

FAS Forum

# Envisioning the Future of Wildland Fire Policy

March 21, 2023

## Event Summary

**FAS**

FEDERATION  
OF AMERICAN  
SCIENTISTS

*The Federation of American Scientists (FAS) is a nonprofit policy research and advocacy organization founded in 1945 to meet national security challenges with evidence-based, scientifically-driven, and nonpartisan policy, analysis, and research.*

<b>Event Purpose and Context</b>	<b>4</b>
<b>Table Talk Summaries</b>	<b>5</b>
Foster smoke-ready communities to save lives and money	5
Build data infrastructure to support decision making based on smoke hazards	5
Consider modifying the Clean Air Act to incentivize increased use of beneficial fire	5
Support strategic deployment of community resilience hubs to mitigate smoke impacts and other hazards	7
Save lives, properties, and ecosystems with real-time actionable fire intelligence	8
Launch an Open Disaster Data Initiative to bolster whole-of-nation resilience from wildfires and related hazards	10
Develop a federal framework to measure and evaluate the socio-ecological impacts of wildfire	11
Invest in Wildfire and Health Forest Corps	12
<b>Table Talk Reflections</b>	<b>13</b>
<b>Understanding the Wildland Fire Landscape in Congress</b>	<b>13</b>
<b>Golden Tickets: Big Ideas in Wildland Fire Policy</b>	<b>15</b>
<b>Appendix I: Golden Ticket Ideas and Themes</b>	<b>16</b>

## Event Purpose and Context

In this critical year for reimagining wildland fire policy, the [Federation of American Scientists \(FAS\)](#) hosted a convening that provided stakeholders from the science, technology, and policy communities with an opportunity to exchange forward-looking ideas with the shared goal of improving the federal government's approach to managing wildland fire.

A total of 43 participants attended the event. Attendee affiliations included universities, federal agencies, state and local agencies, nonprofit organizations, and philanthropies.

This event was designed as an additive opportunity for co-learning and deep dives on topics relevant to the [Wildland Fire Mitigation and Management Commission](#) (the Commission) with leading experts in relevant fields (the convening was independent from any formal Commission activities).

In particular, the Forum highlighted, and encouraged iteration on, ideas emerging from leading experts who participated in the [Wildland Fire Policy Accelerator](#). Coordinated by FAS in partnership with [COMPASS](#), the [California Council on Science and Technology](#) (CCST), and [Conservation X Labs](#), this accelerator has served as a pathway to source and develop actionable policy recommendations to inform the work of the Commission.

A [full list of recommendations from the Accelerator](#) is available on the FAS website.

This document summarizes discussions and key takeaways from the event for participant reference. We look forward to building on the connections made during this event.

## Table Talk Summaries

Foster smoke-ready communities to save lives and money

**Alistair Hayden**, Cornell University



**Teresa Feo**

Senior Science Officer, CCST



Build data infrastructure to support decision making based on smoke hazards

**Alistair Hayden**

Consider modifying the Clean Air Act to incentivize increased use of beneficial fire

**Alistair Hayden** and **Susan Prichard**, University of Washington

**Research challenges for smoke impacts.** Participants asked a number of questions about the availability and use of data on smoke impacts. We are still learning about chronic impacts of smoke exposure vs. acute (from wild or structural fire). EPA has ground-based air monitors, but coverage is thin in rural areas and the system wasn't designed to track wildfire smoke. We also don't have a way to directly link smoke impacts with specific fire events; NOAA satellite data tracks smoke plumes but these can't be traced to individual fires. Additionally, we don't fully understand the relative impacts of wildfire, WUI fire, and prescribed fire; having more data can help demonstrate that prescribed fire can help reduce human health impacts overall.

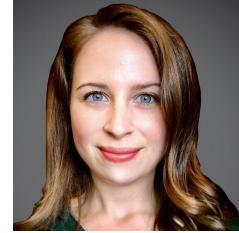
**Combating smoke during an event.** Participants discussed the inevitability of smoke exposure for many populations. Focus needs to be on reducing risk, such as through creating smoke safe spaces with effective air filtration technologies. Burning under the right conditions to ensure smoke impacts are mitigated is also key.

