMMENDATIONS**

**CHAPTER 4:
RECOMMENDATIONS**

**CHAPTER 5:
FUNDING**

CONCLUSION

**APPENDIX A:
GOVERNOR NAPOLITANO’S ACTION PLAN FOR ARIZONA**

**APPENDIX B:
EXECUTIVE ORDER 2003-16**

**APPENDIX C:
GUIDING PRINCIPLES FOR FOREST ECOSYSTEM
RESTORATION AND COMMUNITY PROTECTION**

ACKNOWLEDGEMENTS

STATE OF ARIZONA GOVERNOR, JANET NAPOLITANO

Members of the Governor's Forest Health Oversight Council

Thomas O'Halleran, Arizona House of Representatives
Co-Chair, Sedona

Diane Vosick, Ecological Restoration Institute, Northern Arizona University
Co-Chair, Flagstaff

Doug Aitkin, Arizona Department of Commerce
Phoenix

Alexious C. Becenti, Sr., Navajo Forestry Department
Ft. Defiance

Steve Campbell, Navajo County Cooperative Extension, Univ of Arizona
Holbrook

Ron Christenson, Gila County Supervisor
Payson

Dr. Richard Collison, Medical Doctor
Prescott

Honorable Joe Donaldson, Mayor
Flagstaff

Lori Faeth, Governor's Office
Phoenix

Don Foster, Apache County Health Department
St. Johns

Dallas Massey Sr., Tribal Chairman, White Mountain Apache Tribe
White River

Michael Neal, Arizona Public Service
Phoenix

Kirk Rowdabaugh, Arizona State Land Department
Phoenix

Forest Health Oversight Council

Todd Schulke, Center for Biological Diversity
Tucson

Mike Sommerville, Natural Resources Conservation Service
Phoenix

Rob Smith, Sierra Club
Phoenix

Darrell Willis, Fire Chief
Prescott

Beth Zimmerman, Department of Emergency and Military Affairs
Phoenix

Staff for the Governor's Forest Health Oversight Committee

Corey Cox, Senior Planner, Department of Commerce

Heather Garbarino, Community Planning Specialist, Department of Commerce

EXECUTIVE SUMMARY

Arizona forests and forest communities are at risk of unnatural, catastrophic wildfire. The problems of today began over 120 years ago—brought about by the systematic exclusion of surface fire associated with the first Euro-American settlers. Those changes and others continued for most of the 20th Century. Ironically, it is the removal of fire that is the prime contributor to degraded forest ecosystem health, excessive fuel accumulation, and the bark beetle epidemics that afflict our forests today. It is low-intensity fire on the ground that formerly prevented the explosion of small trees in the ponderosa pine forests—a type of fire that the pines could withstand and in fact required to maintain ecosystem health. It is the excessive number of trees that irrupted following the removal of low-intensity fire coupled with steadily accumulating surface fuels and periodic drought that contribute to the explosive, catastrophic fires of the 1990's, 2000, 2002, and 2003.

Wildfires do not abide by boundaries. Whether caused by lightning or man, originating on the national forests or private property, the risk they pose to people, communities, wildlife habitat, and watersheds has never been greater. Fortunately, we know a lot about what we can do to fix this problem. However, the complexity of the problem requires coordinated action between all those that share responsibility—federal, tribal and state land managers, towns, cities, fire districts, counties, and the private landowner. The 30 recommendations developed by the Council reflect that complexity. In summary they can be broken down as follows:

- o **Recommendations requiring legislative action:** There are **ten** recommendations that require legislative changes. Key elements include: requiring the State to adopt the Uniform and International Wildland/Urban Interface or similar codes to establish minimum standards for infrastructure required to provide community protection; delegation of authority to counties to regulate lot splits to ensure adequate infrastructure and property protection; providing a tax credit for individuals and businesses that install and use wood pellets and wood products for heating; and, providing funding for additional efforts by the State Forester to reduce hazardous fuels.
- o **Recommendations to the Governor and Executive Branch:** There are **fifteen** recommendations for the Governor and Executive Branch that include: creating a new office of Forest Ecosystem Health with responsibilities for all activities related to fire protection and forest restoration; elevating the State Forester to a cabinet level position; identifying important services for coordination by the State Forester; identifying actions to be taken by the Department of Commerce to promote businesses and markets for small wood utilization; working with utility companies and the Western Governors' Association to encourage the use of Best Management Practices to manage utility corridors to avoid

disruption of energy delivery during and following fire; urging new state construction to install wood pellet and wood heating systems; and recommending the initiation of a collaborative process to increase the demand for wood based energy production.

- o **Recommendations for the Congressional Delegation and Federal Government:** Adequate management of federal land will require funding and implementation of treatments. There are **four** recommendations in this category that include: expand authorities for the Federal Emergency Management Agency to make federal emergency declarations so bark beetle-related tree mortality can be removed expeditiously to help avoid catastrophic fire; provide full funding for the Healthy Forest Restoration Act and forest thinning and restoration activities; prevent borrowing from thinning and restoration accounts to fund fire suppression; and expand the Community Forest and Restoration Act, which is presently available only in New Mexico to include Arizona.
- o **Recommendation for private landowners:** There is only **one** recommendation in this category that urges private landowners to create defensible space around their homes.

To accomplish the ambitious program outlined in these recommendations additional state funding will be needed. The Council has begun the process of identifying funding needs and potential sources for revenue. We hope to provide a recommendation for funding, along with additional recommendations to provide incentives for the re-establishment of small wood and biomass harvesting, utilization and marketing infrastructure, coordinated education activities, and a new goal for biomass use.

It took 120 years to create the problems we face today. Implementing the solution is underway. Working together and expeditiously implementing the recommendations identified by the Council will begin to reduce the risk of fire to our towns and forests. The Rodeo-Chediski fire has taught us that inaction is not an option—the time to act is now.

CHAPTER 1: BACKGROUND

The Extent and Importance of Arizona's Forests

Arizona has one of the most extensive pine forests in the world. The “tall timber” of northern Arizona, consisting mostly of ponderosa pine, covers millions of acres in a swath extending along the Mogollon Rim and the White Mountains from northwest of Flagstaff to the New Mexico border southeast of Springerville.¹ Most of this area lies within the Coconino and Apache-Sitgreaves National Forests and the White Mountain Apache Indian Reservation. Extensive ponderosa pine forests are also found on the Kaibab National Forest on both sides of the Grand Canyon, in the Chuska and Lukachukai Mountains of the Navajo Indian Reservation, the Prescott National Forest and on the “sky island” mountains of southeastern Arizona such as the Santa Catalinas, the Chiricahuas, and Mount Graham in the Coronado National Forest.

The pine forests are vital to Arizona and its citizens. They are home to tens of thousands of residents in mountain cities and towns such as Flagstaff, Prescott, Payson, Show Low, Heber, Overgaard, Pinetop, Lakeside, White River, McNary, Eagar, Springerville, and numerous smaller communities. Pine forests constitute large and critical portions of the watersheds of the Salt, Verde, and Gila Rivers, which supply water for the people, farms, and industries of central and southern Arizona, including the Phoenix metropolitan area. Pine forests provide essential habitat for numerous species of wildlife, including deer, elk, bear, and wild turkey, as well as game birds, birds of prey, and small mammals. Arizona's pine forests can also provide wood for utilization. Finally, Arizona's forests are an enormous recreational resource, providing camping, hunting, fishing, hiking, and bicycling opportunities, as well as relief from the desert heat, for hundreds of thousands of visitors, both from in-state and out-of-state. The income from these visitors is critical to the economy of much of rural Arizona.

The Conditions of Arizona's Forests

There is widespread agreement among forest scientists on a number of general points.² In most of Arizona's pine forests, the number of trees is now substantially greater and the diversity and abundance of grasses, wildflowers, and shrubs are substantially less than in the nineteenth century. The increase in tree density is due to relatively young trees that have irrupted since widespread

¹ G.A. Pearson. *Management of Ponderosa Pine in the Southwest* (1950)

² See, e.g., W. Wallace Covington and Margaret M. Moore, *Southwestern Ponderosa Forest Structure: Changes Since Euro-American Settlement*, 92 *Journal of Forestry* 39 (1994); M.H. Madany and N.E. West, *Livestock Grazing B Fire Regime Interactions Within Montane Forests of Zion National Park, Utah*, 64 *Ecology* 661 (1983); M. Savage and T.W. Swetnam, *Early 19th Century Fire Decline Following Sheep Pasturing in a Navajo Ponderosa Pine Forest*, 71 *Ecology* 2374 (1990); G. Thomas Zimmerman and L.F. Neuenschwander, *Livestock Grazing Influences on Community Structure, Fire Intensity and Fire Frequency in the Douglas-fir/ Ninebark Habitat Type*, 37 *Journal of Range Management* 104 (1984).

