CALL TO ACTION

A National Crisis: Lack of Forest Maintenance Resulting in Destructive Wildfires[1]

A Call to Action

REV. 8.7

GLANCE AT THE *LOGIC SEQUENCE* SHOWN ON PAGE 4.

UPDATED For COVID-19

SEE ADDITIONAL FOCUS ON "MANAGED FIRE", PAGE 7

INCLUDES A SECTION ENTITLED, "BE FIRE WISE AND SAFE", PAGE 17

INCLUDES A NEW SECTION ENTITLED, "IMPROVED AERIAL FIRES SUPPRESSION TACTICS" , PAGE 18

SEE ADDITIONAL FUNDING REQUIREMENTS ON PAGE 22

Sign-on to the *Petition* [Petition Link: http://chng.it/bGsyZvSb]. As of August 11, 2021, there are 4,866 signatories for this *Call to Action.* In 2020, over 10 million acres were destroyed by wildfire. As of this update, another 3,701,807 acres have already burned in 2021, about 3 percent more than the amount of last year's very destructive campaign -- at the same time. The fire season never stops. Help make a change. There is a summary of this document available upon request to mtrains7@verizon.net.

[1] Prepared by Michael T. Rains with comments included from a wide-range of professionals; 34 and counting. This paper has been updated to address the COVID-19 Pandemic and other critical components, such as "managed fire" that can halt the national crisis of destructive wildfires. Last update of this *Call to Action*: 8/11/2021 7:51:57 AM.

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A *Call to Action*

Executive Summary

The following represents a *Call to Action* -- a plea for a dedicated national effort to reduce the destructive impacts of uncontrollable wildfires. The *Call to Action* – described in detail on page 19 of this document, includes a:

- National Commitment.
- Statement of Intent [example].
- Vision.
- Strategy.
- 10-Year Plan of Work.

The majority of the document [pages 5-19] establishes the foundation for the *Call to Action*.

Clearly, we are facing a crisis: 90+ million acres, or more, of our national forestlands are at high-risk to large, destructive wildfires. Why? Because for three decades, we have significantly underfunded forest management work that could restore the health and resiliency of our landscapes and help prevent large, intense wildfires. By shifting money *from* sustainable forest management actions *to* fire suppression, today's forests have become overgrown and act like tinderboxes. These tinderboxes cause larger, hotter, faster burning blazes that destroy everything in their path -- requiring billions of dollars each year to put out. It's a vicious cycle, and it's time we end it. How do we break the cycle?

We solicit an aggressive commitment – *A Call to Action* -- from lawmakers to legislate and properly fund forest health maintenance work that creates and maintains a mosaic of vegetative stages that are productive and more resilient to catastrophic wildfire. By restoring the health of our landscapes, we break the cycle and help reduce the horrific destruction that these wildfires level against public health, infrastructure, and natural resources.

What can you do now?

First, we all must better understand a *Logic Sequence* that enables fires to stay as small as possible. This is the foundation of this document. This *Logic Sequence* is illustrated on the next page.

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Logic Sequence

Keeping Fires Small *Logic Sequence*

- **Forest Maintenance Helps Keep Fires Small:**
  - ✓ Small fires = less risk to firefighters and the local citizenry:
    - Putting all fires out immediately is very cost effective; large fires are unimaginably expensive and destructive;
    - The concept of "managed fire", for now, is simply an intellectual argument with mostly disastrous results:
      - Keeping fires small = saving valuable watershed values, including critical habitat for wildlife:
      - Keeping fires small = fewer smoke pollutants impacting nearby communities, as well as the firefighters themselves:
        - Well trained leaders at the local level = the best utilization of resources to keep fires small.

Please read this document that clearly establishes the foundation for a *Call to Action* and consider signing this *Petition.* At the very least, share your voice of support in any way you feel is appropriate. We need your help.

The 2021 fire season well is upon us, exceeding the very destructive 2020 pace. During the 2020 fire season, about 10.4 million acres burned. But it's so much more than just acres burned. People are dying from fire and smoke, along with countless wildlife and domestic animals. Towns and communities are being wiped away. Stories of loss and grief are gut wrenching. Current activity indicates the 2021 fire season will be more destructive than last year. And, when we review the 2021 Omnibus Spending Bill that was approved, there is a status quo budget in terms of forest maintenance. Ditto for the proposed 2022 budget. Yes, there are some proposed investments in current infrastructure discussions, but they represent only about 25 percent of needs. Why are Congressional Representatives and Senators turning away from this national crisis? Together we can be a force to make a long-needed change for a long time.

To this end, call your Members of Congress and advocate for expanded forest maintenance that enables healthy, resilient forests. Through legislation, funding and the optimization of our wildfire suppression strategies, we can dramatically decrease the threat of large, destructive wildfires.

Use the following links to find contact information for lawmakers in your state:

- **Senators:** https://www.senate.gov/general/contact_information/senators_cfm.cfm
- **Representatives:** https://www.house.gov/representatives
- **Governors:** https://www.usa.gov/state-governor
- **Mayors:** https://www.usmayors.org/mayors/

Foreword

The intent of this document is to establish the framework for a *Call to Action.* This *Call to Action* is designed to reduce the impacts of large, intense wildfires on people's lives, their communities, and lands along a rural to urban gradient resulting from lack of management of America's forests.[2] The results of this *Call to Action* shall have a positive global impact, as well. The goal is to advance this *Call to Action* to key decision-makers [i.e., the President of the United States; Members of Congress; USDA[3] and DOI[4] Secretaries; and other leaders] – as a way to secure support, advancement of the concepts presented and finally, deploy pragmatic actions.[5] We cannot wait any longer for action. We are facing a national crisis.

As of August 11, 2021, there are 4,866 signatories for this Call *to Action.* Please consider signing on, or at the very least share your voice of support in any way that you feel appropriate.

COVID-19 Pandemic Update

When the original *Call to Action* was written, the was no COVID-19 pandemic. To date in the United States, 36,058,757 cases and 618,149 deaths have been reported – an average of about 16 percent of the global totals.[6,7] With the coronavirus pandemic and new variants of the virus continuing to collide head-on with the harshness of the 2021 fire season,[8,9] fire suppression tactics and care for firefighters and the citizenry has to change dramatically.[10] This makes addressing a *Call to Action* even more urgent. Accordingly, even though the maintenance of forests remains the most important overall goal, as the COVID-19 pandemic is being fought throughout the world, the following are the "Top 10 Actions" that must be deployed now and for the foreseeable future:[11,12]

1. All indications suggest the 2021 fires season will be more destructive than 2020 and the COVID-19 pandemic will still be with us. We must understand this and act accordingly or thousands of people will needlessly become ill or die.
2. The concept of "managed fires" must be taken off the table for now; no exceptions [see detailed attention to this action on page 7]. Clear, unambiguous direction from the Forest Service Chief's Office on this matter cannot be overstated.
3. The goal is to put out every fire immediately. Reduce response time by at least 80 percent!

