

## California Fire Science Consortium Funding Extension Proposal

**JFSP project number:** 09-S-04-18

**Project title:** The California Fire Science Delivery Consortium

**Principal Investigator:** Scott Stephens, UC Berkeley

**Consortium Coordinator:** Tim Kline, UC Berkeley

**Consortium Progress Reporting Lead:** Susie Kocher, UC Cooperative Extension

### I. Key accomplishments, challenges and lessons learned

The initial two years of the California Fire Science Consortium (CFSC) involved a considerable amount of written, web-based, and in-person outreach to managers and stakeholders in the region. These activities for FYs 2011 and 2012 (which include the first 1.5 years of consortium activity) are summarized in Table 1. These outputs exceed the plans included in the CFSC’s original proposal made to JFSP in 2010.

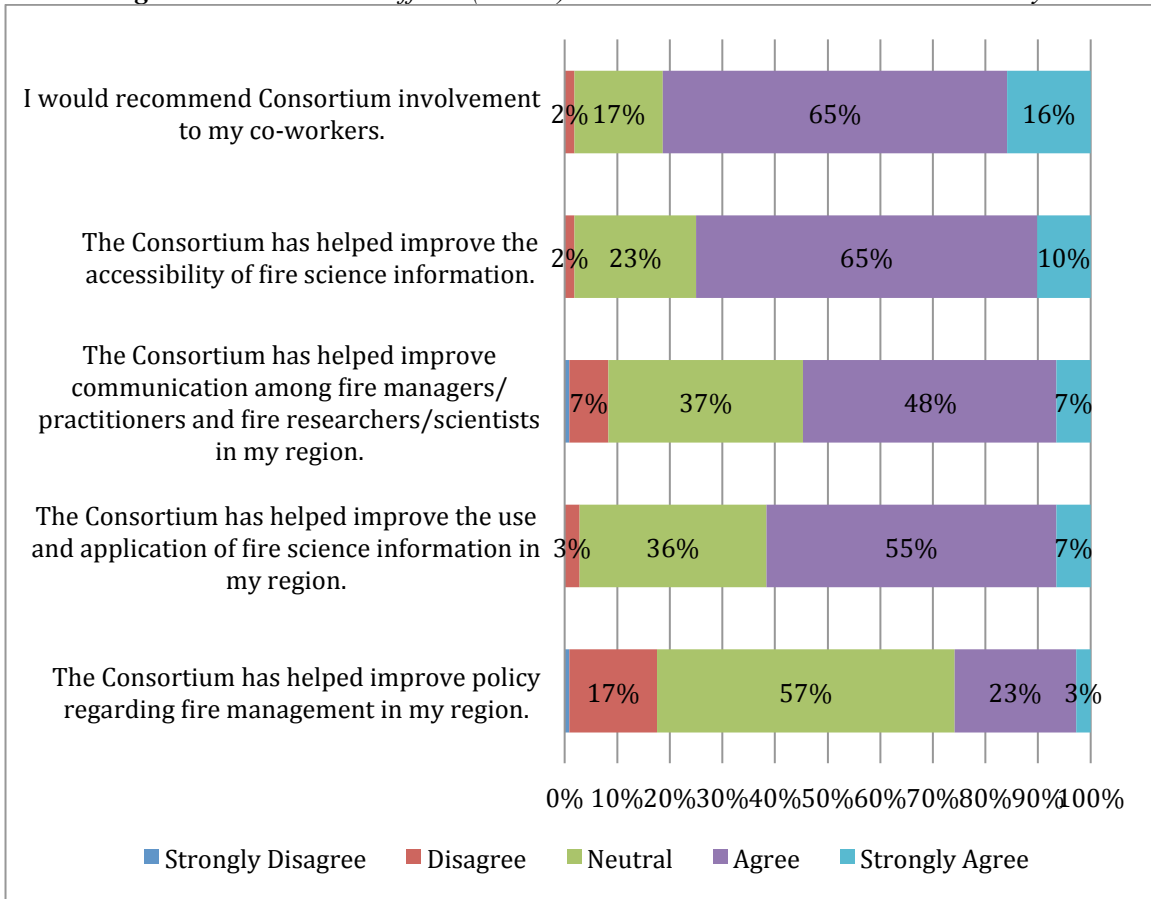
*Table 1 – CFSC Activity Summary FY 2011 and 2012*

