



# Firesheds, Quantitative Risk, PODs, & Strategic Response

Comparison of Fire Analytics Tools

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23 September 2021

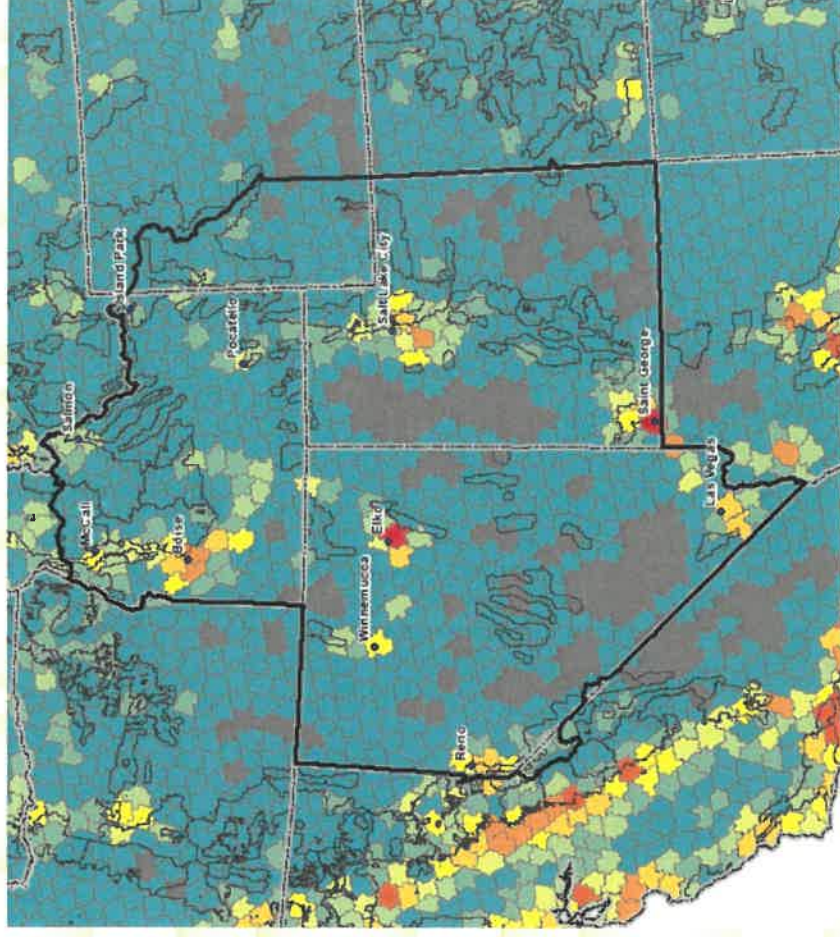


How do we use these products?  
 How do they relate to each other?

	Firesheds	QWRA	PODs	StratResponse
National Scale	YES	YES	n/a	n/a
Regional Scale	YES	YES	n/a	n/a
Forest Scale	NO	YES	YES	YES
Locally Editable	NO	YES	YES	YES
Risk	NO	YES	NO	YES
Likelihood	YES	YES	NO	YES
Intensity	NO	YES	NO	YES
Susceptibility/Importance	NO	YES	NO	YES
Considers WUI	YES	YES	YES	YES
Considers Non-WUI Values	NO	YES	YES	YES
Operational Tool	NO	YES	YES	YES
Fuels Planning Tool	NO	YES	NO	NO

# Firesheds

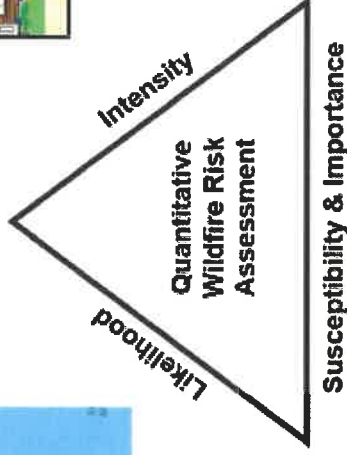
- Containers ~250K acres each.
- Red = SOURCE of wildfires that impact communities—only communities—only communities.
- High potential for national tracking of our success.
- Coarse scale



Grey means Firedshed is not a source of wildfires that impact communities.