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[2] In this *Call to Action*, the term *forest* represents more than just trees. For example, the Chaparral Forests of southern California and the wide-range of vegetation that make up the urban gradient, specific to the Wildland-Urban Interface.
[3] USDA: United States Department of Agriculture.
[4] DOI: Department of Interior.
[5] Petition Link: http://chng.it/bGsyZvSb
[6] https://www.cnn.com/interactive/2020/health/coronavirus-us-maps-and-cases/
[7] https://www.worldometers.info/coronavirus/
[8] Wildfire Today™ reported on September 2, 2020 that 222 wildland firefighters have tested positive for COVID-19 and one has died. To date, actual numbers are hard to determine.
[9] https://theconversation.com/smoke-from-wildfires-can-worsen-covid-19-risk-putting-firefighters-in-even-more-danger-145998
[10] Geographic Action Plans to help address COVID-19:: https://www.nifc.gov/fireInfo/covid-19.htm
[11] A separate companion document to the *Call to Action* is also available highlighting the "Top 10 Action."
[12] Based on results, weather patterns so far, including the lack of precipitation, indication are the 2021 fire season will be equally as destructive as 2020, perhaps more.

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4. Smoke is also a killer. We must keep it to a minimum. See No. 3, above.
5. More fully utilize smaller, more agile aircraft and helicopters. They come with much less people needed to effectively operate, thereby reducing the COVID-19 risk profile [see page 18].
6. Use larger aircraft in a more appropriate role; their response time is slower. Keeping our focus on "Top 10 Action" No. 3 is key.
7. Fully utilize smokejumpers and other specialized firefighters to augment Initial Attack. [see page 19].
8. Pre-position resources much better than ever before. The current mantra must be: **"strive to be close to the incident, react quickly and put all wildfires out immediately."**[13]
9. Seek added funds for the United States Forest Service.[14] If only the COVID-19 pandemic and fire suppression tactics are addressed, the estimate is +$1.7 billion. If delayed forest maintenance -- including hazardous fuels reduction – is added, the *annual* cost is about +$5.3 billion.[15] To be clear, the Forest Service does not have adequate funding to address the impacts of the historic 2020 year and what is currently happening in 2021 without significant action by the United States Congress.[16] See Appendix A.1, page 22. **Again, the lack of forest and wildland maintenance to enhance ecosystems productivity over the last 30 years cannot be over stated.**[17]
10. We must do all we can to keep people safe and well.

Faced with the added impacts of the COVID-19 pandemic, there are three fundamental steps that are inextricably linked:

- **Behave very differently** to remain safe. For example, the notion of traditional, large fire camps in the foreseeable future seems irresponsible.
- **Keep all fires small** and put them out immediately; reduce smoke.
- **Keep the focus on forest maintenance**, the ultimate "brass ring." Over time, this will ensure America's forests can become more resilient to disturbances; habitats are improved; forest mosaics become commonplace; and fires are smaller and less intense. And, the current national crisis can begin to dissipate and eventually end.

[13] Pre-positioning in order to be more efficient and effective in fire suppression was carefully addressed in a letter to the USDA Secretary by the National Wildfire Institute dated May 4, 2020.
[14] The Department of Interior will need to review their level of resources, as well.
[15] In response to the Senator Wyden-led letter addressed to the Forest Service Chief on April 30, 2020.
[16] Congress is considering the Infrastructure Investment and Jobs Act. About $3.4 billion is being targeted for "wildfire risk reduction" – about $680 million annually for 5 years.
[17] Current predictions indicate the 2021 fire season will more destructive. And, when reviewing the 2021 Omnibus Spending Bill just approved, there is a status quo budget in terms of forest maintenance.

Managed Fire

> "… These are different times. With the current land conditions and the impacts of a changing climate, the notion of allowing a fire to burn anywhere, for whatever reason, for the foreseeable future, is unacceptable and must be stopped now; no exceptions."

This concept deserves added attention and must be addressed head on.[18] Managed fires are natural ignitions [some refer to them as "unplanned"][19] which under suitable weather and soil moisture conditions are allowed to burn to meet desired ecological objectives in Wilderness Areas only where pre-planned and approved in Forest Plans. This allows fire to play a natural role in restoring the ecosystems by recycling nutrients into the soil and clearing the forest floor of excessive debris. The key is to identify the right kind of fire at the right time at the right place. However, relying on natural ignitions to instantly create an opportunity for a managed fire in a random location, without adequate planning and pre-positioning for resources is like playing a game of Russian Roulette.[20] This is not to be confused with "Prescribed Fire" which is conducted under very specific conditions.

Item No. 2 on the list of "Top 10 Action" in this *Call to Action* calls for – without exception – the elimination of "managed fires" for the foreseeable future. This includes Wilderness Areas. The reality is, with the clogged-up conditions of our forests; hard to predict weather events; and the extremely high level of expertise required to perfectly "herd" a wildfire, "managed fires" quickly become escaped fires. The notion of effectively directing a wildfire to help restore the forest has become largely an intellectual argument and puts others needlessly in harm's way; causes deaths due to smoke inhalation; and, significantly increases fire suppression costs that continue to shift more funds away from badly needed traditional forest maintenance.

In 2021, with the risks associated with the COVID-19 pandemic, letting fires burn to help accrue forest restoration targets is unconscionable. There is a strong connection between smoke inhalation and the more dire effects of Covid-19?

Messages are very mixed. On one hand, national direction from leaders[21] seems to suggest no more "managed fires" due to current conditions. Events on the ground show a far different scenario. This misguidance may be due to available budgets. A steady flow of funding from fire suppression is being used to "manage fires" or in reality, attempt to manage fire. The application of pre-approved and planned prescribed fire comes with a much more constrained budgetary account. Using an unplanned ignition as a de facto prescribed fire and claiming restoration

[18] On July 19, 2021, several conservation professionals, under the leadership of Philip S. Aune [Program Manager (RET), Pacific Southwest Research Station], discussed the concept of "managed fire" and concluded that under the current time, its use is completely inappropriate. The group – known as the "Call to Action Group -- has shared its views with the new Forest Service Chief, Randy Moore for his consideration.

[19] The term "natural" is often used by states and the federal government to describe the type of wildfire. Sometimes, the term "unplanned" is used. The terms have been used interchangeably. For example, a *natural* lighting strike causing a wildfire is *unplanned*. Prescribed fires are *planned*. They are not *natural* or *unplanned*.

[20] Derr, William. United States Forest Service (Ret.). Email correspondence. May 18, 2020.

[21] The August 2, 2021 letter by Forest Service Chief Moore to his leadership team regarding the use of managed fires will undoubtedly help is deployed corporately.

credits is simply wrong. Perhaps an Office of Investigation [OIG] accounting of this practice is warranted.

As stated above, the practice of "managed fire", especially in the western part of our country, is a huge gamble that can quickly accelerate to an "escaped fire." This has become all too common in recent years, regardless of good intentions.[22,23] And, regardless of weather and all the other "fire factors," the practice of "managed fire" requires far too much knowledge and authority by the person making this immediate call; it's not a fair fight. There are simply too many factors at risk. The unpredictability of the fire and its destruction in the current time and place will always win. As stated earlier, this is a practice that must be separated from prescribed burning.

The outcome of prescribed fire is much more predictable. In recent studies, prescribed fires have shown to be much safer and if deployed carefully can significantly help reduce hazardous fuels. Increased appropriations by Congress for prescribed burning is a critical step in the right direction.

The concept of *managed fires* must be stopped and the careful use of prescribed fire needs to be a key tool in a pragmatic forest maintenance regime. It is interesting to note that recently, an extremely well-respected former Forest Supervisor for the Forest Service stated: "…If I were Chief, I would never allow "managed fires"; not this year, not EVER.

"Managed fire" seems to be, as some have suggested, an intellectual theory, that should never[24] be applied, while "prescribed fire" is a great tool that needs much more funding."[25]

Here is the bottom line: It is time to declare that all wildfires will be promptly and aggressively extinguished, period; no exceptions. Extremely clear direction is a must.