Euro-American settlement of the forests began. The presence of large, mature trees (sometimes called "old growth") is low.

The high density of young ponderosa pine trees has created a risk of large, high-intensity fires such as the Rodeo-Chediski. This unnatural condition of the forest has also contributed to an unprecedented bark beetle epidemic, and associated tree mortality. Finally, climatic information indicates that Arizona is entering a scientifically predictable period of extended drought. The convergence of these factors leaves Arizona's forests and communities vulnerable to unnatural, catastrophic fire.

The Rodeo-Chediski fire, in which over 400,000 acres of Arizona's forests burned, was one of the greatest disasters in the history of our state. Hundreds of families lost their homes and property. Thousands more were forced to evacuate their communities and lived with the fear that their homes too, would be lost. The soil erosion in the aftermath of the fire continues to impact the watersheds serving Phoenix and downstream fisheries.

In 2003 the pattern repeated itself. Overstocked forests, drought, and beetle-killed trees led to the Aspen fire in the Santa Catalina Mountains. Over 85,000 acres burned, 232 homes and 9 businesses were destroyed, and many people lost one of their favorite recreation areas for decades to come.

The citizens of Arizona must do what we can to prevent another forest fire disaster in the future. Fortunately, there are appropriate actions that can be taken to reduce the risk of unnatural wildfire to forests and communities. This will require restoring forests to an ecological condition where fires no longer burn severely in the canopy but rather fire returns to its natural position of frequent low-intensity ground fire. In addition, citizens and communities must take responsibility for treating their homes and property to reduce the risk of fire to structures and firefighters. The recommendations developed in this report are important steps for achieving this goal.

CHAPTER 2: THE OVERSIGHT COUNCIL AND ITS MISSION

The Governor's Forest Health Oversight Council was formed in response to a recommendation resulting from the March 10, 2003 First Annual Conference on Forest Health and Safety (see the associated document, "Action Plan for Arizona" included in Appendix A). The Oversight Council and related Advisory Council were formally established by executive order 2003-16, signed by Governor Janet Napolitano on May 22, 2003.

The composition of the Oversight Council is intended to reflect the broad community of stakeholders concerned about the sustainability of Arizona's forests and the social and economic health of Arizona's forest-dependent communities.

The Council was charged with the responsibility of ensuring the timely implementation of the Action Plan and to coordinate efforts for fire prevention, suppression, and recovery between government agencies and all levels of government. The other duties include:

- Develop a timeline for the implementation of the Governor's Forest Health and Safety Action Plan for Arizona;
- Provide oversight to timely implementation of the Governor's Forest health and Safety Action Plan for Arizona;
- Coordinate with the Governor's Forest Health Advisory Council;
- Perform such other tasks as the Governor or the Advisory Council may suggest.

As a result of many meetings and presentations, the Council learned that a variety of legislative and administrative changes are needed to improve the effectiveness of the State's forest restoration and wildfire hazard reduction efforts. This report reflects elements of each of the four duties and represents what the Council feels are the changes that are needed to protect Arizona forests and communities.

Mission:

The Mission of the Arizona Forest Health Oversight Council is to develop a timeline for the implementation of the Governor's Forest Health and Safety Action Plan; to provide oversight to timely implementation of the Action Plan; to collaborate with the Forest Health Advisory Council; and to perform other tasks that the Governor or the Advisory Council may suggest.

CHAPTER 3: GUIDING PRINCIPLES FOR FOREST ECOSYSTEM RESTORATION AND COMMUNITY PROTECTION

The Forest Health Advisory Council (a sister to the Oversight Council) was established under executive order 2003-16 to develop guiding principles for the design and implementation of restoration-based fire fuel reduction and forest health restoration projects based on the best available science. Qualifications for representatives on the Council include an academic or professional background in natural resource management or forestry.

The Advisory Council completed work on the Guiding Principles for Forest Ecosystem Restoration and Community Protection in September, 2003. The Principles were endorsed and adopted by the Oversight Council in November, 2003. The joint actions and cooperation between the two Councils emphasize the importance of linking science to action in both words and practice. The Principles are intended to provide the framework for planning and implementing forest ecosystem restoration and community protection projects statewide. They also provide guidance and foundation for the recommendations developed in this report.

The preamble to the Principles includes the following summary. The entire text can be found in Appendix C.

- *Different forest types have different natural disturbance regimes. For example, where crown fire is unnatural, thinning and prescribed burning may be needed to safely reestablish more natural surface fire regimes. But in forest types where crown fire is natural, such treatments may not be needed, at least from an ecological standpoint. Understanding these differences is fundamental to restoring more natural disturbance regimes in our forests.*
- *Community stakeholders must take the lead to implement these principles and make the decisions for their communities at risk. The Council stresses the immediate and urgent need to adequately reduce the risk to communities. This will require a comprehensive effort to reduce hazardous fuels in and around at-risk communities regardless of the adjacent ecosystem type. Fire research and recent fires demonstrate that fuels reduction treatments in and around communities may not prevent the loss of homes. Homeowners must do their part to create defensible space and replace or mitigate flammable building materials.*
- *Although Arizona's forest and woodland ecosystems need restoration, it is important to understand that restoration is a young science whose long-term outcomes are uncertain. The Council urges employing a diversity of*

restoration strategies that fit local ecological, social, political, and economic circumstances. A “one size fits all” approach is not appropriate.

- *Learning about restoration should be an active and ongoing process. A serious commitment to monitoring and adaptive management is critical to understanding the ecological, social, and economic dimensions of restoration. The Guiding Principles should be viewed as dynamic and adaptable to evolving conditions and experiences.*
- *The costs of restoration must be weighed against the costs of inaction. Though restoration may seem a weighty investment, it pales in comparison to the immediate and long-term costs and risks of allowing current forest conditions to persist. Restoration is a process of recovery requiring a substantial and sustained investment of funds, and political and public support.*
- *The Guiding Principles urge us to think big. Arizona’s forests and the ecological processes that sustain them span landscapes. Assessing needs, identifying priorities, and charting progress toward community protection and forest ecosystem restoration goals must occur within an appropriately large landscape context.*
- *The Council’s ultimate hope is that the Guiding Principles will help guide our movement toward sustainable and reciprocal relationships between human communities and forest ecosystems – relationships that sustain the biological, cultural, and economic values that contribute to a healthy democratic society, both now and into the future.*

CHAPTER 4: RECOMMENDATIONS

Introduction

The following **31** recommendations represent the policy, implementation, and funding changes required to implement the Governor’s Action Plan for Arizona. The goal is to reduce the risk of unnatural wildfire to Arizona’s forests and forest dependent communities. They reflect the work of the Council in combination with four subcommittees that include both Council and citizen members.

The serious threat posed by unnatural wildfire led the Council to develop strong recommendations. For example, the Forest Health Oversight Council recognizes that a key strategy for reducing the threat to forest communities is to provide counties, towns, cities, and fire districts the authorities they need to ensure adequate fire prevention and protection. Therefore, some of the recommendations represent a minimum standard from which these jurisdictions can expand.

The Council has chosen not to define the wildland-urban interface. This is viewed as a local decision that will vary depending upon the community and the surrounding topographical features. However, the Council recognizes the state and federal efforts to identify communities at risk, and in this respect urges that funding become a priority for fire hazard reduction efforts in these areas.

The Council also recognizes the importance of solving the challenges posed by the overwhelming amount of small-diameter wood resulting from forest restoration. The loss of wood removal and utilization infrastructure poses a serious impediment to the reduction of hazardous fuels. Several recommendations directly address this problem; however, the Economic Utilization Subcommittee intends to study this problem further with the goal to develop economic utilization guiding principles that address sustainability and sustainable harvest of natural resources and maximize ecological and economic benefit to Arizona’s forests and forest dependent communities.

Finally, we acknowledge that some recommendations may create controversy. However, the Council agreed that it was our responsibility to recommend what we see as the most important steps to protect the health and safety of the people, forests, and communities of Arizona. To this end, we would put the responsibility back on those that oppose the recommendations to offer alternatives that are equally effective at protecting public safety and Arizona’s forests.

Update Fire Codes

- 1. Pursuant to ARS 41-2146 that the State of Arizona Fire Marshall adopt, enforce, and maintain a current Fire Code through the State Fire Safety Committee to establish minimum standards for safeguarding life and property from fire and fire hazards. (Currently adopted code is circa 1988)**
- 2. Pursuant to ARS 41-2146 that the State of Arizona Fire Marshall adopt and maintain a current Wildland Urban Interface Fire Code through the State Fire Safety Committee. The minimum standard shall address the categories found in the INTERNATIONAL URBAN WILDLAND INTERFACE CODE (IUWIC) safeguarding life and property in areas at risk from wildfire. Enforcement of the code should be delegated to counties, towns, cities and fire districts.**

Rationale:

Over the past twenty years increasingly frequent, large, and severe wildland fires have ravaged many areas of Arizona and the western United States. In 2002 the Rodeo-Chediski fire burned approximately 469,000 acres of Arizona's forest and over 425 structures. In 2003 the Aspen fire in Pima County destroyed 349 structures, and the recent wildfires in California have destroyed over 4,814 structures and included the loss 22 civilian and firefighter lives.