# There are many options to Reduce Risk

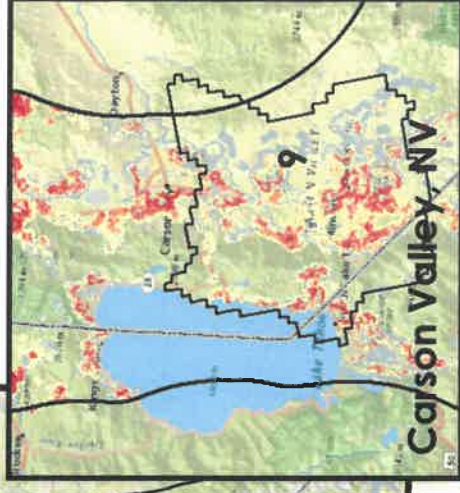
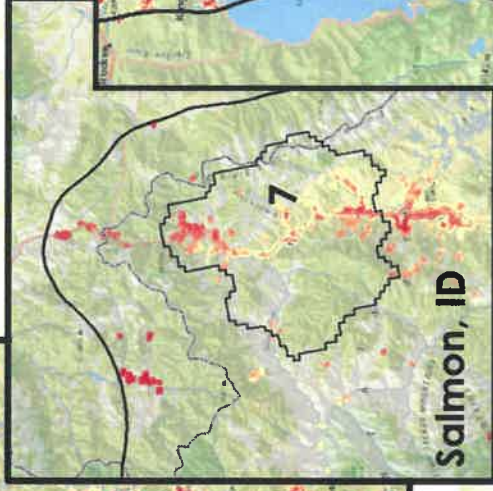
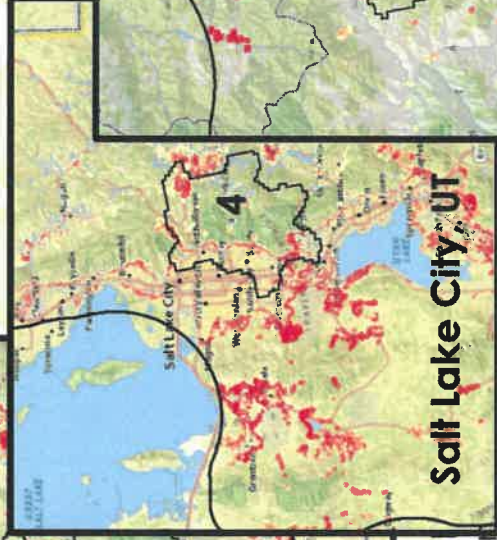
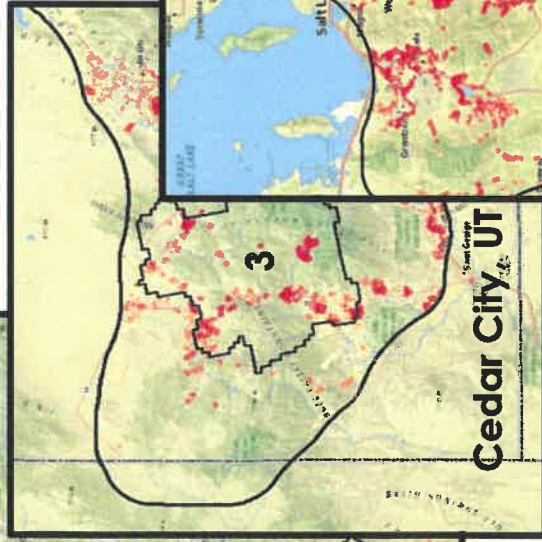
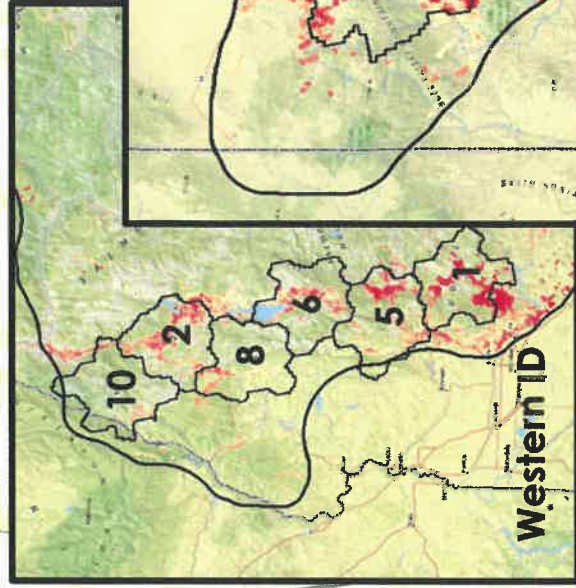
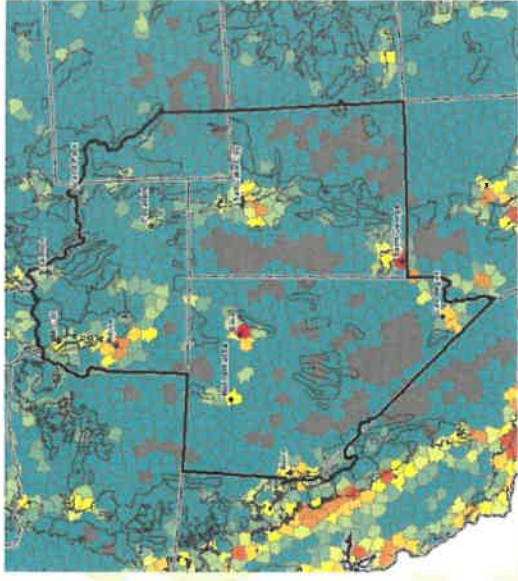


Academics disagree on which side of the triangle to focus to avoid loss to communities at risk.

- Replace roof with fire-resistant material
- Cover vents with metal mesh
- Keep gutters & decks clear

# Top 10 USFS Firesheds

- Conifer Forest
- Treatable w/mechanical
- USFS Jurisdiction



Red pixels, here, show Regional QWRA loss to Human Habitation

\*The commonly available Fireshed map shows Exposure independent of jurisdiction.