A National Crisis with Global Implications

Currently, there are over one billion burnable acres of landscapes across America. And, during the last three decades or so, the size and intensity of wildfires has left a path of destruction with annual losses in wildfire-related damages to infrastructure, economic effects of evacuations and lost tourism, public health, and natural resources estimated to be $70 to $350 billion each year.[26] But it is more than just acres burned or the size of the fire. As Ernesto Alvarado, professor of wildland fire at the University of Washington says, "…we should concentrate more on human losses.[27] Often, the human cost of wildfires has little to do with the fire size. For example, the

[22] A classic case is the Tamarack Fire in Northern California. Tamarack Fire Information - InciWeb the Incident Information System (nwcg.gov). The fire started on July 4, 2021 and was "monitored" for 13 days before any action. As of August 11, 2021, the Tamarack Fire is 68,663 acres burned and still not fully contained. Go to "Top 10 Action" No. 3, page 5. This incident did not have to be this way.

[23] Congressman Tom McClintock [CA-4-R] weighs in: Rep. McClintock Requests Information About Tamarack Fire Response | myMotherLode.com

[24] "Never" is a long time. But, let's be pragmatic. With the current land conditions and the impacts of a changing climate, the notion of allowing a fire to burn, for whatever reason, for the foreseeable future, is unacceptable and must be stopped now.

[25] Stubblefield, Ted. Forest Supervisor, United States Forest Service (Ret.). Email correspondence. October 30, 2020.

[26] The annualized economic burden from wildfire is estimated to be between $71.1 billion to $347.8 billion ($2016 US). NIST Special Publication 1215. The Costs and Losses of Wildfires: A Literature Survey. Douglas Thomas, David Butry, Stanley Gilbert, David Webb and Juan Fung. Applied Economics Office Engineering Laboratory. November 2017.

[27] Wildfire Today, October 8, 2020, reporting on an NPR article.

Camp Fire, which burned more than 18,000 structures and killed 88 people in Paradise, California, isn't even in the state's top 20, ranked by acreage. A 1,000-acre fire in the west may go almost unnoticed. The same size fire in the Pinelands of New Jersey would be a disaster.

Sometimes we take the power of healthy forests for granted. In addition to their role in helping reduce the intensity of wildfires, healthy forests reduce the impacts of a changing climate by offsetting as much as 20 percent of the country's annual greenhouse gas emissions.[28] Healthy forests also reduce flooding by catching rainwater, creating permeable soils and reducing erosion. Healthy forests are crucial for good quality water and air. Over one-half of Americans depend on healthy forests to capture and filter their drinking water. Healthy forests remove millions of tons of pollutants each year helping to reduce respiratory problems, such as asthma and even premature death that pollutants may cause. Healthy forests create habitat for a wide array of plants and animals, including those in which their continued existence is threatened.

The degradation of America's forests due to the lack of management and the subsequent destruction by uncontrollable wildfires has brought us to a pivotal point. That is, a lowered capability of our forests to help mitigate the adverse impacts of a changing climate and produce the air and water we need to survive, is resulting in planetary conditions that are threatening the very existence of humans and wildlife. Simply put, without the protection that healthy forests provide, we are also jeopardizing the future of planet Earth.

For example, smoke from wildfires does not only affect people's health, it can speed up the melting of polar icecaps. Particulate matter in smoke – soot -- settles on glaciers and darkens the ice surface, thereby speeding up melting as more of the sun's heat is absorbed. A growing body of research suggests that wildfire soot will contribute to accelerating the Arctic meltdown in the decades ahead.

With a projected rise in sea levels of about 2 meters [some predictions are higher] by 2100 – due to ice melting -- the impacts along coastal communities throughout the world will be devastating. According to research by Cornell University in 2017, "…2 billion people – about one-fifth of the world's population – could become climate change refugees due to rising ocean levels by 2100."[29] The social and economic impacts of this level of displacement is almost incalculable. As conservation leaders, we cannot stand by and allow this to take place. We must do all that can be done to mitigate the adverse impacts, now and ahead.

Declining forest health and large, high intensity wildfires that accompany this decline is *the* land conservation issue of our time. We must be vigilant. The lack of forest management is a safety issue. It is an economic issue. It is a security issue. This lack of forest management in America and the associated consequences is now a national crisis contributing to global degradation.

Discussion

In 2018, the *Camp Fire* wiped away the town of Paradise, California, "…burning homes, shops, restaurants, parks – many treasured pieces of an old mining town. It also left thousands of

[28] https://www.fs.fed.us/climatechange/advisor/scorecard/Carbon_Infographic_Final.pdf
[29] https://news.cornell.edu/stories/2017/06/rising-seas-could-result-2-billion-refugees-2100

children displaced from their schools – at least from the campuses or even their teachers and peers."[30] 88 people perished. Other fires during the year accounted for over 2,000 civilian deaths. The 2018 fire season was horrific in terms of its destruction. But it was not that much different than what happened in 2017-2015; 2012-2011; 2009-2004; and, 2001-2000.[31] 2019 proved to be somewhat of a reprieve overall, even though the number of fires and acres burned across the country were still significant[32]. However, this *reprieve* has unfortunately become an anomaly. We cannot become complacent. The 2020 fire season was historic in its destruction. According to the National Interagency Fire Center, there were about 57,000 fires and 10.4 million acres burned. The total *10-year average* is about 61,000 fires and about 6.7 million acres burned. The 2020 wildfire season has ended. The loss of life, directly from fire and more indirectly from smoke inhalation, and destroyed towns and communities was horrific. This destruction is continuing in 2021 at a faster pace.[33] On August 11, 2021, the Dixie Fire -- currently, the second largest fire in California is still burning at 482,047 acres and only 22 percent contained -- destroyed Greenville. Respectfully, the current approach to wildfire management has become stodgy.[34] Simply put, enough is enough. It is time for all of us – from the newly elected President to Congress to government officials to state leaders, and to the local citizenry to garner the courage to stand up and begin to put an end to this horrific and totally unnecessary destruction.

Smoke is Also a Killer

Although it may not be as obvious as a raging inferno, smoke from wildfires is also a killer. America's population is expected to decline between 2000 and 2100. However, the mortality attributable to wildfire smoke is expected to triple between now and the end of the Century - from as much as 25,000 to about 75,000 deaths per year.[35] More conservative estimates show this range to be from about 15,000 to 44,000 annual deaths.[36]

According to the US Climate and Health Alliance[37], "…wildfire smoke is primarily made of carbon dioxide, water vapor, carbon monoxide, particulate matter, hydrocarbons and other organic chemicals, nitrogen oxides, and many other trace elements. Smoke composition can vary, depending on the fuel type, fire temperature, and wind conditions. Of these pollutants, "particulate matter [PM] is the most concerning, given their very small size and ability to be inhaled deeply into the lungs." According to the Environmental Protection Agency[38], numerous scientific studies have linked long-term $PM_{2.5}$ [also called particle pollution] exposure to a variety of problems, including:

[30] The Enterprise-Record. November 8, 2019.
[31] For the latest fire statistics, use this website: https://www.nifc.gov/fireInfo/nfn.htm See also Incident Activity Charts and Tables.
[32] 2019 wildland fire statistics: Number of Fires [50,477] and Acres Burned [4,664,364]. That is about 75 percent in Number of Fires and 67 percent in Acres Burned of the reported 10-year average [66,993 Number of Fires and 6,972,600 Acres Burned].
[33] As of August 11, 2021, there has already been 39,593 fires that have burned 3,701,807 acres – a 3 percent increase at the same time in 2020 which was a very destructive fire year.
[34] Wildfire solutions | Stanford News
[35] B. Ford, M. Val Martin, S. E. Zelasky, E. V. Fischer, S. C. Anenberg, C. L. Heald, J. R. Pierce. Future Fire Impacts on Smoke Concentrations, Visibility, and Health in the Contiguous United States. *GeoHealth*, 2018.
[36] https://grist.org/article/44000-americans-could-end-up-dying-from-wildfire-smoke-every-year/
[37] http://usclimateandhealthalliance.org/wildfires-public-health-view-front-lines/
[38] https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm

- Cancer.
- Stroke.
- Irregular heartbeat and heart attacks.
- Respiratory problems, such as irritation of the airways, coughing or difficulty breathing.