Activity (Conducted, Hosted, Facilitated or Sponsored)	Number of activities offered during FY 2011 and FY 2012	Total number of participants
<b><i>In-person outreach</i></b>		
Field trips, tours, demonstrations, and roadshows	5	274
Talks and personal briefings about consortium	44	2,440
Field consultations	1	10
Workshops	1	150
Conferences and symposia	14	1,096
Poster presentations	2	NA
<b><i>Written materials</i></b>		
Research briefs	74	15,000+ (web estimate only, more in person)
Bibliography or annotated bibliography	6	15,000+ (web estimate only, more in person)
Newsletters (printed or electronic distribution)	17	15,653
<b><i>Web based outreach</i></b>		
Webinars	20	715
Tweets	39	NA
Blog Posts	17	NA

While room for improvement and the expansion of certain forms of outreach exist, evaluation data (Figures 1, 2 and 3) and event feedback from participants both

suggest that the written, web-based, and in-person activities of the Consortium are useful and applicable to participants’ work. 81% taking the 2012 national evaluation survey agreed that they would recommend involvement with the Consortium to co-workers. Most said the CFSC has helped improve accessibility of fire science information (75%), helped improve the use and application of fire science (62%) and helped improve communication between managers and scientists (55%).

**Figure 1 – Consortium effects (n=108). 2012 JFSP National Evaluation Survey.**



**Field Trips:**

Field trips were particularly popular. 73% of attendees (n=33) on our largest field trip to date (to the Stanislaus-Tuolumne Experimental Forest) agreed that the field trip helped “to better use fire science information in my work.” On evaluation forms, participants wrote that they appreciated:

- “...the on-the-ground opportunity to see science turned into management”
- “...the opportunity to get a diversity of people to see the field work done”
- “...the discussion in the woods [and the] link of research to management”

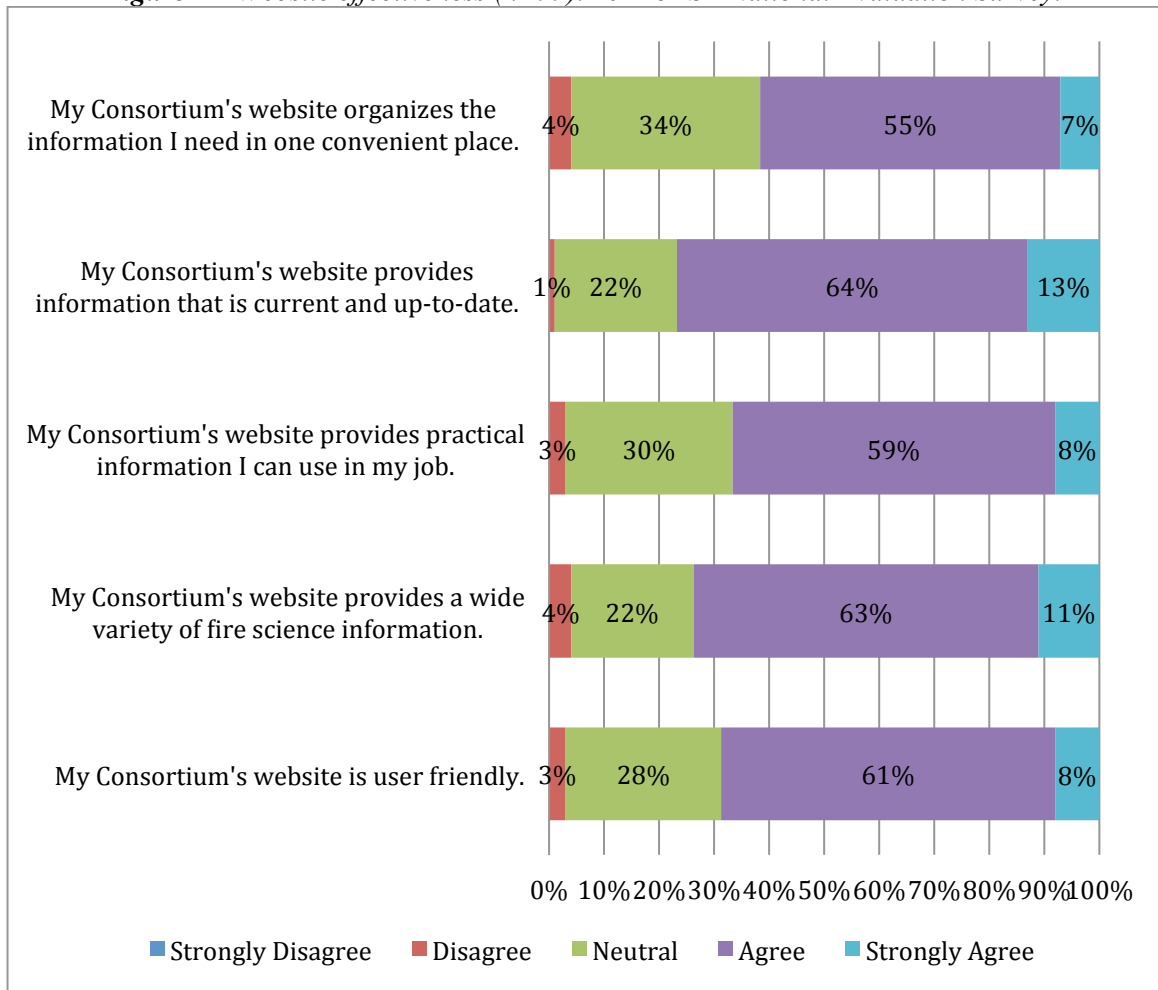
Another respondent wrote:

- “I think we should continue to have more field events similar to this to exchange ideas”

**Website:**

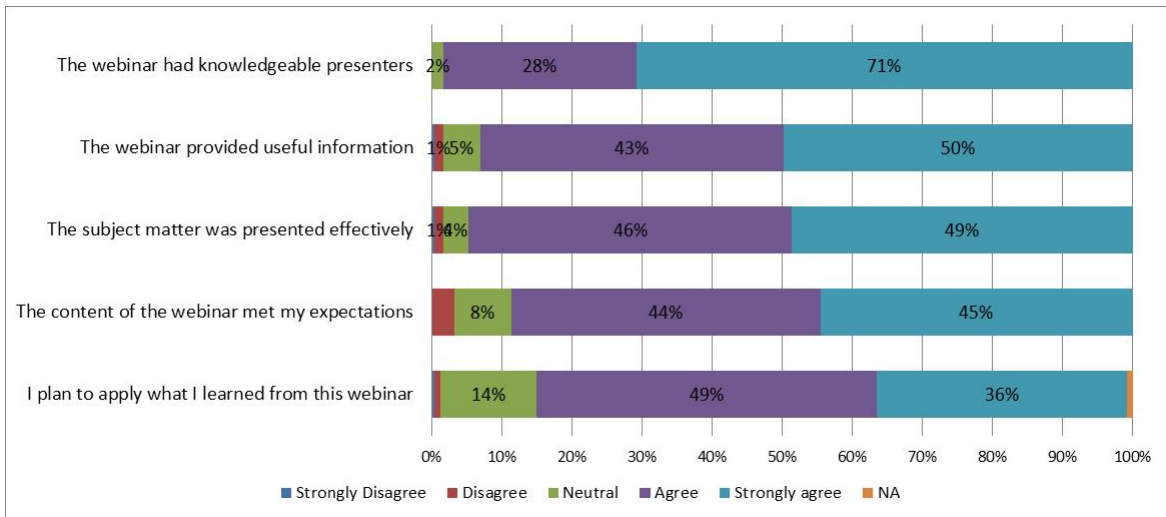
The CFSC website (<http://www.cafiresci.org/>) has received favorable reviews. 77% of fire science consumers agreed that it provides up to date information, of a wide variety (74%) and 67% agreed that it provides practical information they can use in their jobs.

**Figure 2 – Website effectiveness (n=99). 2012 JFSP National Evaluation Survey.**



**Webinars:**

The CFSC hosted 21 webinars during its first two years of implementation. Webinars covered diverse topics including FRID data, fuels management, wildlife habitat, social acceptability of treatments, and many WUI topics. A total of 715 people “attended” these webinars and 247 filled out an on-line evaluation about their webinar experience(s). Nearly every participant agreed that presenters were knowledgeable (99%), presented the subject effectively (95%), and provided useful information (93%). 85% agreed they plan to apply what they learned. 94% said they plan to participate in future webinars.