## For More Information About Firesheds

- Read more about the Fireshed Registry on RMRS site:  
<https://www.fs.usda.gov/rmrs/datasets/fireshed-registry-fireshed-and-project-area-boundaries-continental-united-states>
- 10-Year Scenario Investment Planning Platform (USFS):  
[https://codevers.com/usfs\\_sipp\\_10yr\\_plan/](https://codevers.com/usfs_sipp_10yr_plan/)
- Get Fireshed Data here: <https://www.fs.usda.gov/rds/archive/catalog/RDS-2020-0054>
- GTR-425 (May 2021):  
[https://www.fs.fed.us/rm/pubs\\_series/rmrs/gtr/rmrs\\_gtr425.pdf](https://www.fs.fed.us/rm/pubs_series/rmrs/gtr/rmrs_gtr425.pdf)
- FEMA “Infogram” about Firesheds (July 2021):  
<https://www.usfa.fema.gov/blog/ig-070821.html>

## Freshed Registry

The **Freshed Registry** is a geospatial dashboard built to organize information about wildfire transmission to communities and monitor progress towards risk reduction from management investments. The Registry is a unique approach to bring together a time window of information - past, present, and predicted future, to describe risk trajectories on lands where destructive wildfires are likely to originate. The dashboard provides an interactive system to view information on:

1. Context (Ownership, Fuels, and Buildings),
2. History (Fires and Treatments),
3. Projected wildfire risk (Simulated Fires),
4. Planned future treatments (5-year action plans), and
5. Prioritized treatment
6. Community zones and exposure

The proposed treatments are the results of one possible strategy, based on the scenario investment planning model. Panels with a yellow background have clickable records that will allow you to filter the features shown on the map.

To get started with this interface, **highlight the selection tool** in the top-left corner of this map, zoom in, and then click on your area of interest. If more than one "freshed" is selected, please re-select just a single freshed.

The **Freshed Registry General Technical Report** provides more information on the development of Fresheds and the data shown here.

"Wildfire transmission to communities" occurs when fires start on public lands and grow into private lands where structures are exposed to wildfire risk.



Use this map to set focus for all other maps, tables, and charts.

# Quantitative Wildfire Risk Assessment (QWRA)

Methodology is detailed in GTR-315

We decide Resources (natural) and Assets (human-made) to consider. We rank their importance.

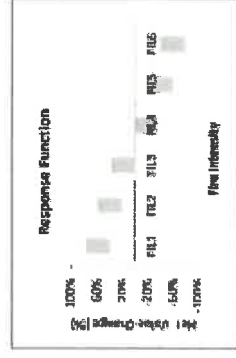
- Critical Infrastructure
- Ecological Integrity
- Fish Habitat
- Heritage
- Human Habitation
- Recreation Infrastructure
- Suitable Timber
- Surface Drinking Water
- Wildlife Habitat

CRITICAL INFRASTRUCTURE



X

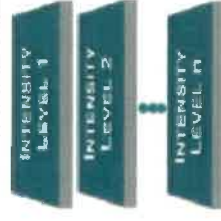
WILDFIRE LIKELIHOOD AND INTENSITY



RESPONSE FUNCTION

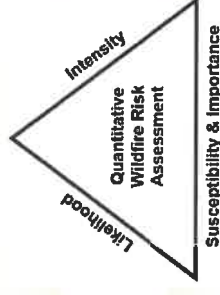


**WILDFIRE RISK**



Fire modeling is done with FSIM simulation model to derive Annual Burn Probability & Flame Length.

We decide how HVRAs are affected by fire (based on fire effects fire science).





# Quantitative Wildfire Risk Assessment (QWRA)

- ▀ Regional Risk Assessment (2019).
  - ▀ B-T has a forest-level risk assessment\*.
  - ▀ Customized to R4 HVRAs, priorities, and fire effects.
  - ▀ The output *integrates* risk for the things we care about—shows tradeoffs when there is overlap.
  - ▀ QWRA also allows us to look at just one HVRA.
  - ▀ Can inform Shared Stewardship, Timber, Watershed, Wildlife, Recreation, go/no-go use of wildfires, and hazardous fuels mitigation needs.

**Fun Fact:** The B-T is the featured example in GTR-315, considered the authoritative guide on completing QWRAs.



## Intermountain Region Quantitative Wildfire Risk Assessment

### Methods and Results



Photo: Andy Norman, USDA Forest Service

Prepared by:

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For:

Linda Chappell – USDA Forest Service Intermountain Region

October 9, 2019





# Potential Operational Delineations (PODs)

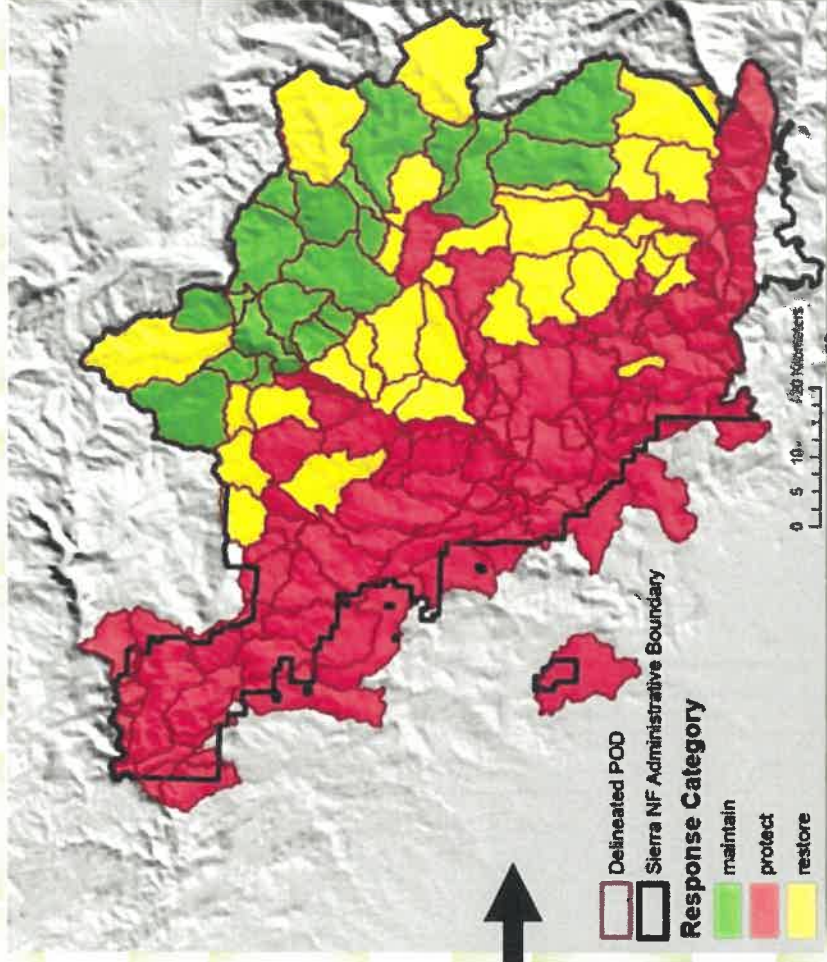
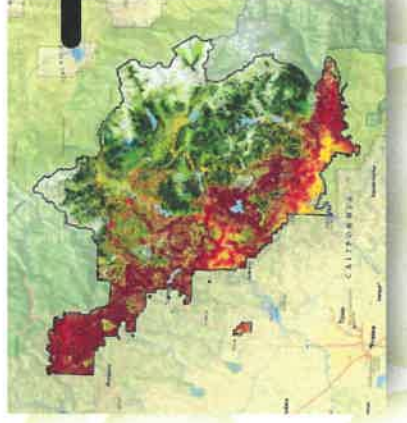
- PODs are:
  - independent of risk assessments
  - operational containers for wildfires
  - follow ridges, rivers, and roads & PCL/SDI
  - likely to replace FMUs in WFDSS
  - in need of GIS support to ensure quality
- Not inherently complex but require coordination with partners in workshops.
- Promotes cross-boundary communication with partners and stakeholders.
- Several PODs in a single Fireshed.
- Can help evaluate fuels treatment needs.





# QWRA + PODs = Strategic Response (SR)

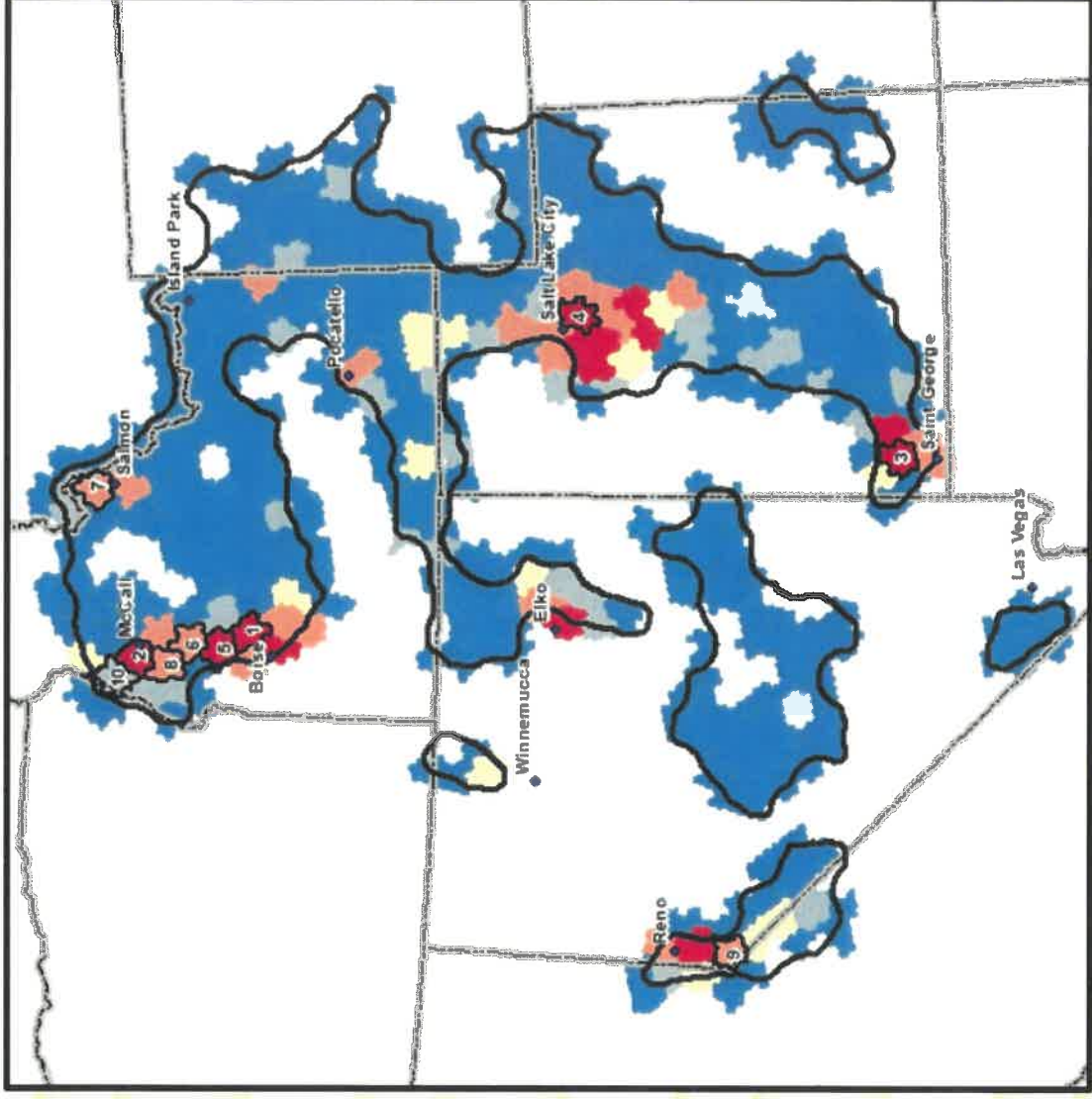
- Pre-planned response to wildfire ignition.
- Commonly displayed by POD containers.
- Derived from QWRA:
  - sums the risk of all the pixels in the POD
  - shows if fire is "good" "bad" or "neutral"
  - within and transmitted from the POD
- Decisions in alignment with risk to values.
- Will eventually be in WFDSS.