People with asthma, heart or lung diseases, children[39] and older adults are the most likely to be affected by particle pollution exposure.[40] Research is also showing that smoke from wildfires is also causing significant harm to skin health, accelerating skin aging and skin cancers.[41]

According to atmospheric researchers, led by a team from Yale and Harvard, "The scope of the problem is immense: Over the next three decades, more than 300 counties in the West will see more severe smoke waves from wildfires, sometimes lasting weeks longer than in years past."[42] An obvious and immediate concern should be the vulnerability of the first responders, our wildland firefighters. Now we have the COVID-19 pandemic to accentuate his issue.

It's a Tie for the Top Spot

Large, high intensity wildfires throughout America – especially in the west – have created this national crisis. The three primary reasons are, with a tie for the top spot:

1. Lack of forest management [*maintenance*]
1. The impacts of a changing climate.
3. The expansion of the Wildland-Urban Interface

In some past writings on this subject, it has been stated that *the* primary culprit for the deterioration of America's forests [reminding us all that *forests* represent more than trees][43] and the incredible destruction caused by wildfires, is the *lack* of forest management. Further, it was concluded that the impacts of a changing climate represents a real force, no doubt, but not the driving force. Lately, however, the lines between the two – impact of wildfires and impacts of a changing climate on the warming of our planet have become much too blurred to make a rationale distinction; there probably is none. As Jad Daley, President and CEO of American Forests concluded in his November 2018 article, "Climate Change = More Fire = More Climate Change."[44] Or, as Bob Berwyn of Inside Climate News stated in his August 2018 news note, we are in a "vicious cycle when the results of warming produce yet more warming."[45]

The Paris Climate Agreement of 2015[46] provided worldwide awareness, leadership and goals to help ensure post Industrial Revolution global warming would not exceed a +2°C threshold [from pre-Industrial Revolution levels]. To many, re-committing to the Paris Climate Agreement [also

[39] Wildfire smoke is particularly harmful to kids' respiratory health, study finds (statnews.com)
[40] Recent [2020] studies by Stanford University researchers say smoke from the recent California wildfires led to 1,200 excess deaths and 4,800 additional ER visits among the elderly – and that's just for people ages 65 and over.
[41] Y. Claire Change. Caring for Skin After Wildfire Smoke Exposure and Irritation | Allure [Dougher, K.9/24/2020].
[42] https://www.cbsnews.com/news/2019-wildfire-season-smoke-from-wildfires-increases-health-risks-for-millions-of-americans/
[43] For example, the Chaparral Forests of Southern California and the wildland-urban forests [a wide-range of vegetation and tree species] are in critical need of improved management. Fuels treatment represent far more than just trees.
[44] Daley, Jad. *New Math: Climate Change = More Fire = More Climate Change*. American Forests. Nov 27, 2018.
[45] Berwyn, Bob. How Wildfires Can Affect Climate Change (and vice versa). Inside Climate News. August 23, 2018.
[46] The Paris Agreement [Accord de Paris]. United Nations Framework Convention on Climate Change [UNFCCC]. 2015.

known as, the Paris Accord] has indicated to the world that the United States continues to care about global warming and its impacts on the health, economy and security of current and future generations. And, we must do our part.
Since 1895, temperatures in the United States have increased by about one-half degree Fahrenheit; some projections by mid-Century are plus 2 to 4 degrees.[47] That's huge. The consequences will be devastating. Whatever path is chosen to highlight our role, we must be vigilant and sustain our responsibility as visionary and scientific leaders to help mitigate the impacts of a changing climate. Time is running out.

An estimated 120 million Americans in more than 46 million homes are at risk due to wildfire; 72,000 communities are directly in harm's way. Thousands of heroic firefighters have died protecting people and property. How many more reasons does it take before we can begin to improve America's forests so fire can eventually be used as a conservation tool and no longer feared for their destruction? We have a national crisis. The American people are calling for a solution. What is happening does not need to happen. We know what to do to stop this destruction. Now is the time for a *Call to Action.*

The National Fire Plan

It has been over 20 years since the report entitled, "Managing the Impacts of Wildfires on Communities and the Environment" [the *National Fire Plan*] was written by the Departments of Agriculture and Interior. A critical feature of the *National Fire Plan* was "hazardous fuels reduction improves forest health and its resiliency to fire." Unfortunately, not much has changed since then. In fact, land conditions have deteriorated. For example, in 2001 there was an estimated 38 million acres on our National Forests considered to be at high risk from destructive wildfires. Today, the estimate is about 80 million acres; some recent analysis suggest as high as 90 million acres.

ALERT: Indications are, the new Administration's Infrastructure Bill that is under negotiations, will target about +$3.4 billion for wildfire risk reduction. This is a 5-year Bill, so we have to think more short-term and effectively link expenditures with the annual appropriations process. If asked, this is how we would distribute the funding:

1. +$3.047 billion for hazardous fuels treatment. With the current program, this brings the overall level to about $1.1 billion annually from 2021-2026. The needs are greater but this would be a significant start.
2. +$33 million for biomass uses and marketing for low value wood; a game changer!
3. +$70 million for securing defensible space in high priority WUI area.
4. +$250 million for prescribed fire – a key feature of forest maintenance.
5. +$100 million for the stewardship on nonfederal forests adjacent to high-risk NFS lands; could not be more critical.

A Funding Gap That Is Forever Increasing

As already stated, a primary culprit for this deterioration is the lack of forest management. And, this is due in part to the lack of adequate resources, caused by 25+ years of shifting funds *from* management actions *to* the fire suppression effort.

For example, about 65+ percent of the current Forest Service budget goes toward controlling fires. In 1995 this amount was about 16 percent. As more and more of the agency's resources continue to be shifted to the fire effort, fewer funds are available to support forest

[47] https://www.americangeosciences.org/webinars/wildfire-management-in-the-21st-century

management work – the same restorative projects that reduce the fire threat. Clearly, a paradox has been created. As funds are shifted away from forest management work, fires have become larger and much more destructive because forests are not being maintained. The loss of funds for forest management over the last decades has not been restored to the Forest Service through the appropriation process. This gap equates to a *minimum* annual amount of about $2.2 billion up to $3.6 billion.[48] The specific *minimum* annual investment for just the Forest Service [+$2.2 billion] should be guided as follows:[49,50,51]

- +$97 million for "federally assisted state programs [the Forest Stewardship Program] to address the "…strengthening the stewardship of private lands", as stated by USDA Secretary Perdue.
- +$600 million for hazardous fuels reduction [this brings the overall level for the Forest Service to $1.05 billion]. Not the $2.4 billion per year called for in some estimates but an important increase none-the-less over the completely inadequate $445.3 million.[52]
- +$26 million for fire science and technology development [including defensible space protection in the Wildland-Urban Interface].
- +$45 million for the cooperative fire programs.
- +$14 million for forest health protection [specifically, invasive species control].
- +$1.385 billion for management actions on the National Forests.
- +$33 million for biomass uses that include wood-based nanotechnology [cellulose nanomaterials], specifically addressing low value wood, such as hazardous fuel.