**Relationship to prescribed fire.** Gathering and applying data discussed in this recommendation can help managers understand which fires and acres are contributing more heavily to smoke. Participants discussed the importance of integrating smoke data into decisions about when and where to apply prescribed burns for maximum benefits to human and ecological health.

**Changing how we talk about smoke.** Participants discussed how, in the changing landscape, we must start thinking about *when* we will be exposed to smoke, not *if*. It is important to communicate that prescribed fire is crucial for reducing smoke impacts in the longer term; if fire is inevitable, prescribed fire is key to harm reduction. Participants discussed the importance of viewing the urgency of smoke exposure as the same as fire exposure; smoke needs to be integrated everywhere (building standards, air filtration, education) and addressed as the public health crisis it is.

Support strategic deployment of community resilience hubs to mitigate smoke impacts and other hazards

**Lee Ann Hill**, PSE Healthy Energy



**Locations of resilience hubs.** Groups discussed the importance of community leadership in selecting the location and characteristics of hubs, citing schools as common locations. Generally, ideal locations are known to community members and easily accessible. Resilience hubs are usually existing structures that are retrofitted rather than new buildings. Participants also discussed the importance of equity when determining the locations of resilience hubs. Prescribed fire smoke impacts both high density urban populations and low density rural populations, yet urban hubs occupy most of the conversation.

**Hubs vs. shelters.** Participants discussed the distinction between hubs and shelters. Hubs can serve as overflow spaces for shelters during disasters, but aren't generally meant to hold many people for days at a time. Hubs are generally designed to provide short-term access to clean air and climate control and to support resilience more generally. Networks of resilience hubs can help share the burden during multi-day events. In rural areas especially, individual preparedness is also critical. Additionally, folks who may not want to go to a shelter may visit resilience hubs.

**Wildfire, prescribed fire, and resilience hubs.** Participants discussed how resilience hubs can protect community members from smoke impacts regardless of the sources. Planners in fire-prone landscapes can consider prescribed and wildfire impacts in resilience hub design depending on level of risk and prioritize the location and attributes of hubs accordingly.

**Ensuring use.** Contributors emphasized the importance of community design, community-led education, and appropriate location to ensure resilience hubs are used and understood. Some participants raised questions about advancing hubs in rural communities or states that may be resistant to such a program. Gathering data on usage will be helpful for improving design. Resilience hubs can also be leveraged as community resource centers, providing guidance (e.g., workshops) and tools (e.g., HEPA filters) on climate-proofing homes.

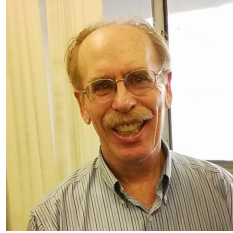
**Cost of hubs.** Several participants asked about costs and funding sources for resilience hubs. Costs will vary based on existing infrastructure, type of hazard, and community characteristics. Federal resources could be allocated based on leveraging existing community resources; federal funds can also be used to make community participation possible. Several participants discussed existing grant programs, such as hazard mitigation assistance grants, as potential funding sources. Cost-effectiveness of resilience hub investments can be maximized by ensuring they can be leveraged for multiple hazards and support communities on blue sky days.



## Save lives, properties, and ecosystems with real-time actionable fire intelligence



**Tim Ball**  
Fireball Information  
Technologies



**Carlton Pennypacker**  
University of California,  
Berkeley



**Harry Statter**  
Frontline Wildfire Defense

*The authors are part of a research group, [FUEGO](#), that designed a satellite to bridge the intelligence gap described in this proposal.*

**Urgency of task:** The Camp Fire illustrates the need for improved near real-time intelligence for wildfire response. Existing satellites, such as the Geostationary Operational Environmental Satellite, are an important data source but are low resolution, and make too few observations for real time information. The DOD has adequate capability through the Defense Support Program, but using that system for wildfire intelligence has been a longstanding goal with little progress. It might be helpful if the DOD formally ends this program to open the path for other solutions.