# Fresheds & the R4 QWRA are Aligned

R4 QWRA shows Loss of Human Habitation:

- > 90th Percentile Loss
- 75th-90th Percentile Loss
- 50th-75th Percentile Loss
- 25th-50th Percentile Loss
- < 25th Percentile Loss





## Building Resilient Infrastructure Communities (BRIC)

**BRIC Notice of Funding Opportunity (NOFO) Intent:** *To support the adoption and enforcement of building codes, standards, and policies that will protect the health, safety, and general welfare of the public with long lasting impacts on community risk reduction. This includes critical services, facilities, and future disaster costs. FEMA will provide financial assistance to eligible BRIC applicants for the following activities:*

1. **Capability- and Capacity-Building (C&CB) activities** – Enhance the knowledge, skills, expertise, etc., of the current workforce to expand or improve the administration of mitigation assistance. This includes activities in the following sub-categories: building codes activities, partnerships, project scoping, mitigation planning and planning-related activities, and other activities.
2. **Mitigation Projects** – cost-effective projects designed to increase resilience and public safety; reduce injuries and loss of life; and reduce damage and destruction to property, critical services, facilities, and infrastructure from natural hazards and the effects of climate change.
3. **Management Costs** – financial assistance to reimburse the recipient and subrecipient for eligible and reasonable indirect costs, direct administrative costs, and other administrative expenses associated with a specific mitigation measure or project in an amount up to 15 percent of the total amount of the grant award, of which not more than 10 percent of the total award amount may be used by the recipient and 5 percent by the subrecipient for such costs generally.
4. **Applicant Eligibility** – State, Local, Tribal or Federal Cooperators must apply on behalf of individuals, community members, or businesses. In the spirit of collaboration, they may not apply for BRIC funding independently as the primary applicant. ***This is an annual grant program which opens Aug/Sept of each year and closes for applications in late January of the following year.***

### Current Federal Award Information

Application Closure	January 28, 2022
Pre-Award Selection	Summer 2022
Performance Period	36 Months from Receipt of Federal Award
Available Funding for the NOFO:	\$1,000,000,000
State/Territory Allocation Total:	\$ 56,000,000
Tribal Set-Aside Total	\$ 25,000,000
National Competition Total	\$ 919,000,000

### Cost Share

75 percent federal / 25 percent non-federal. This means federal funding is available for up to 75 percent of eligible costs. The remaining 25 percent of eligible costs must be derived from non-federal sources. The non-federal cost share may consist of cash, donated or third-party in-kind services, materials, or any combination thereof. Cash and third-party in-kind matches must consist of eligible costs (i.e., same eligibility as the federal share). If applying under an economically depressed rural community, cost share becomes 90 percent federal/10 percent non-federal.