Caution: A "Fire Fix" is Not a "Forest Fix"

On March 23, 2018, H.R. 1625 [Consolidated Appropriations Act of 2018] was signed into law. This included the "Wildfire and Disaster Funding Adjustment" [Title I, Sec. 102], whereby additional funds for wildfire emergencies shall be authorized from 2020 – 2027, ranging from $2.25 to $2.95 billion. These emergency funds are intended to halt the momentum-killing process known as "fire borrowing", whereby funding for other programs are siphoned away for the fire effort. The Act would also halt the ever-increasing percentage of the overall United States Forest Service budget going to wildfire control by freezing the "10-year average" for fire suppression – a figure used by the Forest Service for budget development purposes -- at the 2015 level. These are all very good things. Accordingly, the action commonly referred to as the "fire fix" has been accomplished. However, we need to fully understand that the *fire fix* is only the first step toward a *forest fix*. Allow for an explanation.

In 1995, expenditures in fire equated to about 16 percent of the total Forest Service budget. It is now about 60+ percent. Over this span, there was a tremendous decline in forest management [*maintenance*] work across the country. Everything – money, skills and emphasis -- was being

[48] See Appendix A.1. The +$3.61 billion is based on documented needs. The +$2.2 billion represents *minimal* requirements. The primary difference is due to resource requirements for hazardous fuels reduction.
[49] These estimates are for the Forest Service only. Additional amounts, if any, will need to also be determined for the DOI.
[50] After adjusting for LWCF [Land and Water Conservation Fund] and a restructure of the Forest Service budget, the 2021 budget appears to represents a net increase of about $19 million; essentially a status quo budget.
[51] Indications are about 0.3 percent, or approximately $3,369,000,000 in this $1 trillion infrastructure bill is directed at wildland fire reduction. See A Senate infrastructure bill will address many wildland fire issues - Wildfire Today.
[52] The 2022 proposed budget includes an increase of $476 million for hazardous fuels treatment. If enacted, this would bring the total funding level for hazardous fuels treatment for the Forest Service to about $989 million or about 40 percent of needs.

shifted to the fire effort. The "fire fix" hopefully enables this shift to stop. Again, this is very good news.

However, it must be clear, the "fire fix" certainly does not backfill the huge gap that was created in lost non-fire skills and forest management actions foregone, as examples, especially during the last two decades. Accordingly, it is important that this notion be recognized and new momentum be immediately established for the next step. That is, to deploy a comprehensive forest maintenance strategy so wildfires will be smaller and less destructive. This forest maintenance strategy will require new the funding levels outlined above. The 2021 "Omnibus Spending Bill" does not include these additional funds. Unless these funds are provided for, the "fire fix" will have little to do with helping reduce the impacts of large, intense wildfires, perhaps especially for the 90 million acres of National Forests that are now considered to be at high-risk from destructive wildfires.

As one Member of Congress succinctly concluded, "…It [the "fire fix"] doesn't solve the problem. Solving the problem is stopping the damn fires, not spending more money to put them out once they get started." Fundamentally, increased fire management requires aggressive forest maintenance. Otherwise, we simply spend more and more money to control wildfires, with no end in sight.

Lack of Forest Management That Halts Resilient Vegetative Mosaics

At an August 16, 2018 Cabinet Meeting[53], the former President of the United States [Trump] spoke about the need to improve the *maintenance* of the forests. The former Secretary for the Department of Interior [Zinke] stated that the current situation of uncontrollable wildfires is due to "gross mismanagement [of the forests] for decades." Actually, what former Secretary Zinke said was not true. It is not *gross mismanagement*. It is little or no management. Nobody knows how to manage forests better than the Forest Service. But, "…you cannot do when you do not have."[54]

In a November 19, 2018 opinion piece entitled "…Who or What Is Really Responsible for the Huge Forest Fires in California? [by Bruce Bialosky]," a quote from Chris French, now Acting Deputy Undersecretary for the Department of Agriculture, stated: "the primary cause of the intense forest fires is the forests are overstocked. There are more trees than 100 years ago."[55]

Accounting for amounts of wood exports and imports, we essentially use each year about one-half of the wood that is produced from all our forestlands. That in itself has created a problem. Simply put, our forests are getting clogged up. Each year, about 317 billion board feet of new wood is produced from the forests and woodlands in the United States – 60 billion board feet from our National Forests.[56] The current harvest level from these National Forests, for example, is 3 billion board feet -- or about 5 percent of the annual growth. More biomass *can* and *should* be removed. Our forests – which are much more than just trees [for example the Chaparral

[53] See time 11:53 of the Cabinet meeting: https://www.youtube.com/watch?v=mNddZ4cwzRU
[54] Rains, Michael T. Forest Management and Fire Management: In Sync or at Odds [A "Short Paper"]. November 20, 2018.
[55] Comments made while serving as the Deputy Chief for the National Forest System, United States Forest Service.
[56] U.S. Forest Resource Facts and Historical Trends. USDA Forest Service, FS-1035. 2014: https://www.fia.fs.fed.us/library/brochures/docs/2012/ForestFacts_1952-2012_English.pdf

Forests of Southern California] -- are getting stressed, they are dying, and are becoming a tinderbox for fire. And, once a fire gets a foothold, they become destructive behemoths that destroy everything in their paths. Productive ecosystems are being completely altered or destroyed. Simply put, more vegetation *can* and *should* be sustainably, economically, and safely removed from our forestlands.

But let's be clear. This *Call to Action* is not just about biomass production and uses. In fact, available biomass – including biochar as an example -- is simply a "by-product" of a much more dynamic approach to maintaining America's forests. That is, the focus of expanded forest maintenance shall be on wildlife habitat condition treatments across very large landscapes. The goal shall be to create and maintain a mosaic of seral vegetative stages that are highly resistant to catastrophic fires, as well. That is, well-planned, methodical steps in the process of enabling productive ecological succession across priority watersheds that are especially high risk to wildfires. The 10-year plan-of-work in the *Call to Action* will outline specific treatments that place wildlife habitat first and foremost across large geographic ecotypes and agency regional boundaries. Cooperation and collaborative approaches, with a wide-range of partnership, will be commonplace resulting in the eventual reduction of large, intense fires.[57]

Forest Management: Pace and Scale

Repeating, a dominant reason for the deterioration of America's Forest and the incredible destruction caused by wildfires, is the lack of forest management. But whenever the term "forest management" surfaces, there are many that conclude, "that's just a coverup for "*indiscriminate logging.*" And, as former Forest Service Chief Jack Ward Thomas said, "gladiators form and fights ensue." To be clear, forest management focuses on managing vegetation, restoring ecosystems, reducing hazards and maintaining forest health. Vegetation management[58] activities that will help improve habitat -- including timber harvesting, timely salvage, thinning, pruning and prescribed fire are fundamental to the management of trees, forests and forest ecosystems and wildlife habitat conditions. Over the last 30 years, timber harvest levels, for example, have declined by about 80 percent. Excessive regulations, disguised as important to an *environmental movement* have in fact contributed to a reduction in environmental health.