**New capabilities:** One solution would be to launch a new geostationary satellite dedicated to monitoring fire activity in North America, housed within a civilian agency. Data from a new geostationary satellite should be combined with data from many other sources, such as low-earth orbit satellites, aerial observations, ground sensors to form an actionable intelligence system. Images scraped from social media and 911 reports could also be inputs.

**Agency responsibility:** The platform will likely need to be pursued as a public-private partnership led by the Department of Homeland Security (DHS), specifically the US Fire Administration within FEMA. While the effort is relevant to NASA, NOAA, and USGS, the sensitive nature of the data and the security aspect of fire make DHS the most appropriate lead. DHS should partner with USGS and other agencies to support specific core functions of the platform.

**Operational decisions:** A better operational record is critical for improving planning and response efforts. The intelligence system should capture both inputs and outputs to form this record. The platform should support much more than response, as the data can be used to build and improve early prediction models. This in turn informs our response and moves us toward a resilience-focused approach.



**Related Efforts:** The [National Guard's FireGuard program](#) and the [National Geospatial-Intelligence Agency Firefly program](#) provide the west coast with fire intelligence. These programs are authorized on a temporary basis and are very limited in scope. NGO's and the private sector are investing in various intelligence efforts across aerial, space, and ground.

Launch an *Open Disaster Data Initiative* to bolster whole-of-nation resilience from wildfires and related hazards

**Shefali Juneja Lakhina**, WonderLabs



**General feedback.** Overall, participants were very supportive of the idea and wanted to explore various possible mechanisms for implementation. In the wildland fire community there's a respected data standardization push going on, although questions remain about where to house such data and how to think about standards and management across communities of practice.

**Related initiatives and learning opportunities.** Participants discussed executive branch actions that could set the stage for this work, including the Year of Open Government and the Year of Open Science. Such an initiative could also build on lessons learned from the Data Act. There is precedent with [CDC's Data Modernization Initiative](#) (although the disaster data initiative would be more complex), which incentivized reporting across levels of government to improve public health decisions.

**Data collection and standardization challenges.** Data interoperability is a challenge. Participants discussed differentiating between data standardization and data centralization/management; standardization needed before federal infrastructure can be built. Pre- and post-event data could both be included in this effort to address gaps. Participants discussed including local impacts, especially for disasters that don't receive a federal declaration and associated funding. Additionally, relevant data at the county level may also be spread across multiple institutions, such as emergency management and public health. OSTP's National Science and Technology Council would need to ensure usability as well as data privacy and security.

**Where to house data.** Participants discussed the challenge of where to house this open data and how to ensure access to those who need it. FEMA could be the designated focal point for managing the database, but the challenge would be making sure it can be used by various stakeholders (e.g., responder vs. emergency manager).

**Congressional action.** Participants discussed the merits and drawbacks of using an Executive Order to organize the initiative and explored a possible role for Congress. In the long-term, institutionalizing the initiative after data is rolled up from the local level could involve enlisting FEMA, getting land management agencies on board, and solidifying support through legislation.

Develop a federal framework to measure and evaluate the socio-ecological impacts of wildfire



**Leana Weissberg**  
UC Berkeley



**Ken Alex**  
UC Berkeley

**General feedback:** Groups discussed the urgency of creating a baseline against which efforts to mitigate wildland fire can be measured and acknowledged the importance of starting with the end in mind in wildland fire mitigation work.

**Data aggregation and gap analysis.** Multiple participants noted that aggregating existing data could be challenging and that some data may not be sophisticated enough for metrics applications (such as data on housing and local economies); however, development of the framework could be valuable in identifying critical gaps in these cases.

**Designing effective accountability mechanisms.** Another challenge raised was potential sensitivity around “scoring” vs. a framework model and how to build in mechanisms for accountability, which could be achieved through performance review by OMB and/or through third party advising or evaluation. Several participants raised development of public-facing versions of this framework to demonstrate benefits of public investment on wildfire mitigation.

**Creating relevant and useful metrics.** Some participants discussed the practicalities of developing metrics under a common evaluation framework, including going beyond acres treated, considering tradeoffs between different metrics, allowing for metrics prioritization, and building in flexibility for regional relevance. Participants specified the importance of metrics to assess watershed health, socioeconomic and socio-ecological impacts, workforce, and spending.