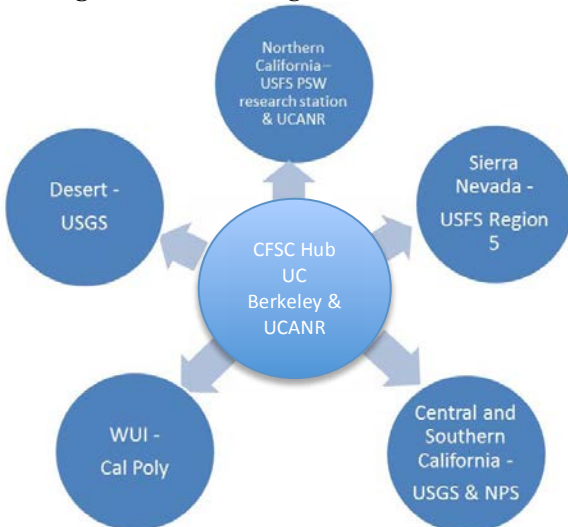


**Figure 3 – Webinar satisfaction (n=247). CFSC on-line webinar evaluation survey.**

These evaluation data suggest at least a partial achievement of many of the short and medium-term outcomes included in the CFSC’s 2010 logic models. These include: 1) Improved communication between scientists and managers; 2) Increased access to fire science information; 3) Increased understanding of fire science information; 4) Improved use of fire science information; and 5) Improved relevance of fire science information to land management problems. The continued and more complete achievement of these outcomes will necessitate ongoing and dynamic outreach.

Other medium and long-term outcomes for the Consortium are yet to be accomplished at a meaningful level. Only 26% of fire science consumers (n=108) agreed the CFSC “has helped improve policy regarding fire management in my region” (See Figure 1).

**Figure 4 – CFSC organizational structure**



**Challenges:**

The CFSC has a decentralized structure with funds disbursed to five different subregions and seven different institutions (see Figure 4).

Some of the CFSC’s subregions have been able to hire or designate staff as regional coordinators to lead and organize efforts at the subregional level while others have not. While each of the Consortium’s subregions has been productive, this has contributed to gaps in certain forms of outreach in some regions. Similarly, some subregions have not been able to maintain

active regional steering committees to guide local outreach and activities. At the statewide level, maintaining communication and coordinating follow-through from each of the subregions presents an ongoing challenge.

***Successes:***

As noted above, a major success of the CFSC in its first two years of operations was the production of a large body of management-oriented research briefs of academic papers. Our series of 22 webinars was also highly successful in terms of participants engaged. By making presenters including researchers and managers available to questions from participants, the webinar series also created numerous opportunities for interaction. In an evaluation survey for one webinar, a participant wrote: *“Keep up the sharing of information... it is greatly appreciated by us field folk.”*

In addition to success with these written and web-based resources, the field-based outreach opportunities in FY 2012 allowed the Consortium to demonstrate existing research that is being put into practice. Using the input of the Sierra Nevada subregional steering committee, the Consortium organized a series of field trips to address two different management issues that the committee thought was needed by the management community. One field trip visited the site of a managed wildfire in a district that is seeking to expand the use of these management fires. Two other field trips visited sites with implemented heterogeneous fuel treatments. The field trips all included lively dialogue between diverse participants and allowed for manager-to-researcher and manager-to-manager knowledge exchange.

***Lessons learned:***

Building from the experience of different subregional groups, a key lesson learned during the initial funding period has been the value of having coordinators at the subregional level. Based on the success of regions with designated coordinators, this proposal includes a plan to designate a coordinator for each subregion.

Another central take-away point, learned from advisory committee feedback, evaluation data, and event surveys, has been the value of grounding outreach events in actual examples from the management realm. These different forms of feedback suggest that participants find the contextualization of research through real world examples to be an especially useful means of knowledge transfer, and one that the Consortium will build on in the coming two years.