Arizona's fire code is 15 years old and does not reflect new knowledge and common sense requirements needed to protect homes against wildland fires. In addition, Arizona does not have a Wildland-Urban Interface Code. The loss of property, and civilian and firefighter lives could have been reduced or avoided if homeowners had applied practical, research-supported actions for creating defensible space. By updating the Arizona fire code and adopting a Wildland-Urban Interface code property owners will be responsible, active participants in efforts to protect themselves, their property, and the lives of firefighters. We will also lessen the eventual recovery costs to state and federal taxpayers and reduce the possibility of increasing insurance premiums.

- 3. The State of Arizona Fire Marshall shall adopt the new codes as soon as possible or within one year of enactment of enabling legislation.**

Rationale:

The time for action is now given the current drought and fuel conditions of Arizona forests and the trend of lengthening fire seasons, and more frequent, severe, and larger fires. The Fire Safety Advisory Committee recently recommended adoption of the 2000 Uniform Fire Code, and this is presently

under review at the Governor's Regulatory Review Council (GRRC). While this is an important step in the right direction, the Council is concerned that upon adoption, the Code will be "out of date." Therefore, the Council recommends that the Fire Safety Advisory Committee update the current recommendation and that the newer 2003 Uniform Code be adopted quickly.

Regarding the Wildland-Urban Interface Code, the Council recognizes that a collaborative process takes time. However, templates exist for a new Wildland-Urban Interface code that can contribute to an expedited review and recommendation process. Adopting the Wildland-Urban Interface Code should be the top priority of the Fire Marshal and state and local emergency responders for the next year.

- 4. The Legislature should revise state statutes to provide authority to fire districts, cities, towns, and counties to adopt, implement, and enforce the IUWIC code or an equally effective code immediately, and to promulgate higher standards where local conditions require it. Authority should include updating the code as new information develops.**

Rationale:

Some towns, cities, fire districts and counties have expressed concern over the timeline for the state process. Where support exists counties, towns, cities and fire districts want to adopt the IUWIC code immediately. Whether or not they have the authority to do so is unclear. This would clarify their authority and maintain local control.

<p>Expand the Membership of the Governor's Forest Oversight Council and the State Fire Safety Committee</p>

- 5. The composition of the Governor's Forest Oversight Council should be expanded to include the Arizona State Fire Marshall.**
- 6. The composition of the State Fire Safety Committee should be increased to include broader representation of stakeholders including the counties, towns, cities, fire districts, the insurance industry, and the State Forester.**

Rationale:

The State Fire Marshall plays a big role in adoption and maintenance of the state fire code as well as providing vital fire service support and training. The Governor’s Forest Oversight Council should be expanded to include the State Fire Marshall.

Currently, State Fire Safety Committee is defined in statute (A.R.S. 41-2146) with a membership of seven individuals representing: fire departments serving more than 100,000 citizens; fire departments serving less than 100,000 citizens; the general public; architects; building official; fire chief’s association; and fire chief’s association for less than 100,000 citizens.

The committee does not include representatives from counties, the insurance industry, and other stakeholders such as planners. Therefore, the statute should be revised to include these key stakeholders so they can participate in the revision of the fire codes.

Fighting wildland fire in the wildland-urban interface takes different skills and knowledge than battling structural fires only. Therefore, the State Forester, who also bears responsibility for coordinating firefighting, should be made a prominent member of the State Fire Safety Committee when the Wildland-Urban Interface code is developed.

<p style="text-align: center;">Increase Local Authority for Planning, Implementation, and Enforcement</p>
--

7. Expand current county planning and zoning authority to enable better management of growth and development in communities vulnerable to unnatural catastrophic fire, such as managing lot splits, access roads, and internal streets and permitting transfer of development rights.

Rationale:

The counties understand the need to anticipate future wildfires and to protect public and fire fighter safety. To be effective the counties need the authority to plan, zone, and enforce the minimum standards adopted in the state fire code and wildland-urban interface fire code. This authority also permits the counties to take actions that minimize the cost of delivering fire protection services.

For example, one of the most difficult issues related to firefighting in rural areas is inadequate access to property, leading to a slow response time to emergencies. In a survey of fire districts done in 2001, virtually every fire district that responded expressed concerns about inadequate roads, impassable roads, roads that had been blocked or fenced by property owners, lack of turnarounds,

roads that cannot withstand the weight of fire apparatus, and lack of water for firefighting. The land division (lot splitting) process in counties that allows any property owner to split his or her property five ways has led to unplanned and unregulated sprawl outside of towns and cities. The inability to regulate basic public health and safety needs has led to infrastructure (roads, drainage, water, and sewer) and service (police, fire, and rescue) challenges for counties, fire districts, and other emergency providers.

While language added by Growing Smarter Plus in 2000 helped somewhat, it did not provide enough authority for counties to adequately address lot split and access issues.

- 8. Give counties, towns, cities and fire districts the authority to require landowners to establish defensible space by the removal of vegetation, to remove hazardous fuels, and to take other reasonable preventative actions necessary to reduce the hazard of wildfire and/or facilitate the control of wildfire on their property.**
- 9. Give counties, towns, cities and fire districts the authority to develop and implement an administrative review process to enforce hazardous fuels reduction.**

Rationale:

Uniform fire codes focus primarily on new construction, and are enforced primarily through denial of required permits. To more effectively prevent and control wildfires in the wildland-urban interface, the state fire marshal, counties, and fire districts must have authority to require landowners to undertake certain fire prevention measures, such as the removal of hazardous fuels, including dead trees and brush, from existing developments as well as from newly constructed developments. Additional authority is also needed to seek reimbursement from the landowner if the county, fire district, town or city takes action because a landowner fails or refuses to take action to correct the hazardous condition.

Although in extreme cases cities and counties might be able to address such problems using their authorities to abate nuisances and their general authorities to enforce ordinances, such proceedings are time consuming, costly, and generally require court proceedings that depend upon county attorneys' willingness to make such action a priority. Even when a judgment is obtained it may not be enforced, and in some cases its relative priority is so junior that the lien would not be paid even if foreclosed. Although the state fire marshal has authority to issue cease and desist orders and to seek injunctive relief in court to enforce the state fire code, that is a cumbersome and expensive process that requires the assistance of attorneys.

The administrative process as it presently exists is only available for review of orders of state agencies. This language would allow counties, towns, cities and fire districts to initiate an administrative process to facilitate the enforcement of regulations that would reduce hazardous fuels and establish a defensible space on properties in the urban-wildland interface.

Develop a Real Estate Disclosure Process

- 10. In areas vulnerable to unnatural, catastrophic wildfire, a disclosure statement should be developed stating that the property is within a zone of significant fire hazard. It could also include a list of the actions that have been or could be taken to reduce the hazard of fire to property and structures. The Council recommends working through a collaborative process that includes representatives from the real estate and homebuilding industry to develop a disclosure process.**

Rationale:

Communities in fire-vulnerable areas are developing disclosure forms to reveal whether or not a homeowner has taken action to create defensible space. These disclosure forms serve a dual purpose of educating prospective home and property owners and to motivate action.

Insurance companies are also beginning to analyze the defensibility of residences they insure and are requesting that property owners meet an industry standard of defensibility.

Insurance industry losses caused by catastrophic wildfire have heightened industry concerns about the economic viability of insuring homes in fire-prone areas. Proactive efforts to create defensible space and the expeditious reduction of hazardous fuels surrounding communities at risk are crucial to maintaining private insurance coverage, and preventing policy cancellations and uninsurable households.

The Office of Forest Ecosystem Health and State Forester

- 11. The Governor should create a new Office of Forest Health to be co-located with the State Lands Department. This new office should be led by the State Forester. The State Forester position should be separated from the job of the State Land Commissioner and become a gubernatorial appointment as well as become a cabinet-level position. All**

forest management functions including, but not limited to the following activities should be consolidated under the State Forester:

- **Implementation of the Cooperative Forestry Assistance Act**
- **Education and outreach**
- **Collaboration with stakeholders, federal agencies, counties, towns, cities and fire districts**
- **Project monitoring**
- **Database development and maintenance**
- **Assistance to communities for grant-writing**
- **Forest Restoration and Fire website**
- **Oversee FIREWISE activities in the state**
- **Coordinate the preparation of a statewide forest health evaluation**
- **Review, interpret, and respond to federal land management policy and funding initiatives**
- **Develop harvesting Best Management Practices (BMPs)**

12. The State Forester should develop a strategic plan that identifies the positions required to coordinate forest health and fire management on state and nonfederal lands under their jurisdiction. In 2004 this represents approximately 22 million acres. The legislature should fund essential positions.