## Building Resilient Infrastructure Communities (BRIC)

### State/Territory Maximum Allocation & Activity Caps

- The maximum allocation for a state or territory under this category is **\$1,000,000**, covering all activities/projects.
- Each state/territory may apply for up to \$1,000,000 in the State/Territory Allocation. This may be used for Capacity/Capability activities (C&CB) and/or mitigation projects.
- The combined cost for any C&CB activities and/or mitigation projects under the State/Territory Allocation must not exceed **\$1,000,000** federal cost share per applicant.
- The applicant's highest ranked sub application (C&CB activity or mitigation project) for the State/Territory Allocation must not exceed **\$1,000,000** federal cost share.
- Up to **\$500,000** of the State/Territory Allocation may be used for mitigation planning and planning-related activities per applicant.
- Up to 10 percent of any sub application may be used for information dissemination activities, including public awareness and education (brochures, workshops, videos, etc.) related to a proposed C&CB activity or mitigation project.

### Tribal Set-Aside Activity Caps

- The combined cost for any C&CB activities under the Tribal Set-Aside must not exceed **\$1,000,000** federal cost share per applicant. Additionally, the applicant's highest ranked sub application (C&CB activity) for the Tribal Set-Aside must not exceed **\$1,000,000** federal cost share.
- Up to **\$500,000** of the Tribal Set-Aside may be used for mitigation planning and planning-related activities per applicant.
- Up to 10 percent of any sub application may be used for information dissemination activities, including public awareness and education (brochures, workshops, videos, etc.) related to a proposed C&CB activity or mitigation project.
- If more than **\$25,000,000** in sub applications is submitted under the Tribal Set-Aside, the C&CB activities and highest-ranked mitigation project sub applications up to **\$25,000,000** will be selected. Once the **\$25,000,000** is selected, all remaining tribal mitigation project sub applications will be evaluated under the national competition.

### National Competition Cap

- Applicants may submit an unlimited number of mitigation project sub applications each valued up to **\$50,000,000** federal share to the national competition.
- Up to **10 percent** of any sub application may be used for information dissemination activities, including public awareness and education (brochures, workshops, videos, etc.) related to proposed mitigation project.
- **Used to fund mitigation projects, management costs, and additional projects that have exceeded State, Territory, and Tribal Set-Aside Caps.**

**Hazard Mitigation Benefits:** *Natural hazards pose a serious risk to states, localities, tribes, and territories throughout the United States. These hazards include flooding, drought, hurricanes, landslides, wildfires and more. Many natural hazards are expected to become more frequent and more severe. Therefore, reducing the impacts these hazards have on lives, properties and*





## Building Resilient Infrastructure Communities (BRIC)

*the economy is a top priority for many communities. Although the general population understands “that” this is a reality, they do not understand “how” to effectively respond or prepare for these events. FEMA has previously provided financial assistance to BRIC applicants for the following activities:*

1. **Colorado Springs Wildfire Mitigation** – The community has taken actionable steps to mitigate against future damage by adopting a stronger fire-resistive building code, mapping wildfire risk, and participating in strategic community engagement. The City of Colorado Springs Fire Department collaborated with the Colorado Springs Housing and Building Association to identify ways to mitigate the impacts of wildfires on residential buildings. This information led to Ordinance No. 18-50, which amended the International Fire Code to address wildland/urban interface mitigation requirements for high-risk areas. Benefits include but are not limited to:
  - a. Reduced physical damage to structures/contents as well as infrastructure.
  - b. Life-safety benefits for areas with potential rapid wildfire risk.
  - c. Improved air quality and community health due to a reduction of wildfire smoke/pollutants.
  - d. Retained timber values and reduced fire suppression costs.
  - e. As more structures are built with fire-resistant materials in the area, it decreases the cost for materials and installation.

**Total Project Cost: \$1.33 Million**

**Partnerships:** City of Colorado Springs Fire Department, Colorado Springs Housing and Building Association, and FEMA

2. **Camptonville Biomass Plant** – The Camptonville Community Partnership is developing a 5.5-megawatt biomass plant in Camptonville, CA. This plant will support healthy forests by generating electricity from materials removed from forests that are overstocked or suffering from tree die-off. The project provides incentives for fuel reduction activities and otherwise utilizing forest waste. It includes a power-purchase agreement with the local utility (PG&E) to purchase electricity created by the biomass facility. This plant will provide a market focused on sustainable forest management projects, reducing forest fuels, and minimizing the threat of wildfire. This plant will provide a market focused on sustainable forest management projects, reducing forest fuels, and minimizing the threat of wildfire. Benefits include but are not limited to:
  - a. Reduced physical damage to structures/contents as well as infrastructure in at risk areas.
  - b. Life-safety benefits for areas with potential rapid wildfire risk.
  - c. Improved air quality and community health due to a reduction of wildfire smoke/pollutants
  - d. An alternative power generation source which also provides jobs in the community
  - e. Potentially results for long-term wildfire fuels reduction without additional grants.
  - f. Reduced fire suppression and emergency response costs.