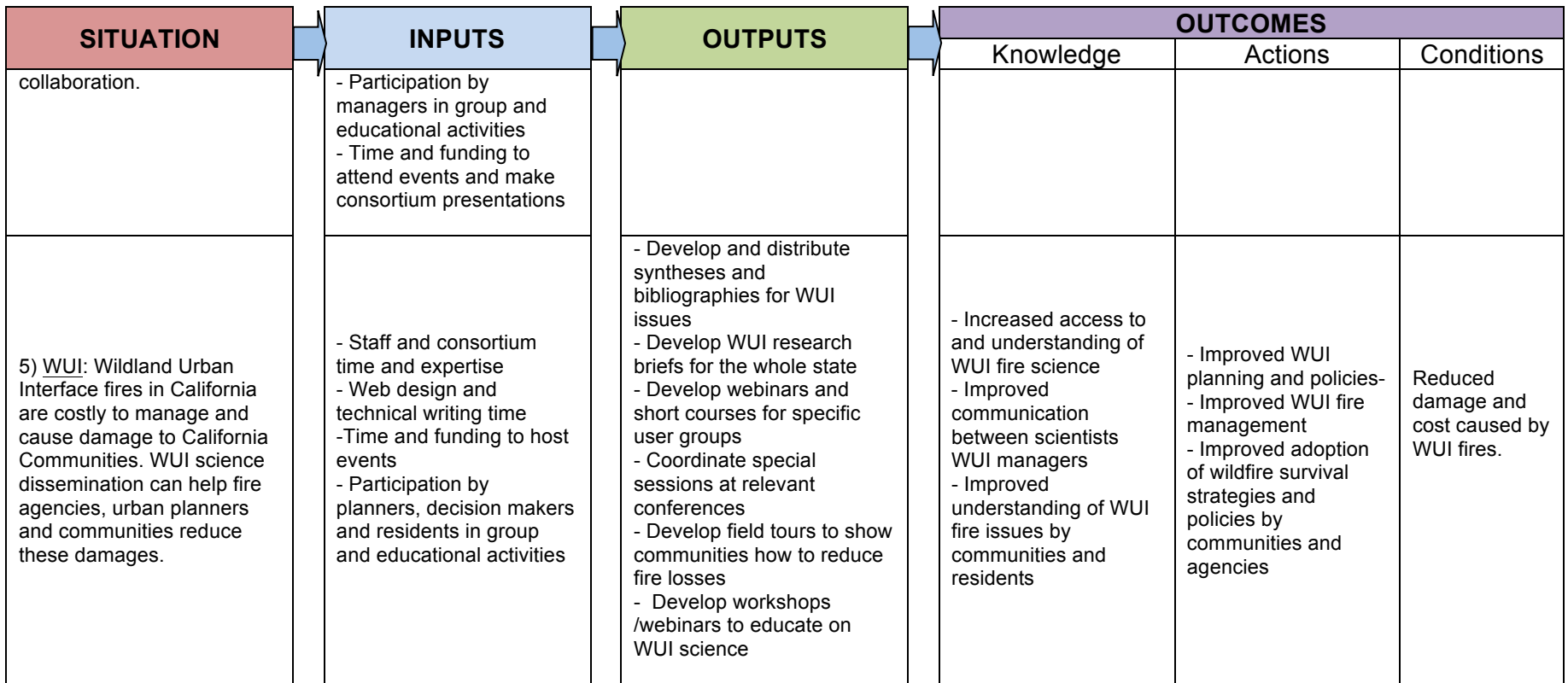
**II. Governance**

The governance of the Consortium is run by a Leadership Committee comprised of PI Scott Stephens (UCB), co-PIs Max Moritz and Bill Stewart (UCB), progress evaluation lead Susie Kocher, coordinator Tim Kline (UCB), and the 5 leaders of the subregional modules: Carl Skinner (USFS- PSW), Hugh Safford (USFS- Region 5), Jon Keeley (USGS), Chris Dicus (Cal Poly), and Matt Brooks (USGS). A majority vote by the Leadership Committee will be used to make decisions about the Consortium, though to date all group decisions have been made by informal consensus.

Statewide and subregional coordinators initiate activities at the recommendation of the PIs and advisory committees of their subregions, as well as produce and plan consortium resources and activities.