Rationale:

According to state statute (**ARS37-621**) the State Land Commissioner is the Arizona State Forester. In reality the State Land Commissioner is responsible for a wide variety of functions, of which forestry is only a part. The Deputy State Forester and the State Land Department are responsible for protecting over 22 million acres of state, nonfederal, and nonfire district land from fire.

The responsibilities for implementing the actions necessary to reduce the risk of wildfire are dispersed throughout government. The Council has also identified gaps in current fire prevention and land management activities that should be filled. For example, there is no coordination of education activities for the public, government officials engaged in land management activities, the construction industry, and many others that have a stake in and role to play in

reducing the risk of unnatural fire. Placing all fire and forest management activities in a new Office of Forest Health will ensure the coordination and coherent delivery of services required to reduce fire hazard.

The Governor recognizes that the condition of Arizona's forests and the vulnerability of forested communities are a major environmental and economic issue. Because Arizona's forests play a significant role in maintaining surface waters in the state, contribute significant recreation dollars to the economy, and are an aesthetic asset important to our quality of life and ability to attract a skilled workforce to Arizona, the Council feels the State Forester should become a cabinet-level position.

The Council is not proposing that this change include the development of new administrative infrastructure. Rather, the State Forester should be co-located with the State Lands Department to maximize efficiency. However, we have recommended an expanded mission for the Office of Forest Health, and to be effective additional staff will be required. This represents a relatively small investment in the face of the current and future damage created by catastrophic fire.

In addition to improving coordination and efficiency, this structure will give the State Forester the stature and access required to argue for additional federal resources for forest restoration and community protection at all levels of the federal government.

13. The State Forester should create and maintain a statewide, geospatial database to manage information on forest condition and forest management activities. The database can be used to inform collaborative, multi-jurisdictional planning at the state, county, and local levels and the design and application of treatments. This can be the foundation for the statewide assessment proposed by the Forest Health Advisory Council. This database will be located in the newly created Office of the State Forester.

Rationale:

The database is intended to meet the pressing need for coordination of information among agencies and different levels of government. The present level of coordination is not adequate to support planning and project prioritization at all levels and across organizations. Specifically, the purposes of the database are to provide information to: facilitate development of strategic, area-wide cross-boundary treatment plans in order to achieve the greatest near-term protection to values-at-risk per acre treated; focus funding on areas with the greatest need and potential for high benefit-cost ratios; develop a system for measuring

progress; provide public education and increase public awareness; and improve Arizona's ability to compete for federal funds.

As envisioned, the database will be developed in two overlapping phases, with planning for the second phase occurring during implementation of the first phase. The first phase, or first-generation system, will focus on collecting data about treatments and evaluating their role in decreasing the threat of catastrophic wildfire to the wildland-urban interface. The second-generation system will involve a more refined, more comprehensive analysis of forest condition and wildfire risk. Currently the first-generation system has a minimal level of funding, and the second-generation system is not yet funded.

Education

- 13. The State Forester should develop a FIREWISE, USA Program (<http://www.firewise.org/usa/>) with the goal of enrolling 10 communities in the Firewise, USA Program by January 2005.**
- 14. The State Forester will train 15 - 25 FIREWISE, USA assessors by January 2005.**
- 15. Counties, towns, cities and fire districts are encouraged to assist communities and the State Forester to enroll communities (defined by FIREWISE, USA as homeowner associations and similar small entities) in the FIREWISE Communities/USA recognition program.**

Rationale:

Education is a key element for successful implementation of the Governor's Action Plan and reducing the hazard of catastrophic fire. The FIREWISE, USA program assists communities to create defensible space. The process begins with an assessment of the fire risk to the community and an evaluation of what needs to be done. A trained individual must conduct this assessment. If the community executes the actions identified in the assessment to reduce fire hazard it is labeled a FIREWISE Community.

The State Forester should assume responsibility to train individuals and local fire agencies to do FIREWISE assessments. Cooperation will be needed by local jurisdictions and counties to recruit communities and identify individuals that can be trained to do assessments. This activity can be an effective cornerstone of education for property owners. The Council recognizes that educating the public about forest health seems to be most effective when done by local agencies.

16. The State Forester should formally recognize the Student Conservation Association, Inc. (<http://www.thesca.org/>) as a partner.

Rationale:

Young adults enrolled in the Student Conservation Association, Inc. are an effective, low-cost workforce capable of conducting landowner outreach and firefighting services. A formal relationship between the State and SCA will facilitate coordination between state educational efforts and this potent workforce. This partnership does not include a financial commitment.

Increase Markets for Small Wood Utilization

17. The Department of Commerce should cultivate businesses that will contribute to an economically and ecologically sustainable wood utilization sector. In particular, the Department should work with the Economic Utilization Subcommittee of the Council to help them accomplish the following:

- **Identify and evaluate current forest product manufacturing companies and markets in Arizona**
- **Develop Guiding Principles for economically and ecologically sustainable wood utilization projects/industry for Arizona**
- **Identify and evaluate forest products currently imported into Arizona that could be manufactured locally using materials from forest restoration**
- **Identify and evaluate efforts in Arizona to manufacture products and/or develop markets for products based on raw materials derived from forest restoration**
- **Identify and evaluate economic development efforts in Arizona to enhance the non-extractive “amenities” economy (e.g. recreation, tourism) that is tied to the environmental health and scenic condition of Arizona’s forests**
- **Develop recommendations for consideration by the Councils related to current and suggested future economic utilization activities to promote**

forest restoration, community protection, and sustainable community economic recovery

- **Evaluate and pursue job training grant opportunities**

Rationale:

Arizona lacks the appropriate infrastructure for economically and ecologically sustainable wood-harvesting and utilization. This has left Arizona in a situation where there are thinning and restoration projects ready for implementation, but no companies with the expertise to remove trees and nothing but a handful of commercial interests willing to use a minute portion of the material. The result is that projects are delayed and wood is disposed of in landfills or burned on site--creating smoke, releasing carbon, and wasting valuable energy.

In the face of this difficulty there is opportunity for positive change. Over the last forty years we have learned that sustainable forest communities and sustainable wood-based enterprises depend on ecologically sound management of our forests. There is general acceptance that future commercial development should be based on long-term goals of community and forest health. The Economic Utilization Subcommittee will develop through open / inclusive communication and dialogue a zone of agreement surrounding the sustainable harvest of forest resources, related to the outflow of materials from forest restoration and fire-hazard reduction activities.

18. The Governor, by executive order, should require all new or renovated state facilities to consider using commercially based wood pellets or wood chips for heating purposes (schools, universities, etc.).

19. The legislature should provide a tax credit for homeowners that install and use wood pellet heat.

Rationale:

Heating technology using wood pellets is well established and commercially viable. In addition, small business capacity already exists in the state to produce pellets and can be expanded rapidly into new communities in response to new markets. The manufacturing of pellets and small wood utilization for heat have many benefits greater than other wood products including: pellet production must be located close to its markets leading to appropriate-scale small enterprise development; both the manufacturing of pellets and the production of heat from wood are clean approaches to heat production when the pollutants of different sources are compared; and, it creates a market for the utilization of small wood.

- 20. Through a collaborative process develop recommendations for achieving greater contribution to energy generation in Arizona from renewable resources focusing on utilization of biomass materials while not undermining other renewable alternatives.**

Rationale:

The Arizona Corporation Commission currently sets the Environmental Performance Standard (EPS) to motivate the use of renewable energy. The EPS requires regulated utilities to generate 1.1 percent of their total retail energy sales from renewable sources by 2007. Generating energy from small wood and wood by-products will generate a market while solving a waste disposal problem. The Council, after further study, will make additional recommendations to stimulate biomass use. As the Council pursues this recommendation, it should ensure the sunset of the 2007 EPS is eliminated or at a minimum extended at least 20 years to encourage investment in new technologies that are sustainable.

Protection of Utility Corridors

- 21. The state and federal land management agencies shall sign a Memorandum of Understanding (MOU) with the utility companies to facilitate, standardize, and improve the maintenance of utility corridors when best management practices are guaranteed.**
- 22. The Governor should work with other Governors in the Western Governors' Association (WGA) to adopt a policy resolution that will foster cooperation across states to manage utility corridors by using standardized best management practices.**
- 23. The states, through the WGA, should encourage utilities that don't follow Best Management Practices to start.**

Rationale:

Utility corridors cross wildlands of different jurisdictions throughout the Intermountain West. Power delivery is threatened by wildfire and falling trees resulting from post-fire and beetle mortality. Providing uninterrupted power requires adequate treatment of utility corridors. Obtaining the permission to maintain this zone of protection is a challenge across multiple jurisdictions.