**Total Project Cost: \$5.1 Million**

**Partnerships:** Camptonville Community Partnership, Yuba Water Agency, and PG&E

### **Community Benefits**

The above examples of BRIC funded projects can provide both short and long-term environmental, economic, and social advantages which improve a community’s quality of life or make it more attractive to new residents/businesses. BRIC prioritizes projects that mitigate risk to public infrastructure, community lifelines, incorporate nature-based solutions, and support modern building





## Building Resilient Infrastructure Communities (BRIC)

codes. The community benefits from these efforts may include:

1. **Wildfire Smoke Mitigation (Improved Air Quality)** – Hazardous fuels reduction work ensures that wildfires have less vegetation (fuels) to feed on. Less fuel means less opportunity for intense wildfire and smoke. Until landscape resiliency is achieved and maintained, Smoke Mitigation measures are likely an opportunity for the BRIC grant process. For example, Sonoma County in California was recently awarded \$36.98 Million to develop a system within the Wildland Urban Interface (WUI). The system establishes zones containing an inner and outer core. The inner core is hardened by encouraging property owners to create and maintain defensible space around their homes to reduce the potential for ignition from embers, direct flame, or radiant heat. The outer core absorbs the impacts from wildfires before they get to this hardened inner core. This is accomplished by reducing vegetation in large-parcel infill sites and or wildland areas that abut communities. Infill sites are created to provide buffers to decrease fire spread and intensity, provide anchor points, and increase environmental benefits including improved forest health/wildlife habitats, improved water quality, less extreme wildfire, and effective smoke mitigation.
2. **Economic Health** – The utilization and removal of forest waste/fuel loading supports community economic health. As with the Colorado Springs Mitigation Project, these efforts have the capacity/capability to reduce damage to community lifelines and infrastructure due to less extreme wildfire or wildfire spread. Moreover, local job creation, property values, renewable energy, green building materials, and fire adaptive landscapes may increase.
3. **Community Partnerships** – BRIC is a firm believer in creating meaningful partnerships and community collaboration. Applicants are limited only by their imagination so long as they can successfully prove their proposal(s) have the capability and capacity to *support the adoption and enforcement of building codes, standards, and policies that will protect the health, safety, and general welfare of the public with long lasting impacts on community risk reduction*. The possibilities are only limited by our wiliness to work with one another toward a common goal. Thus, the list of potential shareholders in this effort are endless.

Some examples may include:

- City, State, Local, or Municipal Government(s)
- Counties and County Leadership
- Local Tribes and Tribal Leadership
- Health Departments
- Forestry Professionals, Representatives, and Associations
- Community Organizations
- Wildfire & Emergency Responders
- Wildland Urban Interface (WUI) and related Councils
- FEMA

BRIC funded projects offer financial incentive to offset cost while providing a mechanism to enhance community lifelines and education to withstand damages resulting from disaster events. Think carefully, which project do you think would most benefit your community?







## OREGON LIVING WITH FIRE – 2021-2022 Program of Work

**MISSION STATEMENT:** Guided by the National Cohesive Wildland Fire Management Strategy’s framework and vision: To safely and effectively extinguish fire when needed; use fire where allowable; manage our natural resources; and as a nation learn to live with wildland fire.

There are three primary goals that are necessary to achieving the vision.

1. Restore and maintain resilient landscapes
2. Create fire adapted communities
3. Safe and effective wildfire response

<u>Objective</u>	<u>CS Goal</u>	<u>Activity</u>	<u>When</u>	<u>Outcomes/Notes</u>
<b>Partnerships</b>	Resilient Landscape & Fire Adapted Comm	Maintain and enhance partnerships with local Collaborative groups by attending regular meetings and participating as appropriate in local related field activities i.e., Ochoco Collaborative, Klamath Lake Forest Health Project, Deschutes Collaborative Forest Project; add capacity to these existing groups e.g., communication strategy and grant writing.		Jodie has been attending DCFP meetings. KLFHP and OFRC meetings are scheduled for late October. Jodie will be participating with DCFP Outreach Committee.
	All Goals	Build relationships with non-traditional partners within the landscape i.e., builders, realtors, utility companies, etc.	Dec 2022	Jodie has a contact at Pacific Power to follow up with.
	Fire Adapted Comm & Response	Create & Maintain relationships with Rangeland Protection Associations	Dec 2022	Jodie
	Resilient Landscape & Fire Adapted Comm	Maintain relationship with Pacific Northwest sub-network, and the National Fire Adapted Communities & Fire Learning Networks.		Jodie Ongoing item unless otherwise determined
	All Goals	Develop new relationships with other stakeholders across the landscape		Jodie is reaching out to the Oregon State Fire Marshal’s office. Joe is working with the Tribe at Warm Springs on a new technology, e.g. Fire Water delivery system to be deployed on a spring prescribed fire.
	All Goals	Maintain relationships with Central Oregon Fire Chief’s Association, Project Wildfire, Smoke and Public Health, & other groups.		Jodie has been attending Project Wildfire and COFCA meetings. Jen may join the October COFCA meeting to be introduced virtually.
	All Goals	Engage with US Forest Service Region 6, local forests & Oregon Department of Forestry to promote Shared Stewardship in Central Oregon	Dec 2022	Jodie is re-engaging now that the fire year is slowing down.