**Related Efforts.** Natural Capital Accounting, WFLC and Pew reports on the cost of Wildland Fire, and state and local government initiatives were raised as relevant efforts. Participants noted the importance of learning from other similar efforts, such as the [Ocean Health Index](#) and hazard data dashboards.

## Invest in Wildfire and Health Forest Corps

**Irva Hertz-Piccio**to, University of California, Davis



**General feedback.** Participants agreed that we have a massive need for workforce development in wildland fire, but haven't nurtured the vision and culture necessary to get us there. There is benefit to beginning with the end in mind and building a respect for the value of nature early in careers.

**Tactical considerations.** For corps programs, providing the necessary wraparound services was raised as a challenge. This includes providing health insurance, housing, and other necessary services. Competitive pay could also pose a challenge, especially at a time when agencies are trying to build a more permanent and sustainable workforce.

**Recruitment.** Fire services generally are facing a recruitment problem; need to reconsider how we market to people who want to make a difference. Demand is very high from employers for completing this work, but there are challenges to providing competitive pay. Participants discussed immigrant and incarcerated populations as potential candidates for jobs in hazardous fuels removal. For immigrants, pathways to citizenship could be offered. Community college systems could be integrated into the proposed corps programs to help with recruiting.

**Suppression and prevention.** Participants discussed the need for a workforce that can provide support for suppression as well as mitigation (such as prescribed fire). Presently, mobilizing enough people to complete prescribed fire is a challenge for states and the federal government. Additionally, participants discussed the importance of looking at how to leverage workforce development programs (such as certification programs) to train people in related fields, such as ecologists, meteorologists, NEPA assessments, and mental health services. Participants also discussed a need to hire more experts in federal roles to support mitigation efforts.

**Biomass.** Corps programs at scale focused on fuels mitigation have the potential to support biomass generation. Participants discussed opportunities and challenges to bringing biomass from corps operations focused on hazardous fuel removal to market, including high costs of transporting fuels from the landscape. Biomass could be used to offset costs of corps programming.

# Table Talk Reflections

Participants shared the following high-level thoughts in plenary as they reflected on the table talks:

- We don't know where we actually need to be in terms of community and landscape resilience; there is a **need for more input and data** so we can set goals and achieve them.
- Rather than just adding more people to the workforce for prescribed fire, **incentivize prescribed burning** within agencies and support culture change needed to do so.
- We still have a lot to learn about what resources are needed to effectively be proactive. We need **better methods for analyzing the workforce we need** to deploy when it comes to wildland fire disasters, both in terms of immediate response in the aftermath and through mitigation strategies.
- Need to consider ways that **development of bioeconomy workforce** and wildland fire workforce can be achieved in tandem; this is an underexplored piece of wildfire mitigation.
- **Quality economic data** is a way to bridge the gap between what we need to know and what we don't; this will help agencies prioritize as well.
- Centralized data hubs need to be designed to **incorporate contributions from local communities** and folks on the ground.
- Stakeholders should consider how to **work with existing policies** (e.g., IRA) and leverage them effectively rather than relying on creating new policies to solve problems.

## Understanding the Wildland Fire Landscape in Congress

Matt Weiner, CEO of [Megafire Action](#), gave a presentation focused on the wildland fire landscape in Congress, including opportunities, strategies, and vehicles for engagement.

### Relevant Legislative Vehicles

- **Farm Bill** - 5 year reauthorization of agriculture, nutrition, and forestry
- **Annual Appropriations** - funding increases, directed report language, pilot programs
- **Defense reauthorization (NDAA)** - always passed
- **NASA/NOAA reauthorization** (space/satellites and weather modeling)
- Potential disaster and/or drought legislation

### Tips for Developing and Implementing a Congressional Recommendation

- Determine jurisdiction (e.g., relevant agency and Committee) and your vehicle (e.g., annual appropriations, new legislation, etc.)
- Identify a member(s) to work with (and Committees)

- Meeting the Member - sell your vision and your strategy, stay out of the weeds
- Working with Staff - operations and tactics, make their lives easier
- Build coalitions - identify and engage potential allies