Consequently, corridor maintenance is inadequate in some places to ensure continued power delivery during or following a fire or severe weather.

These recommendations urge the state and federal land management agencies to enter into an MOU for the maintenance of utility corridors. In return for facilitating this work the utility company should guarantee the use of best management practices. To ensure that maintenance is consistent across the entire corridor (because Arizona's power supply can be disrupted by events outside the state) the Governor is asked to enlist the assistance of other governors and states in the Intermountain West by urging adoption of a policy resolution by the Western Governors' Association.

Federal Action

24. Congress should authorize Federal Emergency Management Agency (FEMA) to provide funding to take science-based preventative action around communities at risk.

Rationale:

In a prescient action in early 2003 the State requested an Emergency Declaration and federal funding from FEMA to remove hazardous fuels created by the unnatural bark beetle epidemic *before* a catastrophic fire could erupt. This request was denied, appealed, and denied a second time. Presently, many Arizona communities are surrounded by dead and dying trees that will pose a significant risk during the next fire season.

Congress should authorize funding for emergency action either through FEMA or some other agency to address this problem quickly.

25. The Arizona Congressional Delegation should pursue expansion of the "Community Forestry and Restoration Act" developed for New Mexico to include Arizona and other states in the Intermountain West.

Rationale:

This program provides \$5 million in cost-share grants to stakeholders for experimental forest restoration projects that are designed through a collaborative process. The projects may be entirely on, or on any combination of federal, tribal, State, county, or municipal forestlands. The program is very successful.

26. Congress should prohibit the transfer of funds from forest restoration and preventative thinning to conduct fire suppression.

Rationale:

Since 1999, fire suppression costs have exceeded appropriations—resulting in borrowing from forest thinning and restoration accounts. Borrowing funds from preventative thinning to fight fire is akin to stopping immunizations in order to fight the disease. It is irresponsible fiscal and environmental policy. This behavior has resulted in work stoppage on thinning projects, imperiled fragile small businesses capable of performing forest thinning, delayed community forestry efforts, and eroded citizen confidence in federal land management. Congress should act immediately to prohibit the transfer of funds from forest restoration and preventative thinning to fire suppression.

27. Congress should fully fund the \$760 million authorized under the Healthy Forest Restoration Act and the critical State and Private Forestry Programs of the 2002 Farm Bill. Prioritization should be based on the Guiding Principles developed by the Governor’s Forest Health Science Advisory Council that states: *the immediate focus should be on protecting human communities at risk, critical infrastructure, along with key watersheds and habitats.*

Rationale:

A recent Yale University study states that the full cost of damage resulting from the Cerro Grande fire in 2000 is \$26,000/acre³. That figure includes lost property, rehabilitation, lost work productivity, and many other costs. A recent study by Northern Arizona University⁴ comparing the cost of restoration to no action (and a subsequent unnatural fire) demonstrates that it is cost-effective to spend up to \$505/acre to restore forests to prevent catastrophic fire and avoid associated fire suppression costs. This value is a conservative estimate based on a comparison of the cost of restoration versus the cost of suppression, emergency rehabilitation, and lost timber production. All recent studies demonstrate that it is more fiscally responsible to treat forests than to let them burn catastrophically.

28. The Governor’s representative in Washington, D.C. should work with the Congressional delegation to attract resources for forest restoration and fire hazard reduction to Arizona.

Rationale:

³ D.C. Morton, M.E. Roessing, A.E. Camp and M.L. Tyrrell. Assessing the Environmental, Social, and Economic Impacts of Wildfire. Forest Health Initiative, Yale University. GISF Research Paper 001, May 2003

⁴G.B. Snider, D.B. Wood and P.J Daugherty. Analysis of Costs and Benefits of Restoration-Based Hazardous Fuel Reduction Treatments vs. No Treatment , Unpublished Progress Report, Northern Arizona University: School of Forestry, May 2003.

Competition for federal Fire Plan dollars is intense. For Arizona to receive the required level of funding to implement forest restoration and thinning the Governor and Congressional delegation should work together. The new Arizona, Washington, D.C. office should assist the delegation to direct federal dollars to address Arizona's forest health crisis.

Citizen Action

29. Private property owners should implement actions to create defensible space around their homes.

Rationale:

Private landowners, through their own actions, play a large role in protecting their property. This could be accomplished by private landowners voluntarily adopting Firewise building standards. Research shows that there are many actions that can be taken to create "defensible space" around homes. Effective fire hazard reduction will take the combined efforts of government and citizens. Everyone must do their part. Citizens can receive information and assistance from their local fire district, visiting the <http://www.firewise.org/usa/> website, and contacting their local county extension agent .

CHAPTER 5: FUNDING

Various potential funding sources are being explored for the proposed Office of Forest Ecosystem Health and other recommendations. This is a work in progress that will be refined for the second round of recommendations to be developed by the Council.

Council concurs with public comment that additional emphasis should be placed on funding for communities to accomplish the work of creating defensible space and implementing fuels reduction projects. One means of achieving this goal is to support the Governor's FY2005 budget request to double the number of trained and working Arizona Department of Corrections inmate fire/fuels crews. The crews provide a reliable, low-cost supplement to local fuels reduction efforts.

Additionally, the Council agrees with public input regarding the need to adequately fund the State Fire Marshall's Office.

CONCLUSION

Implementation of the 30 recommendations will advance state and federal efforts to reduce the risk of unnatural fire in Arizona's forests and at-risk forest communities. Although there is a cost associated with these recommendations, an investment in forest restoration today will yield overwhelming dividends for forest health, watersheds and water supply, recreation, wildlife, and the quality of life for current and future citizens of Arizona.

The Council recognizes that our work is not done. More analysis and synthesis is needed to develop recommendations that will:

- o Lead to the vitalization of business infrastructure to harvest and utilize small-diameter wood,
- o Stimulate the use of wood by-products for heat and energy production;
- o Ensure that education efforts are coordinated to maximize effectiveness to reach and assist private landowners

The Council is grateful for the privilege to advise the Governor, Legislature, and other stakeholders on the actions needed to protect forest ecosystem health and reduce the hazard of fire to at-risk communities.

**APPENDIX A: GOVERNOR NAPOLITANO'S ACTION
PLAN FOR ARIZONA**

**First Annual Forest Health
And Safety Conference:**

Building on Lessons Learned

**Action Plan for
Arizona**

April 10, 2003

Dear Friends,

Thank you to everyone who attended my Office's first Annual Conference on Forest Health and Safety. It was a very productive session, bringing together dedicated individuals from all walks of life who share a common goal of protecting our state's forests. You will find in this Action Plan for Arizona a list of many of your goals and recommendations aimed at preserving Arizona's forests.

We all have a part to play in reducing the risk of preventable wildfires and the damage they do to our communities. The state will work to improve coordination efforts between government agencies for removing hazardous fuels from the forest floors and ensuring that fire personnel and response teams are prepared to respond to emergencies; educate the community about ways individuals can protect their property; assist community efforts in Arizona's rural areas that are close to forest land, such as in Prescott, Flagstaff and Payson, by providing support through state services; and by developing policies that focus on areas that are susceptible to devastation as a result of forest fires.

In addition to working on education efforts--some of which are as simple as removing items on private property that could fuel wildfires, my Office will work with our Congressional delegation to recommend that Arizona receive the necessary funding to combat the risk of catastrophic wildfire through reforestation and other projects. I commend our federal partners for their plans to reduce fuel on 225,000 acres of Arizona forests and look forward to upcoming projects to do the same in other at-risk parts of the state.

The devastating impact of last summer's Rodeo-Chediski fire left us with important lessons, many of which you will find in this Action Plan. We still have a lot of work to do, but I am confident that with your commitment to addressing the immediate and long-term goals for healthy forests in Arizona, we will get it done.

Very Truly Yours,

Governor Janet Napolitano

GOVERNOR'S FOREST HEALTH AND SAFETY ACTION PLAN

Establish a Science-based Forest Health Advisory Council

- Establish the Arizona Forest Health Advisory Council with a broad cross-section of representation to utilize a science-based approach to improving the health of Arizona's forests. Representation shall include scientists, private sector, conservation community, Indian community, local and logging and forestry experts. The Council will:
 - Develop guiding principles for the design and implementation of restoration-based fuel reduction and forest health projects based on the best science available;
 - Coordinate activities to monitor and evaluate results of existing demonstration restoration projects in Arizona to share lessons learned. Build on these lessons and identify new opportunities for alternative strategies for demonstration restoration-based fuel reduction and forest health projects and the resources to fund them;
 - Evaluate existing and potential sustainable economic uses for small diameter trees for their compatibility with long-term protection of forest health and economic development opportunities focused on creation of local jobs. Include recommendations to expand current marketing efforts of Arizona wood products and coordinate through the Arizona Department of Commerce;
 - Develop incentives for homeowners and homeowner associations for community/neighborhood partnering.