## LOGIC MODEL for California Fire Science Consortium

SITUATION	INPUTS	OUTPUTS	OUTCOMES		
			Knowledge	Actions	Conditions
<p>1) <u>Web-based resources</u>: The abundance of fire science information can be confusing to access as dissemination is uncoordinated across producers. Coordination of current resources through one central website will make end user access easier.</p>	<ul style="list-style-type: none"> <li>- Staff web design and maintenance time</li> <li>- Collection of web resources</li> <li>- Consortium member time to respond to information queries</li> <li>- Consortium member time to increase email lists</li> <li>- Access to deliver web based training and webinar software</li> </ul>	<ul style="list-style-type: none"> <li>- Make web resources available through the CFSC website</li> <li>- Email newsletters to alert contacts of new resources</li> <li>- Use social media (facebook/ twitter) outreach about fire science</li> <li>- Conduct webinars on fire science topics of interest</li> </ul>	<ul style="list-style-type: none"> <li>- Increased awareness of fire science information available</li> <li>- Increased ability to access fire science information for land management</li> </ul>	<ul style="list-style-type: none"> <li>- Increase use of fire science in land management</li> <li>- Improved fire and land management decision making</li> </ul>	<p>Improved environmental conditions in California wildlands</p>
<p>2) <u>Written information</u>: An abundance of science information is available but some managers are reluctant to seek out or use highly technical science information from journal articles.</p>	<ul style="list-style-type: none"> <li>- Staff time and expertise on resource issues</li> <li>- Staff time and expertise for technical writing</li> <li>- Website and alerts to deliver written products</li> </ul>	<ul style="list-style-type: none"> <li>- Develop and distribute 1 synthesis / annotated bibliographies for key resource issues per region per year</li> <li>- Develop 5 research briefs per region per year</li> <li>- Develop materials for non-management groups, including journalists, regulators, policymakers, and the public</li> </ul>	<ul style="list-style-type: none"> <li>- Increased understanding of fire science information</li> </ul>	<ul style="list-style-type: none"> <li>- Improved fire and land management decision making</li> </ul>	
<p>3) <u>In person outreach</u>: In-person interaction helps learners integrate new information into pre-existing cognitive frameworks. Inadequate opportunities currently exist to allow learners to have in-person interaction with researchers.</p>	<ul style="list-style-type: none"> <li>- Time and funding to host events</li> <li>- Knowledge of key participants and science users</li> <li>- Participation by managers in group and educational activities</li> <li>- Time and funding to attend events and make consortium presentations</li> </ul>	<ul style="list-style-type: none"> <li>- Host in-person educational events including regional one-day conferences, workshops and field trips</li> <li>- Target science users, non-management groups, including journalists, regulators, policymakers, and the public</li> <li>- Participate in educational efforts of others to inform about consortium and products</li> </ul>	<ul style="list-style-type: none"> <li>- Improved communication between scientists and managers</li> <li>- Improved collaboration on research needs between scientists and managers</li> <li>- Improved understanding and use of fire science information</li> </ul>	<ul style="list-style-type: none"> <li>- Improved consortium program delivery</li> <li>- Improved understanding and use of fire science information</li> </ul>	
<p>4) <u>Collaboration</u>: The culture and attitudes of science and management institutions can be a barrier to effective communication and</p>	<ul style="list-style-type: none"> <li>- Time and funding to convene groups</li> <li>- Knowledge of key participants and science users</li> </ul>	<ul style="list-style-type: none"> <li>- Maintain subregional working and advisory groups</li> <li>- Participate in on-going conferences to inform about consortium and products</li> </ul>	<ul style="list-style-type: none"> <li>- Improved relevance of fire science information to land management problems</li> </ul>		



**ASSUMPTIONS:** Coordination of fire science information delivery and development of user-friendly written and web-based information and tools will increase use of science in land management decision-making. In-person interaction will improve understanding of fire science information. Presenters will be seen as credible and attendees will be able to find topics that are useful to them. Improved communication and collaboration between fire scientists and managers will result in production of more relevant fire science information. Improved dissemination of WUI science information will lead to adoption of better WUI policies and procedures by California resident, communities and agencies.

**EXTERNAL FACTORS:** The time and funding constraints of end users will affect their ability to seek out and use fire science information. Managers will have the ability (time, funding, and interest) to attend consortium educational activities and increase communication and collaboration. Social dynamics and politics around WUI issues will be conducive to rational science-based planning.

An Advisory Committee guides the Leadership Committee on the activities and direction of the Consortium. The Advisory Committee is comprised of a minimum of 5 and maximum of 9 resource and fire managers from different local, state, federal, and/or private entities (Table 1). The Advisory Committee is currently seeking a representative from a county-level fire agency.

*Table 2. Current CFSC-wide Advisory Committee members*

Name	Affiliation
Robin Wills (chair)	NPS, Western Region Fire Management
Neil Sugihara	USFS, Region 5 Fire Ecologist
Robert Taylor	NPS, Biogeographer and Fire GIS Specialist
Jared Hammatt	BLM, Natural Resource Specialist
Chris Keithley	CALFIRE, FRAP Research Manager
Phyllis Banducci	CALFIRE, Fire Planning Chief
Dexter Dong	USFS, Humboldt-Toiyabe NF Fire Ecologist
Gus Smith	NPS, Yosemite National Park Fire Ecologist

### **III. Partnerships**

The inter-agency nature of the CFSC’s structure allows for built-in partnerships with other non-consortium projects and employees in the agencies that staff the subregional teams. These include the UC Agriculture and Natural Resources program (UC Cooperative Extension), the US Forest Service R5 Ecology Program, USFS PSW Research Station, the National Park Service, California Polytechnic Institute, and UC Berkeley College of Natural Resources. For example, the Sierra Nevada region of the Consortium combines efforts with existing USFS Regional Ecology staff to write research briefs and plan consortium activities, in effect multiplying the efforts of what consortium staff alone could accomplish.