Most who are in the profession of caring for the land along a rural to urban gradient, consider themselves *environmentalists*. But, with a *conservation* bent. That is, to keep our forests healthy, sustainable and more resilient to disturbances. Maintenance, protection and use – stewardship – is key. Doing nothing means nothing ever changes. Thus, we find ourselves in this current mess.

Let there be no doubt, the health of America's forests is declining. Wildfires are destroying lives and property, reducing air quality, altering critical wildlife habitat and killing millions of animals needlessly. Forests in declining health, the impacts of a changing climate, and the expanding

[57] LaMalfa Introduces RESTORE Act to Improve Forest Health, Mitigate Wildfire Risk | Congressman Doug LaMalfa (house.gov). The proposed legislation would be a solid *"…set of good tactics that would fit nicely into a more cohesive Call to Action.*

[58] Vegetation management includes a wide-range of vegetation types and tree species. Perhaps a newer phrase in our communications needs to emerge. That is, instead of the lack of *forest management* we should say, lack of *vegetation management* or the lack of *forest maintenance*. Our forests are more than just trees!

Wildland-Urban Interface, has created a volatile mixture that has led to the current national crisis. Now, it is time to step forward with a concentrated effort and begin to address the 19-20 million acres annually of forests across our country that need some type of restorative action – about 8 million acres each year on the National Forests.

The goal of this restoration commitment is to help create healthy, sustainable forests that are more resilient to disturbances so the linkage between environmental health and community stability can be more fully realized.[59]

Reduction in Hazardous Fuels

This large, fundamental task cannot be accomplished with such a meager level of funding. In the late 1990s, a General Accounting Office [GAO] report noted that "the most extensive and serious problem related to the health of forests in the interior West is the over-accumulation of vegetation, which has caused an increasing number of large, intense, uncontrollable, and catastrophically destructive wildfires." When the *National Fire Plan* was written, it was thought that about $850 million annually was the minimum required to more effectively address the issue of hazardous-fuels removal. More recently, a 2013 Congressional Research Service report suggests costs for a comprehensive hazardous fuels treatment program for the National Forests could exceed $2 billion a year.

The point is, cost estimates to effectively address the removal of hazardous fuels range from about $1 to $2 billion dollars a year for just the Forest Service depending on the acres that can be treated. The current agency budget for this activity is about $445 million. Thus, with only a fraction of required funds available, focusing work on the highest-priority areas is fundamental to success. But let's be candid: no amount of focusing can offset this level of funding shortfall. Simply put: at the current investment level, the effort in reducing hazardous fuels is not making a difference that is even close to what is needed. A recent Farm Bill, authorized the collection of "excess KV funds," termed *K2*, to be collected and used for varied needs throughout the geographic region in which collected. This created an opportunity by Forest Service to use such funding for desperately needed fuel reduction projects, specifically within the Wildland Urban Interface [WUI] where fire risks are great.

Biomass Uses

Most people are aware that traditional timber harvesting, thinning, and timely salvage of dead and dying trees, as examples, represent biomass removed and then used; shorthand for *biomass uses*. Recently, biomass uses have turned to more innovative solutions that offer opportunities for high-volume, high-value markets for lower quality wood. For example, wood-based nanotechnology[60], a biomass use example, offers a revolutionary technology to create new jobs and strengthen America's forest-based economy through industrial development and expansion as well as providing means to enable forests to remain healthy and sustainable through

[59] Initially, due to lack of capacity and funding and other constraints, a goal of about 5-7 million additional acres annually would be a very reasonable objective, especially if these acres are targeted to the highest priority "firesheds." As capacity and funding increase, the pace and scale of forest maintenance will also increase.

[60] https://www.fpl.fs.fed.us/documnts/pdf2014/fpl_2014_rains001.pdf

accelerated restoration. Wood-based nanotechnology applications include packaging barrier coatings; printing paper coatings; structural composite panels for construction; flexible electronic displays; printed electronics; lightweight structural and non-structural panels and parts for aerospace; automotive applications; and, a host of industrial tools and consumer products.

Other examples include innovations in the development, application and technology transfer of cross laminated timber – CLT -- for use in nonresidential building construction. And, torrified wood and biochar for energy. For example, torrified wood and coal have similar heat producing capabilities and can generate electricity at about the same efficiency rate while torrefied wood emits significantly less particulate matter.

These science-based innovations are critical to forest restoration, thus healthy forests. The greater the level of hazardous fuels that can be economically removed, the more efficient the forest maintenance campaign becomes.

It is estimated that a strong, well-established program in cost-effective biomass uses could create high-value markets from low-value wood [i.e., hazardous fuels] that could reasonably help restore about 20 million forested-acres annually. About one-half of the nation's 885 million acres of forestland currently requires some type of restorative action. This pace and scale of restoration could reduce future fire suppression costs in the range of 12-15 percent [some say as high as 23 percent]. In terms of what the 2020 fire suppression expenditures were, this represents a savings of about $1 billion! These are funds that could be redirected for vegetation management uses, which will in turn help reduce the size and intensity of unwanted fires. Simply put, it makes good economic sense to aggressively invest in biomass uses to help achieve more resilient forests throughout the rural to urban land gradient. As stated earlier, funding in the range of $33 million per year equates to a "strong, well-established program" in innovative biomass uses.[61]

Be Fire Wise and Safe

As the Wildland-Urban Interface [WUI] continues to expand across America, emphasizing the maintenance of vegetation and individual property care in the WUI will be a critical aspect of the *Call to Action*. This includes helping expand the number of Fire Safe Councils[62], Fire Safe USA®[63] sites, and defensible space around homes. And, any other tactics that will enable the WUI to be more resilient to fire in order to save lives and property. We know that "defensible space" [also known as the "home ignition zone"] and preparing ["hardening"][64] is critical for the protection of homes from wildfire. Yet, less than 2 percent of the 72,000 communities at risk have been formally designated as fire wise and safe. The *Call to Action* will help change this through activities that include, additional grants and funding; minimizing risks; improved insurability; application of *K2* funding; and expanded partnerships with first responders. The short-term goal -- working with existing organizations -- is to provide additional funding to protect the highest priority areas, immediately. The long-term goal is to help enable at least one-

[61] The 2021 Omnibus Spending Bill does not provide any increase in funding for Research and Development and specifically for biomass uses. Thus, in terms of funding and focus, nothing has changed.
[62] Home | California Fire Safe Council | Learn More Today (cafiresafecouncil.org)
[63] NFPA - Firewise USA®
[64] Hardening Your Home - Ready for Wildfire

half of all communities-at-risk to be designated *fire wise and safe*. This will require significant resources over a long period of time. See Appendix A.2, page 23, for additional details.

Once again we must ask a driving question. That is, where is Congress on this serious financial need? As well, where is for example, NACo [the National Association of Counties] on this matter? Why are so many silent regarding the need for adequate forest maintenance funding?