Establish Governor's Forest Health Oversight Council

- Establish the Governor's Forest Health Oversight Council with representation from the Governor's Office, Legislature, state agencies, Forest Health Advisory Council and community at large. Oversight Council will:
 - Develop timeline for implementation of Governor's Forest Health and Safety Action Plan;
 - Serve in oversight role to ensure implementation of Governor's Forest Health and Safety Action Plan.

Promote Inter-governmental/Inter-agency Coordination

- Adopt and implement the first "Statewide Fire-Service Mutual Aid Plan" to ensure emergency equipment is dispatched to any emergency situation as quickly as possible and avoids delays created by debating "who is going to pay." This cooperation among all levels of government will ensure rapid response in the event of a wildfire or other disaster.
- Utilize new technology to improve radio interoperability and coverage in rural and remote areas ensuring a statewide radio system that can be used by all

emergency responders. Conduct trial run in northern Arizona to test results and improve or amend as needed.

- Establish a lead working group to coordinate communication between all agencies, communities and tribes. Working group will:
 - Work with the Office of Homeland Security, Arizona Division of Emergency Management and Arizona State Land Department to ensure fire prevention, suppression and education;
 - Coordinate with all agencies, communities and tribes to craft enforcement procedures and develop common messages;
 - Evaluate existing and historic models, resources and tools and streamline them;
 - Identify available funding to support these resources.
- Build on and refine existing emergency operations plans for at-risk communities in collaboration with state and government agencies.
- Coordinate with Arizona Department of Transportation and tribal and local government to determine safety status of Arizona's roads and highways. Create fuel breaks and fire lines within communities and identify and direct necessary resources to implement.

Set Priorities for Protecting our Forested Communities

- Direct State Land Department to lead prioritization of communities at risk using fire behavior/resistance, population diversity, and fire occurrence.
- Evaluate current hazardous fuel reduction projects within the wildland/urban interface area to ensure the most at-risk communities are protected. Identify process and timeline for projects and direct funding to communities to support local forest health and fire mitigation efforts including bark beetle infestation.

Improve Education and Communication

- Coordinate outreach and education campaign efforts to educate homeowners on what they need to do to make sure they have eliminated fire hazards surrounding their homes. Focus on cooperation with local, state and federal governments and seek public/private partnerships to engage professional public relations experts in crafting effective messages for homeowners. Messages will be consistent with Arizona FIREWISE Program and targeted at homeowners in forested communities and include information to direct people to National Fire Plan Grants and Assistance to Communities website. Utilize local organizations to assist in outreach and create an incentive plan for communities that move ahead with protection efforts in a timely fashion.

- Partner to create “one-stop shopping” website for National Fire Plan Grants and Assistance to Communities with information on actions people can take to protect their properties and grant opportunities available to help. Website address: www.southwestareagrants.org
- Develop Public Service Announcements to educate homeowners on individual actions they can take to be prepared.

Provide Our Communities and Citizens with Much-Needed Tools

- Coordinate volunteer efforts to focus outreach program for re-enforcing citizen education on wildfire preparations and assisting homeowners and communities with fuel removal projects.
- Develop necessary legislation to grant cities and counties necessary authority to establish wildland/urban interface building and landscaping codes.
- Set “Best Management Practice” standards for forest management practices.
- Partner to conduct emergency training programs in impacted communities.
- Direct the Arizona Division of Emergency Management to coordinate with other state, local and tribal agencies to improve their planning and response efforts such as streamlining the eligibility and application process, coordinating health and human resources across entities, and educating/informing the public during a disaster.

Work with Congressional Delegation to Secure Resources and Develop Sound Policy for Arizona

- Work with Congressional delegation to ensure national policy meets Arizona’s needs and to secure necessary resources for fire prevention and suppressions.
- Investigate opportunities in non-traditional program areas such as Department of Energy, Natural Resource Conservation Services and the Federal Emergency Management Agency to support forest health and safety initiatives and respond to the bark beetle infestation.

APPENDIX B: EXECUTIVE ORDER 2003-16

Executive Order 2003-16 Forest Health and Safety

WHEREAS, the catastrophic wildland fire season of the year 2002: 1) burned over 400,000 acres of Arizona's forests, other natural resources, and property; 2) damaged watersheds, wildlife and wildlife habitat; and 3) threatened Arizona citizens; and

WHEREAS, the continued drought has contributed to the loss of hundreds of thousands of additional trees to bark beetle infestation; and

WHEREAS, the combination of these and other factors, including more than a century of mismanagement of our forests, has contributed to a very high level threat of catastrophic wildland fire that is expected to remain high for many years; and

WHEREAS, numerous Arizona communities have been identified as "at risk" to wildfire and more than 500,000 acres of urban interface lands are highly susceptible to fire losses due to hazardous fuel conditions; and

WHEREAS, the March 2003 Governor's Conference on Forest Health and Safety led to development of an Action Plan for Arizona, and a call for the creation of a broad, science-based Forest Health Advisory Council to improve the health of Arizona's forests; and

WHEREAS, the Action Plan for Arizona also recommends the establishment of a Governor's Forest Health Oversight Council to ensure implementation of the plan and to coordinate efforts for fire prevention, suppression and recovery between government agencies and all levels of government; and

WHEREAS, by working together to address forest health issues we can restore our forests to healthy condition and prevent other forest fire disasters.

NOW, THEREFORE, I, Janet Napolitano, by the virtue of the authority vested in me as Governor by the Constitution and Laws of the State of Arizona, do hereby:

1. Establish the Arizona Forest Health Advisory Council (the "Advisory Council").
 - a. The Governor shall appoint members of the Advisory Council who shall serve at the pleasure of the Governor;
 - b. The Advisory Council shall have at least 15 members and no more than 19 members;

- c. All Advisory Council members shall have a forest-health science background and the Advisory Council shall include members from each of the following:
 - Three representatives of Universities in Arizona;
 - Two representatives of the Native American community;
 - Three representatives of conservation organizations with interest in protecting forests;
 - Four representatives from Arizona's business and ranching communities, including:
 - Two representatives of forest-based industry;
 - Two representative with rangeland management expertise;
 - Two representatives from a federal land management agency with interest in forest management;
 - At least one representative from the Arizona State Land Department;
 - At least one representative from the Arizona Game and Fish Department;
 - At least one representative from the Governor's Office.
- d. The Advisory Council shall:
 - Develop guiding principles for the design and implementation of restoration-based fire fuel reduction and forest health projects based on the best-available science;
 - Monitor and evaluate results of existing demonstration restoration projects in Arizona to share lessons learned;
 - Identify new opportunities and alternative strategies for demonstrating restoration-based fuel reduction and forest health projects and the resources to fund them;
 - Evaluate existing and potential sustainable economic uses for small-diameter trees based on their compatibility with long-term protection of forest health and economic development opportunities focused on the creation of local jobs;
 - Develop incentives for homeowners and homeowner associations to make their homes and properties fire safe.

2. Establish the Governor's Forest Health Oversight Council ("Oversight Council").

- a. Except as otherwise provided below, the Governor shall appoint members of the Oversight Council who shall serve at the pleasure of the Governor.
- b. The Oversight Council shall have at least 25 members and no more than 27 members;
- c. The Oversight Council shall include members from each of the following:
 - the Chairs of the Natural Resource Committees of the Arizona Senate and

- House of Representatives;
- One member representing a rural forested district; who shall be appointed by the minority party leader of the Arizona House of Representatives;
- One member representing a rural forested district, who shall be appointed by the minority party leader of the Arizona Senate;
- At least one representative of a University in Arizona;
- Two representatives of Tribal governments in Arizona;
- Two representatives from conservation organizations with an interest in protecting forests;
- Two representatives from forest-based industry;
- One representative with rangeland management expertise;
- One representative from an organization with interest in rural economic development;
- One representative from a citizen-based organization focused on forest health;
- One representative from a utility responsible for management of a forested transmission corridor;
- One representative from a health-related field or agency;
- One representative from the Arizona State Land Department;
- One representative from the Arizona Division of Emergency Management;
- One representative from the Arizona Department of Commerce;
- Two representatives from federal agencies interested in forest health;
- At least one representative from a Municipal Fire Department;
- One County Supervisor from a county with a significant forested community;
- One Mayor from a forested community;
- One representative from the Arizona Governor's office.

d. The Oversight Council shall:

- Develop a timeline for the implementation of the Governor's Forest Health and Safety Action Plan for Arizona;
- Provide oversight to timely implementation of the Governor's Forest Health and Safety Action Plan for Arizona;
- Coordinate with the Governor's Forest Health Advisory Council;
- Perform such other tasks as the Governor or the Advisory Council may suggest.