Outside of these collaborations, one of the most effective partnerships in the CFSC’s initial two years of activity has been with prescribed fire councils (PFCs) in the state. The Northern California PFC pre-dated the Consortium by a year, and has been a key partner in connecting research and management activities in the northern half of the state (including the northern Sierra Nevada). The Consortium has also been active in the formation of the Southern Sierra Nevada Prescribed Fire Council. The Consortium participates in both councils by providing research input to PFC meetings through coordinating research talks and sharing written resources. These council meetings provide a unique opportunity for the Consortium to interact with an active segment of land managers and air quality regulators. The northern subregional of the Consortium shares staff with the Northern California PFC, which allows for streamlined collaboration between the two groups.

In January 2013, CALFIRE agreed to contribute 4 hours of staff time per week from their Fire and Resources Assessment Program (FRAP) to consortium activities. As an agency, CALFIRE plays a central role in the management of state and county-owned lands, and includes a staff of resource managers that the Consortium will seek to engage with through this partnership. CALFIRE has also agreed to use this shared staff time to facilitate use of other CALFIRE resources, including meeting spaces at regional offices throughout the state.



#### **IV. Future direction**

The CFSC will focus its efforts in the following areas, based on the feedback from the Consortium's Advisory Committee, national survey evaluation data, and evaluation surveys from events.

1. *Continue to expand in-person knowledge exchange opportunities.*
  - a. The CFSC will continue to expand the use of in-person outreach, the high value of which has been affirmed through evaluation data.
  - b. Due to budget and travel limitations in public agencies, the Consortium will expand the use of a "one day conference" model. These conferences will be designed to be inexpensive and simple to set up, and easy for participants to attend. Conferences will include research and management presentations, group discussions, and/or local field trips. Where possible, written resources will be developed in conjunction with these conferences as take-away materials for participants (e.g. a research synthesis on mixed-severity fire regimes developed for a conference on the same topic for the Klamath River Basin).
2. *Center outreach activities in on-the-ground examples.*
  - a. Feedback from event surveys and the CFSC Advisory Committee confirm that many consortium participants find this form of outreach to be the particularly useful.
  - b. Where possible, in-person, written, and web-based resources will be used to connect research to existing management projects or real world fire events. This will help managers make direct conclusions from research to help apply science to the local landscapes where they work.
  - c. The Consortium will explore the development of an online showcase of different management projects to facilitate peer-to-peer learning between managers and to highlight different treatments and effects throughout the state.
3. *Expand the production of research syntheses that summarize a body of research on a particular topic.*
  - a. In response to the large number of research briefs published by the Consortium, the CFSC Advisory Committee recommended expanding the production of syntheses that encompass multiple scientific articles on a particular topic. This will help avoid information overload.
4. *Develop CFSC resources for key stakeholders and players outside of the management community.*
  - a. The Consortium will begin to develop written resources and activities to highlight research implications for key non-management groups, including: journalists, regulators, policymakers, and the public.

#### **V. Budget explanation**

For the upcoming two-year funding period, the CFSC is requesting a level of funding comparable to the amount awarded for the initial two-year funding period. As shown in the attached budget, the majority of these funds will be used for salary to

support a staff team that includes managers, researchers, and outreach specialists working in various functions for the Consortium. In particular, the individual budgets for the Berkeley hub and the 5 subregions include funds for staff time for coordinator positions. The Berkeley hub will continue to employ a 100 percent time coordinator, and the subregional groups will each employ a coordinator at 25 or more percent time.

The consortium will continue to focus the use of funds towards high-impact outreach activities. By minimizing website costs through in-house hosting, past and proposed budgets have allowed funds to be focused on staff time. As noted in the above logic models, staff time is the central “input” is used to generate consortium outcomes such as written products, web events and outreach, and in-person outreach activities.

## *Appendix 1 – Subregional responses to selected proposal prompts*

In order to include feedback from the 5 subregional teams of the CFSC, each subregion has contributed, in abbreviated form, their 1) main challenge, 2) main success, 3) lessons learned, and 4) future plans.