Improved Aerial Fire Suppression Tactics

In 2013, the U.S. Government Accountability Office, in their Wildland Fire Management report to Congress, recommended a nationwide, multi-year Aerial Firefighting Use and Effectiveness [AFUE] study. The study was chartered by the United States Forest Service to answer a pivotal question given the growing wildfire threat across America.[65] That is, "…What are the best mixes of aircraft to do the fire suppression job?" AFUE findings included:

- The majority of retardant drops were completed by large aircraft [Large Air Tankers (LATs), Very Large Air Tankers (VLATs), Multi-Engine Scoopers (MES), and Type 1 helicopters] in an effort to control large wildfires, including those that were allowed to burn [i.e., "managed fires"] across landscapes to remove fuels.
- Smaller aircraft [i.e., Single-Engine Scoopers (Fire Bosses), Type 2 and 3 helicopters, and retardant-dropping Single-Engine Air Tankers (SEATs)] were predominantly used to subdue small fires during Initial Attack.
- Based on the results of the AFUE study, and following the parallels of the 2012 Rand Institute Study on "Determination and Cost-Benefit Analysis of the Optimal Mix of Helicopters and Airtankers for the U.S. Forest Service"[66], the Forest Service should be acknowledging that smaller, more agile "scooping" aerial firefighting assets such as single engine scoopers [i.e., Fire Bosses and others] can help fill the role to achieve goals and outcomes that are best suited for many fire prone western states.

Accordingly, in this *Call to Action*, another paradox has emerged. That is, since the concept of "managed fire" needs to be eliminated due to ramifications of much greater and destructive fires, the use of smaller aircraft to enable more cost-efficient and effective fire suppression needs to be expanded ["Top 10 Action" 2 and 3].

Here is what experience is telling us:

- Large airtankers certainly have a place in fire suppression efforts, but oftentimes they are not the most effective in helping achieve Goal No. 3 in the "Call to Action": "…Put out every fire immediately. Reduce response time by at least 80 percent!"
- Large airtankers are expensive and limited in number. There are just over 30 LATS or VLATs that can fight fires across the entire fire landscape in a given season.
- Due to these high costs, often times Incident Commanders are reticent to call for aerial assets and try to mitigate the fire risk without these assets, often with disastrous results.

[65] AFUE FINAL REPORT.pdf
[66] Identifying a Cost-Effective Aviation Fleet for the U.S. Forest Service | RAND

- Smaller, more agile aircraft and helicopters are cost-efficient and effective.
- There are also significantly more of these smaller aircraft, with the number reaching to almost 100 retardant-dropping Single-Engine Air Tankers (SEATs) and 25 single engine scoopers [Fire Bosses]. This would allow for a simple and cost effective "network" of rapid response, Initial Attack assets to be positioned across much of the fire prone areas in a season.
- The firefighting agencies – federal, state and local – need to embrace a more agile, effective approach in aerial fire suppression tactics. Essentially, seek a better balance of aerial suppression tactics and a quick response force.
- A recent evaluation by this author suggests that up to 20 percent of the acres burned in 2020 [about 2 million acres] might have been avoided if a more agile, aerial approach to fire suppression would have been deployed throughout.
- A goal of 65 percent of all aerial wildfire firefighting tactics would probably be a more effective target for smaller aircraft usage.
- All the above should result in a greater reduction in exposure to Covid-19; less the need for fewer fire camps and fewer crews.

Improved Usage of Smokejumpers

It should also be note that another critical feature of *Improved Aerial Fire Suppression Tactics* is the expanded use of Smokejumpers ["Top 10 Action" No. 7] in Initial Attack. In a recent article by Chuck Sheley[67], a former Smokejumper, the following was a conclusion: "…reverse the trend and let smokejumpers be used as they were designed to be used in 1940 -- initial attack as soon as possible. USFS [United States Forest Service] smokejumper use in 2018 went down by over 300 fire jumps compared with the 10-year average." In 2019, there were 604 *jumps*, down about 47 percent of the 10-year average of about 1,300. In 2020, and by all consensus a "horrible fire season," *jumps* represented about 74 percent of the 10-year average [959 *jumps*]. A reduction of 26 percent from the 10-year average of fire jumps in one of the worst fire seasons on record, clearly needs to be discussed and evaluated.

It is our combined opinion that today's Agency Administrators/Line Officers are not being adequately trained or informed of the valuable skills that Smokejumpers bring "to the table" for a quick reactionary force on fires at the point of Initial Attack.[68]

With the wildfires America is facing, and assuming safety protocols are being met, there should be few to **NO** available smokejumpers on the *daily status report*. We must maximize the use of these iconic resources, if at all where possible.

Again, the optimal use of aerial suppression tactics, including a fuller utilization of the Smokejumper force must be discussed, analyzed and determined to reduced damages and costs and save lives from wildfires. It seems clear that currently an optimal level on both tactics is not being attained.

[67] Smokejumpers.com - National Smokejumper Association

[68] When the Tamarack Fire in California started on July 4, 2021, Smokejumpers were readily available but not deployed while the fire was being "monitored." As of August 11, 2021, the fire is now 68,663 acres in size.

CALL TO ACTION

A Call to Action

Conservation leaders are concluding that in order to "create healthy, sustainable forests that are more resilient to disturbances -- so the linkage between environmental health and community stability can be more fully realized" -- a *Call to Action* is required.[69] That is, a well-coordinated partnership that bands together, shares resources and avoids duplication will ensure a successful campaign that improves our forests and the economy and protects lives and property.

This *Call to Action* will include a:

1. **National Commitment.** This shall include a formal declaration of an unprecedented national federal, state and local commitment to aggressively care for America's forests along the complex rural to urban land gradient, so the destructive nature of large, high intensity wildfires will be reduced. The national commitment must address the current lack of resources that have dictated a lack of *forest maintenance*, resulting in the landscape scale destruction from wildfires that we are seeing every year. This cannot be overstated. Estimates suggest this amount is more than $2 billion annually for just the Forest Service; some suggest as high as about $5 billion. The total investment level for all involved shall be determined and budgeted. Leading the way for this national commitment will be a clear and powerful "Statement of Intent" to be issued jointly by the Secretaries of the Departments of Agriculture [USDA] and Interior [DOI]. Success of this national commitment will be enhanced by local and regional coalitions seeking to resolve common problems.

2. **Statement of Intent.** An example "Statement of Intent" is as follows:

   "The lack of forest management across the country has greatly contributed to the current wildfire situation and the associated horrific impacts on people's lives and their communities. This is going to change. Immediately, we [USDA and DOI Secretaries] will be meeting with the new Administration leaders and Congress to gain adequate funding for the *Toward Shared Stewardship Across Landscapes: An Outcome-Based Investment Strategy*[70]and other corporately-used guides.

   This will be the beginning of a long-term campaign to ensure our landscapes become healthy, sustainable and more resilient to disturbances. We will be counting on the aggressive, promotional leadership of everyone to ensure our direct and indirect roles in the stewardship of America's forests is achieved, now and ahead. The Forest Service Chief and the Director of the Bureau of Land Management will be relentless in leading the way."

3. **Vision.** The vision of the national commitment will be guided by the following: "To ensure America's forests are healthy, sustainable and more resilient to disturbances in order to protect people, landscapes and communities from the destruction of large, high intensity wildfires."

[69] Recently, USDA Secretary Vilsack talked about the positive impacts of forest management and his commitment to emphasize the care of our forests. He then referred to the "Moore Plan", referencing the new Forest Service Chief, Randy Moore. Many believe this document – the *Call to Action* -- could be a very solid foundation for the "Moore Plan."

[70] https://www.fs.fed.us/sites/default/files/toward-shared-stewardship.pdf

4. **Strategy.** The *Call to Action* is the overall framework. *Toward Shared Stewardship Across Landscapes: An Outcome-Based Investment Strategy* can be a guiding strategy for the Forest Service.[71] This will be augmented by the 2014 *National Cohesive Wildland Fire Management Strategy.*[72] The overall strategy shall include specific levels of vegetative management to improve ecosystem health through actions such as hazardous fuel treatment, timely timber salvage, thinning, pruning, prescribed fire and reforestation. A focus shall be to create and maintain a mosaic of seral vegetative stages that are highly resistant to catastrophic fires and provide for quality wildlife habitat conditions. Quantifying associated outputs and expected outcomes with specific investment levels targeted to specific geographic areas [i.e., high priority watershed and landscapes] that are at high risk to wildfire.