3. Direct' the Advisory Council to submit written recommendations to the Governor with copies transmitted to the regional executives of the affected agencies. The Advisory Council may submit recommendations for each charge separately in order to expedite process and progress.

4. Direct the Oversight Council to submit to the Governor by June 30, 2003, a recommended timeline for implementation and to provide quarterly updates on progress,
5. Direct the Arizona State Land Department to lead the prioritization of communities most at risk of wildfire in the State of Arizona. The Arizona Division of Emergency Management shall cooperate with the Arizona State Land Department on such prioritization.
6. Direct the Arizona Division of Emergency Management to coordinate with the Arizona State Land Department and other state, local and tribal agencies to: ensure that the state and local communities are best prepared to respond to a fire disaster, including by streamlining the disaster fund eligibility processes, coordinating the delivery of health and human resources services by local, state and federal agencies and educating the public, (including specifically homeowners) about how best to prepare their property to prevent or reduce fire hazard and how best to respond to fire disaster.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of Arizona.

Done at the Capitol in Phoenix on this)).. Day of May in the Year of Our Lord Two Thousand Three and of the independence of the United States of America the Two Hundred and Twenty-Seveny.

APPENDIX C: GUIDING PRINCIPLES FOR FOREST ECOSYSTEM RESTORATION AND COMMUNITY PROTECTION

GUIDING PRINCIPLES FOR FOREST ECOSYSTEM RESTORATION AND COMMUNITY PROTECTION

Arizona Forest Health Advisory Council

Steve Campbell ~ Navajo County Cooperative Extension
Dr. Wally Covington ~ Northern Arizona University Ecological Restoration Institute
Dr. Carl Edminster ~ USDA Forest Service Rocky Mountain Research Station
Don Falk ~ University of Arizona Laboratory of Tree Ring Research
Deb Hill ~ Coconino County
John Kennedy ~ Arizona Game and Fish Department
Robert Lacapa ~ Bureau of Indian Affairs
Taylor McKinnon ~ Grand Canyon Trust
Dr. Marty Moore ~ Eastern Arizona Counties Organization
Brian Nowicki ~ Center for Biological Diversity
Kirk Rowdabaugh ~ Arizona State Land Department
Karl Siderits ~ USDA Forest Service Tonto National Forest
Ed Smith ~ The Nature Conservancy
Dr. Tom Swetnam ~ University of Arizona Laboratory of Tree Ring Research
Richard Van Demark ~ Southwest Forestry
Beth Zimmerman ~ Arizona Division of Emergency Management

September 2003

Preamble to the Guiding Principles

Arizona's high country is home to magnificent forests harboring a diversity of biological, cultural, and economic values. Yet many of Arizona's forests—especially Arizona's extensive ponderosa forests—have undergone a dramatic transformation during the past century due to land use, climate, and other factors. These changes have increased insect and disease outbreaks, abnormally severe fires, and adversely affected biological, cultural, and economic values. The unacceptable risk posed by these conditions requires immediate and strategic action.

Recognizing these factors, Arizona Governor Janet Napolitano convened a Governor's Conference on Forest Health and Safety in March 2003. Findings from this conference led to the development of an Action Plan for Arizona, and a call for the creation of a broad, science-based Forest Health Advisory Council to provide recommendations on how to improve the health of Arizona's forests.

The Arizona Forest Health Advisory Council has developed these Guiding Principles to provide an overall framework for planning and implementing forest ecosystem restoration and community protection projects statewide. In presenting these Guiding Principles, the Council emphasizes the following:

Different forest types have different natural disturbance regimes. For example, where crown fire is unnatural, thinning and prescribed burning may be needed to safely reestablish more natural surface fire regimes. But in forest types where crown fire is natural, such treatments may not be needed, at least from an ecological standpoint. Understanding these differences is fundamental to restoring more natural disturbance regimes in our forests.

Community stakeholders must take the lead to implement these principles and make the decisions for their communities at risk. The Council stresses the immediate and urgent need to adequately reduce the risk to communities. This will require a comprehensive effort to reduce hazardous fuels in and around at-risk communities regardless of the adjacent ecosystem type. Fire research and recent fires demonstrate that fuels reduction treatments in and around communities may not prevent the loss of homes. Homeowners must do their part to create defensible space and replace or mitigate flammable building materials.

Although Arizona's forest and woodland ecosystems need restoration, it is important to understand that restoration is a young science whose long-term outcomes are uncertain. The Council urges employing a diversity of restoration strategies that fit local ecological, social, political, and economic circumstances. A "one size fits all" approach is not appropriate.

Learning about restoration should be an active and ongoing process. A serious commitment to monitoring and adaptive management is critical to understanding the ecological, social, and economic dimensions of restoration. The Guiding Principles should be viewed as dynamic and adaptable to evolving conditions and experiences.

The costs of restoration must be weighed against the costs of inaction. Though restoration may seem a weighty investment, it pales in comparison to the immediate and long-term costs and risks of allowing current forest conditions to persist. Restoration is a process of recovery requiring a substantial and sustained investment of funds, and political and public support.

The Guiding Principles urge us to think big. Arizona's forests and the ecological processes that sustain them span landscapes. Assessing needs, identifying priorities, and charting progress toward community protection and forest ecosystem restoration goals must occur within an appropriately large landscape context.

The Council's ultimate hope is that the Guiding Principles will help guide our movement toward sustainable and reciprocal relationships between human communities and forest ecosystems – relationships that sustain the biological, cultural, and economic values that contribute to a healthy democratic society, both now and into the future.

Guiding Principles

Integration

The overall strategy for restoring forest ecosystem health and protecting communities must be dynamic, comprehensive and integrated. A primary component of the overall strategy is to perform a statewide forest health evaluation to identify high-priority communities, critical infrastructure, habitats, and watersheds at risk. This evaluation can also provide the framework for monitoring individual projects and cumulative effects.

Sustainable Communities and Economies

Sustainable economies are linked to sustainable ecosystems. We should be building a sustainable future for Arizona's forests and communities

The immediate focus should be on protecting human communities at risk, critical infrastructure, along with key watersheds and habitats. Distinguishing between forest ecosystem restoration and community protection, and focusing on community protection within the entire community—private, public and tribal lands and the wildland-urban interface—will improve the likelihood of success.

Close collaboration among all stakeholders is essential to a community-based approach to forest ecosystem restoration and community protection. Encourage and empower community-based collaborations to demonstrate and implement effective community protection and forest ecosystem restoration. Be sensitive and responsive to the diversity of individuals and communities who value and/or depend on the forest and its resources.

Decision-making about forest ecosystem restoration and community protection must occur with a serious commitment to rigorous adaptive management. Such an approach should include baseline data, short and long-term monitoring, and a transparent mechanism for tracking results, evaluating and incorporating findings into the decision-making process.

Ecological Integrity

Appropriate restoration methods are based on ecological need. These methods are further defined by the importance of the site in the watershed or landscape, and the timing, techniques and resources needed to restore ecological integrity. Restoration needs to be designed with a clear understanding of desired and ecologically appropriate future conditions.

Effective forest ecosystem restoration should reestablish fully functioning ecosystems. A primary goal of forest restoration is to enhance ecological integrity, natural processes and resiliency to the greatest extent possible. Fire hazard reduction must be linked to the reintroduction of fire as a keystone ecological process. An active program of prescribed and maintenance burns and natural fire use is essential.

Forest ecosystem restoration and community protection treatments should protect and enhance water and soil resources. The development and implementation of forestry best management practices will serve to protect these resources.

Forest ecosystem restoration should protect and promote development of old-growth trees and large trees needed to restore ecosystem structure and function.

Landscape scale forest ecosystem restoration should maintain native plant and wildlife populations and habitat features. A key consideration is the need to maintain and restore movement corridors and refugia to avoid biodiversity bottlenecks.

Project work should be based upon landscape assessments of risks to and status of aquatic and terrestrial resources and of the potential for restoration to be successful. The assessment is used to identify the root causes of ecosystem degradation at the eco-regional, intermediate and site level scales, determine appropriate methods for restoring degraded systems and create a spatially-explicit prioritization of restoration needs.

Land Use and Planning

Forest ecosystem restoration must include evaluating and changing public land use practices that are scientifically demonstrated to contribute to forest health degradation.

Forest ecosystem problems and solutions exist in a context of land use. In fire prone areas community officials must develop, adopt, and enforce comprehensive land use plans, zoning regulations and building codes for community protection, forest restoration, ecosystem health requirements and long-term fire management. Zoning and land use have a major impact on fire management, and can make a significant contribution to restoring forest health and protecting communities.

Forest ecosystem restoration requires effective community protection to establish and maintain a fire-resistive condition for structures, improvements and vegetation.