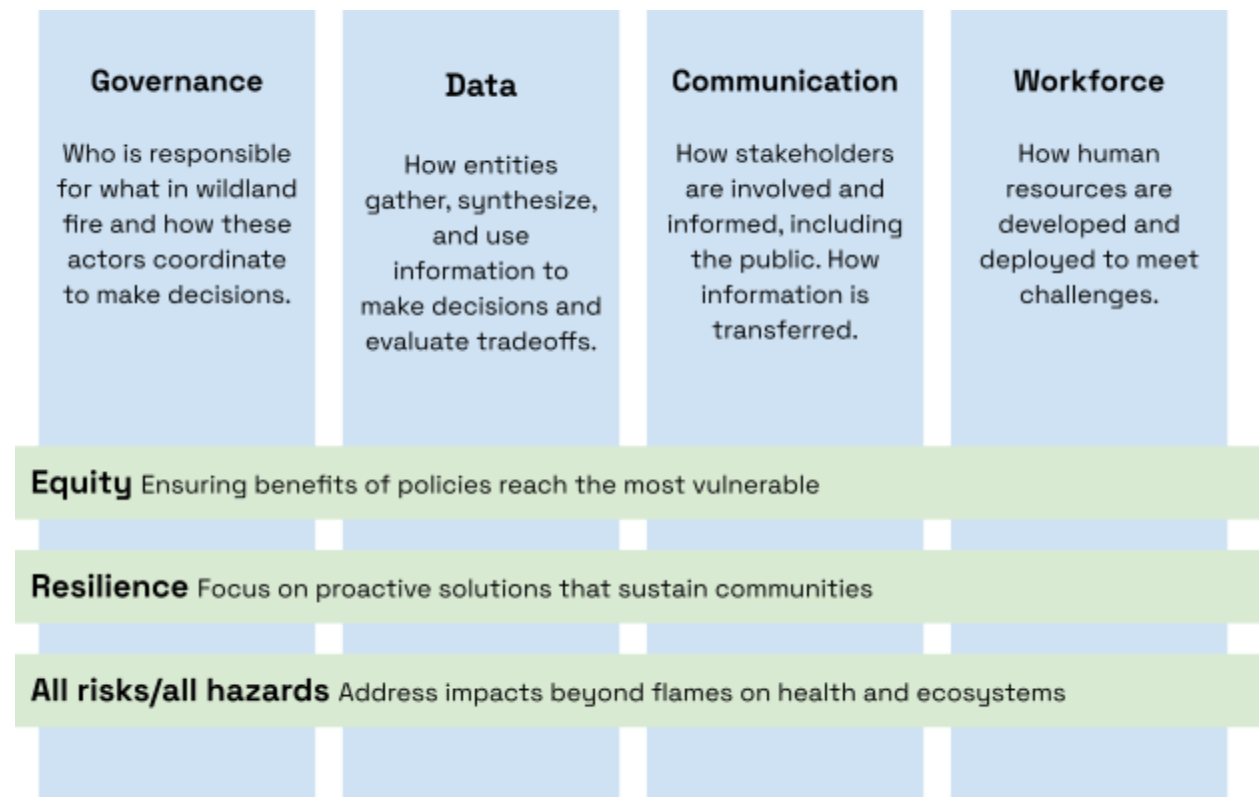
In summary, event participants preparing for Congressional advocacy should focus on effectively communicating how their idea(s) can inform a strategic vision for improving how we live with fire. Congressional staff are experts at crafting legislative language, so there's no need to walk in the door with a bill drafted. Instead, focus on developing a clear, specific vision for what you want to achieve; building a coalition of partners ready to collaborate to get it done; and targeting legislative staff and members with the authority and motivation to act on your vision.

Experts who have developed recommendations through the accelerator can use these strategies as they work to build support for their ideas. Commission members can consider opportunities to engage with Congress to support implementation of their final report recommendations, both in their capacities as former Commission members and in their day-to-day work.

# Golden Tickets: Big Ideas in Wildland Fire Policy

In this exercise, participants were asked to identify their “golden ticket idea” in a few sentences. They were asked to consider what solution or perspective they felt was essential in achieving the best possible future for living with wildland fire – and what they would be most disappointed to see “left on the table” if it were not addressed.