### **Northern California**

**Main challenge:** Identifying specific fire science needs in the region and how to best meet them.

**Main success:** Building partnerships with existing groups that do related work (e.g., the Northern California Prescribed Fire Council and the California Klamath-Siskiyou Fire Learning Network), and supporting and organizing in-person events.

**Lesson learned:** It's important to work with fire scientists and managers to identify needs and opportunities. Our regional Advisory Committee includes managers and researchers, and has played a critical role in identifying core issues and strategies in our region.

**Future plans:** In the next two years, our subregion has two primary objectives: 1) Plan small, regional, one-day fire science events that address specific issues or topics of local interest, have a strong emphasis on management implications, and bring managers and scientists together in the same room; and 2) Work with partners at various land management agencies and organizations to identify fire science needs and the best ways of disseminating new findings.

### **Sierra Nevada**

**Main challenge:** Actively engaging our audience and our board members in helping us to better tailor our services to user needs. Also, identifying ways to assist managers with the NEPA process.

**Main success:** Our written products and in-person activities have covered a wide variety of relevant topics and have been especially well received.

**Lesson learned:** Advisory committees, when composed of appropriately collaboratively minded individuals representing a spectrum of the region's wildland fire expertise, can be extremely valuable.

**Future plans:** We will continue our varied outreach efforts for fire managers, scientists and the public over the next two years. Notably we plan to expand our webinar series centered on Sierra-specific presentations on a bimonthly basis. Additionally, to complement our production of research briefs of individual scientific articles, we will begin producing broader science syntheses on pressing Sierra Nevada fire science topics. Finally, we will expand our field trip series and advertise our services to a wider audience.

### **Central and Southern California**

**Challenge:** The continuing challenge for the region is the underlying assumption that fire management is fuels management and how we will need to move the dial at all levels to get recognition of scientific paradigms well established over the past couple of decades.

**Main success:** Greatest success was the very positive response from managers, firesafe community representatives, NGO's, and scientists on our one-page publication briefs of important research papers, both recent and classical papers.

**Lesson learned:** The most important lesson learned is that our CFSC activities fill a void and provides a recognizable mechanism for more rapid information transfer.

**Future plans:** More emphasis on new research findings with both briefs and webinars; incorporate feedback from our advisory committee held during our first year. Continue to develop out expanding bibliography and work on means for distributing more widely. Complete 5 synthesis papers, two of which are already started but require outside review and revision. Conduct workshop dealing with the contrasts between fire regimes in the central coast with southern California.

### **Mojave and Sonoran Desert**

**Challenge:** Addressing waning interest in fire among desert land managers due to other more pressing issues, especially related to permitting for solar energy installations. This situation will likely continue for at least the next 2 years, posing potential challenges to the development of a regional steering committee (there may not be enough interest among the land managers).

**Main success:** Providing individual consultation on specific targeted questions from fire managers. Also, the contribution of curricular materials for NPS Resource Advisor training course.

**Lesson learned:** There is a significant amount of new information that has recently been published or is in the process of being published. The best use of our time is probably to focus on getting that new information to land managers, rather than summarizing older studies that they likely already know about.

**Future plans:** Produce additional research briefs and syntheses, but focus primarily on the facilitation of interactive outreach events. Using input and assistance from local partnerships, these events include field visits to past fires and treatments, short symposiums, and/or trainings. Will hire Dr. Robert Klinger of the USGS as a regional coordinator based out of Bishop, CA to run in-person events and assist with outreach.

### **Wildland-Urban Interface**

**Challenge:** The biggest challenge we've had is hiring someone to write the science briefs. Another small challenge is the size of the module, which includes the whole state.

**Main success:** By far, the greatest success has been the webinars, which have covered a breadth of WUI fire topics including involved in landscaping, construction, firefighting, fuels, and spatial dynamics.

**Lessons learned:** Hire competent people to write the science briefs and give plenty of advance notice (with eye-catching flyers) for the webinars.

**Future plans:** We will continue to bring in heavy hitting presenters for the webinars, which will cover a diversity of relevant subject areas within the broader WUI problem. We are partnering with the FireSafe Council to provide relevant in-field workshops. We are running a beta workshop in San Luis Obispo County with plans to take throughout the state. We think it would be advantageous to partner with regional partners to facilitate such field days in sundry modules throughout the state.