Methods for accomplishing this condition are based on public safety needs, fire hazard, and local capability and creativity. A fire-resistive condition will be accomplished by removing and modifying forest fuels, establishing defensible space, and use of fire-resistant construction materials and architectural design.

Funding and Compliance

Forest ecosystem restoration and community protection requires a sustained investment of federal, tribal, state, local and private resources. Restoration is a long-term process requiring a sustained commitment of funding. Adequate, sustained investment in forest ecosystem restoration and community protection is more cost effective and socially desirable than fire suppression and rehabilitation.

Forest ecosystem restoration and community protection actions should comply with all applicable environmental laws and regulations.

Practices

Forest ecosystem restoration and community protection programs should use the lowest impact techniques that will be effective and efficient. Explore, develop and utilize low impact technologies to sustain and enhance ecosystem integrity and productivity, and minimize negative cumulative effects.

All forest ecosystem restoration and community protection treatments should use locally adapted native plant materials to the greatest extent possible. Non-invasive, non-native species may be considered for emergency rehabilitation.

Glossary

Adaptive Management

A type of natural resource management in which decisions are made as part of an ongoing process. Adaptive management combines planning, implementing, monitoring, research, evaluating, and incorporating new knowledge into management approaches based on scientific findings and the needs of society. Results are used to modify future management methods and policy.

Biodiversity

The variety of life forms and processes including complexity of species, communities, gene pools, and ecological functions.

Biodiversity Bottleneck

A bottleneck in this context is the assemblage of environmental and/or human-caused factors or ecological “threats” that hamper the ability of ecosystems to support biodiversity at its current level through time. The bottleneck analogy is that fewer organisms (and their genes) in the bottle (current conditions) may be able to emerge on the other side (future conditions) due to resource limitations. (Source: this council.)

http://www.usembassy.it/file2001_04/alia/a1041704.htm;

<http://www.clat.psu.edu/biodiversity/defined/populations/populations-p04.html>

Community Protection

Actions or programs undertaken for the purpose of protecting human lives, property, and infrastructure. (Source: this council)

Crown fire

This is a fire that travels from one crown (or treetop) to another in dense stands of trees, killing most trees in its path. However, even in intense crown fires, unburned strips may be left due to powerful, downward air currents. A passive (or dependent) crown fire relies upon heat transfer from a surface fire burning below the crowns. An active (or independent) crown fire does not require transfer of heat from below the crowns. Source: Barnes, Burton V., Donald R. Zak, Shirley R. Denton, and Stephen H. Spurr. 1997. *Forest Ecology* (4th Edition). John Wiley and Sons, Inc. New York, NY. p. 282. (See also **Surface Fire**)

Cumulative Effects

Individual actions when considered alone may not have a significant impact on the quality of the human environment. Groups of actions, when added together may have collective or cumulative impacts that are significant. Cumulative effects that occur must be considered and analyzed without regard to land ownership boundaries. Consideration must be given to the incremental effects of past, present, and reasonably foreseeable related future actions of the Forest Service, as well as those of other agencies and individuals. Source: CEQ Regulations applied to US Forest Service regulations

<http://www.fs.fed.us/emc/nepa/includes/epp.htm#c151>

Defensible Space

This is an area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure. It also reduces the chance of a structure fire moving from the building to the surrounding forest. Defensible space provides room for the firefighters to do their jobs.(New Mexico State Forestry) Many communities are taking a more holistic approach of creating defensible neighborhoods rather than just individual properties.

Ecosystem

A spatially explicit, relatively homogeneous unit of the earth that includes all interacting organisms and components of any part of the natural environment within its boundaries. An ecosystem can be of any size-a log, pond, field, forest, range or grassland, or even the earth' s biosphere. (*Society of American Foresters*, 1998.)

Ecosystem Function

The process through which the constituent living and nonliving elements of ecosystems change and interact, including biogeochemical processes and succession.

Ecosystem/Ecological Integrity

The completeness of an ecosystem that at multiple geographic and temporal scales maintains its characteristic diversity of biological and physical components, spatial patterns, structure, and functional processes within its approximate range of historic variability. These processes include: disturbance regimes, nutrient cycling, hydrologic functions, vegetation succession, and species adaptation and evolution. Ecosystems with integrity are resilient and sustainable.

Ecosystem Process

The actions or events that link organisms and their environment, such as predation, mutualism, successional development, nutrient cycling, carbon sequestration, primary productivity, and decay. Natural disturbance processes often occur with some periodicity (*From Webster's dictionary, adapted to ecology*).

Ecosystem Resilience

The ability of a system to respond to disturbances. Resiliency is one of the properties that enable the system to persist in many different states or successional stages.

Fire Frequency (Fire Return Interval)

How often fire burns a given area; often expressed in terms of fire return intervals (e.g., fire returns to a site every 5-15 years). (see also Fire Regime Group).

Fire Regime Group

A generalized description of the role fire plays in an ecosystem. It is characterized by fire frequency, predictability, seasonality, intensity, duration, and scale (patch size), as well as regularity or variability. (See also Fire Frequency)

Forest Ecosystem Health

A condition where the parts and functions of an ecosystem are sustained over time and where the system's capacity for self-repair is maintained, allowing goals for uses, values, and services of the ecosystem to be met.

Forest Ecosystem Restoration

Holistic actions taken to modify an ecosystem to achieve desired, healthy, and functioning conditions and processes. Generally refers to the process of enabling the system to resume acting, or continue to act, following the effects of a disturbance. Restoration management activities can be active (such as control of invasive species, thinning of over-dense tree stands, or redistributing roads) or more passive (more restrictive, hands-off management direction that is primarily conservation oriented). Frequently, a combination or number of actions is used sequentially to achieve restoration goals.

Hazardous Fuel

Excessive live or dead trees and other vegetation and organic debris that increase the potential for uncharacteristically intense wildland fire and decrease the capability to protect life, property, and natural resources.

Invasive or Noxious Weed (also applies to animals and other organisms)

Any species of plant which is, or is liable to be, detrimental or destructive and difficult to control or eradicate and shall include any species that the director, after investigation and hearing, shall determine to be a noxious weed. Arizona Revised Statutes 3-201
<http://www.azleg.state.az.us/ars/3/00201.htm>

Landscape

An area composed of interacting and inter-connected patterns of habitats (ecosystems) that are repeated because of the geology, landform, soils, climate, biota, and human influences throughout the area. Landscape structure is formed by patches (tree stands or sites), connections (corridors and linkages), and the matrix. Landscape function is based on disturbance events, successional development of landscape structure, and flows of energy and nutrients through the structure of the landscape. A landscape is composed of watersheds and smaller ecosystems. It is the building block of biotic provinces and regions.

Natural Disturbance Regime

A natural disturbance (e.g. fire, insect outbreak, flood) with a characteristic frequency, intensity, size, and type that has influence on an ecosystem over evolutionary time.

Old Growth Tree

This is an old tree, one that exhibits the complex structural attributes associated with the oldest age class of trees in an old growth stand. In today's forests, an old-growth tree is one that has been standing since before the onset of commercial logging and fire

exclusion. These trees are sometimes referred to as pre-settlement trees. Old-growth ponderosa pine trees typically have orange, platy bark. Source: Schubert, G.H. 1974. Silviculture of southwestern ponderosa pine: the status of our knowledge. USDA Forest Service General Technical Report RM , <http://www.ancienttrees.org/cfogqa.php#1>

Prescribed Fire

Any fire ignited by management actions to meet specific objectives. All prescribed fires are conducted in accordance with prescribed fire plans. (See also **Wildland Fire Use**)

Risk to Communities

The risk associated with adverse impacts to communities resulting from unwanted wildland fire.

Surface fire

A fire that burns over the forest floor, consuming litter, killing aboveground parts of herbaceous plants and shrubs, and typically scorching the bases and crowns of trees. Source: Barnes, Burton V., Donald R. Zak, Shirley R. Denton, and Stephen H. Spurr. 1997. Forest Ecology (4th Edition). John Wiley and Sons, Inc. New York, NY p. 281 (See also **Crown Fire**)

Sustainable (Sustainability)

Meeting the needs of the current generation without compromising the ability of future generations to meet their needs. Ecological sustainability entails maintaining the composition, structure and processes of a system, as well as species diversity and ecological productivity. The core element of sustainability is that it is future-oriented. (*Committee of Scientists Report, 1999.*)

Wildland Fire Use

The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in pre-defined geographic areas outlined in Fire Management Plans. (See also **Prescribed Fire**)

Wildland-Urban Interface

The area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel.

Unless noted, all definitions come from: “RESTORING FIRE-ADAPTED ECOSYSTEMS ON FEDERAL LANDS - A COHESIVE STRATEGY FOR PROTECTING PEOPLE AND SUSTAINING NATURAL RESOURCES” USDI/USDA Draft unpublished document, pp. 74-78, 12/19/2001.