Participants organized their ideas and identified emerging themes connecting these “golden ticket” ideas. Participants were also given five stickers with which to “upvote”, or “second” ideas they thought were most important. After the meeting, FAS further analyzed the content of the exercise and identified four key pillars and three cross-cutting themes that captured various dimensions of the golden ticket ideas.



For a full list of “golden ticket” ideas and corresponding themes, see Appendix I.



# Appendix I: Golden Ticket Ideas and Themes

*Note: Some golden ticket ideas were edited by FAS staff after the event for brevity, clarity, and grammar.*

Golden Ticket Idea	Governance	Data	Communication	Workforce	Equity	Resilience	All risks/ all hazards	Upvotes
Establish a centralized system for collecting and disseminating wildfire and smoke data. Key needs include interoperability, accessibility, focus on mitigation, and near real-time availability.		x	x					13
A collaborative, multidisciplinary leadership structure with decision-making authority and policy level influence.	x				x			9
Prescribed fire at scale, with suppression workforce and policies applied to prescribed fire.	x			x				9
Resilience hubs can mitigate multiple hazardous exposures. Community input and funding for capacity is critical, as well as reliable access to power via distributed energy resources.					x	x	x	9
Direct resources toward vulnerable communities by increasing fire department support, infrastructure retrofits, climate resilience hubs, and local/regional hazard funds.					x	x		8
Fund and manage forest watersheds like infrastructure.	x							5
Interagency approach that adopts the “wildfire value chain”: pre-fire and	x	x						4

post-fire, integrating across jurisdictions with data interoperability.								
More boots on the ground.				x				4
Give land managers the tools they need to maximize benefits and minimize harm from more fire.				x		x		4
WUI/built environment. Interagency fire management in the wildland and structural fire spaces, with an all risk/all hazard approach.	x						x	4
Grow the wildland firefighting workforce through introducing youth into the natural world, preparing them for quality jobs.				x	x			3
Acknowledge and account for social, cultural, and ecological factors in making decisions by designing and integrating new metrics that are weighted equally with economic and land use metrics.	x	x			x		x	3
Develop a climate defense initiative with domestically deployed climate response force, dramatically scaled up resilience programs, and new wildfire-specific response equipment.				x		x		3
Clean Air Act adjustments to recognize prescribed fire. Significant, sustained funding to local health departments for resilience bridging public health and land management.						x	x	3
All firefighters should have real time access to detailed fire location and spread through a national center.		x	x	x				2
Discuss smoke management as a core part of wildfire management.	x		x				x	2

New framework to align efforts to minimize impacts.	X							1
Leading with open data across various domains: APIs, standards, coordinating bodies, and incentives.		X						1
The use of prescribed fire across landscapes considering best practices in science, tech, capacity, and health.	X	X				X		1
Scenario modeling may help underscore the need to improve, rather than accept, the status quo.	X	X						1
Move toward interdisciplinary, intergovernmental, interagency coordination and data consolidation.	X	X					X	1
Data integration for collecting data across agencies; setting up agreed-upon federal framework for that data.	X	X						1
Link smoke data infrastructure with socio-ecological outcome metrics, such that outcome measures of improved ecosystem resilience are tied to outcomes measures of public health.		X				X	X	1
Build durable systems of assessment and evaluation to capture successes and failures, supporting future investment and improvement.	X	X						
Develop a system so projects launch within 4 weeks of appropriation.	X							
Public relations campaign to educate people about minimizing fire and smoke risk, what risk levels mean, and the importance of mitigation and suppression.			X			X		

Science communications training for wildfire experts to speak with communities to combat distrust surrounding mitigation.			x					
Expand disaster response data collection to include resilience hub metrics and incorporate accessibility and equity metrics.		x			x	x		
Integrated intelligence system that aids in intelligence and operations during events, records relevant data, allows for cause and effective analysis, and helps improve predictive understanding.		x	x					
Satellite creation to support knowledge to professionals in fighting fires. The military approach.		x		x				
Engaging communities in creating resilience hubs.					x	x		