5. **10-year Plan of Work.** A comprehensive 10-year Plan of Work shall be developed to deploy the *Call to Action*. This Plan of Work will include monitoring and the annual evaluation of progress and outcomes, with adjustments as needed. The Plan of Work will need to include detailed tactics, including additional investment strategies to increase the pace and scale of forest restoration; optimal fire suppression methods; agency workforce requirements; outlining of specific roles; identification and deployment of improved organizational processes; comprehensive reform management; and the delineation of specific outcomes. These annual outcomes shall include, but not be limited to, the amounts of prescribed burning; targeted hazardous fuels reduction; increasing the production of traditional and innovative new forest products; the creation of varied wildlife habitat conditions; and reducing the backlog in critically needed reforestation.

   Capacity to efficiently deploy significant new funding levels is a concern. This must be addressed now. The very comprehensive "Increasing Workforce Capacity" report[73] developed by the National Association of Forest Service Retirees [NAFSR], as an example, provides a strong foundation for many elements of an effective 10-year Plan of Work for the *Call to Action.* The decline of non-fire skills sets within the Forest Service over the last 30 years – about 40 percent -- cannot be overstated.

   NAFSR has also produced a position paper entitled "America's Forest Management Crisis – A National Catastrophe." The details in this "Call to Action" help augment NAFSR's position paper.[74]

[71] https://www.fs.fed.us/sites/default/files/toward-shared-stewardship.pdf
[72] https://www.forestsandrangelands.gov/strategy/thestrategy.shtml
[73] https://www.nafsr.org/advocacy/2019/072619%20Workforce%20Capacity%20Study.pdf
[74] https://www.nafsr.org/advocacy/2021/042921%20Cover%20Letter%20to%20Congress%20on%20America's%20Forest%20Management%20Crisis.pdf

CALL TO ACTION

Appendix A.1. Additional Cost Estimates to Address COVID-19, Effective Fires Suppression Tactics and Forest Maintenance.[75,76,77]

Category	Amount
COVID-19:	$ in millions
Supplies and Equipment [Protection and Care]	$128.0
Planning and Response [On Incidents and Within the Community]	34.5
Infection Control [Identification and Mitigation]	88.6
Cost Recovery of Businesses Associated with Fire]	108.3
Behavior and Health Response [First Responders and Citizenry]	34.5
Medical Team [s] Assistance [Newly Established IC Teams]	44.3
Medical Assistance [Direct Assistance]	24.6
Medical Assistance [Insurance and Added Hospital Facilities]	19.7
Community Outreach [Technical Assistance to Ensure Safety]	9.8
COVID-19, Subtotal	**492.4**
Wildland Fire Suppression:	
Expanded Contracts for Shorter Response Times	579.6
Personnel [Additional to Keep Fires Small]	326.0
Personnel [Replacements Due to Sickness]	157.0
Community Assistance to Ensure and Deploy Defensible Space	69.5
Community Assistance For Structure Preparedness	320.0
Fire Suppression, Subtotal	**1,452.2**
Fire Suppression Plus COVID-19	**1,944.6**
Forest Maintenance:	
Hazardous Fuels Reduction [HFR], Subtotal	1,855.0
Fire Suppression, COVID-19 and HFR, Subtotal	**3,799.6**
Delayed Maintenance of Forestlands	1,755.0
Total Estimated Costs	**$5,554.6**

[75] Additional costs ranged between +$130 up to +$250 per acres burned in 2020 [projections estimate 2021 will be the same or higher]. This includes new suppression tactics ["preparedness closer to the incident"]; new skill sets in and around incidents; equipment; medical assistance; backup personnel due to sickness; etc.]. The projection for 2020 is in the range of about 7.1 to 10.2 million acres burned [the actual count was 10.4 million acres]. Costs are expected to exponentially increase above 8.8 million acres. The estimates, additional annual costs, also include additional resources for hazardous fuels reduction and delayed maintenance of forestlands based on questions presented in the Senator Wyden-led letter to the Forest Service Chief on April 30, 2020.

[76] The USDA Forest Service budget for 2021 is status quo. The additional needs for 2021 that are illustrated in Appendix A.1 remaining basically the same. The 2022 proposed budget includes $1.7 billion for high-priority hazardous fuels and forest resilience projects, an increase of $476 million over the 2021 enacted level.

[77] HHRG-117-AP06-Wstate-ChristiansenV-20210415.pdf (house.gov)

Appendix A.2. Cost Estimates to Address Defensible Space and Home Hardening Requirements[78]

Assumptions:

1. **Defensible Space [DS]:**
   - **a.** 1 community averages 600 homes and 50 percent of these homes need DS work: thus 300 homes per community at an average cost of $1,750 per home:
     - 1 crew = 4 homes per month.
     - 1 month = 20 days; 1 day = 7 hours; 1 month = 140 hours of work per month.
     - 140 hours x $50/hour = $7,000.
     - $7,000 ÷ 4 = $1,750 per home for DS work.
     - 1 community = $525,000 [$1,750 * 300 homes] for DS work.

2. **Home Hardening [HH]:**
   - **a.** $8,000 per home.
   - **b.** 1 community averages 600 homes and the goal will be to Hardened [HH] 50 percent of the homes in each community served.
   - **c.** 1 community will cost $2.4 million [($8,000 * 600) * 0.50] to HH.

3. **Total Communities:**
   - a. There are 72,000 communities at high risk to wildfire across the country. Only 2 percent have been designated as "fire wise and safe." Thus, 70,560 communities need DS and HH.
   - b. **Goal:** treat one-half of the total communities at risk to wildfire *and* in need of DS and HH work: 35,280 communities.
   - c. Time period to accomplish work: 20 years [or, 1,764 communities treated annually].

4. **Cost-share Requirement:** 75 percent federal share/25 percent non-federal share.

5. **Calculations:**
   - a. **DS:** $525,000 * 1,764 [communities] = $926.1 million * 0.75 ~ $694.6 million each year.
   - b. **HH:** $2.4 million * 1,764 [communities] = $4.2 billion * 0.75 ~ 3.2 billion each year.
   - c. **Total Annual Federal Costs:** ~ $3.85 billion.
   - d. **Revised Amount in the "Call to Action" for DS and HH [Appendix A.1]:** 10 percent of estimated costs to help comply with overall budget constraints: DS [$69.5 million]; H [$320 million] for a total of $389.5 million for the first 5-7 years. As fire suppression costs decline, funds for DS and HH can increase.

6. **Definitions:**
   - **a. Defensible Space.** Defensible space is the buffer between a building on your property and the grass, trees, shrubs, or any wildland area that surround it. This space is needed to slow or stop the spread of wildfire, helping protect your home from catching fire -- either from direct flame contact or radiant heat. Defensible space is also important for the protection of the firefighters defending your home.[79]
   - **b. Home Hardening.** Preparing your home to provide maximum wildfire protection with appropriate building materials and related design features. To provide maximum protection, home hardening must be used in combination with adequate defensible space.[80]

[78] Prepared by Michael T. Rains on February 23, 2021 [revised].
[79] Defensible Space - Ready for Wildfire
[80] Hardening Your Home - FIRESafe MARIN