	All Goals	Maintain partnership with the National Cohesive Strategy efforts with the Western Region		Jodie is on the email distribution list and shares information with partners. She attends the Western Region meetings virtually.
	All Goals	Research & explore funding and/or co-sponsorship opportunities for known and unknown activities (i.e., engaging Federal Contacts for supplemental funding for Forest Activities; additional funding from National Fire Adapted Communities Learning Network for FAC in 4-County area; Rural & Economic development opportunities)	Jan 2022	Jen BRIC, SB 762, and related grant opportunities
	Resilient Landscape & Fire Adapted Comm	Facilitate the creation of all hands, all lands groups committed to working across boundaries & look for tie in with shared stewardship	Dec 2022	Jodie
	Resilient Landscape	Build partnerships to boost biomass utilization throughout the region, i.e., local solid waste companies; biomass in Crook County	Dec 2022	Jodie is engaging with Crook County on this.
	All Goals	Utilize Oregon Living With Fire (OLWF) as a venue to discuss and coordinate approaches to secure <ul style="list-style-type: none"> <li>legislatively approved funding from the Federal Infrastructure Bill, SB762, and Oregon Transportation Bill,</li> <li>agency funding like NRCS, BLM FS, ODF and others,</li> <li>and grant funding like BRIC and others</li> </ul> to maximize local benefits related to the Wildfire Risk Reduction Strategy.	Dec 2022	<i>Added in October 2021 Cross-Boundary Collaboration Session scheduled for Feb. 3, 2022</i>
<b>Communications</b>	All Goals	Explore the development and printing of educational materials i.e., Success stories for events; Have customized outreach materials for different user groups within the 4-county landscape.	Dec 2022	Jodie
	Potential All Goals	Plan & facilitate at least one learning lab in the landscape	Dec 2022	Jodie
	All Goals	Continue to build relationships with local media partners & capitalize on teachable moments through media partnerships & social media platforms		Jodie re-established relationships with local media while on assignment as the on-duty PIO for the Central Oregon Interagency Dispatch Center in September.
	Resilient Landscape & Fire Adapted Comm	Plan and implement at least one live prescribed fire tour for public and elected officials	Dec 2022	Jodie will coordinate. Maybe showcasing the technology Joe and the Tribes at Warm Springs are working on would be an option.

	All Goals	Create regular Newsletter (quarterly) & Blog posts (monthly) to share news with stakeholders		<a href="https://www.oregonlivingwithfire.org/olwf-blog/">https://www.oregonlivingwithfire.org/olwf-blog/</a> Jen Jodie sent an October newsletter to over 600 recipients via MailChimp.
	All Goals	Develop and distribute a report of stakeholder implementation stories bi-annually	Dec 2022	Jodie/Joe December 2021 June 2022 December 2022
	All Goals	Distribute an annual report for OLWF activities – social media data, how deliverables were met, financials, etc.		Jodie/Jen/Joe Report to be distributed January 2022 January 2023
	All Goals	Create a story board to illustrate work within the OLWF landscape for sharing on social media, website, etc.		Jen
	Resilient Landscape & Fire Adapted Comms	Smoke and prescribed fire messaging		Jen and Jodie shared smoke messaging on Facebook during the summer months. Prescribed fire messaging is ongoing.
	Resilient Landscape & Fire Adapted Comms	Create feedback loops for the public to provide feedback on Central Oregon Fire Info		Joe, Jodie, Jen, OLWF, etc. Since this website is maintained by Deschutes County and other partners, more discussion is needed.
	All Goals	Maintain an active online presence.		There have been four Facebook posts in 2021 that reached over 150 people. Most posts garner less than 100 views.
	Fire Adapted Comms	Continue partnership with COCC to host Wildfire Home Protection Strategies Course. Look for opportunities to present that class in more venues	Dec 2022	Jodie
<b>Conferences &amp; Presentations</b>	All Goals	Attend the <a href="#">4<sup>th</sup> National Cohesive Wildland Fire Management Strategy Workshop</a> in Asheville, NC	Oct 2021	This conference was put on virtually. Joe presented and facilitated during this conference. Jen presented during this conference. Jodie helped moderate a chat during the conference. All three attended multiple sessions. October 4-8, 2021 *Jodie unavailable October 7-11.



	Response & Fire Adapted Comm	Attend the <a href="#">Wildland Urban Interface Conference</a> in Reno, NV	Nov 2021	Jodie/Jen/Joe This conference is now a virtual experience November 15-16, 2021
	Fire Adapted Comm	Attend future Fire Adapted Communities Learning Network Workshops.	Apr 2022	Jodie/Jen/Joe
	All Goals	Attend the Western Region Cohesive Strategy Face to Face	June 2022	Jodie/Jen/Joe
	Response	Plan & facilitate the Pre-Season meeting with COFMS, COFCA, Agency Administrators and elected officials	May 2022	Jodie/Joe
<b>Steering Committee</b>	All goals	Maintain a balance of representation and leadership contribution on the OLWF Steering Committee.	Dec 2022	Added representation from the Office of the Oregon State Fire Marshal and Oregon State University Extension in November 2021. Currently there are 11 active members. Joe is discussing Steering Committee membership with the Tribes at Warm Springs.
	All goals	Provide orientation materials to new members including the governing resolution and the previous meetings' minutes.		Jodie and Joe provided to two new members.
	All goals	Establish a regular quarterly meeting schedule & face to face meeting time with OLWF steering committee.	Oct 2021	Jodie
	All goals	Grow and maintain a distribution list for the network.		Jodie/Joe